Planning and Environmental Consultants

Natura Impact Statement

Development at Droim na Gaoithe, Baile Chláir

DOCUMENT DETAILS

The Client	**Vincent Hannon Architects (VHA)**
Project Title:	**Development at Droim na Gaoithe, Baile Chláir**
Project Number:	**210947**
Document Title:	**Natura Impact Statement**
Document File Name:	**NIS D – 2023.05.12 – 210947**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

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Rev	Status	Date	Author(s)	Approved By
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1. INTRODUCTION

1.1 Background

MKO has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Appropriate Assessment of a proposed residential development in Claregalway, Co. Galway (grid ref: M 37312 32235). Development at Droim na Gaoithe, Baile Chláir

An Appropriate Assessment Screening Report has been prepared and is provided in Appendix I. The Article 6(3) Appropriate Assessment Screening Report has identified the European Sites upon which the proposed development has the potential to result in significant effects and the pathways by which those effects may occur.

This Natura Impact Statement (NIS) has been prepared in accordance with the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2021) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010) and the Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin 7, Ireland OPR (2021).

1.2 Statement of Authority

Baseline ecological surveys were undertaken on the 16th of February 2022 by Aran von der Geest Moroney (B.Sc.) of MKO. This report has been prepared by Aran von der Geest Moroney (B.Sc.) and reviewed by Rachel Walsh (B.Sc.) who has over 2 years' experience in ecological assessment.

1.3 Structure and Format of this NIS

- Section Two sets out the scope of the NIS by firstly providing a summary of the findings of the Article 6(3) Appropriate Assessment Screening Report. This clearly identifies the European Sites that have the potential to be significantly affected by the proposed development and the pathways by which they might be affected. Section Two then identifies the individual Qualifying Interests (QIs) or Special Conservation Interests (SCIs) that have the potential to be affected via the identified pathways for effect.
- Following this, in Section Three, all elements of the proposed project are fully described.
- Section Four describes the baseline environment with respect to the relevant QI/SCI of the screened in European Sites.
- Section 5 provides an assessment of the potential for adverse effects on the identified European Sites in the absence of mitigation. Mitigation to robustly block any identified pathways for impact is then prescribed.
- Section 6 provides an assessment of residual effects taking into consideration the proposed mitigation.
- In Section 7, the potential in combination effects of the proposed development on European Sites, when considered in combination with other plans and projects were assessed.
- A concluding statement is provided in Section 8.

2. CONCLUSIONS OF ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING REPORT AND SCOPE OF ASSESSMENT

The Article 6(3) Appropriate Assessment Screening Report (Appendix 1) identified the potential for the proposed development to result in significant effects on the following European Sites:

- Lough Corrib SAC [000297]
- Lough Corrib SPA [004042]

Each of these sites is discussed individually below in terms of the Qualifying Interests/Special Conservation Interests with the potential to be affected and the pathways by which any such effects may occur.

2.1 Lough Corrib SAC [000297]

The individual pathways for effect and the QIs with the potential to be affected are described below.

The detailed Site-Specific Conservation Objectives document (NPWS, Version 1, April 2017), were reviewed for each QI during this assessment. The potential for effect on each QI has been assessed in light of its specific conservation objective.

There is no potential for a direct effect as the proposed development is outside of the SAC boundary.

No pathway for indirect effect on the following QIs was identified given their terrestrial nature and a lack of a source-pathway-receptor chain for likely significant effect:

- 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)
- 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
- 7110 Active raised bogs
- 7120 Degraded raised bogs still capable of natural regeneration
- 7150 Depressions on peat substrates of the *Rhynchosporion*
- 8240 Limestone pavements
- 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
- 91D0 Bog woodland

The SAC located approx. 630m north east of the proposed development. According to Map 10 of the site-specific conservation objectives, Slender Green Feather-Moss occurs to the west of Lough Corrib. Therefore, there is no source-pathway-receptor chain for indirect effect on this species.

The Lesser horseshoe bat (*Rhinolophus hipposideros*) roost for which the SAC is designated is located approximately 33.6km north west of the development site as mapped in Map 11 of the Site-Specific Conservation Objectives (NPWS 2017). Therefore, the proposed development site is outside of the 2.5 km key foraging range for this species. There is no potential for significant effect in the form of disturbance on the designated roost or the mapped foraging grounds for Lesser horseshoe bat (*Rhinolophus hipposideros*).

There is no potential for indirect effect on Freshwater Pearl Mussel as the population for which this SAC has been designated is restricted to the Owenriff River, within the upper catchments of Lough Corrib.

The proposed development is located entirely outside the SAC with the SAC located approx. 630m north east of the proposed development. In addition, the proposed development is surrounded by existing developments and located within an urban and agricultural landscape. In addition, there are no surface water features or suitable habitat for otter in the vicinity of the development site. Therefore, there is no potential for a significant increase in disturbance of Otter due to the proposed development.

2.1.1 Groundwater Pathways

The Clare-Corrib ground water body which the development site is located within has an EPA Ground Waterbodies Risk of "At risk". A potential pathway for significant effect on the SAC was identified in the form of percolation of contaminated groundwater into the Clare-Corrib groundwater body which ultimately discharges into the River Clare and Lough Corrib. Therefore, taking a precautionary approach, the proposed works have the potential to cause deterioration in water quality during construction and operation, potentially affecting the following downstream QI habitats and Species:

- 1092 White-clawed Crayfish *Austropotamobius pallipes*
- 1095 Sea Lamprey *Petromyzon marinus*
- 1096 Brook Lamprey *Lampetra planeri*
- 1106 Salmon *Salmo salar*
- 1355 Otter *Lutra lutra*
- 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
- 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*
- 7220 Petrifying springs with tufa formation (*Cratoneurion)*
- 7230 Alkaline fens
- 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
- 1833 Slender Naiad *Najas flexilis*
- 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae)*
- 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea*

2.2 Lough Corrib SPA [004042]

The individual pathways for effect and the SCIs with the potential to be affected are described below.

The detailed Site-Specific Conservation Objectives document (NPWS, Version 1, January 2023), were reviewed for each SCI during this assessment. The potential for effect on each SCI has been assessed in light of its specific conservation objective.

There is no potential for direct effect as the proposed development is outside of the SPA boundary.

The proposed development site consists predominantly of agricultural grassland habitats which are common in the wider area. The site does not provide significant supporting habitat for the SCI species for which the SPA is designated. The surrounding area is an urbanising landscape with active roads, housing developments and a football pitch bordering the proposed development site. In addition, the proposed development site is currently grazed by horses. As such the proposed development site is subject to high levels of disturbance. Therefore, no potential for significant habitat loss or displacement effect exists.

The core foraging range of Hen harrier during the breeding season is 2km with a maximum range of 10km (SNH, 2016). The proposed development site is located 5.1km from the SPA. Due to the intervening distance between the proposed development site and the SPA and the urban nature of the proposed development site which does not provide significant suitable habitat for hen harrier no source-pathway-receptor chain for indirect effect on this species exists.

2.2.1 Groundwater Pathways

The Clare-Corrib ground water body which the development site is located within has an EPA Ground Waterbodies Risk of "At risk". A potential pathway for significant effect on the SPA was identified in the form of percolation of contaminated groundwater into the Clare-Corrib groundwater body which ultimately discharges into the Clare River and Lough Corrib. Therefore, taking a precautionary approach, the proposed works have the potential to cause deterioration in water quality during construction and operation, potentially affecting the following downstream SCI habitat and the water dependent SCI species of Lough Corrib SPA:

- A051 Gadwall *Anas strepera*
- A056 Shoveler *Anas clypeata*
- A059 Pochard *Aythya ferina*
- A061 Tufted Duck *Aythya fuligula*
- A065 Common Scoter *Melanitta nigra*
- A125 Coot *Fulica atra*
- A140 Golden Plover *Pluvialis apricaria*
- A179 Black-headed Gull *Chroicocephalus ridibundus*
- A182 Common Gull *Larus canus*
- A193 Common Tern *Sterna hirundo*
- A194 Arctic Tern *Sterna paradisaea*
- A395 Greenland White-fronted Goose *Anser albifrons flavirostris*
- A999 Wetlands and waterbirds

3. DESCRIPTION OF PROPOSED DEVELOPMENT

3.1 Site Location

The proposed development site is located in Claregalway, Co. Galway (grid ref: M 37312 32235). The site is a greenfield site of approximately 6.9 ha which is bordered by the R381 to the west and Lakeview Road to the south.

The location in of the development site in relation to EU Designated Sites is shown in Figure 3-1 with groundwater bodies shown in Figure 3-2.

3.2 Characteristics of the Proposed Development

The Development will consist of the construction of a total of 88 residential units, and creche. The proposal includes two estate entrances, one from R381 (to Oranmore) and one from the L7110. The proposed units mix is as follows:

- 2 four bedroom two storey houses,
- 19 three bedroom two storey houses,
- 18 two bedroom two storey houses,
- 15 three bedroom apartments,
- 21 two bedroom apartments,
- 13 one bedroom apartments,
- 1 Crèche.

The development also includes a children's playground to Lakeview Road, landscaped amenity public open space, and IW pumping station, ESB substation and all necessary site development works.

The Proposal also includes car parking, bicycle parking, hard & soft landscaping, site clearance works, roads, footpaths, amenity facilities, public lighting, signage, connections to existing services and all ancillary site development works.

The proposed site layout is provided in Figure 3-3.

3.2.1 Foul Water Management

A pre-commencement connection enquiry has been submitted to Irish Water to establish whether a wastewater connection to Irish Water infrastructure is possible. The letter confirming feasibility of connection is provided in Appendix D of the Civil Works Design Report submitted alongside this report.

The proposed wastewater drainage system for the proposed residential development will consist of a combination of gravity and pumped discharge to an existing local gravity foul sewer situated in the R381 regional road. All gravity sewers shall be laid under roads and open spaces. The proposed layout of the development site drainage can be seen in Appendix II.

Due to the topography of the proposed development site, a pumping station is required to service a portion of the proposed development. This pumping station will be located in the north of the proposed development site and will provide 24-hours storage for approx. 54 no. residential units and 1 no. creche and will comply with the requirements of the IW Code of Practice for Wastewater Infrastructure. Wastewater will be pumped from the pumping station via a proposed 110mm HDPE rising main to a newly constructed discharge manhole and then via gravity will be discharged to the proposed 150mm foul sewer line. Wastewater generated in the remaining 34 no. residential developments will discharge to the same proposed 150mm foul sewer line. All wastewater generated from the proposed development will ultimately discharge to the existing manhole and 300mm foul sewer line which runs parallel to the R381 across from the proposed development entrance via the proposed 150mm foul sewer line. The foul sewer network within the proposed development site was designed to cater for 90 no. units.

The pumping station will be located 13m from the boundary of the nearest dwelling. The pumping station will allow for a 4m space in front of it (in accordance with Irish Water Standard Detail STD-WW-26) to allow for an occasional tanker or service vehicle to be parked outside. Tanker movements to the pumping station are expected to be minimal and subject to the operational efficiencies of the pumping station. It is anticipated that no more than 2-4 tanker visits would be required per annum.

3.2.2 Surface Water Management

The proposed storm water drainage system for the proposed development has been designed to cater for all surface water runoff from all hard surfaces within the proposed development i.e. roadways, roofs, parking areas etc. Precast concrete gullies including lockable cast iron grating and frame connected to a piped system will be provided to collect run-off from these areas.

It is proposed that the storm water drainage generated within the proposed development site will flow by gravity and discharge via an Oil/ petrol interceptor to 2 no. soakaway units located strategically throughout the development as shown in Appendix II. The soakaway units within the proposed development site will be of cellular storage providing 95% void ratio. All soakaways within the proposed development site are designed to accommodate a 1 in 100 year storm event + 20% for climate change.

3.2.3 Flood Risk Assessment

JBA Consulting have carried out a flood risk assessment (FRA) for the proposed development site located in Claregalway, Co. Galway (grid ref: M 37312 32235). The risk of flooding to the development site via different pathways is outlined below. The full FRA can be seen in Appendix III.

Fluvial Flood Risk

There is no historical evidence for fluvial risk to the development site. The development site is located predominantly within flood zone C, with a small area to the northeast within flood zone B. As such the proposed works adhere to the "The Planning System and Flood Risk Management" guidance. A low risk to fluvial flooding is also outlined within the Clare River Flood Relief Study.

Pluvial Flood Risk

According to the OPW PFRA mapping, the central area of the proposed development site has the potential to act as a collection point for rainfall. Pluvial flooding has the potential to be a risk in

conjunction with groundwater flooding. In addition, the transition of the greenfield site to hard standing areas may increase risk of pluvial flooding.

Groundwater Flood Risk

The primary risk to flooding on the development site is that of groundwater flooding. This is due to the high groundwater vulnerability (3-10m bedrock depth) which the majority of the development site is located within. A small proportion located within extreme groundwater vulnerability (0-3m bedrock depth). There is a history of groundwater flooding at the development site. Previous flooding at the development has been attributed to groundwater influences due to turloughs within the vicinity (northwest and south of the development site). The site is considered to be at risk of flooding due to groundwater.

Clare River Flood Relief Scheme

The Clare River Flood Relief scheme was undertaken in order to provide flood relief in the Claregalway and surrounding area. Within the vicinity of the development site flooding was identified to be caused predominantly by groundwater influence, namely two turloughs located south of the development site and north west of the development site. The turlough located to the south of the development site was found to be higher than the turlough at the north west of the development site. A link between the two was identified resulting in groundwater related flooding issues to the north west of the development site. A 1.65km pipeline was constructed and completed in 2018 to reduce the impacts of flooding in regions impacted by groundwater flooding. This pipeline runs along the eastern boundary of the development site with the outfall to the Clare River located c. 60m upstream of the bridge. This pipeline is shown as a green line within Plate 3-1. This scheme provides a level of flood relief of 1% AEP with an additional 20% allowance for climate change.

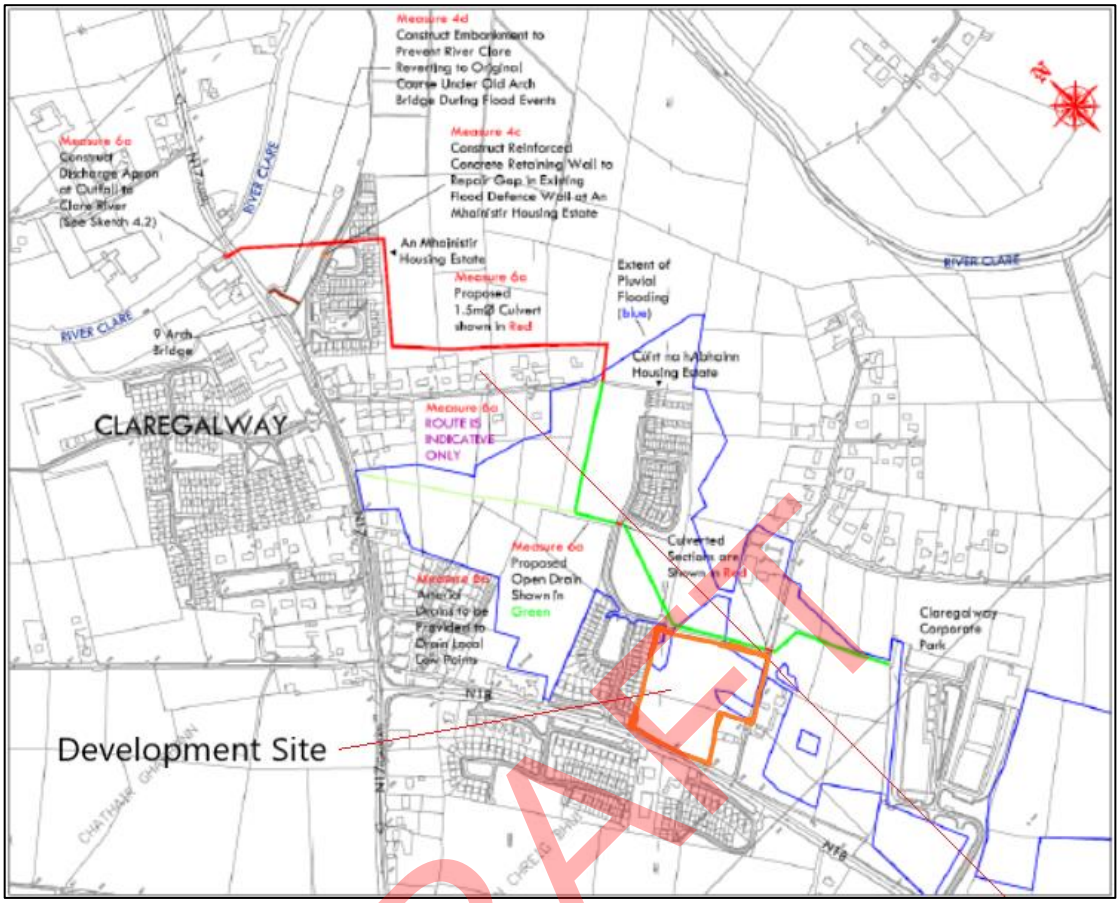


Plate 3-1 Clare Flood Relief Scheme Pipeline (In green) located adjacent to Development Site (In orange) (Image source JBA Consulting).

Suggested FRA mitigations.

Suggested mitigation measures outlined within the FRA prepared by JBA Consulting include the following:

- A surface water drainage system that replicates existing greenfield conditions and that is in accordance to the GDSDS should be considered.
- Finished Floor levels for the development should be set to 1% AEP event levels, including freeboard of 300mm.

The FRA identifies a risk of groundwater flooding within the development site. However, the FRA has concluded that although the CFRAM mapping shows a groundwater flood risk at the site, the Clare River Flood Relief Scheme has since mitigated the risk of groundwater flooding at the proposed development site.

3.2.4 Landscaping

A landscape plan for the proposed residential development has been prepared and is shown in Appendix IV of this report. A linear open space consisting of grass, trees and clipped hedgerow will be implemented along the existing and to be retained stone wall adjacent to the R381 at the east of the proposed development site. This will create a linear area of vegetation that will enhance connectivity

with the neighbouring residential development and the lands to the south. Similarly linear sections of trimmed hedging and trees are proposed throughout the site establishing connectivity within the site. Clipped hedging and trees will be planted along the southern boundary of the proposed development site within the retained stone wall and will further add to the connectivity of the site and the surrounding lands. Within the north eastern portion of the site there will be an area of mixed native woodland and mixed wildflower and bulb planting which will aid in the biodiversity of the proposed development site and in keeping with the All Ireland Pollinator Plan.

Planting throughout the proposed development site has been designed among other factors to use biodiverse plants to increase the biodiversity of the site as well as contribute to local biodiversity. Full details on plant species can be found within the landscape plan shown in Appendix IV of this report and within the associated landscape report submitted as part of this application.

Approximately 222m of linear vegetation is proposed along the southern and western boundaries of the proposed development site. The open green space, native woodland and pollinator friendly meadows within the northeast of the site covers approximately 0.3ha of the proposed site boundary.

3.2.5 Lighting

The lighting plan for the operational phase of the proposed development, has been designed in accordance with Bat Conservation Ireland (*Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers*, BCI, 2010) and the Bat Conservation Trust (*Guidance Note 08/18 Bats and Artificial Lighting in the UK* (BCT, 2018), to direct light away from important habitat features and minimise light spillage, thus reducing any potential disturbance to bats. The Public Lighting Layout and Reality Lighting Contours drawings can be seen in Appendix V.

The proposed light fitting/scheme has been designed to help mitigate the effect of the artificial lighting on the local bat populations by incorporating:

- The Upward Light Output Ratio (ULOR) will be 0%. Lighting fixtures will have a 0-degree tilt and will be fitted with back-louvers on the columns to reduce light spill.
- The proposed lighting consists of 'Veelite Metro Streetlight 27w LED Street Optic' and 'Veelite Metro Streetlight 27w LED Forward Throw A Optic' and will be of the LED colour temperature - Warm White (3000K).
- All LED streetlights will be mounted on 6m poles.
- Minimal lighting (<1lux) surrounding the public area in the northern section of the proposed development site to allow for commuting/foraging. Additionally, light spillage on the treeline along the western boundary has been designed with minimum lux levels <2lux in most areas.

3.2.6 Ground Investigations

Irish Drilling Ltd. (IDL) carried out site investigation works at the site of the proposed residential development between 31st January 2022 and 11th March 2022 in order to provide detailed geotechnical information of the underlying ground conditions at the proposed development. The full Site Investigation Report is submitted alongside this report as part of the application.

Eight cable percussion boreholes were completed to 'refusal' or to client specified depths, with borehole depths ranging between 1.4m and 2.2m below ground level. Five rotary core boreholes were carried out to depths ranging between 7.1m and 24m below ground level. The rotary core boreholes

were predominantly carried out in the case where the cable percussive borehole encountered 'refusal'. Nine trial pits were excavated throughout the site with a track excavator. Ground conditions, pit stability, water ingress and services encountered were all recorded. Soil infiltration tests were also carried out at three of the nine trial pits.

Ground Conditions:

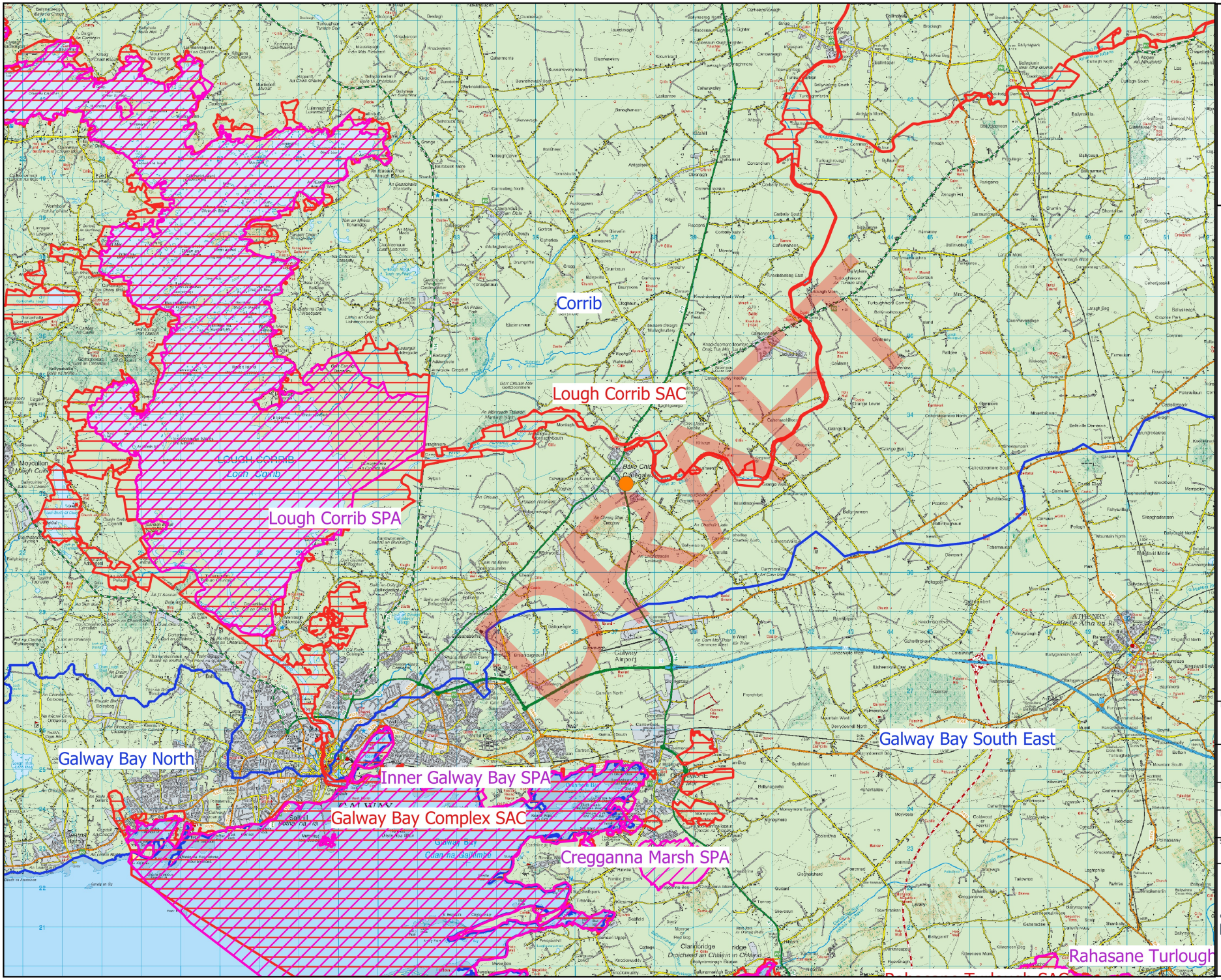
Ground conditions consisted predominantly of Glacial Till overlaying bedrock. Intact bedrock was encountered at depths varying from 2.1m to 21m below ground level and is described as 'very strong, thinly to thickly bedded, bioclastic limestone'. Weathered bedrock was also encountered with two boreholes at depths between 6.8m to 11.6m below ground level.

Groundwater:

Groundwater was not encountered in boreholes or trial pits at the time of fieldwork operations. It was noted that 'Groundwater inflows may occur in many areas during the completion of excavations and the rate of inflow will vary with the permeabilities of the soils and rock'.

Geotechnical review:

The water table was not encountered above the depths of recommended shallow foundations however the water table may be at ground level at times of flooding or excessive rainfall.



Map Legend

- Site Location
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- WFD Catchments

Drawing Title
Site Location in Relation to EU Designated Sites

Project Title
Development at Droim na Gaoithe, Baile Chláir

Drawn By	Checked By
AvdGM	RW
Project No.	Drawing No.
210947	Fig 3-1
Scale	Date
1:125000	15.03.23

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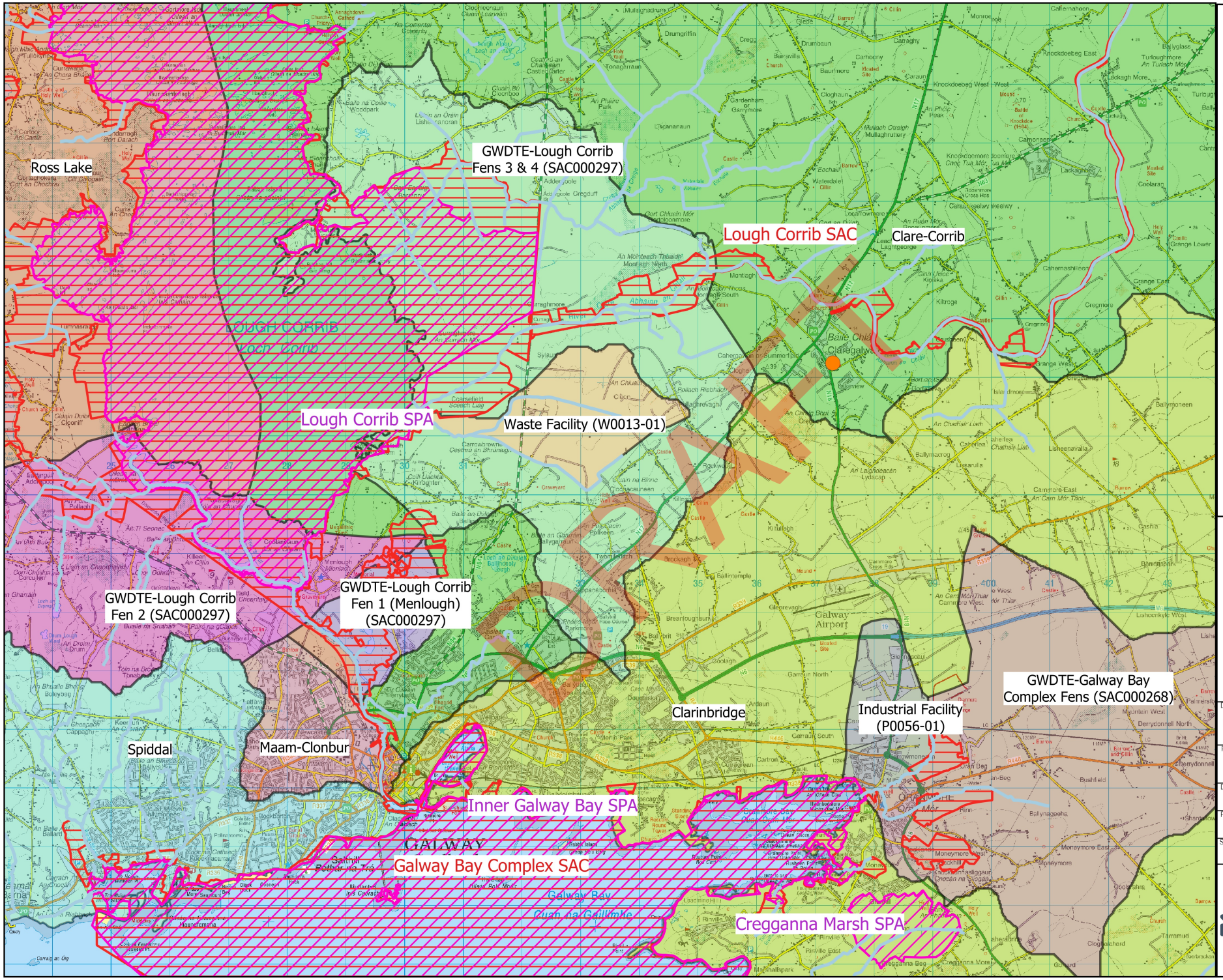

Map Legend

- Site Location
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Clare-Corrib
- Clarinbridge
- GWDTE-Galway Bay Complex Fens (SAC000268)
- GWDTE-Lough Corrib Fen 1 (Menlough) (SAC000297)
- GWDTE-Lough Corrib Fen 2 (SAC000297)
- GWDTE-Lough Corrib Fens 3 & 4 (SAC000297)
- Industrial Facility (P0056-01)
- Maam-Clonbur
- Ross Lake
- Spiddal
- Waste Facility (W0013-01)

Drawing Title

Site Location in Relation to EU Designated Sites and Groundwater Bodies

Project Title

Development at Droim na Gaoithe, Baile Chláir

Drawn By	Checked By
AvdGM	RW
Project No.	Drawing No.
210947	Fig 3-2
Scale	Date
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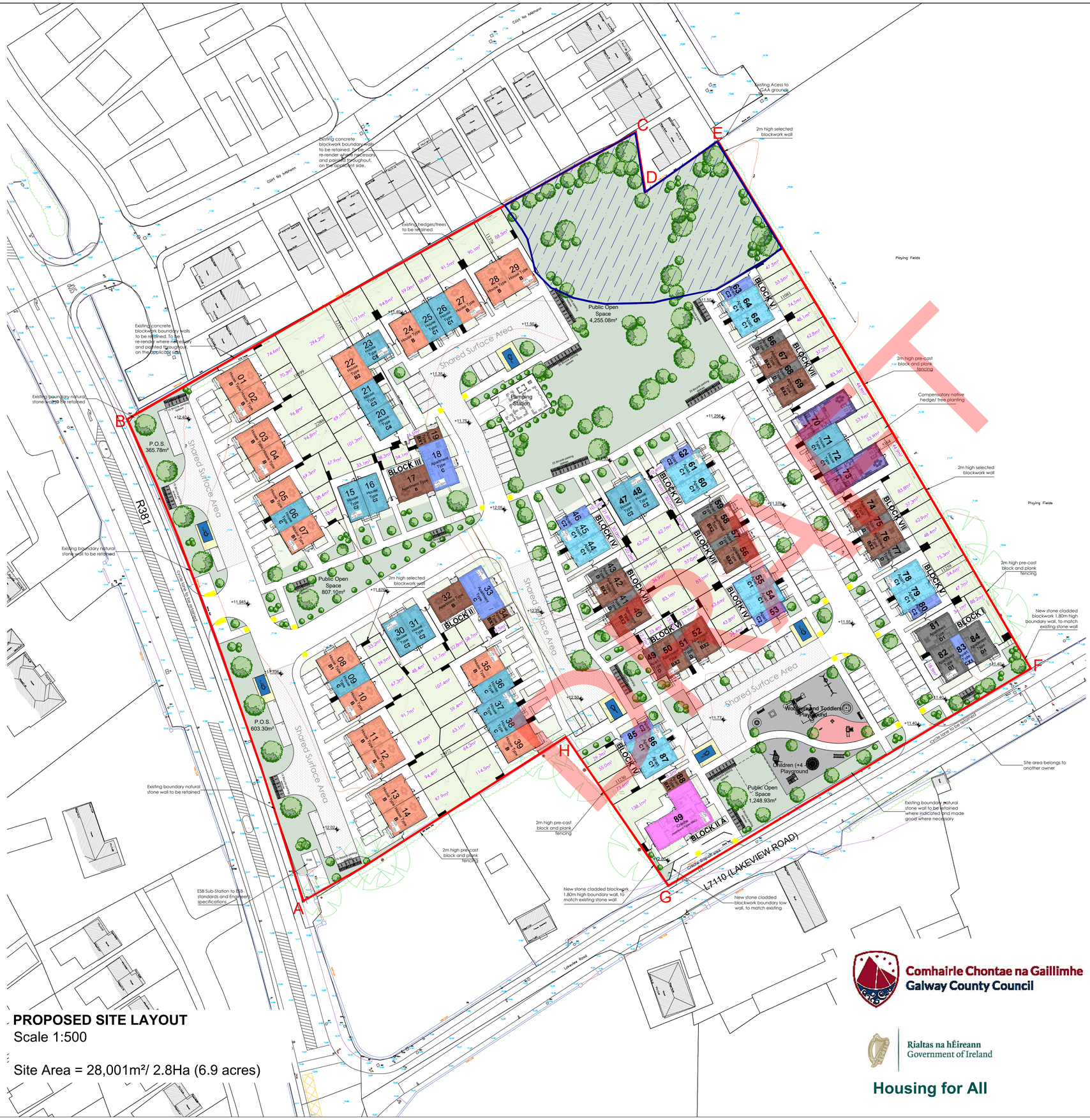

LEGEND:

- Public Open Space
- Private Open Space
- Home Zone
- Restricted Area as per Galway Co. Development Plan 2017-2023
- Site Area
- Site Area belongs to another owner
- Bin Store
- Car Parking Space
- Bike Stand

UNIT TYPES

TYPE A (4 Bedrooms)

4 BEDS. HOUSE
2 Houses

TYPE B (3 Bedrooms)

3 BEDS. HOUSE
19 Houses

3 BEDS. APARTMENT
15 Apartments

TYPE C (2 Bedrooms)

2 BEDS. HOUSE
18 Houses

2 BEDS. APARTMENT
21 Apartments

TYPE D (1 Bedroom)

1 BED. APARTMENT
13 Apartments

TYPE E (Crèche)

CRÈCHE
1 Unit - 21 Children

88 PROPOSED UNITS + 01 CRÈCHE

NOTE: Landscape included as reference only and subject to Landscape Architect's design.

SITE STATISTICS:

(As required for Housing by Galway Co. Development Plan 2022-2028)

Overall Site Area *(Edged in RED)*:
27,110.04m² Approx. (6.70 acres approx.)

DENSITY
Required : *N/A*
Provided : 33 Units/Ha.

OPEN SPACE
Public:
Required : *15% (4,066.51m²)*
Provided : 26.8%(7,279.75m²)

Private Open Space for Housing is provided in the form of rear gardens of minimum 11m in depth (22m back to back between houses), in compliance with the recommended areas required by the current Galway Co. Development Plan 2022-2028.

New Car Parking calculation
(based on new Galway County Development Plan 2022-2028 requirements)

Houses and Apartments:
4 bedroom units = 2 per unit = 4 car parking spaces required.
1 to 3 bedroom units = 1.5 per unit = 86 x 1.5 = 129 car parking spaces required.

Crèche:
Total capacity = 6 babies (0 to 1 years old)
7 children (1 to 2 years old)
8 children (2 to 6 years old)
Total= 21 (babies & children).

Staff: (0 to 1 years old) 1 staff each 3 children = 2 staff required.
(1 to 2 years old) 1 staff each 5 children = 1 ~ 2 staff required.
(2 to 6 years old) 1 staff each 8 children = 1 staff required.
Total staff required = 5.

Crèche car parking spaces required = 1 space/staff = 5
1 space each 4 children = 5.25 ~ 6

Total = 11 car parking spaces required for the crèche.

Total car parking spaces required:
Dwelling Units = 133 spaces.
Crèche = 11 spaces.

Total overall required = 144 spaces.

Provided:
144 spaces (Total)
Including 6 Disabled parking spaces

BICYCLE STANDS
Required: 1 bicycle spaces per bed for residents, 1 each 2 dwellings for visitors & 1 each car space (Crèche) = 258 bicycle spaces

Provided: 260 Bicycle parking spaces

PROPOSED SITE LAYOUT

Scale 1:500

Site Area = 28,001m²/ 2.8Ha (6.9 acres)

Comhairle Chontae na Gaillimhe
Galway County Council

Rialtas na hÉireann
Government of Ireland

Housing for All

N

Rev	Description	By	Date
-	-	-	-

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Client:	Galway County Council
Project:	Proposed Housing Development at Baile Chláir. Co. na Gaillimhe
Drawing Description:	Proposed Site Layout Plan
Scale:	1:500 @ A1
Status:	Planning
Drawing No:	210503-03-003
Rev:	
Date:	March 2023
Drawn by:	SF/ WS
Checked by:	BF

4. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

The ecological surveys that were undertaken to inform this NIS are fully described in this section. A general description of the ecology of the site of the proposed development is provided in the AA Screening Report prepared for the proposed development. The specific surveys that were undertaken to assess the potential effects on the identified European Sites are described below.

4.1 Methodology

4.1.1 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data including the following:

- Review of online web-mappers: National Parks and Wildlife Service (NPWS), EPA, Geological Survey of Ireland (GSI), Inland Fisheries Ireland (IFI)
- Review of Site-Specific Flood Risk Assessment
- Review of the Site-Specific Conservation Objectives (SSCOs) for European Sites identified within the Appropriate Assessment Screening Report as being within the Likely Zone of Impact.

4.1.2 Ecological Multidisciplinary Walkover Surveys

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological baseline conditions are those existing in the absence of proposed activities (CIEEM 2018, updated 2022). A multidisciplinary ecological walkover survey was conducted on the 16th of February 2022 in line with NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes) by Aran von der Geest Moroney (B.Sc.) and Cillian Burke (B.Sc.).

The walkover surveys were designed to detect the presence, or likely presence, of a range of protected species. The survey included a search of all potentially suitable habitat for the presence of potential presence of protected species that are likely to occur in the vicinity of the proposed development.

Habitats were identified in accordance with the Heritage Council's 'Guide to Habitats in Ireland' (Fossitt, 2000). Plant nomenclature for vascular plants follows 'New Flora of the British Isles' (Stace, 2010), while mosses and liverworts nomenclature follows 'Mosses and Liverworts of Britain and Ireland - a field guide' (British Bryological Society, 2010).

During the multidisciplinary surveys, a search for Invasive Alien Species (IAS) listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015) was also conducted.

4.2 Results of Desk Studies

4.2.1 Desk Study Results

The proposed development site is located in Claregalway, Co. Galway (grid ref: M 37312 32235). The site is a greenfield site of approximately 6.9 ha which is bordered by the R381 to the west and Lakeview Road to the south.

The wider area is dominated by residential dwellings, Claregalway village, the Clare [Galway] River, bogland and agricultural lands. Lough Corrib is located approx. 7km overland west of the development site.

Additional information from the desk study, including information on water quality and information on European Sites in the Likely Zone of Impact of the development is presented below.

4.2.1.1 EPA Water Quality Data

The EPA Envision map viewer was consulted on the 27th of March 2023 regarding the water quality status of watercourses surrounding the proposed development. The Biotic Index of Water Quality (BIWQ) was developed in Ireland by the Environmental Protection Agency (EPA). Q-values are assigned using a combination of habitat characteristics and structure of the macro-invertebrate community within the waterbody. Individual macro-invertebrate families are classified according to their sensitivity to organic pollution and the Q-value is assessed based primarily on their relative abundance within a sample.

The proposed development site is located entirely within the Corrib Catchment, Hydrometric Area 30 and within Clare[Galway]_SC_070 sub-catchment and the CLARE (GALWAY)_090 sub-basin.

The Clare [Galway] River {EPA Code: 30C01] is located approx. 640m north east of the development site overland and is part of Lough Corrib SAC. The Clare [Galway] river flows in a westward direction into Lough Corrib, which is located approx. 7km west of the development site overland. While there is no surface water connectivity between the proposed works area and the Clare [Galway] River there is a shared groundwater catchment between the Clare [Galway] River and the proposed works area.

There are three EPA water quality stations along the Clare [Galway] River within the vicinity of the site (Table 4.1).

Table 4-1 Water quality status and Q-values of watercourse in close proximity to the proposed development.

Watercourse Name	Sampling Station	Location	Sampling Year	Q-Value & Water Quality Status
Clare [Galway] River [EPA Code: 30C01]	Cregmore Bridge	E141027.4, N232921.38	2021	Q3 - 4 - Moderate
	Claregalway Bridge	E137283.86, N233237.2	2006	Q4 -Good
	Curraghmore Bridge	E132173, 232847	2009	Q4 – 5 -High

The groundwater catchment, Clare-Corrib, within which the proposed development is located is 'at risk' under the Water Framework Directive.

4.2.1.2 Geological Survey Ireland (GSI)

The development site is located within a Regionally Important Aquifer - Karstified (conduit). The GSI groundwater vulnerability for the majority of the site is regarded as 'High' with the northeast of the regarded as 'Extreme' (Plate 4-1).

Plate 4-1 Groundwater vulnerability in the vicinity of the site as mapped by Geological Survey Ireland (GSI).

4.2.1.3 Inland Fisheries Ireland (IFI)

Inland Fisheries Ireland undertook surveys in the Clare River and its sub-catchments between July 1st and 19th 2019 (IFI 2019). A total of 38 river sites were surveyed on the Clare River Catchment in 2019.

Eight fish species were recorded during the river surveys: Salmon was the most abundant fish species recorded followed by brown trout then stone loach and then three-spined stickleback. Roach, pike, European eel and lamprey species were also recorded.

Inland Fisheries Ireland undertook a fish stock survey of Lough Corrib in 2018 (Connor et al. 2018). Lough Corrib is known internationally for its brown trout fishing. The lake is also known to hold salmon, perch, roach, bream, roach x bream hybrids, eels, three-spined stickleback and pike.

A total of eight fish species and one type of hybrid were recorded on Upper Lough Corrib in June/July 2018. A total of 841 fish were captured. Perch was the most abundant fish species recorded, followed by roach x bream hybrids. Roach, brown trout, pike, salmon, bream, three-spined stickleback and eels were also recorded.

A total of eight fish species and one type of hybrid were recorded on Lower Lough Corrib in June 2018. A total of 567 fish were captured. Perch was the most abundant fish species recorded, followed by roach. Roach x bream hybrid, pike, brown trout, three-spined stickleback, salmon, stone loach and eels were also recorded.

Lough Corrib was also surveyed in 2008, 2011 and 2014 as part of the Water Framework Directive surveillance monitoring programme (Kelly et al., 2009, 2012a and 2015). During the 2014 survey, roach followed by perch were found to be the dominant species present in the lake. Brown trout, salmon, three-spined stickleback, nine-spined stickleback, pike, roach x bream hybrids, rudd, stoneloach and eels were also captured during the survey. Salmon were not recorded during the 2008 survey.

Roach is a non-native invasive fish which was first identified in Lower Lough Corrib in the early 1980s. The aquatic plant, curly waterweed (*Lagarosiphon major),* is an invasive plant identified in the lake in 2005 and has excluded native species from bays in which it has established. Zebra mussel (*Dreissena polymorpha)* is another invasive species which was first recorded in Lough Corrib in 2007.

Both Lower Lough Corrib and Upper Lough Corrib have been assigned an ecological status of 'Good' for 2018 based on the fish populations present (Connor et al. 2018). Lower Lough Corrib was assigned an ecological status of Poor in 2008 and Moderate in both 2011 and 2014. Upper Lough Corrib was assigned an ecological status of Poor in 2011 and Good for both 2008 and 2014.

4.2.1.4 Lough Corrib SAC [000297]

The Conservation Objectives document and Natura 2000 Data Form for this site as available on the NPWS website was reviewed during this assessment. Information in relation to the conservation objectives of the QI's and site-specific pressures and threats for the SAC is detailed below.

4.2.1.4.1 *Review of Conservation Objectives*

The relevant QIs and the associated conservation objectives of the site are presented in Table 4.2.

Table 4-2 Qualifying Interests and Conservation Objectives (Version 1, 2017).

Qualifying Interest	Conservation Objective
Whiteclawed Crayfish *(Austropotamobius pallipes)* [1092]	To maintain the favourable conservation condition of White-clawed Crayfish in the Lough Corrib SAC.
Sea Lamprey *(Petromyzon marinus)* [1095]	To restore the favourable conservation condition of Sea Lamprey in the Lough Corrib SAC.
Brook Lamprey *(Lampetra planeri)* [1096]	To maintain the favourable conservation condition of Brook Lamprey in the Lough Corrib SAC.
Salmon *(Salmo salar)* [1106]	To maintain the favourable conservation condition of Salmon in the Lough Corrib SAC.
Otter *(Lutra lutra)* [1355]	To maintain the favourable conservation condition of Otter in the Lough Corrib SAC.
Slender Naiad *Najas flexilis* [1833]	To restore the favourable conservation condition of Slender Naiad in Lough Corrib SAC.

Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]	To restore the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) in Lough Corrib SAC.
Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]	To restore the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoëto-Nanojuncetea* in Lough Corrib SAC.
Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.* [3140]	To restore the favourable conservation condition of hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.* in Lough Corrib SAC
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	To maintain the favourable conservation condition of water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation in Lough Corrib SAC
Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]	To maintain the favourable conservation condition of Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* in Lough Corrib SAC
Petrifying springs with tufa formation *(Cratoneurion)* [7220]	To maintain the favourable conservation condition of petrifying springs with tufa formation *(Cratoneurion)** in Lough Corrib SAC
Alkaline fens [7230]	To maintain the favourable conservation condition of Alkaline fens in Lough Corrib SAC

4.2.1.4.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to effect on the SAC were reviewed and considered in relation to the proposed works. These are provided in Table 4.3.

Table 4-3 Site-specific threats, pressures and activities with potential to have effects on Lough Corrib SAC (October 2020).

Negative Impacts			
Rank	Threats and pressures [code]		Inside/outside/both [i] o [b]
M	A08	Fertilisation	b
H	H01.08	diffuse pollution to surface waters due to household sewage and waste waters	o
M	J02.01.03	infilling of ditches, dykes, ponds, pools, marshes or pits	i
M	B01	forest planting on open ground	b
M	E01.03	Dispersed habitation	i
M	J02.15	Other human induced changes in hydraulic conditions	b
M	A10.01	removal of hedges and copses or scrub	i
H	A02.01	agricultural intensification	b
L	E03.01	Disposal of household / recreational facility waste	i

L	C01.01	Sand and gravel extraction	o
H	G05	Other human intrusions and disturbances	i
M	D01	Roads, paths and railroads	i
M	D03.01.02	piers / tourist harbours or recreational piers	i
H	C01.03.02	Mechanical removal of peat	i
M	E01.01	continuous urbanisation	o
H	I01	invasive non-native species	i
M	A04.03	abandonment of pastoral systems, lack of grazing	i

Rank: H = high, M = medium, L = low, i = inside, o = outside, b = both

A potential pathway for effect with regard to site-specific threats, pressures and activities has been identified in relation to potential for: *E01.01 Continuos urbinisation,* This activity has the potential, in the absence of best practice and mitigation, to result in adverse impacts to the site. No potential for impact with regard to any additional site-specific threats, pressures and activities were identified.

4.2.1.4.3 Annex I habitats of Lough Corrib SAC (000297)

Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia uniflorae)* [3110]

According to the site-specific conservation objectives, the distribution of lake habitat 3110 within Lough Corrib is likely to be restricted to the north-western bay, however, the habitat has not been fully surveyed. It may occur elsewhere along the northern or western shoreline of Lough Corrib, in Ballydoo Lough (N. of Corrib) and in small lakes in the Owenriff catchment. Ireland is a European stronghold for this soft-water, nutrient-poor lake habitat. It is quite species-poor and dominated by plants with an isoetid growth form, such as Quillwort (*Isoetes lacustris*), or Water Lobelia (*Lobelia dortmanna*). Other species such as Bulbous Rush (*Juncus bulbosus*) and Bog Pondweed (*Potamogeton polygonifolius*) also commonly occur. Habitat 3110 is frequent in catchments where peatland overlies acid bedrock (notably granite and old red sandstone). The habitat is under significant pressure from eutrophication, and from drainage and other damage to peatland. Damage to peatland can result in hydrological changes in lakes, increased organic matter, water colour and turbidity, changes in sediment characteristics, acidification and even enrichment. The habitat requires oligotrophic or Water Framework Directive High status. According to the Article 17 Report (NPWS 2019), the overall Conservation Status for the habitat is 'Bad' and the overall Conservation Trend is 'Stable'.

Although it is noted that this habitat is likely to be restricted to the north-west of Lough Corrib, taking a precautionary approach, there is potential for this habitat to exist downstream of the development site.

Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]

According to the site-specific conservation objectives, the full distribution and characteristics of this lake habitat in Lough Corrib SAC have not been mapped. The characteristic species slender naiad *(Najas flexilis)* was recorded in the western arm of Lough Corrib and that area appears to be dominated by lake habitat 3110, with lake habitat 3130 found towards the northern basin proper. The division between lake

habitats 3130 and 3140 may be difficult to determine, and both habitats may occur throughout the lake. Based on Environmental Protection Agency (EPA) macrophyte data, lake habitat 3130 is likely to occur in Ballycuirke Lough (Loch Bhaile Ui Choirc). The habitat has been interpreted as a mixed *Najas flexilis* lake habitat in Ireland. The habitat occurs in lakes with circum-neutral, low-nutrient waters in catchments of mixed geology. Base-rich influences come from basalt, limestone, marble, sedimentary deposits or calcareous coastal sand, and peatland is often widespread in the catchments. *Najas flexilis* is a character species. The co-occurrence of *Potamogeton perfoliatus* and *Isoetes lacustris* is also characteristic. It is under significant pressure from drainage, agriculture, peat extraction, forestry and wastewaters. Habitat 3130 co-occurs with habitat 3110 in some lakes and may also co-occur with habitats 3140 and 3150. According to the Article 17 Report (NPWS 2019), the overall Conservation Status for the habitat is 'Inadequate' and the overall Conservation Trend is 'Deteriorating'.

The full distribution of this lake habitat in Lough Corrib SAC has not been mapped and there is potential for this habitat to exist downstream of the development site.

Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.* [3140]

According to the site-specific conservation objectives, the hard water lake habitat 3140 is found in Lough Corrib, notably the southern basin. Its exact distribution and area have not been mapped. It is likely to also extend along the eastern side of the northern basin. The habitat is strongly associated with lowland lakes over limestone bedrock. It is also found on calcareous sand at the landward side of machair plains and in canals. The habitat is dominated by algae, particularly stoneworts (*Chara spp.*). Stonewort diversity is high and includes a number of rare and threatened species. Irish examples of the habitat are also of international importance for their 'krustenstein', an organic crust found on bedrock and cobbles in shallow waters. Ireland has some of the best European examples of the hard-water lake habitat and, as a result, particular responsibility for maintaining/restoring this natural habitat at Favourable conservation status within the EU. The hard-water lake habitat is under significant pressure from eutrophication, the primary sources of nutrients and organic material being agriculture and municipal and industrial wastewaters. Movement of pollutants, especially phosphorus, through ground water is a significant concern. According to the Article 17 Report (NPWS 2019), the overall Conservation Status for the habitat is 'Bad' and the overall Conservation Trend is 'Deteriorating'.

This habitat is located downstream of the development site.

Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]

The selection of SACs for this habitat used a broad interpretation of the habitat description, as it is itself broad ranging. According to the site-specific conservation objectives, the habitat description for 3260 ranges from upland bryophyte/macroalgal dominated stretches, to lowland depositing rivers with pondweeds and starworts. There is little known about the characteristics or sub-types in Lough Corrib SAC. Site-specific objectives for the habitat concentrate upon high conservation value sub-types. Many of the rivers included in the Lough Corrib SAC were for Atlantic salmon *(Salmo salar)* and most of these rivers are in arterial drainage schemes which have altered aquatic plant distribution and species composition. According to the NPWS Article 17 Report, the habitat has a broad definition, covering from upland, flashy, oligotrophic, bryophyte- and algal-dominated rivers, to tidal reaches dominated by higher plants. In Ireland, the highest conservation interest is associated with lowland depositing and tidal rivers and unmodified, fast-flowing, low-nutrient rivers. Crow-footed dominated reaches typically have low species diversity and generally indicates poor condition and damage. The main problems for river habitats in Ireland are damage through hydrological and morphological change, eutrophication and other water pollution. Agriculture and municipal and industrial discharges are the most significant sources of

nutrient and organic pollution. The overall Conservation Status for this habitat is 'Inadequate' and the Conservation Trend is 'Deteriorating'.

Taking a precautionary approach, a potential for this habitat to exist downstream of the development site exists.

Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]

According to the site-specific conservation objectives, Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* have not been mapped in detail for Lough Corrib SAC and thus total area of the qualifying habitat is unknown. While the full extent of Annex I fen habitats (both this habitat and Alkaline fens (7230)) within the SAC is currently unknown, their area is extensive and they often occur in association with and transitional to other habitats including Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) (6410), Active raised bogs (7110), Petrifying springs with tufa formation (Cratoneurion) (7220) and Limestone pavements (8240) (NPWS internal files). According to the Article 17 Report (NPWS 2019), the overall Conservation Status for the habitat is 'Inadequate' and the Conservation Trend is 'Stable'. Maintenance of groundwater, surface water flows and water table levels within natural ranges is essential for this wetland habitat.

NPWS point recordings of Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* habitat occur along the banks of Lough Corrib. Taking a precautionary approach there is potential for Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* to occur downstream of the proposed development.

Petrifying springs with tufa formation *(Cratoneurion)* [7220]

Petrifying springs with tufa formation *(Cratoneurion)* have not been mapped within Lough Corrib SAC. The total area of the qualifying habitat in the SAC is unknown. The necessary ecological conditions required for this habitat occur around Lough Corrib. It is often associated with other habitats including Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae (7210), Alkaline fens (7230) and Limestone pavements (8240). According to the Article 17 Report (NPWS 2019), the overall Conservation Status for the habitat is 'Inadequate' and the overall Conservation Trend is 'Deteriorating'.

It is likely that rivers over limestone bedrock have a significant groundwater contribution. There may be tufa formation associated with such groundwater springs and seepages. Such petrifying springs are an in-stream form of the Habitats Directive priority Annex I habitat "Petrifying springs with tufa formation (Cratoneurion)" (7220) and of high conservation value.

Taking a precautionary approach there is potential for Alkaline Fens to occur downstream of the proposed development.

Alkaline fens [7230]

Alkaline fens have not been mapped in detail for Lough Corrib SAC. The total area and distribution of the qualifying habitat is unknown. While the full extent of Annex I fen habitats are unknown their area is extensive. They often occur in association with and are transitional to other habitats including Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) (6410), Active raised bogs (7110), Petrifying springs with tufa formation (Cratoneurion) (7220) and Limestone pavements (8240) (NPWS 2017). According to the Article 17 Report (NPWS 2019), the overall Conservation Status for the

habitat is 'Bad' and the overall Conservation Trend is 'Deteriorating'. Maintenance of groundwater, surface water flows and water table levels within natural ranges is essential for this wetland habitat.

NPWS point recordings of Alkaline Fen habitat occur along the banks of Lough Corrib. Taking a precautionary approach there is potential for Alkaline Fens to occur downstream of the proposed development.

4.2.1.4.4 *Annex II species of Lough Corrib SAC (000297)*

Whiteclawed Crayfish *(Austropotamobius pallipes)* [1092]

As per the detailed Site-Specific Conservation Objectives document (NPWS, 2017), white-clawed crayfish is known to occur within the aquatic habitat of the SAC. A distribution map is available for this species within the SSCO (Map 10). White-clawed crayfish (*Austropotamobius pallipes*) is recorded from the entire lengths of the four main tributaries of the River Clare, however, its total distribution is unknown. According to the Natura 2000 Form, permanent crayfish populations are present within the SAC. Potential for indirect impacts on this QI exists via potential for deterioration in water quality associated with the construction and operation of the proposed development. According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this species is 'Bad' and the overall Conservation Trend is 'Deteriorating'.

There are no NPWS point data records downstream or within the vicinity of the development site. However, taking a precautionary approach there is potential for Whiteclawed crayfish to occur downstream of the proposed development.

Lamprey species

Lough Corrib SAC is designated for two species of lamprey: Sea Lamprey (*Petromyzon marinus*) and Brook Lamprey (*Lampetra planeri*).

As per the detailed Site-Specific Conservation Objectives document (NPWS, 2017), sea lamprey is known to occur within the aquatic habitat of the SAC. No specific map is available for this species within the SSCO. Sea lamprey (*Petromyzon marinus*) traditionally congregate and build spawning nests in the River Corrib in Galway city, both up- and downstream of the Salmon Weir Bridge. Their further upstream passage is impeded by the regulating weir immediately upstream. According to the Natura 2000 Form, reproducing sea lamprey populations are present within the SAC.

As per the detailed Site-Specific Conservation Objectives document (NPWS, 2017), brook lamprey is known to occur within the aquatic habitat of the SAC. No specific distribution map is available for this species within the SSCO. According to the Natura 2000 Form, permanent brook lamprey populations are present within the SAC.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for Sea Lamprey is 'Bad' and the overall Conservation Trend is 'Stable'.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for Brook Lamprey is 'Favourable' and the overall Conservation Trend is 'Stable'.

Taking a precautionary approach there is potential for lamprey species to occur downstream of the proposed development.

Salmon *(Salmo salar)* [1106]

As per the detailed Site-Specific Conservation Objectives document (NPWS, 2017), Atlantic salmon is known to occur within the aquatic habitat of the SAC. No specific distribution map is available for this species within the SSCO however, there are no barriers to its migration in Lough Corrib SAC. Salmon are known to spawn in the headwaters of Lough Corrib tributaries. According to the Natura 2000 Form,

reproducing salmon populations are common within the SAC. Potential for indirect impacts on this QI exists via potential for deterioration in water quality associated with the construction and operation of the proposed development. According to the Article 17 Report (NPWS 2019), the overall Conservation Status for Atlantic Salmon is 'Inadequate' and the overall Conservation Trend is 'Stable'. á

There is the potential for Salmon to occur downstream of the proposed development.

Otter *(Lutra lutra)* [1355]

As per the detailed Site-Specific Conservation Objectives document (NPWS, 2017), otter is known to occur within the aquatic habitat of the SAC. A distribution map is available for this species within the SSCO (Map 12). Potential for indirect impacts on this QI exists via potential for deterioration in water quality. According to the Article 17 Report (NPWS 2019), the overall Conservation Status for Otter is 'Favourable' and the overall Conservation Trend is 'Improving'.

The closest NPWS record for otter is approx. 1km northwest of the development site on the Clare River.

Slender naiad *(Najas flexilis)* [1833]

Slender naiad is recorded on one occasion from one location in Lough Corrib. The record was made between the 7th and the 12th of July 1986 by W. Krause and J.J. King in the north-western bay of the lake (Krause and King, 1994). It is possible that the Lough Corrib population of *Najas flexilis* has become extinct since 1986. It has not been re-recorded in survey between 2002 – 2004, during EPA surveys since 2007, surveys in 2012 or 2014. The large size of Lough Corrib means that Slender naiad could easily have been missed and may persist in some localities. It is likely, however, given the condition of the lake habitat, that the population has declined in number and/or become more fragmented (NPWS 2017). The species is threatened by enrichment (eutrophication), acidification and peatland damage.According to the Article 17 Report (NPWS 2019), the overall Conservation Status for Slender naiad is 'Inadequate' and the overall Conservation Trend is 'Deteriorating'.

Taking a precautionary approach there is the potential for Slender naiad to occur downstream of the proposed development with the waters of Lough Corrib.

4.2.1.5 Lough Corrib SPA (004042)

The Conservation Objectives document and Natura 2000 Data Form for this site as available on the NPWS website was reviewed during this assessment. Information in relation to the conservation objectives of the SCIs and site-specific pressures and threats for the SPA is detailed below.

4.2.1.5.1 *Review of Conservation Objectives*

The relevant SCI and the associated conservation objectives of the site are presented in Table 4.6.

Table 4-4 Special conservation Interest and Conservation Objectives (Version 1, 2023).

Qualifying Interest	Conservation Objective
Gadwall *Anas strepera* [A051]	To restore the favourable conservation condition of gadwall in Lough Corrib SPA

Shoveler *Anas clypeata* [A056]	To restore the favourable conservation condition of shoveler in Lough Corrib SPA
Pochard *Aythya farina* [A059]	To restore the favourable conservation condition of pochard in Lough Corrib SPA
Tufted Duck *Aythya fuligula* [A061]	To restore the favourable conservation condition of tufted duck in Lough Corrib SPA
Common Scoter *Melanitta nigra* [A065]	To maintain the favourable conservation condition of common scoter in Lough Corrib SPA
Coot *Fulica atra* [A125]	To restore the favourable conservation condition of coot in Lough Corrib SPA
Golden Plover *Pluvialis apricaria* [A140]	To maintain the favourable conservation condition of golden plover in Lough Corrib SPA
Black-headed Gull *Chroicocephalus ridibundus* [A179]	To restore the favourable conservation condition of black-headed gull in Lough Corrib SPA
Common Gull *Larus canus* [A182]	To restore the favourable conservation condition of common gull in Lough Corrib SPA
Common Tern *Sterna hirundo* [A193]	To restore the favourable conservation condition of common tern in Lough Corrib SPA
Arctic Tern *Sterna paradisaea* [A194]	To restore the favourable conservation condition of Arctic tern in Lough Corrib SPA
Greenland White-fronted Goose *Anser albifrons flavirostris* [A395]	To restore the favourable conservation condition of Greenland white-fronted goose in Lough Corrib SPA
Wetlands [A999]	To maintain the favourable conservation condition of wetlands in Lough Corrib SPA

4.2.1.5.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to effect on the SPA were reviewed and considered in relation to the proposed works. These are provided in Table 4.7.

Table 4-5 Site-specific threats, pressures and activities with potential to have effects on the SPA (October 2020).

Negative Impacts			
Rank	Threats and pressures [code]		Inside/outside/both [i] o [b]
H	E01	Urbanised areas, human habitation	o
H	F02.03	Leisure fishing	i
L	G01.01	Nautical sports	i
L	A04	Grazing	o
L	A08	Fertilisation	o
M	B	Sylviculture, forestry	o
H	F03.01	Hunting	i

Potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to potential for: ‘*’E01 Urbanised areas, human habitation’*. These activities have the potential, in the absence of best practice and mitigation, to result in adverse impacts to the site. No

potential for impact with regard to any additional site-specific threats, pressures and activities were identified.

4.2.1.5.3 *Special Conservation Interests' Specific Information*

Gadwall (*Anas strepera*) [A051]

The National population of over-wintering gadwall in Ireland has increased by 24% from 1994/95 to 2019/20. According to the Site-Specific Conservation Objectives (SSCO's) for Lough Corrib SPA, the gadwall population has reduced by 40% between surveys undertaken in the periods between 1995-2000 and 2012-2017. Most recent data showed a population of 29 gadwall using the SPA.

Shoveler (*Anas clypeata*) [A056]

The National population of over-wintering shoveler in Ireland has declined by 11% from 1994/95 to 2019/20. According to the Site-Specific Conservation Objectives (SSCO's) for Lough Corrib SPA, the shoveler population has reduced by 84% between surveys undertaken in the periods between 1995-2000 and 2012-2017. Most recent data showed a population of 15 shoveler using the SPA.

Pochard (*Aythya ferina*) [A059]

The National population of over-wintering pochard in Ireland has decreased by 79% from 1994/95 to 2019/20. According to the Site-Specific Conservation Objectives (SSCO's) for Lough Corrib SPA, the pochard population has reduced by 94% between surveys undertaken in the periods between 1995-2000 and 2012-2017. Most recent data showed a population of 625 pochard using the SPA.

Tufted Duck (*Aythya fuligula*) [A061]

The National population of over-wintering tufted duck in Ireland has declined by 18% from 1994/95 to 2019/20. According to the Site-Specific Conservation Objectives (SSCO's) for Lough Corrib SPA, the tufted duck population has reduced by 56% between surveys undertaken in the periods between 1995-2000 and 2012-2017. Most recent data showed a population of 2,399 tufted duck using the SPA.

Common Scoter (*Melanitta nigra*) [A065]

The National population of breeding common scoter in Ireland has declined by 21% from 1994/95 to 2019/20. According to the Site-Specific Conservation Objectives (SSCO's) for Lough Corrib SPA, the common scoter population has experienced an increase of 27% between surveys undertaken in the periods between 1995 and 2020. Most recent data showed a population of 38 potential breeding pairs of common scoter using the SPA.

Coot (*Fulica atra*) [A125]

The National population of over-wintering coot in Ireland has declined by 23% from 1994/95 to 2019/20. According to the Site-Specific Conservation Objectives (SSCO's) for Lough Corrib SPA, the coot population has reduced by 87% between surveys undertaken in the periods between 1995-2000 and 2012-2017. Most recent data showed a population of 1,912 coot using the SPA.

Golden Plover (*Pluvialis apricaria*) [A140]

The National population of over-wintering golden plover in Ireland has declined by 54% from 1994/95 to 2019/20. According to the Site-Specific Conservation Objectives (SSCO's) for Lough Corrib SPA, the

golden plover population has increased by 21% between surveys undertaken in the periods between 1995-2000 and 2012-2017. Most recent data showed a population of 2,088 golden plover using the SPA.

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

According to the Site-Specific Conservation Objectives (SSCO's) for Lough Corrib SPA, black-headed gull colonies have been recoded at multiple locations across Lough Corib SPA. Most recent population estimates for breeding black-headed gull are estimated at 400 pairs. These numbers represent a short term decline from the 2010 population estimate of 51%. These number also represent an acute long term decline from an estimated 3,000 breeding pairs in 1983.

Common Gull (*Larus canus*) [A182]

According to the Site-Specific Conservation Objectives (SSCO's) for Lough Corrib SPA, breeding common gull have been recoded at multiple locations across Lough Corib SPA. Most recent population estimates for breeding common gull are estimated at 137 pairs. These numbers represent a short term decline from the 2010 population estimate of 50%. These number also represent a long term decline of at least 74% in breeding pairs of common gull since surveys undertaken in 1983.

Common Tern (*Sterna hirundo*) [A193]

According to the Site-Specific Conservation Objectives (SSCO's) for Lough Corrib SPA, breediung common tern have been recoded at multiple locations across Lough Corib SPA. Most recent population estimates for breeding common tern are estimated at 6 pairs. These numbers represent a short term decline from a 2007 population estimate of 73%. In both the short and long term breeding pairs of common tern have declined with 27 breeding pairs estimated to be using Lough Corrib SPA in 1984 and 37 pairs in 1995.

Arctic Tern (*Sterna paradisaea*) [A194]

According to the Site-Specific Conservation Objectives (SSCO's) for Lough Corrib SPA, breediung arctic tern have been recoded at multiple locations across Lough Corib SPA. Most recent population estimates for breeding common tern are estimated at 10 pairs. These numbers represent a short term decline from a 2007 population estimate of almost 80%. Overall the breeding population of arctic tern within Lough Corrib SPA has fluctuated significantly with 10 breeding pairs estimated to be using Lough Corrib SPA in 1984 and 60 pairs in 1995.

Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]

The National population of greenland white-fronted goose in Ireland has declined by 13% from 1985 to 2018. According to the Site-Specific Conservation Objectives (SSCO's) for Lough Corrib SPA, the greenland white-fronted goose population has reduced by 91% between surveys undertaken in the periods between 1994-1999 and 2016-2021. Most recent data showed a population of 15 greenland white-fronted goose using the SPA.

Wetlands [A999]

Lough Corrib is a site of international importance for wintering waterfowl. 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. Potential indirect effects on the supporting wetland habitat of waterbirds within the SPA in the form of degradation of surface water quality was identified.

The following relevant information has been extracted from the NPWS site synopsis and Natura 2000 Data Form for the SPA:

> *'The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Greenland White-fronted Goose, Gadwall, Shoveler, Pochard, Tufted Duck, Common Scoter, Hen Harrier, Coot, Golden Plover, Black-Headed Gull, Common Gull, Common Tern and Arctic Tern. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetlands & Waterbirds.*
>
> *Lough Corrib SPA is an internationally important site which supports in excess of 20,000 wintering waterbirds, including a population of Pochard that is, itself, of international importance. A further six species of wintering waterfowl have populations of national importance. The site also contains a nationally important communal roost site for Hen Harrier. Lough Corrib is the most important site in the country for breeding Common Scoter. Its populations of breeding gulls and terns are also notable, with nationally important numbers of Black-headed Gull, Common Gull, Common Tern and Arctic Tern occurring. It is of note that several species which regularly occur are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Greenland White-fronted Goose, Hen Harrier, Golden Plover, Common Tern and Arctic Tern. Lough Corrib is a Ramsar Convention site.'*

4.3 Results of Field Surveys

4.3.1 General description of Ecology of the Site

4.3.1.1 Habitats

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological Baseline conditions are those existing in the absence of proposed activities (CIEEM 2018, updated 2022).

A multidisciplinary ecological walkover survey of the site was conducted on the 16th of February 2022 in line with NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes) by Aran von der Geest Moroney (B.Sc., QCIEEM) and Cillian Burke (B.Sc.). All habitats were readily identifiable during the time of the walkover survey.

The proposed development site consists predominantly of grassland habitat classified as Improved agricultural grassland **(GA1)** (Plate 4-2). The areas of Improved agricultural grassland were dominated by perennial rye grass (*Lollium perenne*) with broad leaved dock (*Rumex obtusifolius*), clover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*), daisy (*Bellis perennis*), dandelion (Taraxacum *officinale agg.*) and *Rhytidiadelphus squarrosus* occurring throughout. The grassland was heavily poached and at times wet underfoot.

The site is bordered to the west and partially to the south by stone walls classified as Stone walls and other stonework **(BL1)** (Plate 4-3), with a scattered mature ash dominated treeline **(WL2)** comprising the remainder of the southern boundary (Plate 4-4). The site is bordered to the north by a combination of concrete block wall classified as Buildings and artificial surfaces **(BL3)** and a bramble (*Rubus fruticosus*), blackthorn (*Prunus spinosa*) and hawthorn (*Crataegus monogyna*) dominated hedgerow **(WL1)** (Plate 4-5). The site is bordered to the east by an ivy (Hedera spp.), bramble, blackthorn and hawthorn dominated hedgerow **(WL1)** with occasional mature ash trees (*Fraxinus excelsior*) (Plate 4-6).

A blackthorn and hawthorn tall hedgerow **(WL1)** runs in a south easterly direction from the northern boundary and partially bisects the site (Plate 4-7). There are two areas of recolonising gravel classified as recolonising bare ground **(ED3)** located within the site boundary (Plate 4-8).

There were no drains located within the site or leading off the site.

The site is bordered by the R381 to the west (Plate 4-9), lakeview road and an area of land with a mosaic of grassland, scrub and artificial habitats to the south (Plate 4-10), a residential area to the north and GAA sports pitches to the east.

No species listed as a Third Schedule Invasive Alien Species (IAS) of the European Communities Regulations 2011 (S.I. 477 of 2015) was recorded within the development site boundary.

There were no Annex I habitats or Annex II fauna associated with the Lough Corrib SAC or SCI species of the Lough Corrib SPA recorded during the site visit

Plate 4-2 Improved agricultural grassland (GA1) heavily poached in areas.

Plate 4-3 Stone wall boundary to the south of the site classified as Stone walls and other stonework (BL1).

Plate 4-4 Scattered mature ash dominated treeline (WL2) at south eastern boundary of site.

Plate 4-5 Combination of concrete block wall classified as Buildings and artificial surfaces (BL3) and a bramble, blackthorn and hawthorn dominated hedgerow (WL1) located at the north of the site.

Plate 4-6 Ivy, bramble, blackthorn and hawthorn dominated hedgerow (WL1) with occasional mature ash trees in the background with heavily poached agricultural grassland in the foreground.

Plate 4-7 Blackthorn and hawthorn tall hedgerow (WL1) which partially bisects the site.

Plate 4-8 Area of recolonising gravel classified as recolonising bare ground (ED3) located in the north western corner of the site

Plate 4-9 R381 located west of the site.

Plate 4-10 Lakeview Road and area of land with a mosaic of grassland, scrub and artificial habitats located south of the site.

4.3.1.2 Fauna

The walkover survey was designed to detect the presence, or likely presence, of a range of protected species associated with European protected sites. No evidence of Annex II species associated with the Lough Corrib SAC was recorded within the proposed development site. No suitable habitat for Otter exists within or adjacent to the proposed development site.

No SCI species associated with any European site were recorded during the site visit. There is no significant supporting habitat for any of the listed wetland or waterfowl SCI bird species of the nearby Lough Corrib SPA within the proposed development site, which is predominantly made up of heavily poached agricultural grassland; a habitat which is common and widespread in the wider area.

5. ASSESSMENT OF POTENTIAL EFFECTS AND ASSOCIATED MITIGATION

This Natura Impact Statement presents the data and information on the project and provides an analysis of the potential adverse effects on the aforementioned EU designated sites. Potential adverse effects are assessed in view of best scientific knowledge, on the basis of objective information in relation to the proposed project, including the proposed avoidance, reduction and preventive measures.

The following sections provide a review of the potential pathways for effect for each of the 'screened-in' EU Designated Sites. Mitigation measures for the avoidance of adverse effects are then provided, followed by an assessment of potential effects, post implementation of the mitigation measures.

5.1 Potential for Direct Effects on the European Sites

The proposed development site is located completely outside of the boundary of any European Sites, including Lough Corrib SPA and Lough Corrib SAC. Therefore, there is no potential for direct effects on these European Sites.

5.2 Potential for Indirect Effects on the European Sites

5.2.1 Deterioration in water quality

The proposed development has no surface water connectivity with any European Site. However, the proposed development site is located within the Clare-Corrib ground water body which has an EPA Ground Waterbodies Risk of "At risk". A potential pathway for significant effect on Lough Corrib SAC and Lough Corrib SPA was identified in the form of percolation of contaminated groundwater into the Clare-Corrib groundwater body which ultimately discharges into the River Clare and Lough Corrib. Therefore, taking a precautionary approach, the proposed works have the potential to cause deterioration in water quality during construction and operation, potentially affecting the water dependent Qualifying Interests and Special Conservation Interests of these European Sites.

5.2.1.1 Construction phase

The construction of the development will involve excavations and earth moving which create the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the refuelling of excavation machinery. There is also a risk of percolation of contaminated waters into the Clare-Corrib groundwater body during these construction activities.

5.2.1.1.1 *Preventative measures to avoid impact on water quality*

The pathway that would allow potential effects to occur to water quality was considered in the design of the project. The sections below set out the environmental management framework to be adhered to

during the proposed works and it incorporates the mitigating principles to ensure there are no adverse effects on the integrity of any European Sites. The sections below include comprehensive detail regarding site set up, pollution prevention, hydrocarbon management, construction monitoring and biosecurity.

The measures described below ensure that the proposed works will not prevent or obstruct any of the qualifying interests or special conservation interests from reaching favourable conservation status as per Article 1 of the EU Habitats Directive. The measures described below ensure that the proposed works do not adversely affect the integrity of European Sites.

5.2.1.1.2 *Construction Phase Control Measures and Assessment*

Standard best practice environmental control measures have been incorporated in the design of the development and are outlined in the following subsections.

Site Set up

- The contractor will employ a suitably qualified ecologist to undertake the role of Ecological Clerk of Works (ECoW) for the duration of the construction phase.
- The appointed contractor will be fully briefed by an ecologist as to the sensitive nature of the site, and the required mitigation measures.
- At the outset of the works, 2.4m high hoarding will be erected around the boundaries of the development site. All works will be located within the confines of this fencing.
- A designated section of the site will be fenced off as the construction compound. The exact location will be established by the contractor. The ground will be covered with a layer of Terram and covered with a 300mm layer of stone. The compound will be secured with a 2-meter Tensil fence and double security gate. A 1.2-meter silt fence will be placed around the compound.
- An ecologist will visit the construction site during the works to ensure that mitigation measures are being implemented.

Groundwater mitigation measures

- Access routes will be clearly marked / identified. Access during construction to any working areas will be restricted to land within the outlined works area.
- Plant will travel slowly across bare ground at a maximum of 5 kilometres per hour (km/hr).
- The site will be continuously monitored by the Site Manager for signs of run-off such as silt in surrounding vegetation, and measures will be put in place to prevent this where necessary.
- Excavations will be carried out using a suitably sized excavator and, in all circumstances, excavation depths and volumes will be minimised.
- The FRA concluded that the Clare Flood Relief Scheme has mitigated flood risk at the site. As a precautionary measure, any stockpiling at the site will be located outside of OPW-mapped floodable areas and will be surrounded by silt fencing. Stockpiles will be removed on a regular basis to avoid potential sediment-laden run-off escaping the site.
- Earthworks will take place during periods of low rainfall to reduce influx of sediment laden waters to groundwater and to reduce the need for groundwater pumping out of excavations.

- Due to the high to extreme groundwater vulnerability within the site, long-range and short-range weather forecasting will be used and works will be postponed if heavy rain is forecast. Details on rain levels provided in 'Environmental Monitoring' section below.
- Good construction practices such as dust suppression on site roads, and regular plant maintenance will ensure minimal risk.
- If groundwater is encountered during excavations, discharge of pumped water to ground will be via a silt bag which will filter remaining sediment from the pumped water to a designated area within the site. The entire discharge area from silt bags will be enclosed by a perimeter of silt fencing. Alternatively, it will be pumped to a sealed clean tanker and removed from the site for appropriate treatment and discharge. No construction water will be discharged directly to groundwater.
- The Construction Industry Research and Information Association (CIRIA) guidance document, Guidance on the Control and Management of Water Pollution from Construction Sites (CIRIA, 2001) provides additional water protection measures to be considered throughout construction.

Cement-based Products Control Measures

- No batching of wet-cement products will occur on site.
- Ready-mixed supply of wet concrete products will be used where needed.
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site.
- Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible. No discharge of cement contaminated waters to groundwater will be allowed.
- The weather forecast will be checked prior to the pouring of concrete and no such works will be undertaken when bad weather is forecast (i.e. Heavy Rain, see below Environmental Monitoring Section). Concrete will not be poured at times when rain is predicted as this may lead to run off and over spillage of the formwork.
- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.
- Concrete (including waste and wash down) will be contained and managed appropriately to prevent pollution of groundwater.

Dust control

- Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Public roads outside the site and along the main access route to the site will be regularly inspected by the Site Manager for cleanliness, most notably before and after plant and machinery deliveries to site.
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind.
- Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- Water misting or bowsers will operate on-site as required to mitigate dust in dry weather conditions.
- If transport of soils or other material off site is required, which has significant potential to generate dust, this will be undertaken in tarpaulin-covered vehicles where necessary.
- Daily inspection of site to examine dust measures and their effectiveness.

Refuelling, fuel and hazardous materials storage

- All plant will be inspected prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. All major repair and maintenance operations will take place off site.
- Minimal refuelling or maintenance of vehicles or plant will take place on site. Off-site refuelling will occur at a controlled fuelling station.
- Vehicles will never be left unattended during refuelling. Only dedicated, trained, and competent personnel will carry out refuelling operations. Plant refuelling procedures shall be detailed in the contractor's method statements.
- Fuels, lubricants and hydraulic fluids for equipment used will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment.
- Refuelling will be completed in a controlled manner using drip trays at all times.
- Fuels volumes stored on site will be minimised. Any fuel storage areas will be bunded appropriately for the fuel storage volume for the time period of the works and fitted with a storm drainage system and an appropriate oil interceptor.
- Mobile storage tanks such as fuel bowsers will be bunded to 110% capacity to prevent spills. Tanks for bowsers and generators shall be double skinned. When not in use, all valves and fuel trigger guns from fuel storage containers will be locked.
- All pipework from containers to pump nozzles will have anti siphon valves fitted.
- The plant refuelling procedures shall be detailed in the contractor's method statements, including an emergency plan to deal with accidental spillages.
- The plant used will be regularly inspected for leaks and fitness for purpose.

Potential release of hydrocarbons

- Mobile storage tanks such as fuel bowsers will be bunded to 110% capacity to prevent spills. Tanks for bowsers and generators shall be double skinned. When not in use, all valves and fuel trigger guns from fuel storage containers will be locked.
- All plant refuelling will take place using mobile fuel bowsers. Only dedicated trained and competent personnel will carry out refuelling operations. A spill kit and drip tray shall be on site at all times and available for all refuelling operations. Equipment shall not be left unattended during refuelling. All pipework from containers to pump nozzles will have anti siphon valves fitted. The plant refuelling procedures shall be detailed in the contractor's method statements.
- Spill kits shall be available in each item of plant required.
- Oil booms and oil soakage pads, spill kits and other appropriate equipment will be kept on site to deal with any accidental spillage.

Biosecurity Measures

- No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011) were recorded within the proposed works area.
- Good construction site hygiene will be employed to prevent the introduction of problematic invasive alien plants by thoroughly washing vehicles prior to entering the site.

Environmental Monitoring

- The contractor will assign a member of the site staff as the environmental officer with the responsibility for ensuring the environmental measures prescribed in this document are adhered to. Any environmental incidents or non-compliance issues will immediately be reported to the project team.
- Works will be periodically supervised by an ECoW.
- A written record will be maintained or available on-site of all monitoring undertaken.
- Event based inspections by the Site Manager as follows:
    - Rainfall >10 mm/hr (i.e. high intensity localised rainfall event)
    - Rainfall >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
    - Rainfall total greater than monthly average recorded in 7 consecutive days (prolonged heavy rainfall over a week).

Construction works will be undertaken in accordance with the following:

- CIRIA (Construction Industry Research and Information Association) Guidance Documents
    - Control of water pollution from construction sites (C532)
    - Control of water pollution from linear construction projects: Technical Guidance (C648)
    - Control of water pollution from linear construction projects: Site Guide (C649)
    - Environmental Good Practice on Site (C692)
- NRA Guidance Documents
    - Guidelines for the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads
    - Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, during and Post Construction of National Road Schemes.

After implementation of best practice and preventive measures as described above, together with measures already incorporated in the project design, no potential for adverse impacts on water quality exists. The measures ensure that the proposed works do not prevent or obstruct any of the QIs and SCIs of the relevant European Sites from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

5.2.1.2 Operational Phase

The operational phase of the proposed project will result in the production of foul water and an increase in surface water run-off due to roofs and paved areas. The site has been identified as being at risk due to groundwater and pluvial flooding. In the absence of appropriate design, there exists a potential for indirect effect on groundwater quality.

5.2.1.2.1 *Foul Water Management*

A pre-commencement connection enquiry has been submitted to Irish Water to establish whether a wastewater connection to Irish Water infrastructure is possible. The letter confirming feasibility of connection is provided in Appendix D of the Civil Works Design Report submitted alongside this report.

According to the proposed foul water drainage layout in the drainage drawing, provided in Appendix II, the foul water network will connect to the public sewer west of the development site on the R381.

Due to the topography of the proposed development site, a pumping station is required to service a portion of the proposed development. This pumping station will be located in the north of the proposed development site and will provide 24-hours storage for approx. 54 no. residential units and 1 no. creche and will comply with the requirements of the IW Code of Practice for Wastewater Infrastructure. Wastewater will be pumped from the pumping station via a proposed 110mm HDPE rising main to a newly constructed discharge manhole and then via gravity will be discharged to the proposed 150mm foul sewer line. Wastewater generated in the remaining 34 no. residential developments will discharge to the same proposed 150mm foul sewer line. All wastewater generated from the proposed development will ultimately discharge to the existing manhole and 300mm foul sewer line which runs parallel to the R381 across from the proposed development entrance via the proposed 150mm foul sewer line. The foul sewer network within the proposed development site is designed to cater for 90 no. units.

The pumping station will be located 13m from the boundary of the nearest dwelling. The pumping station will allow for a 4m space in front of it (in accordance with Irish Water Standard Detail STD-WW-26) to allow for an occasional tanker or service vehicle to be parked outside. Tanker movements to the pumping station are expected to be minimal and subject to the operational efficiencies of the pumping station. It is anticipated that no more than 2-4 tanker visits would be required per annum.

The foul drainage system for the proposed development will be designed in accordance with EPA Guidelines.

5.2.1.2.2 *Surface Water Management*

The proposed development will result in a necessity for surface water management due to the presence of roofs and paved areas.

The proposed storm water drainage system for the proposed development has been designed to cater for all surface water runoff from all hard surfaces within the proposed development i.e. roadways, roofs, parking areas etc. Precast concrete gullies including lockable cast iron grating and frame connected to a piped system will be provided to collect run-off from these areas.

It is proposed that the storm water drainage generated within the proposed development site will flow by gravity and discharge via an Oil/ petrol interceptor to 2 no. soakaway units located strategically throughout the development as shown in Appendix II. The soakaway units within the proposed development site will be of cellular storage providing 95% void ratio. All soakaways within the proposed development site are designed to accommodate a 1 in 100 year storm event + 20% for climate change.

5.2.1.2.3 *Ground Water Flood Risk Management*

As in Section 3.2.3 mitigation measures outlined within the FRA prepared by JBA Consulting include the following:

- A surface water drainage system that replicates existing greenfield conditions and that is in accordance to the GDSDS has been considered.
- Finished Floor levels for the development will be set to 1% AEP event levels, including freeboard of 300mm.

The FRA has concluded that although the CFRAM mapping shows a groundwater flood risk at the site, the Clare River Flood Relief Scheme has since mitigated the risk of groundwater flooding at the proposed development site.

According to the FRA (Appendix III) and as in Section 3.2.3, the Clare River Flood Relief scheme was undertaken in order to provide flood relief in the Claregalway and surrounding area. A 1.65km pipeline was constructed and completed in 2018 to reduce the impacts of flooding in regions impacted by groundwater flooding. This pipeline runs along the eastern boundary of the development site with the outfall to the Clare River located c. 60m upstream of the bridge. This pipeline is shown as a green line within Plate 3-1. This scheme provides a level of flood relief of 1% AEP with an additional 20% allowance for climate change.

5.2.1.3 Decommissioning

The proposed project is considered to be permanent. Therefore, no effects with regard to decommissioning are anticipated.

6. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The sections provided below detail the site-specific residual impact assessment in relation to the relevant QIs of the above EU sites in light of their site-specific targets and attributes. The assessment takes into consideration the proposed measures to avoid, reduce and block identified pathways for impact.

6.1 Lough Corrib SAC [000297]

The potential for adverse residual effects on each of the individual Qualifying Interests that were identified as being at risk of potential effects is assessed in this section in view of the Conservation Objectives of those habitats and species.

Tables below provide an assessment of the proposal, as described in Section 3 of this report and associated Appendices, against the Attributes and Targets for each of the 'Screened in' QIs of the EU Designated Site.

6.1.1 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]

The attributes and targets for Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia uniflorae)* as per the Site-Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1, 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-1 below

Table 6-1 Targets and attributes associated with nominated site-specific conservation objectives for Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in habitat area or alteration to community distribution as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat distribution	No decline, subject to natural processes.	
Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution	
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	There will be no impacts on the vegetation composition or distribution associated with the habitat as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this
Vegetation distribution: maximum depth	Restore maximum depth of vegetation, subject to natural processes	

		report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	There will be no impact or alteration to the hydrological regime with regards to water level fluctuation as a result of the proposed development. The proposed development site is located within Flood Zone C with respect to fluvial flooding, therefore there will be no effects on the floodplain or hydrological regime of the SAC. Moreover, the development site is located approx. 29km east of the QI lake habitat. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the vegetation	There will be no impact or alteration to the lake substratum quality as a result of the proposed development. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality: transparency	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	There will be no impacts on water quality including transparency, nutrients, phytoplankton biomass, phytoplankton biomass, algal biomass or macrophyte status as a result of the proposed development. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality: nutrients	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	
Water quality: phytoplankton biomass	Restore appropriate water quality to support the habitat, including high chlorophyll a status	
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	
Water quality: attached algal biomass	Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status	
Water quality: macrophyte status	Maintain high macrophyte status	

Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	There will be no impacts on water and sediment pH, alkalinity and cation concentrations quality as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water colour	Restore/maintain appropriate water colour to support the habitat	There will be no impact on water colour, dissolved organic carbon or turbidity as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Dissolved organic carbon (DOC)	Restore/maintain appropriate organic carbon levels to support the habitat	
Turbidity	Restore/maintain appropriate turbidity to support the habita	
Fringing habitat : area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3110	There will be no impact on the condition of the fringe habitat area or condition as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.2 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]

The attributes and targets for Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1, 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-2 below.

Table 6-2 Targets and attributes associated with nominated site-specific conservation objectives for Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in habitat area or alteration to community distribution as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary.
Habitat distribution	No decline, subject to natural processes.	

Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution	Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	There will be no impacts on the vegetation composition or distribution associated with the habitat as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation distribution: maximum depth	Restore maximum depth of vegetation, subject to natural processes	
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	There will be no impact or alteration to the hydrological regime with regards to water level fluctuation as a result of the proposed development. The proposed development site is located within Flood Zone C with respect to fluvial flooding, therefore there will be no effects on the floodplain or hydrological regime of the SAC. Moreover, the development site is located approx. 14km east of the QI lake habitat. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the vegetation	There will be no impact or alteration to the lake substratum quality as a result of the proposed development. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality: transparency	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	There will be no impacts on water quality including transparency, nutrients, phytoplankton biomass, phytoplankton biomass, algal biomass or macrophyte status as a result of the proposed development. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of
Water quality: nutrients	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	

Water quality: phytoplankton biomass	Restore appropriate water quality to support the habitat, including high chlorophyll a status	the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	
Water quality: attached algal biomass	Restore/maintain trace/absent attached algal biomass	
Water quality: macrophyte status	Maintain high macrophyte status	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	There will be no impacts on acidification status as a result of the proposed development. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water colour	Restore/maintain appropriate water colour to support the habitat	There will be no impact on water colour as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Dissolved organic carbon (DOC)	Restore/maintain appropriate organic carbon levels to support the habitat	There will be no impact on dissolved organic carbon (DOC) as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Turbidity	Restore/maintain appropriate turbidity to support the habitat	There will be no impact on turbidity as a result of the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the	There will be no impact on the condition of the fringe habitat area or condition as a result of the proposed

	natural structure and functioning of habitat 3130	development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.3 Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.* [3140]

The attributes and targets for Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.* [3140] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-3 below

Table 6-3 Targets and attributes associated with nominated site-specific conservation objectives for Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in habitat area or alteration to community distribution as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat distribution	No decline, subject to natural processes.	
Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution	
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	There will be no impacts on the vegetation composition or distribution associated with the habitat as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation distribution: maximum depth	Restore maximum depth of vegetation, subject to natural processes	
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	There will be no impact or alteration to the hydrological regime with regards to water level fluctuation as a result of the proposed development. The proposed development site is located within Flood Zone C with respect to fluvial flooding, therefore there will be no effects on the floodplain or hydrological

		regime of the SAC. Moreover, the development site is located approx. 7km east of the QI lake habitat. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the vegetation	There will be no impact or alteration to the lake substratum quality as a result of the proposed development. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality: transparency	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	There will be no impacts on water quality including transparency, nutrients, phytoplankton biomass, phytoplankton biomass, algal biomass or macrophyte status as a result of the proposed development. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality: nutrients	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	
Water quality: phytoplankton biomass	Restore appropriate water quality to support the habitat, including high chlorophyll a status	
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	
Water quality: attached algal biomass	Restore/maintain trace/absent attached algal biomass	
Water quality: macrophyte status	Maintain high macrophyte status	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	There will be no impacts on acidification status as a result of the proposed development. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

Water colour	Restore/maintain appropriate water colour to support the habitat	There will be no impact on water colour as a result of the proposed development. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Dissolved organic carbon (DOC)	Restore/maintain appropriate organic carbon levels to support the habitat	There will be no impact on dissolved organic carbon (DOC) as a result of the proposed development. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Turbidity	Restore/maintain appropriate turbidity to support the habitat	There will be no impact on turbidity as a result of the proposed development. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3140	There will be no impact on the condition of the fringe habitat area or condition as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.4 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]

The attributes and targets for Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-4 below.

Table 6-4 Targets and attributes associated with nominated site-specific conservation objectives for Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in habitat distribution or area as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat distribution	No decline, subject to natural processes	
Hydrological regime: river flow	Maintain appropriate hydrological regimes	There will be no impact or alteration to the hydrological regime with regards to river flow or groundwater discharge as a result of the proposed development. The proposed development site is located within Flood Zone C with respect to fluvial flooding, therefore there will be no effects on the floodplain or hydrological regime of the SAC. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Hydrological regime: groundwater discharge	Maintain appropriate hydrological regimes	
Substratum composition: particle size range	Maintain appropriate substratum particle size range, quantity and quality, subject to natural process	The proposed works will not result in the alteration of the substratum particle size range, quantity or quality of the habitat. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

Water quality	Maintain appropriate water quality to support the natural structure and functioning of the habitat	There will be no impact on water quality associated with the proposed works. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation composition: typical species	Typical species of the relevant habitat sub-type should be present and in good condition	There will be no alteration or degradation to the vegetation composition as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Floodplain connectivity: area	The area of active floodplain at and upstream of the habitat should be maintained	According to the FRA (Appendix III) The proposed development site is located within Flood Zone C with respect to fluvial flooding, therefore there will be no effects on the floodplain as a result of the proposed development.
Riparian habitat: area	Maintain the area and condition of fringing habitats necessary to support the habitat and its sub-types	There will be no direct loss of this habitat as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.5 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]

The attributes and targets for Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-5 below.

Table 6-5 Targets and attributes associated with nominated site-specific conservation objectives for Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	

Habitat distribution	No decline, subject to natural processes	There will be no decline in habitat area or distribution associated with the proposed works. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Ecosystem function: hydrology	Maintain appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	There will be no abstractions which could result in changes to the water table and therefore no changes to the hydrological regime or peat formation as a result of the development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Ecosystem function: peat formation	Maintain active peat formation, where appropriate	
Ecosystem function: water quality	Maintain appropriate water quality, particularly nutrient levels, to support the natural structure and functioning of the habitat	
Vegetation structure: typical species	Maintain vegetation cover of typical species including brown mosses and vascular plants	There will be no direct impacts on vegetation composition. There will be no impact on non-native species cover as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation composition: non-native species	Cover of non-native species less than 1%	
Vegetation composition: trees and shrubs	Cover of scattered native trees and shrubs less than 10%	
Physical structure: disturbed bare ground	Cover of disturbed bare ground not more than 10%. Where tufa is present, disturbed bare ground not more than 1%	The development site is located completely outside of the SAC. There will be no alteration of physical structure of this QI habitat through disturbed ground or additional drainage as a result of the development. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Physical structure: drainage	Areas showing signs of drainage as a result of drainage ditches or heavy trampling not more than 10%	

Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	There will be no direct or indirect impacts on rare, threatened or scarce species associated with the habitat. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.6 Petrifying springs with tufa formation (*Cratoneurion*) [7220]

The attributes and targets for petrifying springs with tufa formation *(Cratoneurion)* [7220] as per the Site-Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-6 below.

Table 6-6 Targets and attributes associated with nominated site-specific conservation objectives for petrifying springs with tufa formation (Cratoneurion) [7220].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in habitat area or distribution associated with the proposed works. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat distribution	No decline, subject to natural processes	
Hydrological regime: height of water table; water flow	Maintain appropriate hydrological regimes	There will be no abstractions which could result in changes to the water table and therefore no changes to the hydrological regime as a result of the development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality - nitrate level	No increase from baseline nitrate level and less than 10mg/l	
Water quality - phosphate level	No increase from baseline phosphate level and less than 15µg/l	
Vegetation composition:	At least three positive/high quality indicator species as	There will be no change to positive indicator species associated with the proposed development. There will be no impact on

positive indicator species	listed in Lyons and Kelly (2016) and no loss from baseline number	the sward height or physical structure associated with the habitat as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation composition: negative indicator species	Potentially negative indicator species should not be Dominant or Abundant; invasive species should be absent	There will be no impacts on the vegetation composition with introduction of negative indicator species associated with the proposed development. There will be no impact on the sward height or physical structure associated with the habitat as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation structure: sward height	Field layer height between 10cm and 50cm (except for bryophyte-dominated ground <10cm)	
Physical structure: trampling/dung	Cover should not be Dominant or Abundant	

6.1.7 Alkaline fens [7230]

The attributes and targets for Alkaline fens [7230] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-7 below.

Table 6-7 Targets and attributes associated with nominated site-specific conservation objectives for Alkaline fens [7230].

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in habitat area or distribution associated with the proposed works. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat distribution	No decline, subject to natural processes	
Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range	There will be no abstractions which could result in changes to the water table and therefore no changes to the hydrological

Ecosystem function: peat formation	Maintain active peat formation, where appropriate	regime or peat formation as a result of the development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Ecosystem function: hydrology	Maintain appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	
Ecosystem function: water quality	Maintain appropriate water quality, particularly nutrient levels, to support the natural structure and functioning of the habitat	
Community diversity	Maintain variety of vegetation communities, subject to natural processes	There will be no impact on community diversity of the habitat as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation composition: number of positive indicator species (brown mosses)	Number of brown moss species present at each monitoring stop is at least one	There will be no impact on vegetation composition specifically, positive indicator species of brown moss, vascular plants, cover of the indicator species, non-native species or native species of the habitat as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Vegetation composition: number of positive indicator species (vascular plants)	Number of positive vascular plant indicator species present at each monitoring stop is at least two for small-sedge flushes and at least three for black bog-rush (Schoenus nigricans) flush and bottle sedge (Carex rostrata) fen	
Vegetation composition: cover of positive indicator species	Total cover of brown moss species and positive vascular plant indicator species at least 20% for small-sedge flushes and at least 75% cover for black bog-rush (Schoenus nigricans) flush and bottle sedge (Carex rostrata) fen	

Vegetation composition: negative indicator species	Total cover of negative indicator species less than 1%	
Vegetation composition: non-native species	Cover of non-native species less than 1%	
Vegetation composition: native trees and shrubs	Cover of scattered native trees and shrubs less than 10%	
Vegetation composition: soft rush and common reed cover	Total cover of soft rush (Juncus effusus) and common reed (Phragmites australis) less than 10%	
Vegetation structure: height	Proportion of live leaves and/or flowering shoots of vascular plants that are more than 5cm above the ground surface should be at least 50%	There will be no impact on vegetation height as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Physical structure: disturbed bare ground	Cover of disturbed bare ground less than 10%	There will be no impact on physical structure specifically disturbed bare round, drainage or tufa formations of the habitat as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Physical structure: drainage	Area showing signs of drainage as a result of drainage ditches or heavy trampling less than 10%	
Physical structure: tufa formations	Disturbed proportion of vegetation cover where tufa is present is less than 1%	
Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	There will be no impact indicators of local distinctiveness specifically of the habitat as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.8 Whiteclawed Crayfish *(Austropotamobius pallipes)* [1092]

The attributes and targets for Whiteclawed Crayfish *(Austropotamobius pallipes)* as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-8 below.

Table 6-8 Targets and attributes associated with nominated site-specific conservation objectives for Whiteclawed Crayfish (Austropotamobius pallipes) [1092].

Attribute	Target	Assessment
Distribution	No reduction from baseline.	There will be no impact on distribution as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Distribution: Lough Corrib	No reduction from baseline.	There will be no impact on distribution as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Population structure: recruitment	Juveniles and/or females with eggs in all occupied tributaries and occupied parts of Lough Corrib	Recruitment within this species will not be impatced upon due to the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

Negative indicator species	No alien crayfish species	There will be no direct or indirect introduction of negative indicator species due to the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Disease	No instances of disease	There will be no direct or indirect introduction of disease due to the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Water quality	At least Q3-4 at all sites sampled by EPA	There will be no reduction in water quality as a result of the proposed works. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Habitat quality: heterogeneity	No decline in heterogeneity or habitat quality	There will be no change in habitat heterogeneity or habitat quality as a result of the proposed works. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.9 Sea Lamprey (*Petromyzon marinus*) [1095]

The attributes and targets for Sea Lamprey (Petromyzon marinus) is: as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-9 below.

Table 6-9 Targets and attributes associated with nominated site-specific conservation objectives for Sea Lamprey (Petromyzon marinus) [1095].

Attribute	Target	Assessment
Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary	There will be no impact on distribution as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Population structure of juveniles	At least three age/size groups present	There will be no impact on the population structure or juvenile density as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Juvenile density in fine sediment	Mean catchment juvenile density at least 1/m²	
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	There will be no impact on the extent, distribution or availability of habitat as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in
Availability of juvenile habitat	More than 50% of sample sites positive, with a minimum of four positive sites in a catchment, which are at least 5km apart	

		Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.10 Brook Lamprey *(Lampetra planeri)* [1096]

The attributes and targets for large shallow inlets and bays as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-10 below.

Table 6-10 Targets and attributes associated with nominated site-specific conservation objectives for Brook Lamprey (Lampetra planeri) [1096].

Attribute	Target	Assessment
Distribution	Access to all watercourses down to first order streams	There will be no direct negative impact on distribution as a result of the proposed works. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Population structure of juveniles	At least three age/size groups of brook/river lamprey present	There will be no impact on the population structure or juvenile density as a result of the proposed works. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 5/m^2	
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	There will be no impact on the extent, distribution or availability of habitat as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all
Availability of juvenile habitat	More than 50% of sample sites positive	

		water pollution during the construction and operational stage of the proposed works.

6.1.11 Salmon *(Salmo salar)* [1106]

The attributes and targets for reefs as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-11 below.

Table 6-11 Targets and attributes associated with nominated site-specific conservation objectives for Salmon (Salmo salar) [1106].

Attribute	Target	Assessment
Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary	There will be no impact on distrubance as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Adult spawning fish	Conservation Limit (CL) for each system consistently exceeded	There will be no reduction in adult spwaing fish , salmon fry abundance, out-migrating smolt abundance or the number and distribution of redds as a result of the propsed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	
Out-migrating smolt abundance	No significant decline	
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes	

Water quality	At least Q4 at all sites sampled by EPA	There will be no reduction in water quality as a result of the proposed developement. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.12 Otter *(Lutra lutra)* [1355]

The attributes and targets for Otter *(Lutra lutra)* as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-12 below.

Table 6-12 Targets and attributes associated with nominated site-specific conservation objectives for Otter (Lutra lutra).

Attribute	Target	Assessment
Distribution	No significant decline	There will be no decline on the species distribution as a result of the proposed works. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 1,054ha along river banks/ lake shoreline/around ponds	There is no suitable habitat for otter within the vicinity of the proposed development site. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the

		construction and operational stage of the proposed works.
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 314.2km.	There will be no reduction to the freshwater (river) habitat extent. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 4,178ha.	There will be no reduction or alteration to the freshwater (lake) habitat extent as a reult of the proposed works. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Couching sites and holts	No significant decline.	There will be no reduction in holt or couching sites as a result of the proposed works. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Fish biomass available	No significant decline	There will be no changes to the fish biomass available to otter as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as

		outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Barries to connectivity	No significant increase.	There will be no changes to the connectivity between commuting routes used by Otter as a result of the proposed development. The proposed works are located entirely outside of the SAC boundary. Indirect pathways that would allow impacts to occur via ground water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.1.13 Slender naiad *(Najas flexilis)* [1833]

The attributes and targets for Slender naiad *(Najas flexilis)* [1833] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SAC (NPWS Version 1 2017) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-13 below.

Table 6-13 Targets and attributes associated with nominated site-specific conservation objectives for Slender naiad (Najas flexilis) [1833].

Attribute	Target	Assessment
Population extent	Restore the spatial extent of *Najas flexilis* within the lake, subject to natural processes.	There will be no decline in population extent, depth, viability or abundance associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Population depth	Restore the depth range of *Najas flexilis* within the lake, subject to natural processes	
Population viability	Restore plant fitness, subject to natural processes	
Population abundance	Restore the cover abundance of *Najas flexilis,* subject to natural processes	
Species distribution	Restore to at least the north-western bay, subject to natural processes	

Habitat extent	Restore, subject to natural processes	The proposed development will not result in the alteration of the species distribution or habitat extent associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat for the species	There will be no impact or alteration to the hydrological regime, lake substratum quality, water quality or increased acidification as a result of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the population of the species	
Water quality	Restore appropriate water quality to support the population of the species	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the population of *Najas flexilis*, subject to natural processes	
Water colour	Restore/maintain appropriate water colour to support the population of *Najas flexilis*	There will be no impacts on water colour, associated species or fringing habitats as associated with the habitat as a result of the proposed works. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Associated species	Restore appropriate associated species and vegetation communities to support the population of *Najas flexilis*	
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the population of *Najas flexilis*	

6.2 Lough Corrib SPA [004042]

The potential for adverse residual effects on each of the individual Special Conservation Interests that were identified as being at risk of potential effects is assessed in this section in view of the Conservation Objectives of those species and habitat.

Tables below provide an assessment of the proposal, as described in Section 3 of this report and associated Appendices, against the Attributes and Targets for each of the 'Screened in' SCIs of the EU Designated Site.

6.2.1 Gadwall *(Anas strepera)* [A051]

The attributes and targets for Gadwall *(Anas strepera)* [A051] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-14 below.

Table 6-14 Targets and attributes associated with nominated site-specific conservation objectives for Gadwall (Anas strepera) [A051].

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing.	There will be no decline in winter population trend or winter spatial distribution associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in disturbance associated with the proposed development.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in barriers to connectivity and use of the SPA associated with the proposed development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no significant reduction of foraging locations associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to

		avoid all water pollution during the construction and operational stage of the proposed works.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no reduction in suitable roosting habitat associated with the proposed development.

6.2.2 Shoveler *(Anas clypeata)* [A056]

The attributes and targets for Shoveler *(Anas clypeata)* [A056] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-15 below.

Table 6-15 Targets and attributes associated with nominated site-specific conservation objectives for Shoveler (Anas clypeata) [A056].

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing.	There will be no decline in winter population trend or winter spatial distribution associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in disturbance associated with the proposed development.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in barriers to connectivity and use of the SPA associated with the proposed development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no significant reduction of foraging locations associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no reduction in suitable roosting habitat associated with the proposed development.

6.2.3 Pochard *(Aythya ferina)* [A059]

The attributes and targets for Pochard *(Aythya ferina)* [A059] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-16 below.

Table 6-16 Targets and attributes associated with nominated site-specific conservation objectives for Pochard (Aythya ferina) [A059].

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing.	There will be no decline in winter population trend or winter spatial distribution associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in disturbance associated with the proposed development.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in barriers to connectivity and use of the SPA associated with the proposed development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no significant reduction of foraging locations associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no

	support the population target	reduction in suitable roosting habitat associated with the proposed development.

6.2.4 Tufted Duck *(Aythya fuligula)* [A061]

The attributes and targets for Tufted Duck *(Aythya fuligula)* [A061] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-17 below.

Table 6-17 Targets and attributes associated with nominated site-specific conservation objectives for Tufted Duck (Aythya fuligula) [A061].

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing.	There will be no decline in winter population trend or winter spatial distribution associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in disturbance associated with the proposed development.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in barriers to connectivity and use of the SPA associated with the proposed development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no significant reduction of foraging locations associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no reduction in suitable roosting habitat associated with the proposed development.

6.2.5 Common Scoter *(Melanitta nigra)* [A065]

The attributes and targets for Common Scoter *(Melanitta nigra)* [A065] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-18 below.

Table 6-18 Targets and attributes associated with nominated site-specific conservation objectives for Common Scoter (Melanitta nigra) [A065].

Attribute	Target	Assessment
Breeding population trend	Long term trend is stable or increasing.	There will be no decline in breeding population trend or productivity rate associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Productivity rate	Sufficient productivity to maintain the population trend as stable or increasing	
Distribution of nesting habitat	No significant loss of distribution in the long term, other than that occurring due to natural patterns of variation	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in disturbance of nesting habitat associated with the proposed development.
Extent and condition of nesting habitat	Sufficient area of high quality habitat to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no reduction in the extent and condition of nesting habitat associated with the proposed development.
Disturbance at breeding site	Disturbance occurs at levels that do not significantly impact the achievement of targets for breeding population trend and spatial distribution of nesting habitat	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be increase in disturbance at breeding sites associated with the proposed development.
Barriers to connectivity and site use	Barriers do not significantly impact the breeding population's access to the SPA or other ecologically important sites outside the SPA	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no reduction in increase in barriers to connectivity and site use of the SPA associated with the proposed development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat, and available forage biomass to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no significant reduction of foraging locations associated with the proposed development.

		Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.2.6 Coot *(Fulica atra)* [A125]

The attributes and targets for Coot *(Fulica atra)* [A125] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-19 below.

Table 6-19 Targets and attributes associated with nominated site-specific conservation objectives for Coot (Fulica atra) [A125].

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing.	There will be no decline in winter population trend or winter spatial distribution associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in disturbance associated with the proposed development.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in barriers to connectivity and use of the SPA associated with the proposed development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no significant reduction of foraging locations associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no

	support the population target	reduction in suitable roosting habitat associated with the proposed development.

6.2.7 Golden Plover *(Pluvialis apricaria)* [A140]

The attributes and targets for Golden Plover *(Pluvialis apricaria)* [A140] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-20 below.

Table 6-20 Targets and attributes associated with nominated site-specific conservation objectives for Golden Plover (Pluvialis apricaria) [A140].

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing.	There will be no decline in winter population trend or winter spatial distribution associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	
Disturbance at wintering site	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in disturbance associated with the proposed development.
Barriers to connectivity and site use	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in barriers to connectivity and use of the SPA associated with the proposed development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no significant reduction of foraging locations associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no reduction in suitable roosting habitat associated with the proposed development.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no reduction in significant suitable supporting habitat associated with the proposed development.

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

The attributes and targets for Black-headed Gull (*Chroicocephalus ridibundus)* [A179] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-21 below.

Table 6-21 Targets and attributes associated with nominated site-specific conservation objectives for Black-headed Gull (Chroicocephalus ridibundus) [A179].

Attribute	Target	Assessment
Breeding population size	Long term population is stable or increasing.	There will be no decline in breeding population size or productivity rate associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Productivity rate	Sufficient to maintain the population	
Distribution: extent of available nesting options within the SPA	Sufficient availability of suitable nesting sites throughout the SPA to maintain the population	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no decrease in nesting habitat within the SPA associated with the proposed development.
Prey biomass available	Sufficient extent of biomass of available prey items across the site to help support the population	There will be no reduction in prey biomass availability associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Disturbance at the breeding site	Disturbance occurs at levels that do not	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be increase

	significantly impact on black-headed gull at the breeding site	in disturbance at breeding sites associated with the proposed development.
Disturbance at areas ecologically connected to the colony	Disturbance occurs at levels that do not significantly impact on black-headed gull at the breeding site	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be increase in disturbance at areas ecologically connected to the colony associated with the proposed development.
Barriers to connectivity	No significant increase	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in barriers to connectivity associated with the proposed development.

6.2.9 Common Gull (*Larus canus*) [A182]

The attributes and targets for Common Gull (*Larus canus)* [A182] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-22 below.

Table 6-22 Targets and attributes associated with nominated site-specific conservation objectives for Common Gull (Larus canus) [A182].

Attribute	Target	Assessment
Breeding population size	Long term population is stable or increasing.	There will be no decline in breeding population size or productivity rate associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Productivity rate	Sufficient to maintain the population	
Distribution: extent of available nesting options within the SPA	Sufficient availability of suitable nesting sites throughout the SPA to maintain the population	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no decrease in nesting habitat within the SPA associated with the proposed development.
Prey biomass available	Sufficient extent of biomass of available prey items across the site to help support the population	There will be no reduction in prey biomass availability associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Disturbance at the breeding site	Disturbance occurs at levels that do not significantly impact on common gull at the breeding site	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be increase in disturbance at breeding sites associated with the proposed development.

Disturbance at areas ecologically connected to the colony	Disturbance occurs at levels that do not significantly impact on common gull at the breeding site	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be increase in disturbance at areas ecologically connected to the colony associated with the proposed development.
Barriers to connectivity	No significant increase	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in barriers to connectivity associated with the proposed development.

6.2.10 Common Tern (*Sterna hirundo*) [A193]

The attributes and targets for Common Tern (*Sterna hirundo)* [A193] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-23 below.

Table 6-23 Targets and attributes associated with nominated site-specific conservation objectives for Common Tern (Sterna hirundo) [A193].

Attribute	Target	Assessment
Breeding population size	Long term population is stable or increasing.	There will be no decline in breeding population size or productivity rate associated with the proposed development.
Productivity rate	Sufficient to maintain the population	Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Distribution: extent of available nesting options within the SPA	Sufficient availability of suitable nesting sites throughout the SPA to maintain the population	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no decrease in nesting habitat within the SPA associated with the proposed development.
Prey biomass available	Sufficient extent of biomass of available prey items across the site to help support the population	There will be no reduction in prey biomass availability associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Disturbance at the breeding site	Disturbance occurs at levels that do not significantly impact on common tern at the breeding site	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be increase in disturbance at breeding sites associated with the proposed development.

Disturbance at areas ecologically connected to the colony	Disturbance occurs at levels that do not significantly impact on breeding common tern	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be increase in disturbance at areas ecologically connected to the colony associated with the proposed development.
Barriers to connectivity	No significant increase	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in barriers to connectivity associated with the proposed development.

6.2.11 Arctic Tern (*Sterna paradisaea*) [A194]

The attributes and targets for Arctic Tern (*Sterna paradisaea)* [A194] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-24 below.

Table 6-24 Targets and attributes associated with nominated site-specific conservation objectives for Arctic Tern (Sterna paradisaea [A194].

Attribute	Target	Assessment
Breeding population size	Long term population is stable or increasing.	There will be no decline in breeding population size or productivity rate associated with the proposed development.
Productivity rate	Sufficient to maintain the population	Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Distribution: extent of available nesting options within the SPA	Sufficient availability of suitable nesting sites throughout the SPA to maintain the population	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no decrease in nesting habitat within the SPA associated with the proposed development.
Prey biomass available	Sufficient extent of biomass of available prey items across the site to help support the population	There will be no reduction in prey biomass availability associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Disturbance at the breeding site	Disturbance occurs at levels that do not significantly impact on Arctic tern at the breeding site	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be increase in disturbance at breeding sites associated with the proposed development.

Disturbance at areas ecologically connected to the colony	Disturbance occurs at levels that do not significantly impact on Arctic tern at the breeding site	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be increase in disturbance at areas ecologically connected to the colony associated with the proposed development.
Barriers to connectivity	No significant increase	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in barriers to connectivity associated with the proposed development.

6.2.12 Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]

The attributes and targets for Greenland White-fronted Goose (*Anser albifrons flavirostris)* [A395] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-25 below.

Table 6-25 Targets and attributes associated with nominated site-specific conservation objectives for Greenland White-fronted Goose (Anser albifrons flavirostris) [A395].

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing.	There will be no decline in winter population trend or winter spatial distribution associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	
Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in disturbance associated with the proposed development.
Barriers to connectivity and site use	No significant impact on the wintering population's access to the SPA or other ecologically important sites outside the SPA	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no increase in barriers to connectivity and use of the SPA associated with the proposed development.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no

	forage biomass to support the population target	significant reduction of foraging locations associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no reduction in suitable roosting habitat associated with the proposed development.
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no reduction in significant suitable supporting habitat associated with the proposed development.

6.2.13 Wetlands [A999]

The attributes and targets for Wetlands [A999] as per the Site Specific Conservation Objectives (SSCOs) for Lough Corrib SPA (NPWS Version 1 2023) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-26 below.

Table 6-26 Targets and attributes associated with nominated site-specific conservation objectives for Wetlands [A999].

Attribute	Target	Assessment
Wetland habitat area	No significant loss to wetland habitat within the SPA, other than that occurring from natural patterns of variation	The proposed development is located 5.1km east of the SPA and is situated within an urban environment. There will be no loss of wetland habitat within the SPA associated with the proposed development.
Wetland habitat quality and functioning	No significant impact on the quality or functioning of the wetland habitat within the SPA, other than that occurring from natural patterns of variation	There will be no significant impact on the quality or functioning of the wetland habitat within the SPA associated with the proposed development. Indirect pathways that would allow impacts to occur via water pollution were considered in the design of the proposed development as outlined in Section 3, and a range of mitigation measures, outlined in Section 5 of this report, are in place to avoid all water pollution during the construction and operational stage of the proposed works.

6.3 Conclusion of Residual Impact Assessment

Based on the above, in view of best scientific knowledge, on the basis of objective information, the proposed project will not adversely affect water quality in the area during either construction or operation of the proposed project. There is no potential for adverse effect on the identified QIs/SCIs and their associated targets and attributes, or on any European Site. All identified pathways for effect have been robustly blocked through measures to avoid impacts and the incorporation of best practice/mitigation measures into the project design.

Taking cognisance of measures to avoid impacts and best practice/mitigation measures incorporated into the project design which are considered in the preceding section, the proposed project will not have an adverse effect on the integrity of any European site.

The proposed project will not prevent the QIs/SCIs of European Sites from achieving/maintaining favourable conservation status in the future as defined in Article 1 of the EU Habitats Directive. A definition of Favourable Conservation Status is provided below:

> *'conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2;*

The conservation status will be taken as 'favourable' when:

> *'Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
>
> *"The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and,*
>
> *"There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis."*

Based on the above, it can be concluded in view of best scientific knowledge, on the basis of objective information that the proposed development will not adversely affect the Qualifying Interests/Special Conservation Interests associated with the following EU sites:

- Lough Corrib SAC [000297]
- Lough Corrib SPA [004042]

7. CUMULATIVE EFFECTS

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination impacts on European Sites was conducted. This assessment focuses on the potential for cumulative in-combination effects on the European Sites where potential for adverse effects was identified at the screening stage. This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects.

7.1 Review of other plans and projects

The potential for the proposed works to contribute to a cumulative impact on European Sites was considered.

The following plans have been considered in Table 7-1 below:

- Galway County Development Plan 2022 - 2028
- Regional Spatial and Economic Strategy 2020 – 2032
- National Biodiversity Action Plan 2017-2021

7.1.1 Plans

Table 7-1 Review of relevant plans.

Plans	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy
Galway County Development Plan 2022 – 2028	**NHB 1 - Natural Heritage and Biodiversity of Designated Sites, Habitats and Species** Protect and where possible enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts) and extend to any additions or alterations to sites that may occur during the lifetime of this plan. Protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI 94 of 1999). Support the protection, conservation and enhancement of natural heritage and biodiversity, including the protection of the integrity of European sites, that form part of the Natura 2000 network, the protection of Natural Heritage Areas, proposed Natural Heritage Areas, Ramsar Sites, Nature Reserves, Wild Fowl Sanctuaries (and other designated sites including any future designations) and the promotion of the development of a green/ ecological network. **NHB 2 - European Sites and Appropriate Assessment** To implement Article 6 of the Habitats Directive and to ensure that Appropriate Assessment is carried out in relation to works, plans and	The proposed development will not result in any adverse effects on any European Site and has been specifically designed to minimise any negative effects on biodiversity. Robust and achievable measures and design features have been put in place to avoid any significant impact on surface or ground water quality both within and outside of the site including within the Clare [Galway] River, Clare [Corrib] groundwater body and downstream European sites. There will be no adverse effects on the aquatic receptors listed as QIs/SCIs of any European sites as a result of deterioration in water quality. There will be no adverse effects on the aquatic receptors listed as QIs/SCI, as a result of deterioration in water quality, or disturbance/displacement. The proposed project has been designed to avoid any effect on surface or ground water outside the site as set out in Sections 3 and 5 of this NIS.

	projects likely to impact on European sites (SACs and SPAs), whether directly or indirectly or in combination with any other plan(s) or project(s). All assessments must be in compliance with the European Communities (Birds and Natural Habitats) Regulations 2011. All such projects and plans will also be required to comply with statutory Environmental Impact Assessment requirements where relevant. **NHB 3 - Protection of European Sites** No plans, programmes, or projects etc. giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects.* **NHB 4 - Ecological Appraisal of Biodiversity** Ensure, where appropriate, the protection and conservation of areas, sites, species and ecological/networks of biodiversity value outside designated sites. Where appropriate require an ecological appraisal, for development not directly connected with or necessary to the management of European Sites, or a proposed European Site and which are likely to have significant effects on that site either individually or cumulatively. **P 1 - Protection of Peatlands** Ensure that peatland areas which are designated (or proposed for designation) as NHAs, SACs or SPAs are conserved for their ecological, climate regulation, education and culture, archaeological potential including any ancient walkways (toghers) through bogs. **P 2 - Best Practice in Peatland conservation and management**	

	Work in partnership with relevant stakeholders on all suitable peatland sites to demonstrate best practice in sustainable peatland conservation, management and restoration techniques and to promote their heritage and educational value subject to Ecological Impact Assessment and Appropriate Assessment Screening, as appropriate. **IW 1 - Inland Waterways** (a) Protect and conserve the quality, character and features of inland waterways by controlling developments close to navigable and non-navigable waterways in accordance with best practice guidelines. (b) Preserve, protect and enhance Galway's inland lakes and waterways for their amenity and recreational resource amenity. (c) Protect the riparian zones of watercourse systems throughout the County, recognising the benefits they provide in relation to flood risk management and their protection of the ecological integrity of watercourse systems and ensure they are considered in the land use zoning in Local Area Plans. (d) The Council will support in principal the development and upgrading of the Inland Waterways and their associated facilities in accordance with legislation, best practice and relevant management strategies, key stakeholders and bodies including Waterways Ireland. (e) Ensure all abstractions of water will be subject to assessment for compliance with the requirements of Article 6 of the Habitats Directive. (f) Seek to provide additional accesses to lake shores and rivers for public rights of way, parking and layby facilities, where appropriate.	

	(g) Developments shall ensure that adequate soil protection measures are undertaken, where appropriate, including investigations into the nature and extent of any soil/groundwater contamination.	
Regional Spatial and Economic Strategy 2020 – 2032	**Growth Ambition 2: Environment – Natural Region** **RPO 5.4** - Encourage the prioritisation of Site-Specific Conservation Objectives (SSCO) for all sites of Conservation Value, designated in EU Directive (i.e. SACs, SPAs) to integrate with the development objectives of this Strategy. **RPO 5.5** - Ensure efficient and sustainable use of all our natural resources, including inland waterways, peatlands, and forests in a manner which ensures a healthy society a clean environment and there is no net contribution to biodiversity loss arising from development supported in this strategy. Conserve and protect designated areas and natural heritage area. Conserve and protect European sites and their integrity. **RPO 5.6** - Develop awareness and create a greater appreciation of the benefits of our natural heritage, including on the health, wealth and well-being of the region's ecosystem services. **RPO 5.7** - Ensure that all plans, projects and activities requiring consent arising from the RSES are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate.	The site-specific conservation objectives for Lough Corrib SAC and Lough Corrib SPA were comprehensively reviewed in undertaking this assessment. The surveys undertaken in the preparation of this application, the design of the development and the proposed mitigations in place, demonstrate that the proposed project will not adversely affect the Qualifying Interests/Special Conservation Interests associated with Lough Corrib SAC or Lough Corrib SPA.

National Biodiversity Action Plan 2017-2021	**Target 6.2:** Sufficiency, coherence, connectivity, and resilience of the protected areas network substantially enhanced by 2020.	There will be no adverse effect on SCI habitats or species of Lough Corrib SPA or on the QIs of Lough Corrib SAC. The proposed project will not negatively affect ecological connectivity within the wider area.

7.2 Other Projects

The online planning system for Galway County Council was consulted on the 20/03/2023. Projects identified within Claregalway and the wider area within the last 5 years include:

- Permission for the erection of a Primary Care Centre building consisting of 2 storeys to include pharmacy retail unit at ground level with surface carparking, associated signage, boundary treatment, connection to public services, ground and roof mounted plant & equipment and all ancillary and associated works including reconfiguration and widening of the existing Montiagh Road carriageway and footpath links from the site to the junction with the N83 Galway Road. Gross floor space of proposed works 2817sqm. (Pl. Ref: 2260948),
- Permission to construct a serviced dwelling house and domestic garage. Gross floor space of proposed works: 227.9 sqm & 45 sqm (garage). (Pl. Ref: 22158),
- Extension of duration for the construction of four residential units (comprising of two detached houses and one duplex consisting of a 2 bed and a 4 bed unit), one residential community house for the Brothers of Charity Services (337sqm) and one day care facility with ancillary offices for the Brothers of Charity Services (734sqm) with parking and all associated site services. (Pl. Ref: 22109)
- Permission: Development will consist of 1) the construction of a new building , comprised of warehouse.2) 2 no. ancillary loading bays and enclosed services yard. 3) a first floor link corridor connecting applicant's existing facility in unit 6 with the adjacent unit 7. 4) works also include the fit out of units 7 & 8b to provide reception, canteen, welfare facilities, production and storage areas, internalised sub-station and switch room at ground level and ancillary office and meeting rooms on a newly constructed first floor mezzanine level. 5)proposed amendments to the existing elevations of 6,7 &8b to include the localized inclusion and reconfiguration of glazing, personnel doors and vehicular access with the provision of signage.6) reconfiguration of car parking spaces, the provision of secure bicycle parking spaces and drop-off/loading bay area.7) all associated site works. Gross floor space of proposed works: 1502.3 sqm. (Pl. Ref: 21436),
- Permission for construction of a new dwelling house (169 sqm) and all associated works. (Pl. Ref: 211842),
- Permission to convert attic to habitable space. Gross floor space of proposed works: 38.5 sqm. (Pl. Ref: 21297).
- Permission for amendments to that granted on foot of planning permission [ref no]17505 including amendments to site layout plan, road levels and boundary finishes, gate access to the North of the site, repositioning of wall with gate access to the West adjoining site, provision of new wall and connecting footpath to East adjoining site, amendments to the Day Care and Community House building elevations, provisions of an external storage shed and polytunnel together with all ancillary site works and services. Gross floor space of proposed works: 734 & 332 msq. (Pl. Ref: 21292).
- Permission for a 258 sqm house, 60 sqm garage and associated site works and services. Gross floor space of proposed works: 318 sqm. Gross floor space of any demolition: 12 sqm (part shed). (Pl. Ref: 210900).
- Permission to carry out works to an existing warehouse unit. This will include the construction of a mezzanine floor to provide office space and staff services. Permission is also sought to provide windows in the front elevation. Gross floor space of proposed works: 71.4 sqm. (Pl. Ref: 201749).
- Retention of dwelling granted under ref: 97/602 on revised boundaries, along with all associate site works (Pl. Ref: 201351).
- Permission for development consisting of the construction of a revised house type of 260.75 sqm and in a revised position on site from that granted by P.L. Ref. 19/134, together with

construction of a domestic garage and all necessary site works on an enlarged site. Gross floor space of proposed works: 260.75 sqm. (Pl. Ref: 201250).

- Permission application; le haghaidh athbhreithnithe ar phleanáil atá ann cheana a deonaíodh faoi 19/1581 le haghaidh forbartha ar thailte CLG atá ann cheana. Is éard a bheidh san fhorbairt agus sna hathbhreithnithne; 1. Conair siúil Blueway nua a sholáthar go dtí imlíne na páirce. 2. Athruithe ar fhoirgneamh an Ionaid Pobail atá ann cheana lena n-áirtear sineadh ar na seomraí feistis atá ann cheana ar an mbunurlár ag ionchorprú síneadh ar an seomra pobail atá ann ar an gcéad urlár, lena n-áiritear mionathrú ar na aghaidheanna atá ann cheana. 3. Tógáil do limistéar féachana nua do lucht féachana faoi chumhdach, agus balcóin tadhlach le chéile agus ionad pobail. 4. Athbhreithnithe ar mhéid agus leibhéil na páirce atá ann cheana chun freastal ar athbhreithnithe. 5. Naisc le seirbhisí atá ann cheana agus gach obair laithreáin lena mbaineann, soilsiú, fálú, gineadóir, clós súgartha, dugouts srl mar phleanáil cheadaithe roimhe seo. Spás urláir comhlán na n-oibreacha; 246.5sqm. (Pl. Ref: 201069).
- Permission for the construction of an extension to existing warehouse, to include associated office space, along with site works with connection to existing services. Gross floor space of proposed works: 245.3 sqm. (Pl. Ref: 201866).
- Permission for the demolition of an existing domestic garage and for the construction of a new dwellinghouse and associated services. Gross floor space of proposed works: 171.6 sqm. (Pl. Ref: 20523).
- Permission for the following: 1. Provision of new access driveway from L-62008 in Summerfield Estate to serve existing dwellinghouse. 2. Re-location of services to serve existing dwellinghouse. 3. Retention permission is sought for the existing dwellinghouse on revised site boundaries. Previous permission 96/2801 refers. Gross floor space of work to be retained: 231.6 sqm. (Pl. Ref: 20505).
- Permission for the construction of a single dwellinghouse, domestic garage, proprietary effluent treatment system, percolation area and all associated site services. Gross floor space of proposed works: Dwelling & Garage = 345.50 sqm. (Pl. Ref: 20200).
- Retention of dwelling granted under ref: 3338 on revised boundaries, along with revisions to dwelling to include, attic conversion, extension to rear with minor variations to elevations with all associated site works & connection to existing septic tank. Gross floor space of work to be retained: 72.50 sqm. (Pl. Ref: 203).
- Permission for extension and alterations to dwelling house, for a domestic garage/ fuel store and all associated site works. Gross floor space of proposed works: 104.88 sqm (Extensions - 78.85 sqm & Garage - 26.03 sqm). (Pl. Ref: 191818).
- Permission for development at Coláiste Bhaile Chláir. The development will consist of (A) New external bin store (10 sq.M) & (B) 3no Flagpoles to Claregalway Educate Together National School (RN20211B). Gross floor space of proposed works: 10 sqm. (Pl. Ref: 19832).
- Retention for change of use of part of Unit 9 from office space to light industrial as constructed (area 117m2) pervious permission 181547. Gross floor space of work to be retained: 117 sqm. (Pl. Ref: 191667).
- Retention of minor variations to an existing 2-storey dwelling house as constructed, and all associated site development works, previous planning reference no. 04/1054 and no. 09/604 at Site No. 8, Sli na Bhradain. Gross floor space of work to be retained: 35.4 sqm. (Pl. Ref: 191666).
- Permission for a development comprised of the following: Upgrading the existing grass playing fieldsto an artificial all weather pitch. Upgrading the existing floodlights to 8 no. floodlight columns with lighting of circa 500lux. Proposed play area for children. Development involves works on existing lands to incorporate the following: the associated site works and the perimeter surrounding the playing field, and new saving nets behind the new goals. (Pl. Ref: 191581).

- Permission to construct a serviced dwelling house and domestic garage. Gross floor space of proposed works: 195.2 sqm (House), 40 sqm (Garage). (Pl. Ref: 191573).
- Permission to construct extension to existing dwelling house and associated siteworks at 52 River Oaks. Gross floor space of proposed works: 34.00 sqm. (Pl. Ref: 191331).
- Permission for (a) the construction of a new dwelling house to include construction of a new site entrance gateway to serve new development, (b) subdivision of existing site approved under pl. ref. no. 96-2681, (c) connection to all existing services and (d) for all associated site development works. Gross floor space of proposed works: 170 sqm. (Pl. Ref: 19837).
- Permission to construct a mezzanine floor and to retain changes to elevations at Unit 25A. Gross floor space of proposed works: 163.1 sqm. (Pl. Ref: 19528).
- Permission to provide a new entrance door at the front of property at 79A Riveroaks. (Pl. Ref: 19447).
- Permission for the subdivision of existing site approved under Pl Ref: 97/1328 and the construction of a two-storey dwelling house, vehicular access and all associated siteworks and services. Gross floor space of proposed works 225.73 sqm. (Pl. Ref: 19134).
- Retention of 79 and 79A Riveroaks, Claregalway as two individual dwelling houses. Gross floor space of work to be retained: 68 sqm. (Pl. Ref: 181701).
- Permission for the construction of a dwellinghouse, garage, waste water effluent treatment unit, percolation area and all associated site services. Gross floor space of proposed works: (Dwelling) 231 sqm, (Garage) 60 sqm. (Pl. Ref: 181662).
- Retention of change of use for Unit 8 from Light Industrial to office space as constructed. Permission is also sought for change of use of Unit 9 from Light Industrial to office space to include any associated site development works and services as required. Gross floor space of proposed works 744 sqm. Gross floor space of work to be retained 418 sqm. (Pl. Ref: 181547).
- Retention of an attic conversion at 5 Slí an Bhraidain. Gross floor space of work to be retained 34.5 sqm. (Pl. Ref: 181387).
- Permission for a new terrace and associated elevational changes including new entrance, access steps and ramp modifications, and all associated site works at the Claregalway Hotel. (Pl. Ref: 181349).
- Permission for a ground floor side extension (29 sqm.) and new glazed shelter to adjoining terrace including associated elevational changes and associated site works. Gross floor space of proposed works 29 sqm. (Pl. Ref 181116).
- Extension of duration to the grant of outline permission (Pl. Ref. No. 10/791) is sought to construct a dwelling house, domestic garage, septic tank with ancillary effluent treatment plant and all associated site services (Gross floor space 163.62sqm house; 60sqm garage). Previous Planning Ref. No. 13/870. (Pl. Ref: 181053).
- Permission for the following: (1) Construction of 39 no. residential units comprising: 1 No. Type 'A' - 4 Bed Semi-Detached (2 storey), - 1 no. Type 'A1' - 4 Bed Semi Detached (2 Storey), 17 no. Type 'B' - 3 Bed Semi-Detached (2 storey), 5 no. Type 'B1' - 3 Bed Semi-Detached (2 Storey), 3 No. Type 'B2' - 3 Bed Terrace (2 storey), 6 no. Type 'C' - 2 bed End Terrace (2 Storey), 6 no. Type 'C1'- 2 bed Mid-Terrace (2 Storey). 2. Provision of shared communal and private open space and site landscaping; (3) Onsite and visitor car parking; (4) Vehicular and pedestrian access from the existing River Oaks estate; and (5) All associated site development works. A Natura Impact Statement (NIS) has been prepared in respect of the proposed development. Gross floor space of proposed works 4,158.4sqm. (Pl. Ref: 181015).
- Permission for a second floor fourteen bedroom side extension including associated elevational changes and associated site works to existing hotel. Gross floor space of proposed works 464 sqm. (Pl. Ref: 18916).
- Permission to convert attic to habitable space. Gross floor space of proposed works 20.38 sqm. (Pl. Ref: 18859).

- Retention of early learning centre. Gross floor space of work to be retained 73.2 sqm. (Pl. Ref: 18578).
- Permission for the erection of 5 no. 49 sqm. pre-fabricated temporary classroom buildings with connections to services and all other associated site works. Gross floor space of proposed works 245 sqm. (Pl. Ref: 18520).
- Permission for an extension to the rear of existing dwelling. Gross floor space of proposed works 23sqm. (Pl. Ref: 18429).

7.3 Conclusion of Cumulative Assessment

Following the detailed assessment provided in the preceding sections, it is concluded that, the proposed development will not result in any residual adverse effects on any of the European Sites, their integrity or their conservation objectives when considered on its own. There is therefore no potential for the proposed development to contribute to any cumulative adverse effects on any European Site when considered in-combination with other plans and projects.

In the review of the projects that was undertaken, no connection, that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the proposed development.

Taking into consideration the reported residual impacts from other plans and projects in the area and the predicted impacts with the current proposal, no residual cumulative impacts have been identified with regard to any European Site.

8. CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites.

Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the proposed works do not adversely affect the integrity of European sites.

Therefore, it can be objectively concluded that the proposed development, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.

9. BIBLIOGRAPHY

Birds Directive (2009/47/EC) – http://ec.europa.eu/environment/nature /legislation/birdsdirective /index _en.htm

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive 79/409/EEC as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011).

Connor, L., Morrissey, E., Coyne, J., Corcoran, W., Cierpial, D., Gavin A., Brett A., McLoone, P., Delanty, K., Rocks, K., Gordon, P., O' Briain, R., Matson, R., McCarthy E. and Kelly, F.L. (2018) Fish Stock Survey of Lough Corrib, June/July 2018. National Research Survey Programme, Inland Fisheries Ireland, 3044 Lake Drive, Citywest Business Caumpus, Dublin 24.

CIEEM (2018) Institute of Ecology and Environmental Management Draft Guidelines for Ecological Impact Assessment.

DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin.

DoEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Revision, February, 2010. Department of the Environment, Heritage and Local Government.

EC (2018) 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 (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.

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 (2006) Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.

EC (2007a) 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. Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2007b) Interpretation Manual of European Union Habitats. Version EUR 27. European Commission, DG Environment.

EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements. Environmental Protection Agency.

EPA (2003) Advice Notes on current practice in the preparation of Environmental Impact Statements. Environmental Protection Agency.

EPA website: http://www.epa.ie.

European Communities (Conservation of Wild Birds) Regulations, 1985, SI 291/1985 & amendments – http://www.irishstatutebook.ie.

European Communities (Environmental Impact Assessment) Regulations, 1989 to 2001.

European Communities (Natural Habitats) Regulations, SI 94/1997, SI 233/1998 & SI 378/2005 – http://www.irishstatutebook.ie.

Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Dublin: The Heritage Council.

Habitats Directive (92/43/EEC).

NPWS (2022) Conservation objectives for Lough Corrib SPA [004042]. Generic Version 9.0. Department of Housing, Local Government and Heritage.

NPWS (2018) Conservation objectives supporting document – lesser horseshoe bat (*Rhinolophus hipposideros*) Version 1. Conservation Objectives Supporting Document Series. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS (2017) Conservation Objectives: Lough Corrib SAC 000297. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2008) The Status of EU Protected Habitats and Species in Ireland. Conservation Status in Ireland of Habitats and Species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC.

NPWS of the DEHLG (2008) The Report on Status of Habitats and Species in Ireland: Technical Reports and Forms.

NPWS Protected Areas Site Synopses and maps available on http://www.npws.ie/en/ProtectedSites/.

NRA (2004) Environmental Impact Assessment of National Road Schemes – A Practical Guide, National Roads Authority, Dublin.

NRA (2004) Guidelines for the Treatment of Noise and Vibration in National Road Schemes (1 ed.). Dublin: National Roads Authority.

NRA (2006) Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post-Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2009). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Dublin: National Roads Authority.

O'Briain, R., Matson, R., Gordon, P., Lopez, S., Cierpal, D., Connor, L., Corcoran, W., Coyne, J., Gavin, A., McLoone, P., Twomey, C. and Kelly, F.L. (2019) Sampling Fish in Rivers 2019 – Clare River Catchment, Factsheet No. 2019/2. National Research Survey Programme. Inland Fisheries Ireland.

Scottish Natural Heritage (SNH) (July 2016) Assessing Connectivity with Special Protection Areas (SPA)

Therivel R. (2009) Workshop Material on the Habitats Directive Assessment of Plans Levett-Therivel Sustainability Consultants on behalf of the Heritage Council, Kilkenny.

Water status data available on http://www.epa.ie and http://www.wfdireland.ie

APPENDIX I

APPROPRIATE ASSESSMENT SCREENING REPORT

Planning and Environmental Consultants

Article 6 (3) Appropriate Assessment Screening Report

Development at Droim na Gaoithe, Baile Chláir

DOCUMENT DETAILS

Client:	Vincent Hannon Architects (VHA)
Project Title:	Development at Droim na Gaoithe, Baile Chláir
Project Number:	210947
Document Title:	Article 6 (3) Appropriate Assessment Screening Report
Document File Name:	AASR D2– 2023.05.12 – 210947
Prepared By:	MKO Tuam Road Galway Ireland H91 VW84

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Draft	04/07/2022	AvdGM	RW
02	Draft	12/05/2023	AvdGM	RW

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1. INTRODUCTION

1.1 Background

MKO has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Screening for Appropriate Assessment of a proposed residential development in Claregalway, Co. Galway (grid ref: M 37312 32235).

Screening for Appropriate Assessment is required under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Where it cannot be excluded that a project or plan, either alone or in combination with other projects or plans, would have a significant effect on a European Site then same shall be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives. The current project is not directly connected with, or necessary for, the management of any European Site consequently the project has been subject to the Appropriate Assessment Screening process.

The assessment in this report is based on a field survey undertaken in February 2022 and desk studies undertaken in May 2022 and March - May 2023. It specifically assesses the potential for the proposed development to result in significant effects on European sites in the absence of any best practice, mitigation or preventative measures.

This Appropriate Assessment Screening Report has been prepared in accordance with the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2021) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010) and the Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin 7, Ireland OPR (2021).

1.2 Statement of Authority

Baseline ecological surveys were undertaken on the 16th of February 2022 by Aran von der Geest Moroney (B.Sc.) of MKO. This report has been prepared by Aran von der Geest Moroney (B.Sc.) and reviewed by Rachel Walsh (B.Sc.) who has over 2 years' experience in ecological assessment.

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site Location

The proposed development site is located in Claregalway, Co. Galway (grid ref: M 37312 32235). The site is a greenfield site of approximately 6.9ha which is bordered by the R381 to the west and Lakeview Road to the south.

The location in of the development site is shown in Figure 2.1.

2.2 Characteristics of the Proposed Development

The Development will consist of the construction of a total of 88 residential units, and creche. The proposal includes two estate entrances, one from R381 (to Oranmore) and one from the L7110. The proposed units mix is as follows:

- 2 four bedroom two storey houses,
- 19 three bedroom two storey houses,
- 18 two bedroom two storey houses,
- 15 three bedroom apartments,
- 21 two bedroom apartments,
- 13 one bedroom apartments,
- 1 Crèche.

The development also includes a children's playground to Lakeview Road, landscaped amenity public open space, and IW pumping station, ESB substation and all necessary site development works.

The Proposal also includes car parking, bicycle parking, hard & soft landscaping, site clearance works, roads, footpaths, amenity facilities, public lighting, signage, connections to existing services and all ancillary site development works.

The proposed site layout is provided in Figure 3-3.

2.2.1 Foul Water Management

A pre-commencement connection enquiry has been submitted to Irish Water to establish whether a wastewater connection to Irish Water infrastructure is possible. The letter confirming feasibility of connection is provided in Appendix D of the Civil Works Design Report submitted alongside this report.

The proposed wastewater drainage system for the proposed residential development will consist of a combination of gravity and pumped discharge to an existing local gravity foul sewer situated in the R381 regional road. All gravity sewers shall be laid under roads and open spaces. The proposed layout of the development site drainage can be seen in Appendix II of the NIS submitted as part of the application.

Due to the topography of the proposed development site, a pumping station is required to service a portion of the proposed development. This pumping station will be located in the north of the proposed development site and will provide 24-hours storage for approx. 54 no. residential units and 1 no. creche and will comply with the requirements of the IW Code of Practice for Wastewater Infrastructure. Wastewater will be pumped from the pumping station via a proposed 110mm HDPE

rising main to a newly constructed discharge manhole and then via gravity will be discharged to the proposed 150mm foul sewer line. Wastewater generated in the remaining 34 no. residential developments will discharge to the same proposed 150mm foul sewer line. All wastewater generated from the proposed development will ultimately discharge to the existing manhole and 300mm foul sewer line which runs parallel to the R381 across from the proposed development entrance via the proposed 150mm foul sewer line. The foul sewer network within the proposed development site was designed to cater for 90 no. units.

The pumping station will be located 13m from the boundary of the nearest dwelling. The pumping station will allow for a 4m space in front of it (in accordance with Irish Water Standard Detail STD-WW-26) to allow for an occasional tanker or service vehicle to be parked outside. Tanker movements to the pumping station are expected to be minimal and subject to the operational efficiencies of the pumping station. It is anticipated that no more than 2-4 tanker visits would be required per annum.

2.2.2 Surface Water Management

The proposed storm water drainage system for the proposed development has been designed to cater for all surface water runoff from all hard surfaces within the proposed development i.e. roadways, roofs, parking areas etc. Precast concrete gullies including lockable cast iron grating and frame connected to a piped system will be provided to collect run-off from these areas.

It is proposed that the storm water drainage generated within the proposed development site will flow by gravity and discharge via an Oil/ petrol interceptor to 2 no. soakaway units located strategically throughout the development as shown in Appendix II of the NIS submitted as part of the application. The soakaway units within the proposed development site will be of cellular storage providing 95% void ratio. All soakaways within the proposed development site are designed to accommodate a 1 in 100 year storm event + 20% for climate change.

2.2.3 Flood Risk Assessment

JBA Consulting have carried out a flood risk assessment (FRA) for the proposed development site located in Claregalway, Co. Galway (grid ref: M 37312 32235). The risk of flooding to the development site via different pathways is outlined below. The full FRA can be seen in Appendix III of the NIS submitted as part of the application.

Fluvial Flood Risk

There is no historical evidence for fluvial risk to the development site. The development site is located predominantly within flood zone C, with a small area to the northeast within flood zone B. As such the proposed works adhere to the "The Planning System and Flood Risk Management" guidance. A low risk to fluvial flooding is also outlined within the Clare River Flood Relief Study.

Pluvial Flood Risk

According to the OPW PFRA mapping, the central area of the proposed development site has the potential to act as a collection point for rainfall. Pluvial flooding has the potential to be a risk in conjunction with groundwater flooding. In addition, the transition of the greenfield site to hard standing areas may increase risk of pluvial flooding.

Groundwater Flood Risk

The primary risk to flooding on the development site is that of groundwater flooding. This is due to the high groundwater vulnerability (3-10m bedrock depth) which the majority of the development site is located within. A small proportion located within extreme groundwater vulnerability (0-3m bedrock depth). There is a history of groundwater flooding at the development site. Previous flooding at the development has been attributed to groundwater influences due to turloughs within the vicinity

(northwest and south of the development site). The site is considered to be at risk of flooding due to groundwater.

Clare River Flood Relief Scheme

The Clare River Flood Relief scheme was undertaken in order to provide flood relief in the Claregalway and surrounding area. Within the vicinity of the development site flooding was identified to be caused predominantly by groundwater influence, namely two turloughs located south of the development site and north west of the development site. The turlough located to the south of the development site was found to be higher than the turlough at the north west of the development site. A link between the two was identified resulting in groundwater related flooding issues to the north west of the development site. A 1.65km pipeline was constructed and completed in 2018 to reduce the impacts of flooding in regions impacted by groundwater flooding. This pipeline runs along the eastern boundary of the development site with the outfall to the Clare River located c. 60m upstream of the bridge. This pipeline is shown as a green line within (Plate 2-1). This scheme provides a level of flood relief of 1% AEP with an additional 20% allowance for climate change.

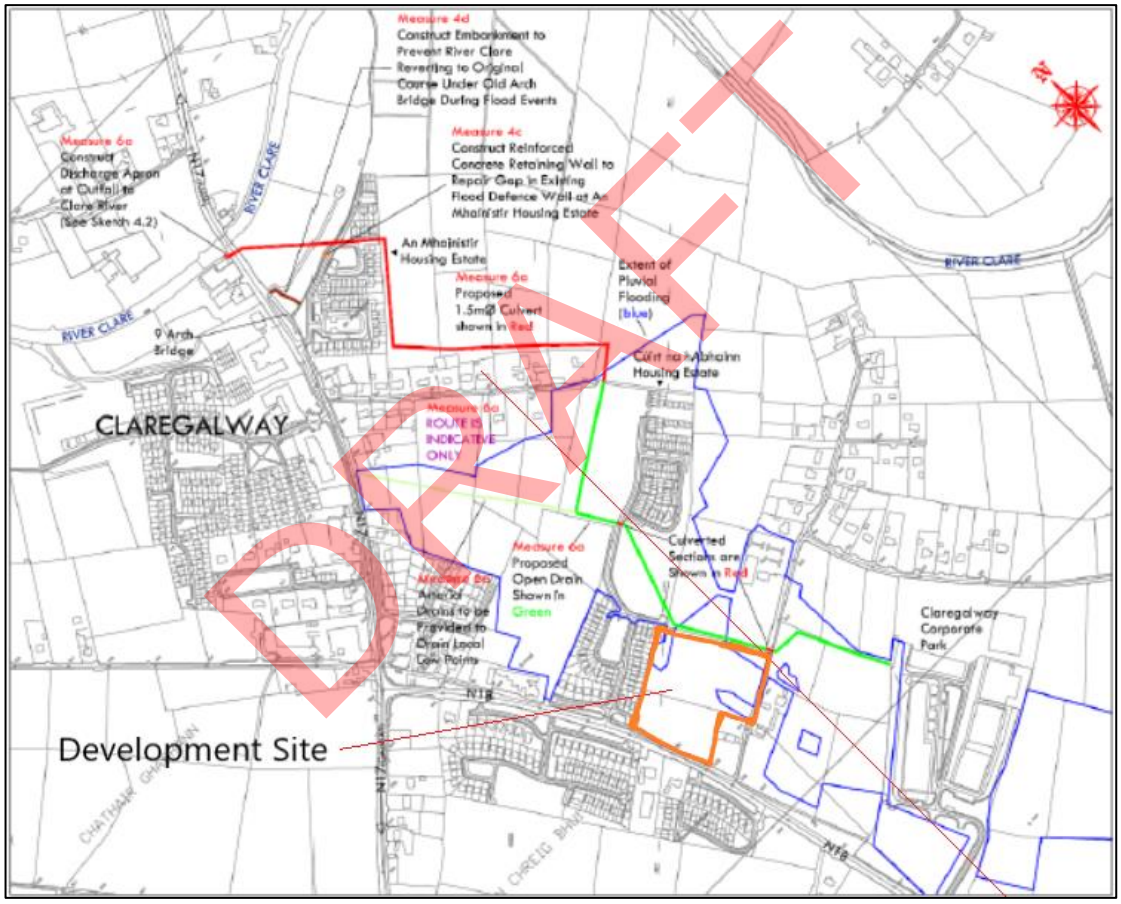

Plate 2-1 Clare Flood Relief Scheme Pipeline (In green) located adjacent to Development Site (In orange) (Image source JBA Consulting).

Suggested FRA mitigations.

Suggested mitigation measures outlined within the FRA prepared by JBA Consulting include the following:

- A surface water drainage system that replicates existing greenfield conditions and that is in accordance to the GDSDS should be considered.
- Finished Floor levels for the development should be set to 1% AEP event levels, including freeboard of 300mm.

The FRA identifies a risk of groundwater flooding within the development site. However, the FRA has concluded that although the CFRAM mapping shows a groundwater flood risk at the site, the Clare River Flood Relief Scheme has since mitigated the risk of groundwater flooding at the proposed development site.

2.2.4 Landscaping

A landscape plan for the proposed residential development has been prepared and is shown in Appendix IV of the NIS submitted as part of the application. A linear open space consisting of grass, trees and clipped hedgerow will be implemented along the existing and to be retained stone wall adjacent to the R381 at the east of the proposed development site. This will create a linear area of vegetation that will enhance connectivity with the neighbouring residential development and the lands to the south. Similarly linear sections of trimmed hedging and trees are proposed throughout the site establishing connectivity within the site. Clipped hedging and trees will be planted along the southern boundary of the proposed development site within the retained stone wall and will further add to the connectivity of the site and the surrounding lands. Within the north eastern portion of the site there will be an area of mixed native woodland and mixed wildflower and bulb planting which will aid in the biodiversity of the proposed development site and in keeping with the All Ireland Pollinator Plan.

Planting throughout the proposed development site has been designed among other factors to use biodiverse plants to increase the biodiversity of the site as well as contribute to local biodiversity. Full details on plant species can be found within the landscape plan shown in Appendix IV of the NIS submitted as part of the application and within the associated landscape report submitted as part of this application.

Approximately 222m of linear vegetation is proposed along the southern and western boundaries of the proposed development site. The open green space, native woodland and pollinator friendly meadows within the northeast of the site covers approximately 0.3ha of the proposed site boundary.

2.2.5 Lighting

The lighting plan for the operational phase of the proposed development, has been designed in accordance with Bat Conservation Ireland (*Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers*, BCI, 2010) and the Bat Conservation Trust (*Guidance Note 08/18 Bats and Artificial Lighting in the UK* (BCT, 2018), to direct light away from important habitat features and minimise light spillage, thus reducing any potential disturbance to bats. The Public Lighting Layout and Reality Lighting Contours drawings can be seen in Appendix V of the NIS submitted as part of the application.

The proposed light fitting/scheme has been designed to help mitigate the effect of the artificial lighting on the local bat populations by incorporating:

- The Upward Light Output Ratio (ULOR) will be 0%. Lighting fixtures will have a 0-degree tilt and will be fitted with back-louvers on the columns to reduce light spill.
- The proposed lighting consists of 'Veelite Metro Streetlight 27w LED Street Optic' and 'Veelite Metro Streetlight 27w LED Forward Throw A Optic' and will be of the LED colour temperature - Warm White (3000K).
- All LED streetlights will be mounted on 6m poles.
- Minimal lighting (<1lux) surrounding the public area in the northern section of the proposed development site to allow for commuting/foraging. Additionally, light spillage on the treeline along the western boundary has been designed with minimum lux levels <2lux in most areas.

2.2.6 Ground Investigations

Irish Drilling Ltd. (IDL) carried out site investigation works at the site of the proposed residential development between 31st January 2022 and 11th March 2022 in order to provide detailed geotechnical information of the underlying ground conditions at the proposed development. The full Site Investigation Report is submitted alongside this report as part of the application.

Eight cable percussion boreholes were completed to 'refusal' or to client specified depths, with borehole depths ranging between 1.4m and 2.2m below ground level. Five rotary core boreholes were carried out to depths ranging between 7.1m and 24m below ground level. The rotary core boreholes were predominantly carried out in the case where the cable percussive borehole encountered 'refusal'. Nine trial pits were excavated throughout the site with a track excavator. Ground conditions, pit stability, water ingress and services encountered were all recorded. Soil infiltration tests were also carried out at three of the nine trial pits.

Ground Conditions:

Ground conditions consisted predominantly of Glacial Till overlaying bedrock. Intact bedrock was encountered at depths varying from 2.1m to 21m below ground level and is described as 'very strong, thinly to thickly bedded, bioclastic limestone'. Weathered bedrock was also encountered with two boreholes at depths between 6.8m to 11.6m below ground level.

Groundwater:

Groundwater was not encountered in boreholes or trial pits at the time of fieldwork operations. It was noted that 'Groundwater inflows may occur in many areas during the completion of excavations and the rate of inflow will vary with the permeabilities of the soils and rock'.

Geotechnical review:

The water table was not encountered above the depths of recommended shallow foundations however the water table may be at ground level at times of flooding or excessive rainfall.

Map Legend

- Site Boundary
- Special Area of Conservation (SAC)

Drawing Title

Site layout

Project Title	Development at Droim na Gaoithe, Baile Chláir
Drawn By: AvdGM	Checked By: RW
Project No.: 210947	Drawing No.: Fig 2-1
Scale: 1:25000	Date: 12.05.23

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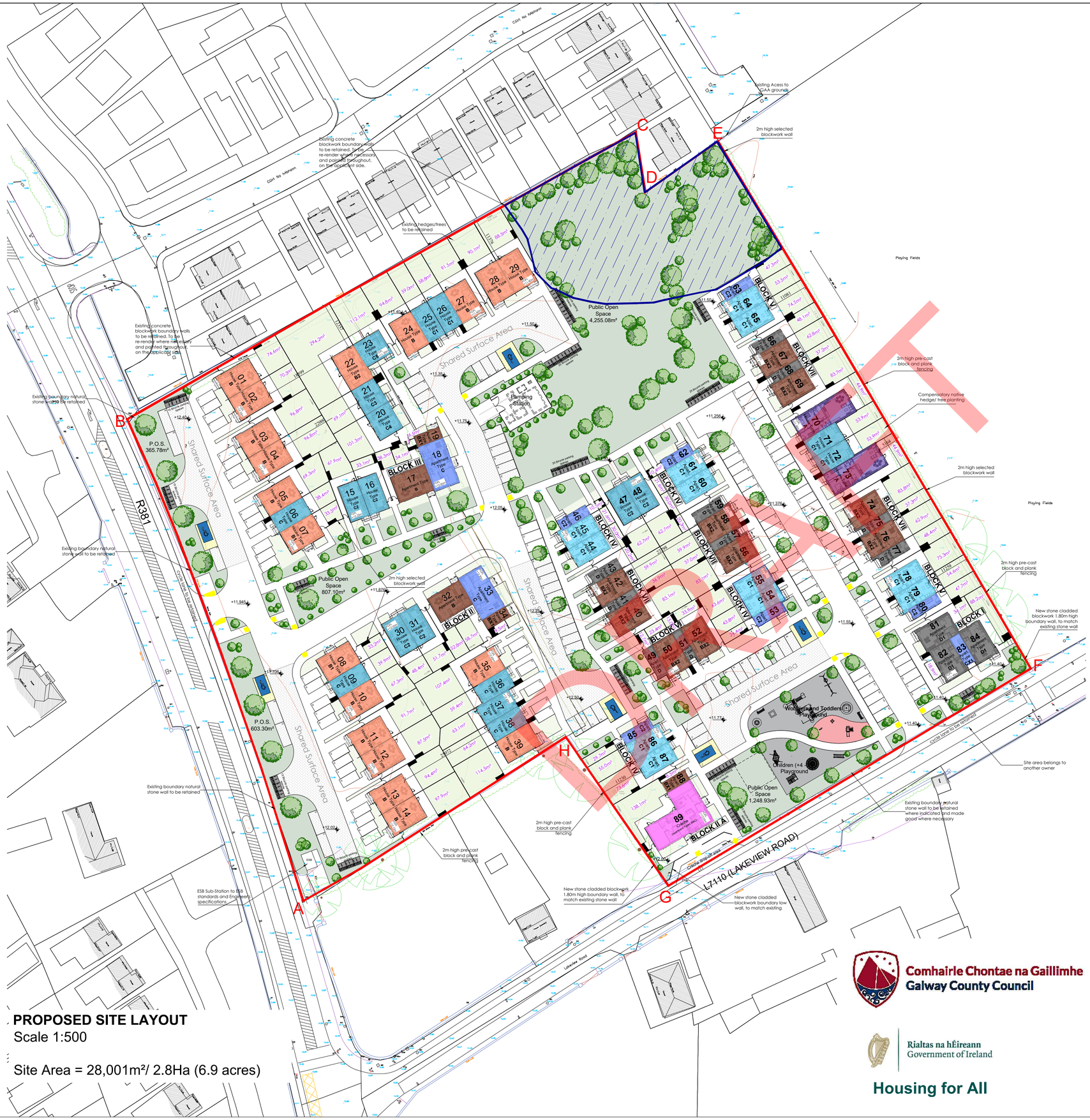

LEGEND:

- Public Open Space
- Private Open Space
- Home Zone
- Restricted Area as per Galway Co. Development Plan 2017-2023
- Site Area
- Site Area belongs to another owner
- Bin Store
- Car Parking Space
- Bike Stand

UNIT TYPES

TYPE A (4 Bedrooms)

4 BEDS. HOUSE
2 Houses

TYPE B (3 Bedrooms)

3 BEDS. HOUSE
19 Houses

3 BEDS. APARTMENT
15 Apartments

TYPE C (2 Bedrooms)

2 BEDS. HOUSE
18 Houses

2 BEDS. APARTMENT
21 Apartments

TYPE D (1 Bedroom)

1 BED. APARTMENT
13 Apartments

TYPE E (Crèche)

CRÈCHE
1 Unit - 21 Children

88 PROPOSED UNITS + 01 CRÈCHE

NOTE: Landscape included as reference only and subject to Landscape Architect's design.

SITE STATISTICS:

(As required for Housing by Galway Co. Development Plan 2022-2028)

Overall Site Area *(Edged in RED)*:
27,110.04m² Approx. (6.70 acres approx.)

DENSITY
Required : *N/A*
Provided : 33 Units/Ha.

OPEN SPACE
Public:
Required : *15% (4,066.51m²)*
Provided : 26.8%(7,279.75m²)

Private Open Space for Housing is provided in the form of rear gardens of minimum 11m in depth (22m back to back between houses), in compliance with the recommended areas required by the current Galway Co. Development Plan 2022-2028.

New Car Parking calculation
(based on new Galway County Development Plan 2022-2028 requirements)

Houses and Apartments:
4 bedroom units = 2 per unit = 4 car parking spaces required.
1 to 3 bedroom units = 1.5 per unit = 86 x 1.5 = 129 car parking spaces required.

Crèche:
Total capacity = 6 babies (0 to 1 years old)
7 children (1 to 2 years old)
8 children (2 to 6 years old)
Total= 21 (babies & children).

Staff: (0 to 1 years old) 1 staff each 3 children = 2 staff required.
(1 to 2 years old) 1 staff each 5 children = 1 ~ 2 staff required.
(2 to 6 years old) 1 staff each 8 children = 1 staff required.
Total staff required = 5.

Crèche car parking spaces required = 1 space/staff = 5
1 space each 4 children = 5.25 ~ 6

Total = 11 car parking spaces required for the crèche.

Total car parking spaces required:
Dwelling Units = 133 spaces.
Crèche = 11 spaces.

Total overall required = 144 spaces.

Provided:
144 spaces (Total)
Including 6 Disabled parking spaces

BICYCLE STANDS
Required: 1 bicycle spaces per bed for residents, 1 each 2 dwellings for visitors & 1 each car space (Crèche) = 258 bicycle spaces

Provided: 260 Bicycle parking spaces

PROPOSED SITE LAYOUT

Scale 1:500

Site Area = 28,001m²/ 2.8Ha (6.9 acres)

Comhairle Chontae na Gaillimhe
Galway County Council

Rialtas na hÉireann
Government of Ireland

Housing for All

N

Rev	Description	By	Date
-	-	-	-

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Client:	Galway County Council
Project:	Proposed Housing Development at Baile Chláir. Co. na Gaillimhe
Drawing Description:	Proposed Site Layout Plan
Scale:	1:500 @ A1
Status:	Planning
Drawing No:	210503-03-003
Rev:	
Date:	March 2023
Drawn by:	SF/ WS
Checked by:	BF

2.2.7 Description of the Baseline Ecological Environment

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological Baseline conditions are those existing in the absence of proposed activities (CIEEM 2018, updated 2022).

A multidisciplinary ecological walkover survey of the site was conducted on the 16th of February 2022 in line with NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes) by Aran von der Geest Moroney (B.Sc., QCIEEM) and Cillian Burke (B.Sc.). All habitats were readily identifiable during the time of the walkover survey.

The proposed development site consists predominantly of grassland habitat classified as Improved agricultural grassland **(GA1)** (Plate 2-2). The areas of Improved agricultural grassland were dominated by perennial rye grass (*Lollium perenne*) with broad leaved dock (*Rumex obtusifolius*), clover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*), daisy (*Bellis perennis*), dandelion (Taraxacum *officinale agg*.) and *Rhytidiadelphus squarrosus* occurring throughout. The grassland was heavily poached and at times wet underfoot.

The site is bordered to the west and partially to the south by stone walls classified as Stone walls and other stonework **(BL1)** (Plate 2-3), with a scattered mature ash dominated treeline **(WL2)** comprising the remainder of the southern boundary (Plate 2-4). The site is bordered to the north by a combination of concrete block wall classified as Buildings and artificial surfaces **(BL3)** and a bramble (*Rubus fruticosus*), blackthorn (*Prunus spinosa*) and hawthorn (*Crataegus monogyna*) dominated hedgerow **(WL1)** (Plate 2-5). The site is bordered to the east by an ivy (Hedera spp.), bramble, blackthorn and hawthorn dominated hedgerow **(WL1)** with occasional mature ash trees (*Fraxinus excelsior*) (Plate 2-6).

A blackthorn and hawthorn tall hedgerow **(WL1)** runs in a south easterly direction from the northern boundary and partially bisects the site (Plate 2-7). There are two areas of recolonising gravel classified as recolonising bare ground **(ED3)** located within the site boundary (Plate 2-8).

There were no drains located within the site or leading off the site.

The site is bordered by the R381 to the west (Plate 2-9), lakeview road and an area of land with a mosaic of grassland, scrub and artificial habitats to the south (Plate 2-10), a residential area to the north and GAA sports pitches to the east.

No species listed as a Third Schedule Invasive Alien Species (IAS) of the European Communities Regulations 2011 (S.I. 477 of 2015) was recorded within the development site boundary.

There were no Annex I habitats or Annex II fauna associated with the Lough Corrib SAC or SCI species of the Lough Corrib SPA recorded during the site visit

Plate 2-2 Improved agricultural grassland (GA1) heavily poached in areas.

Plate 2-3 Stone wall boundary to the south of the site classified as Stone walls and other stonework (BL1).

Plate 2-4 Scattered mature ash dominated treeline (WL2) at south eastern boundary of site.

Plate 2-5 Combination of concrete block wall classified as Buildings and artificial surfaces (BL3) and a bramble, blackthorn and hawthorn dominated hedgerow (WL1) located at the north of the site.

Plate 2-6 Ivy, bramble, blackthorn and hawthorn dominated hedgerow (WL1) with occasional mature ash trees in the background with heavily poached agricultural grassland in the foreground.

Plate 2-7 Blackthorn and hawthorn tall hedgerow (WL1) which partially bisects the site.

Plate 2-8 Area of recolonising gravel classified as recolonising bare ground (ED3) located in the north western corner of the site

Plate 2-9 R381 located west of the site.

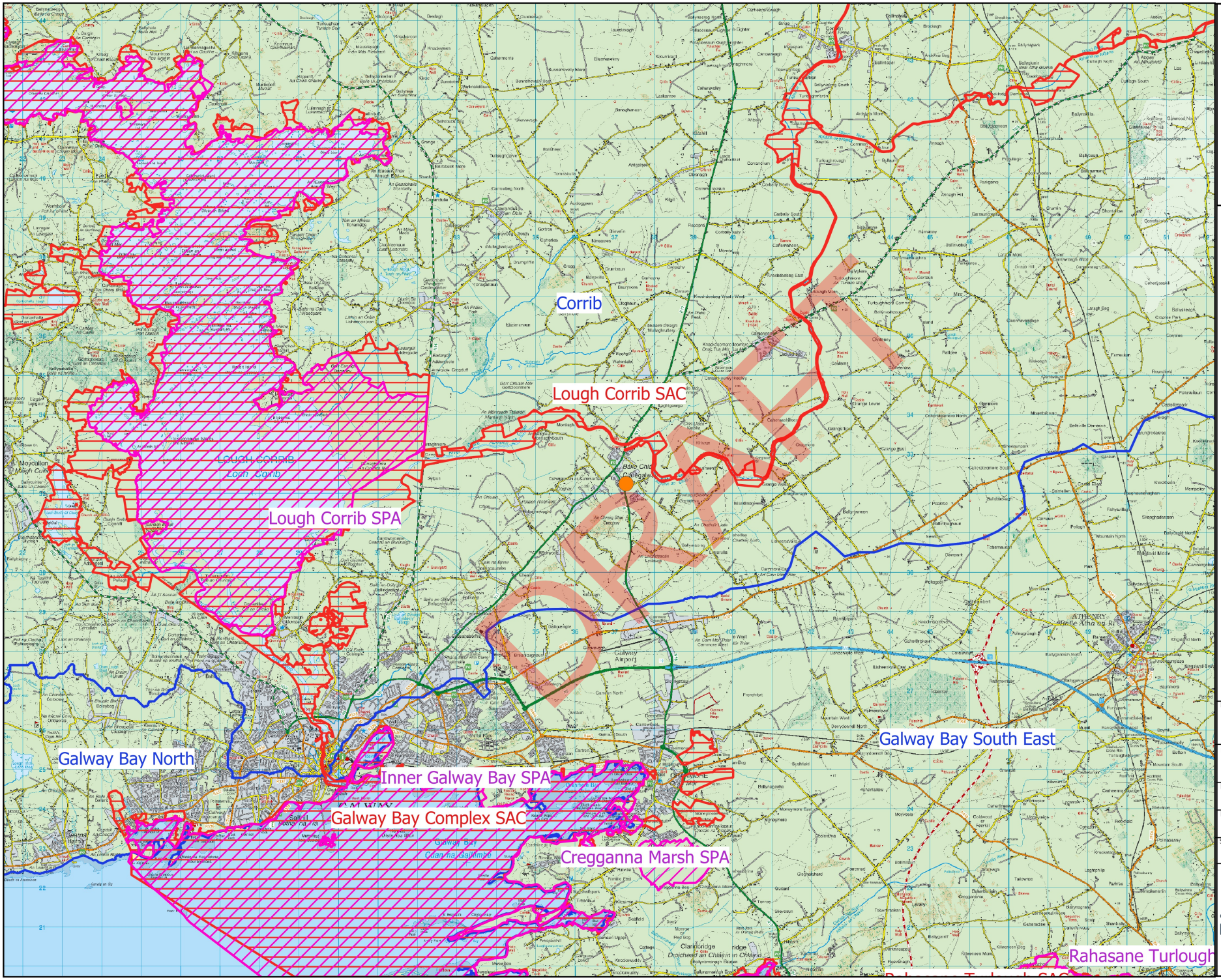
Plate 2-10 Lakeview Road and area of land with a mosaic of grassland, scrub and artificial habitats located south of the site.

3. IDENTIFICATION OF RELEVANT EUROPEAN SITES

Identification of the European Sites within the Likely Zone of Impact

The following methodology was used to establish any European Sites upon which there is a potential for a likely significant effect to occur either individually or in combination with other plans and projects as a result of the proposed development:

- Initially the most up to date GIS spatial datasets for European designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) on the 15/03/2023.
- All European Sites that could potentially be affected were identified using a source-pathway - receptor model. To provide context for the assessment, European Sites surrounding the development site are shown on Figure 3-1 and Figure 3-2. Information on these sites according to the site-specific conservation objectives is provided in Table 3-1. Sites that were further away from the proposed development were also considered and no complete source-pathway-receptor chain for significant effect was identified for any other European Site.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the site of the proposed development and any European Sites. The hydrological catchments are also shown in Figure 3-1.Additionally, the groundwater bodies are shown Figure 3-2.
- In relation to Special Protection Areas, in the absence of any specific European or Irish guidance in relation to such sites, the Scottish Natural Heritage (SNH) Guidance, '*Assessing Connectivity with Special Protection Areas* (SPA)' (2016) was consulted. This document provides guidance in relation to the identification of connectivity between proposed development and Special Protection Areas. The guidance takes into consideration the distances species may travel beyond the boundary of their SPAs and provides information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects.
- Table 3.1, provides details of all relevant European Sites as identified in the preceding steps and assesses the potential for likely significant effects on each.
- The assessment considers any likely direct or indirect impacts of the proposed development, both alone and in combination with other plans and projects, on European Sites by virtue of criteria including the following: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this assessment.
- The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report 15/03/2023.
- Where potential pathways for Likely Significant Effect are identified, the site is included within the Likely Zone of Impact and further assessment is required within the NIS.
- The potential for the proposed development to result in cumulative impacts on any European Sites in combination with other plans and projects was considered in the assessment that is presented in Table 3.1. Plans and projects considered include those that are listed in Section 3-2.



Map Legend

- Site Location
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- WFD Catchments

Drawing Title
Site Location in Relation to EU Designated Sites

Project Title
Development at Droim na Gaoithe, Baile Chláir

Drawn By	Checked By
AvdGM	RW
Project No.	Drawing No.
210947	Fig 3-1
Scale	Date
1:125000	15.03.23

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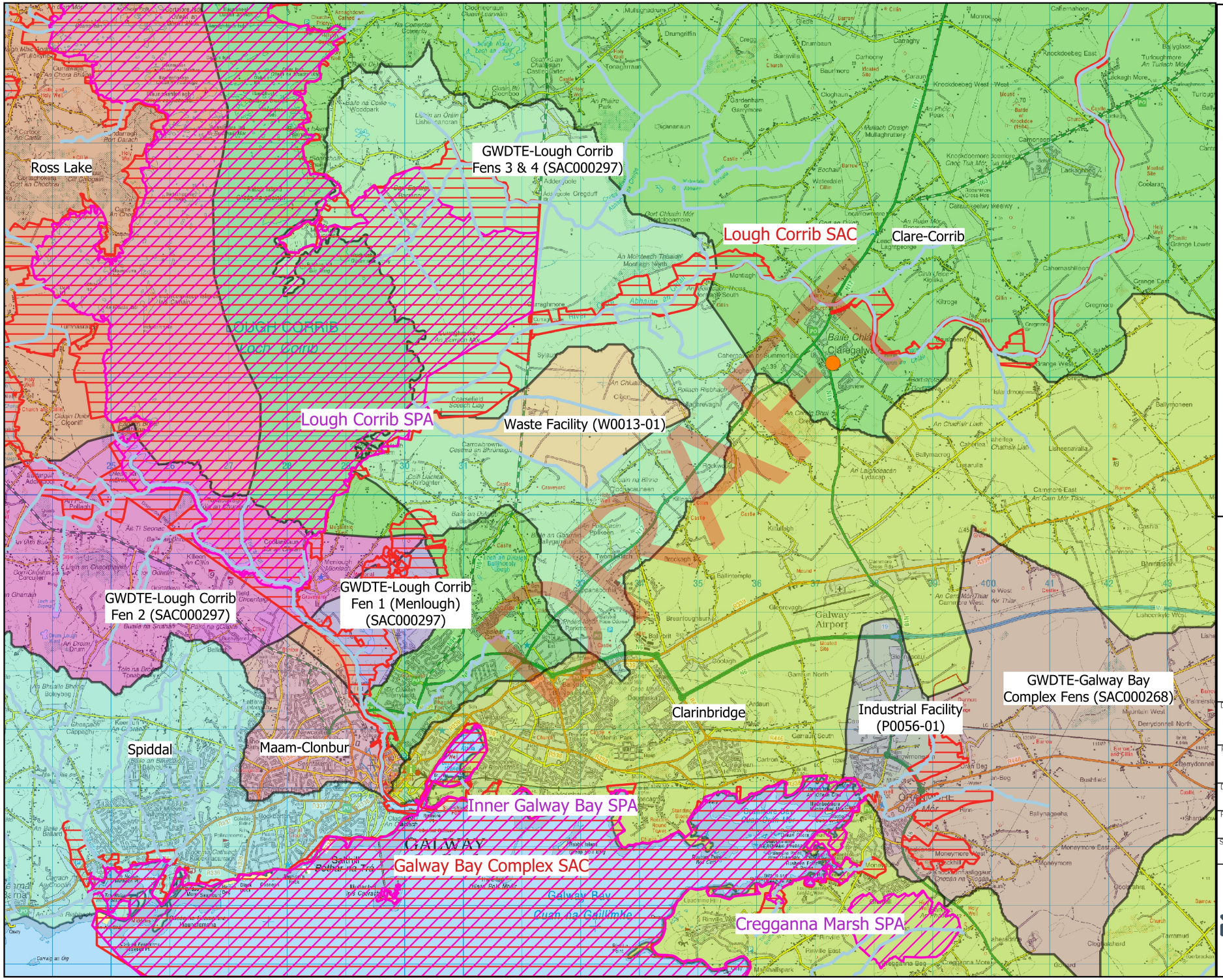

Map Legend

- Site Location
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Clare-Corrib
- Clarinbridge
- GWDTE-Galway Bay Complex Fens (SAC000268)
- GWDTE-Lough Corrib Fen 1 (Menlough) (SAC000297)
- GWDTE-Lough Corrib Fen 2 (SAC000297)
- GWDTE-Lough Corrib Fens 3 & 4 (SAC000297)
- Industrial Facility (P0056-01)
- Maam-Clonbur
- Ross Lake
- Spiddal
- Waste Facility (W0013-01)

Drawing Title

Site Location in Relation to EU Designated Sites and Groundwater Bodies

Project Title

Development at Droim na Gaoithe, Baile Chláir

Drawn By	Checked By
AvdGM	RW
Project No.	Drawing No.
210947	Fig 3-2
Scale	Date
1:84000	15.03.2023

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Table 3.1 Identification of Designated sites within the Likely Zone of Impact

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 15/03/2023	Conservation Objectives	Likely Zone of Impact Determination
Special Areas of Conservation (SAC)			
Lough Corrib SAC (000297) **Distance:** 630m	› 1029 Freshwater Pearl Mussel *Margaritifera margaritifera* › 1092 White-clawed Crayfish *Austropotamobius pallipes* › 1095 Sea Lamprey *Petromyzon marinus* › 1096 Brook Lamprey *Lampetra planeri* › 1106 Salmon *Salmo salar* › 1303 Lesser Horseshoe Bat *Rhinolophus hipposideros* › 1355 Otter *Lutra lutra* › 1393 Slender Green Feather-moss *Drepanocladus vernicosus* › 1833 Slender Naiad *Najas flexilis* › 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae)* › 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* › 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. › 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	Detailed conservation objectives for this site, (Version 1, April 2017, were reviewed as part of the assessment and are available at www.npws.ie	The development site is located completely outside of this SAC, therefore there is no potential for direct effects. A potential for indirect effect was identified via deterioration in water quality as a result of construction and operation of the development. **The SAC is within the Likely Zone of Impact and further assessment is required.**

	› 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia)* (* important orchid sites) › 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae)* › 7110 Active raised bogs › 7120 Degraded raised bogs still capable of natural regeneration › 7150 Depressions on peat substrates of the *Rhynchosporion* › 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* › 7220 Petrifying springs with tufa formation (*Cratoneurion)* › 7230 Alkaline fens › 8240 Limestone pavements › 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles › 91D0 Bog woodland		
Galway Bay Complex SAC (000268) **Distance:** 6.4km	› 1140 Mudflats and sandflats not covered by seawater at low tide › 1150 Coastal lagoons* › 1160 Large shallow inlets and bays › 1170 Reefs › 1220 Perennial vegetation of stony banks › 1310 *Salicornia* and other annuals colonising mud and sand › 1330 Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)* › 1355 Otter *Lutra lutra* › 1365 Harbour seal *Phoca vitulina* › 1410 Mediterranean salt meadows *(Juncetalia maritimi)*	Detailed conservation objectives for this site, dated April 2013, were reviewed as part of the assessment and are available at www.npws.ie	The development site is located completely outside of this SAC, therefore there is no potential for direct effects. Indirect effects on the following QIs can be ruled out due to the terrestrial nature of the habitats/species, the distance from the proposed development site and the absence of a complete source-pathway-receptor chain for effect: › 1220 Perennial vegetation of stony banks › 5130 *Juniperus communis* formations on heaths or calcareous grasslands › 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*)(*important orchid sites)

	› 3180 Turloughs* › 5130 *Juniperus communis* formations on heaths or calcareous grasslands › 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*)(*important orchid sites) › 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** › 7230 Alkaline fens		Indirect effects on the following groundwater dependent QIs can be excluded due to the SAC being located in a separate groundwater body to the development site and therefore the absence of a complete source-pathway-receptor chain for effect: › 3180 Turloughs* › 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** › 7230 Alkaline fens Potential hydrological connectivity was identified between the proposed development and the SAC via the Clare-Corrib groundwater body, River Clare, Lough Corrib and the River Corrib which discharges to the transitional and marine waters of Galway Bay Complex SAC downstream of the development site. However, due to the attenuative and assimilative capacity of the River Clare, Lough Corrib and the River Corrib the potential for significant indirect effect on aquatic QIs of the SAC is considered to be negligible. Therefore, no complete source-pathway-receptor chain for effect was identified between the proposed development and the aquatic QIs for which this site has been designated. **This site is not within the Likely Zone of Impact and no further assessment is required.**
Special Protection Area (SPA)			
Lough Corrib SPA (004042) Distance: 5.1km	› A051 Gadwall *Anas strepera* › A056 Shoveler *Anas clypeata* › A059 Pochard *Aythya ferina* › A061 Tufted Duck *Aythya fuligula* › A065 Common Scoter *Melanitta nigra* › A082 Hen Harrier *Circus cyaneus* › A125 Coot *Fulica atra* › A140 Golden Plover *Pluvialis apricaria* › A179 Black-headed Gull *Chroicocephalus ridibundus*	Detailed conservation objectives for this site (Version 1, January 2023) were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the development site is located completely outside of the SPA. A potential for indirect effect was identified via deterioration of water quality during construction and operation of the development, thus affecting the SCI species and SCI supporting habitat of the SPA. **The SPA is within the Likely Zone of Impact and further assessment is required.**

	› A182 Common Gull *Larus canus* › A193 Common Tern *Sterna hirundo* › A194 Arctic Tern *Sterna paradisaea* › A395 Greenland White-fronted Goose *Anser albifrons flavirostris* › A999 Wetlands and waterbirds		
Inner Galway Bay SPA [004031] Distance 6.9km	› A003 Great Northern Diver *Gavia immer* › A017 Cormorant *Phalacrocorax carbo* › A028 Grey Heron *Ardea cinerea* › A046 Brent Goose *Branta bernicla hrota* › A050 Wigeon *Anas penelope* › A052 Teal *Anas crecca* › A056 Shoveler *Anas clypeata* › A069 Red-breasted Merganser *Mergus serrator* › A137 Ringed Plover *Charadrius hiaticula* › A140 Golden Plover *Pluvialis apricaria* › A142 Lapwing *Vanellus vanellus* › A149 Dunlin *Calidris alpina alpina* › A157 Bar-tailed Godwit *Limosa lapponica* › A160 Curlew *Numenius arquata* › A162 Redshank *Tringa totanus* › A169 Turnstone *Arenaria interpres* › A179 Black-headed Gull *Chroicocephalus ridibundus* › A182 Common Gull *Larus canus* › A191 Sandwich Tern *Sterna sandvicensis* › A193 Common Tern *Sterna hirundo* › A999 Wetlands	Detailed conservation objectives for this site (Version 1, May 2013) were reviewed as part of the assessment and are available at www.npws.ie	There is no potential for direct effect as the proposed development is outside of the SPA boundary. The proposed development site consists predominantly of agricultural grassland habitats which are common in the wider area. The site does not provide significant supporting habitat for the SCI species for which the SPA is designated and none of the SCI species were recorded within the site during the ecological surveys. Therefore, no potential for significant habitat loss or displacement effect exists. Potential hydrological connectivity was identified between the proposed development and the SPA via the Clare-Corrib groundwater body, River Clare, Lough Corrib and the River Corrib which discharges to the marine waters of Inner Galway Bay SPA downstream of the development site. However, due to the attenuative and assimilative capacity of the River Clare, Lough Corrib and the River Corrib the potential for significant indirect effect on SCIs of the SPA is considered to be negligible. In addition, the SPA is located in a separate ground water body to the development site. Therefore, no complete source-pathway-receptor chain for effect was identified between the proposed development and the SCIs for which this site has been designated. **This site is not within the Likely Zone of Impact and no further assessment is required.**
Cregganna Marsh SPA [004142] **Distance:** 9.0km	› [A395] Greenland White-fronted Goose (*Anser albifrons flavirostris*)	This site has the generic conservation objective: '*To maintain or restore the favourable conservation condition*	This SPA is located 9.0km from the proposed development site. There is no potential for direct effect as the proposed development is outside of the SPA boundary.

		of the bird species listed as Special Conservation Interests for this SPA' (NPWS Generic version 9.0, 2022)	The site consists predominantly of agricultural grassland habitats and does not provide significant suitable habitat for the SCI species. Given the distance of the SPA from the proposed development and the absence of significant supporting habitat for the SCI species, no potential for indirect effects in the form of ex-situ disturbance or displacement exists. Furthermore, the development site is located outside of the core foraging range for Greenland White-fronted Goose (5-8km, SNH 2016). **This site is not within the Likely Zone of Impact and no further assessment is required.**

3.2 Likely Cumulative Impact of the Proposed Works on European Sites, in-combination with other plans and projects

The online planning system for Galway County Council was consulted on the 20/03/2023. Projects identified within Claregalway and the wider area within the last 5 years include:

- Permission for the erection of a Primary Care Centre building consisting of 2 storeys to include pharmacy retail unit at ground level with surface carparking, associated signage, boundary treatment, connection to public services, ground and roof mounted plant & equipment and all ancillary and associated works including reconfiguration and widening of the existing Montiagh Road carriageway and footpath links from the site to the junction with the N83 Galway Road. Gross floor space of proposed works 2817sqm. (Pl. Ref: 2260948),
- Permission to construct a serviced dwelling house and domestic garage. Gross floor space of proposed works: 227.9 sqm & 45 sqm (garage). (Pl. Ref: 22158),
- Extension of duration for the construction of four residential units (comprising of two detached houses and one duplex consisting of a 2 bed and a 4 bed unit), one residential community house for the Brothers of Charity Services (337sqm) and one day care facility with ancillary offices for the Brothers of Charity Services (734sqm) with parking and all associated site services. (Pl. Ref: 22109)
- Permission: Development will consist of 1) the construction of a new building , comprised of warehouse.2) 2 no. ancillary loading bays and enclosed services yard. 3) a first floor link corridor connecting applicant's existing facility in unit 6 with the adjacent unit 7. 4) works also include the fit out of units 7 & 8b to provide reception, canteen, welfare facilities, production and storage areas, internalised sub-station and switch room at ground level and ancillary office and meeting rooms on a newly constructed first floor mezzanine level. 5)proposed amendments to the existing elevations of 6,7 &8b to include the localized inclusion and reconfiguration of glazing, personnel doors and vehicular access with the provision of signage.6) reconfiguration of car parking spaces, the provision of secure bicycle parking spaces and drop-off/loading bay area.7) all associated site works. Gross floor space of proposed works: 1502.3 sqm. (Pl. Ref: 21436),
- Permission for construction of a new dwelling house (169 sqm) and all associated works. (Pl. Ref: 211842),
- Permission to convert attic to habitable space. Gross floor space of proposed works: 38.5 sqm. (Pl. Ref: 21297).
- Permission for amendments to that granted on foot of planning permission [ref no]17505 including amendments to site layout plan, road levels and boundary finishes, gate access to the North of the site, repositioning of wall with gate access to the West adjoining site, provision of new wall and connecting footpath to East adjoining site, amendments to the Day Care and Community House building elevations, provisions of an external storage shed and polytunnel together with all ancillary site works and services. Gross floor space of proposed works: 734 & 332 msq. (Pl. Ref: 21292).
- Permission for a 258 sqm house, 60 sqm garage and associated site works and services. Gross floor space of proposed works: 318 sqm. Gross floor space of any demolition: 12 sqm (part shed). (Pl. Ref: 210900).
- Permission to carry out works to an existing warehouse unit. This will include the construction of a mezzanine floor to provide office space and staff services. Permission is also sought to provide windows in the front elevation. Gross floor space of proposed works: 71.4 sqm. (Pl. Ref: 201749).
- Retention of dwelling granted under ref: 97/602 on revised boundaries, along with all associate site works (Pl. Ref: 201351).

- Permission for development consisting of the construction of a revised house type of 260.75 sqm and in a revised position on site from that granted by P.L. Ref. 19/134, together with construction of a domestic garage and all necessary site works on an enlarged site. Gross floor space of proposed works: 260.75 sqm. (Pl. Ref: 201250).
- Permission application; le haghaidh athbhreithnithe ar phleanáil atá ann cheana a deonaíodh faoi 19/1581 le haghaidh forbartha ar thailte CLG atá ann cheana. Is éard a bheidh san fhorbairt agus sna hathbhreithnithne; 1. Conair siúil Blueway nua a sholáthar go dtí imlíne na páirce. 2. Athruithe ar fhoirgneamh an Ionaid Pobail atá ann cheana lena n-áirtear sineadh ar na seomraí feistis atá ann cheana ar an mbunurlár ag ionchorprú síneadh ar an seomra pobail atá ann ar an gcéad urlár, lena n-áiritear mionathrú ar na aghaidheanna atá ann cheana. 3. Tógáil do limistéar féachana nua do lucht féachana faoi chumhdach, agus balcóin tadhlach le chéile agus ionad pobail. 4. Athbhreithnithe ar mhéid agus leibhéil na páirce atá ann cheana chun freastal ar athbhreithnithe. 5. Naisc le seirbhisí atá ann cheana agus gach obair laithreáin lena mbaineann, soilsiú, fálú, gineadóir, clós súgartha, dugouts srl mar phleanáil cheadaithe roimhe seo. Spás urláir comhlán na n-oibreacha; 246.5sqm. (Pl. Ref: 201069).
- Permission for the construction of an extension to existing warehouse, to include associated office space, along with site works with connection to existing services. Gross floor space of proposed works: 245.3 sqm. (Pl. Ref: 201866).
- Permission for the demolition of an existing domestic garage and for the construction of a new dwellinghouse and associated services. Gross floor space of proposed works: 171.6 sqm. (Pl. Ref: 20523).
- Permission for the following: 1. Provision of new access driveway from L-62008 in Summerfield Estate to serve existing dwellinghouse. 2. Re-location of services to serve existing dwellinghouse. 3. Retention permission is sought for the existing dwellinghouse on revised site boundaries. Previous permission 96/2801 refers. Gross floor space of work to be retained: 231.6 sqm. (Pl. Ref: 20505).
- Permission for the construction of a single dwellinghouse, domestic garage, proprietary effluent treatment system, percolation area and all associated site services. Gross floor space of proposed works: Dwelling & Garage = 345.50 sqm. (Pl. Ref: 20200).
- Retention of dwelling granted under ref: 3338 on revised boundaries, along with revisions to dwelling to include, attic conversion, extension to rear with minor variations to elevations with all associated site works & connection to existing septic tank. Gross floor space of work to be retained: 72.50 sqm. (Pl. Ref: 203).
- Permission for extension and alterations to dwelling house, for a domestic garage/ fuel store and all associated site works. Gross floor space of proposed works: 104.88 sqm (Extensions - 78.85 sqm & Garage - 26.03 sqm). (Pl. Ref: 191818).
- Permission for development at Coláiste Bhaile Chláir. The development will consist of (A) New external bin store (10 sq.M) & (B) 3no Flagpoles to Claregalway Educate Together National School (RN20211B). Gross floor space of proposed works: 10 sqm. (Pl. Ref: 19832).
- Retention for change of use of part of Unit 9 from office space to light industrial as constructed (area 117m2) pervious permission 181547. Gross floor space of work to be retained: 117 sqm. (Pl. Ref: 191667).
- Retention of minor variations to an existing 2-storey dwelling house as constructed, and all associated site development works, previous planning reference no. 04/1054 and no. 09/604 at Site No. 8, Sli na Bhradain. Gross floor space of work to be retained: 35.4 sqm. (Pl. Ref: 191666).
- Permission for a development comprised of the following: Upgrading the existing grass playing fieldsto an artificial all weather pitch. Upgrading the existing floodlights to 8 no. floodlight columns with lighting of circa 500lux. Proposed play area for children. Development involves works on existing lands to incorporate the following: the associated site works and the perimeter surrounding the playing field, and new saving nets behind the new goals. (Pl. Ref: 191581).
- Permission to construct a serviced dwelling house and domestic garage. Gross floor space of proposed works: 195.2 sqm (House), 40 sqm (Garage). (Pl. Ref: 191573).

- Permission to construct extension to existing dwelling house and associated siteworks at 52 River Oaks. Gross floor space of proposed works: 34.00 sqm. (Pl. Ref: 191331).
- Permission for (a) the construction of a new dwelling house to include construction of a new site entrance gateway to serve new development, (b) subdivision of existing site approved under pl. ref. no. 96-2681, (c) connection to all existing services and (d) for all associated site development works. Gross floor space of proposed works: 170 sqm. (Pl. Ref: 19837).
- Permission to construct a mezzanine floor and to retain changes to elevations at Unit 25A. Gross floor space of proposed works: 163.1 sqm. (Pl. Ref: 19528).
- Permission to provide a new entrance door at the front of property at 79A Riveroaks. (Pl. Ref: 19447).
- Permission for the subdivision of existing site approved under Pl Ref: 97/1328 and the construction of a two-storey dwelling house, vehicular access and all associated siteworks and services. Gross floor space of proposed works 225.73 sqm. (Pl. Ref: 19134).
- Retention of 79 and 79A Riveroaks, Claregalway as two individual dwelling houses. Gross floor space of work to be retained: 68 sqm. (Pl. Ref: 181701).
- Permission for the construction of a dwellinghouse, garage, waste water effluent treatment unit, percolation area and all associated site services. Gross floor space of proposed works: (Dwelling) 231 sqm, (Garage) 60 sqm. (Pl. Ref: 181662).
- Retention of change of use for Unit 8 from Light Industrial to office space as constructed. Permission is also sought for change of use of Unit 9 from Light Industrial to office space to include any associated site development works and services as required. Gross floor space of proposed works 744 sqm. Gross floor space of work to be retained 418 sqm. (Pl. Ref: 181547).
- Retention of an attic conversion at 5 Slí an Bhraidain. Gross floor space of work to be retained 34.5 sqm. (Pl. Ref: 181387).
- Permission for a new terrace and associated elevational changes including new entrance, access steps and ramp modifications, and all associated site works at the Claregalway Hotel. (Pl. Ref: 181349).
- Permission for a ground floor side extension (29 sqm.) and new glazed shelter to adjoining terrace including associated elevational changes and associated site works. Gross floor space of proposed works 29 sqm. (Pl. Ref 181116).
- Extension of duration to the grant of outline permission (Pl. Ref. No. 10/791) is sought to construct a dwelling house, domestic garage, septic tank with ancillary effluent treatment plant and all associated site services (Gross floor space 163.62sqm house; 60sqm garage). Previous Planning Ref. No. 13/870. (Pl. Ref: 181053).
- Permission for the following: (1) Construction of 39 no. residential units comprising: 1 No. Type 'A' - 4 Bed Semi-Detached (2 storey), - 1 no. Type 'A1' - 4 Bed Semi Detached (2 Storey), 17 no. Type 'B' - 3 Bed Semi-Detached (2 storey), 5 no. Type 'B1' - 3 Bed Semi-Detached (2 Storey), 3 No. Type 'B2' - 3 Bed Terrace (2 storey), 6 no. Type 'C' - 2 bed End Terrace (2 Storey), 6 no. Type 'C1'- 2 bed Mid-Terrace (2 Storey). 2. Provision of shared communal and private open space and site landscaping; (3) Onsite and visitor car parking; (4) Vehicular and pedestrian access from the existing River Oaks estate; and (5) All associated site development works. A Natura Impact Statement (NIS) has been prepared in respect of the proposed development. Gross floor space of proposed works 4,158.4sqm. (Pl. Ref: 181015).
- Permission for a second floor fourteen bedroom side extension including associated elevational changes and associated site works to existing hotel. Gross floor space of proposed works 464 sqm. (Pl. Ref: 18916).
- Permission to convert attic to habitable space. Gross floor space of proposed works 20.38 sqm. (Pl. Ref: 18859).
- Retention of early learning centre. Gross floor space of work to be retained 73.2 sqm. (Pl. Ref: 18578).
- Permission for the erection of 5 no. 49 sqm. pre-fabricated temporary classroom buildings with connections to services and all other associated site works. Gross floor space of proposed works 245 sqm. (Pl. Ref: 18520).

- Permission for an extension to the rear of existing dwelling. Gross floor space of proposed works 23sqm. (Pl. Ref: 18429).

Where potential pathways for effect have been identified in Table 3.1, the potential for cumulative effects resulting from the proposed development, when considered in combination with other plans and projects, cannot be discounted at this stage and further assessment is required.

4. ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING STATEMENT AND CONCLUSIONS

The findings of this Screening Assessment are presented following the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2021) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010).

4.1 Data Collected to Carry Out Assessment

In preparation of the report, the following sources were used to gather information:

- Review of NPWS Site Synopses, Conservation Objectives for the European Sites
- Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Teagasc, EPA, Water Framework Directive (WFD), Geological Survey of Ireland (GSI), Inland Fisheries Ireland (IFI), Irish Wetland Bird Survey I-WeBS & Geohive online Environmental Sensitivity Mapping tool.
- Review of OS maps and aerial photographs of the site of the proposed project.
- Review of other plans and projects within the area.
- Site visits conducted on the 16th of February 2022 by Aran von der Geest Moroney (B.Sc., QCIEEM).

4.2 Concluding Statement

It cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the proposed development, individually or in combination with other plans and projects, would be likely to have a significant effect on the Lough Corrib SAC and SPA.

As a result, an Appropriate Assessment is required, and a Natura Impact Statement shall be prepared in respect of the proposed development.

BIBLIOGRAPHY

Birds Directive (2009/47/EC) – http://ec.europa.eu/environment/nature /legislation/birdsdirective /index _en.htm

CIEEM, 2018, Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. V1.1

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive 79/409/EEC as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011).

DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin.

DoEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Revision, February, 2010. Department of the Environment, Heritage and Local Government.

EC (2021), Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC.

EC (2018) 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 (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.

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 (2006) Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.

EC (2007a) 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. Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2007b) Interpretation Manual of European Union Habitats. Version EUR 27. European Commission, DG Environment.

European Communities (Conservation of Wild Birds) Regulations, 1985, SI 291/1985 & amendments – http://www.irishstatutebook.ie

European Communities (Natural Habitats) Regulations, SI 94/1997, SI 233/1998 & SI 378/2005 – http://www.irishstatutebook.ie

Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Dublin: The Heritage Council.

Habitats Directive (92/43/EEC).

Natural England (March 2007). Draft Guidance: The Assessment of Regional Spatial Strategies and Sub-Regional Strategies Under the Provisions of the Habitats Regulations.

NPWS (2018) Conservation objectives supporting document – lesser horseshoe bat (*Rhinolophus hipposideros*) Version 1. Conservation Objectives Supporting Document Series. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS (2017) Conservation Objectives: Lough Corrib SAC 000297. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2008) The Status of EU Protected Habitats and Species in Ireland. Conservation Status in Ireland of Habitats and Species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC.

NPWS of the DEHLG (2008) The Report on Status of Habitats and Species in Ireland: Technical Reports and Forms.

NPWS Protected Site Synopses and maps available on http://www.npws.ie/en/ProtectedSites/

NRA (2004) Environmental Impact Assessment of National Road Schemes – A Practical Guide, National Roads Authority, Dublin.

NRA (2009). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Dublin: National Roads Authority.

Scottish Natural Heritage (SNH) (July 2016) Assessing Connectivity with Special Protection Areas (SPA)

Stace, C. A. (1997). New Flora of the British Isles. Cambridge: Cambridge University Press.

Therivel R. (2009) Workshop Material on the Habitats Directive Assessment of Plans Levett-Therivel Sustainability Consultants on behalf of the Heritage Council, Kilkenny.

Therivel, R. (2009) 'Appropriate assessment of plans in England', Environmental Impact Assessment Review 29(4), pp. 261-272.

APPENDIX II

PROPOSED DRAINAGE LAYOUT DRAWINGS

THE INFORMATION ON THIS DRAWING IS TO THE ORDNANCE SURVEY IRELAND ITM COORDINATE SYSTEM

Legend

- Site Boundary
- Proposed Foul Gravity Sewer
- Proposed Storm Gravity Sewer
- Existing Foul Gravity Sewer
- Proposed Foul Manhole
- Proposed Storm Manhole
- Existing Foul Manhole
- Proposed Raising Main
- Proposed Gully
- Proposed Gully Connection
- Proposed Petrol Interceptor
- Proposed Wastewater Pump Station
- Proposed Soakaway
- Potential area to flood

NOTES:

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE.
3. ENGINEER/EMPLOYERS REPRESENTATIVE, AS APPROPRIATE, TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES.
4. THE CONTRACTOR SHALL UNDERTAKE A THOROUGH CHECK FOR THE ACTUAL LOCATION OF ALL SERVICES/UTILITIES, ABOVE AND BELOW GROUND, BEFORE ANY WORK COMMENCES.
5. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD.

Rev	Date	Description	By	Chkd.
P01	27/02/2023	Issue for Planning	RM	RB

Client: Galway County Council

Project: Proposed Residential Development
Baile an Chlair
Claregalway

Title: Proposed Drainage Layout

Scale @ A1: 1:500 / @A3 1:1000

Prepared by:	Checked:	Date:
RM	BH	Feb 2023

Project Director: Brian Carroll

Drawing Status: Planning

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Drawing No.: 11171-2002 Revision: P01

APPENDIX III

FLOOD RISK ASSESSMENT REPORT

Claregalway, Co. Galway
Flood Risk Assessment

Draft Report

March 2020

Galway County Council

County Hall

Prospect Hill

GALWAY

JBA Project Manager

Elizabeth Russell
24 Grove Island
Corbally
Limerick
Ireland

Revision History

Revision Ref / Date Issued	Amendments	Issued to
V1 / March 2020	Initial Issue	Galway County Council

Contract

This report describes work commissioned by Galway County Council and their representative for the contract was Daithi Flood. Fiona Byrne of JBA Consulting carried out this work.

Prepared by ..... Fiona Byrne BSc (Hons) MSc
Analyst

Reviewed by ..... Elizabeth Russell BSc MSc CEnv MCIWEM C.WEM
Associate Director

Purpose

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JBA is aiming to reduce its per capita carbon emissions.

Contents

List of Figures

Abbreviations

AEP	Annual Exceedance Probability
CFRAM	Catchment Flood Risk Assessment and Management
DoEHLG	Department of the Environment, Heritage and Local Government
EPA	Environmental Protection Agency
FRA	Flood Risk Assessment
GSI	Geological Survey of Ireland
ICPSS	Irish Coastal Protection Strategy Study
mbgl	Metres below ground level
mOD	Meters above Ordnance Datum
OPW	Office of Public Works
PFRA	Preliminary Flood Risk Assessment
SFRA	Strategic Flood Risk Assessment
SI	Site Investigation

1 Introduction

Under the Planning System and Flood Risk Management Guidelines for Planning Authorities (DoEHLG & OPW, 2009) the proposed development must undergo a Flood Risk Assessment to ensure sustainability and effective management of flood risk.

1.1 Terms of Reference

JBA Consulting was appointed by Galway County Council to prepare a Flood Risk Assessment (FRA) for the proposed development of a site located at Claregalway, Co. Galway. The report was prepared in response to a request by Daithi Flood of Galway County Council.

1.2 Flood Risk Assessment Aims and Objectives

This study is being completed to inform the future development of the site as it relates to flood risk. It aims to identify, quantify and communicate to Planning Authority officials and other stakeholders the risk of flooding to land, property and people and the measures that would be recommended to manage the risk.

The objectives of this FRA are to:

- Identify potential sources of flood risk;
- Confirm the level of flood risk and identify key hydraulic features;
- Assess the impact that the proposed development has on flood risk;
- Develop appropriate flood risk mitigation and management measures which will allow for the long-term development of the site.

Recommendations for development have been provided in the context of the OPW / DECLG planning guidance, "The Planning System and Flood Risk Management". A review of the likely effects of climate change, and the long term impacts this may have on any development has also been undertaken.

For general information on flooding, the definition of flood risk, flood zones and other terms see 'Understanding Flood Risk' in Appendix A.

1.3 Development Proposal

The proposed development is located in Claregalway Village and will comprise of a residential housing estate.

1.4 Report Structure

Section 2 of this report gives an overview of the study location and associated watercourses. Section 3 contains background information and initial assessment of flood risk. Site-specific mitigation measures are outlined in Section 4, while conclusions are provided in Section 5.

2 Site Background

This section describes the proposed residential development site in Claregalway, including watercourses, geology and wider geographical area. A site visit was carried out on 20 March 2020 to allow a greater understanding of the site in the context of its development potential and flood risk.

2.1 Location

The proposed development site is located in Claregalway Village, Co. Galway, refer to Figure 2-1. The site is bounded by the residential area Cuairt Na hAbhainn to the north, a GAA pitch to the east and the R381 and further residential areas to the west. It is approximately 500m from the main village of Claregalway and is currently an undeveloped greenfield site.

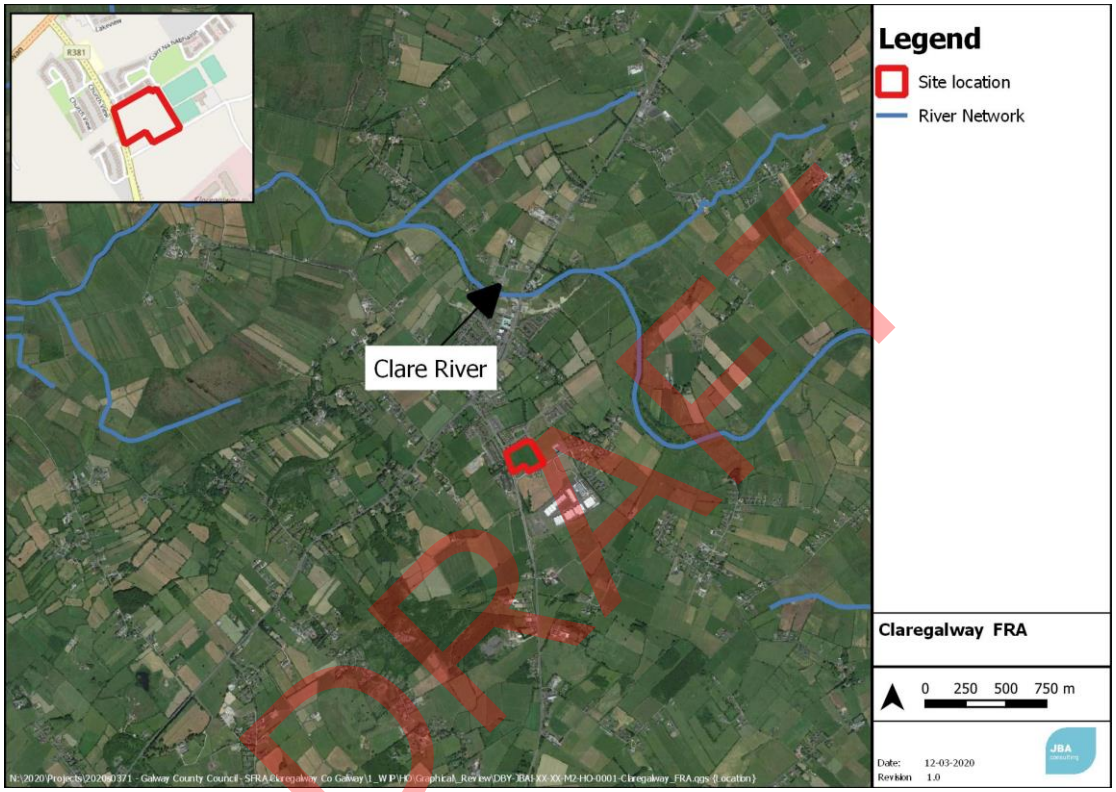


Figure 2-1: Site Location

2.2 Watercourses

The main hydrological feature located near the site is the Clare River located approximately 700m to the west of the site.

2.3 Topology

The site varies in height with high points of up to 12.66mOD at the road frontage and in a localised high point around the centre of the site (see Figure 2-2). There is a general fall from west to east, with the lowest elevation being approximately 10.5mOD at the north east corner of the site. The site covers an area of c. 2.81ha and is currently a greenfield used for cattle grazing.

Figure 2-2 - Site topography - taken from LIDAR DTM

2.4 Site Geology

The groundwater and geological maps of the site, provided by the Geological Survey of Ireland (GSI), have been studied and an extract of the geological map is presented in Figure 2-3. The subsoil is BminDW described as deep well drained mineral (mainly basic).

The underlying bedrock is classified as carboniferous limestone, Burren formation which is described as pale grey clean skeletal limestone.

The associated groundwater vulnerability, which indicates the risk to the underlying groundwater body for the site, is classified as 'High' for the majority of the site, the permeability of the subsoil in the same area is classed as 'Medium'. This implies a depth to bedrock of between 3 and 10m. There is a small section of the which is categorised as "Extreme" vulnerability. This means the depth to bedrock is only between 0 and 3m deep, refer to Figure 2-4.

The GSI maps do not show any karst features in the vicinity of the site, with the nearest karst features being a turlough over 2km to the east and a spring over 2km to the north. There is a borehole or well shown at the property to the southern corner of the site boundary.

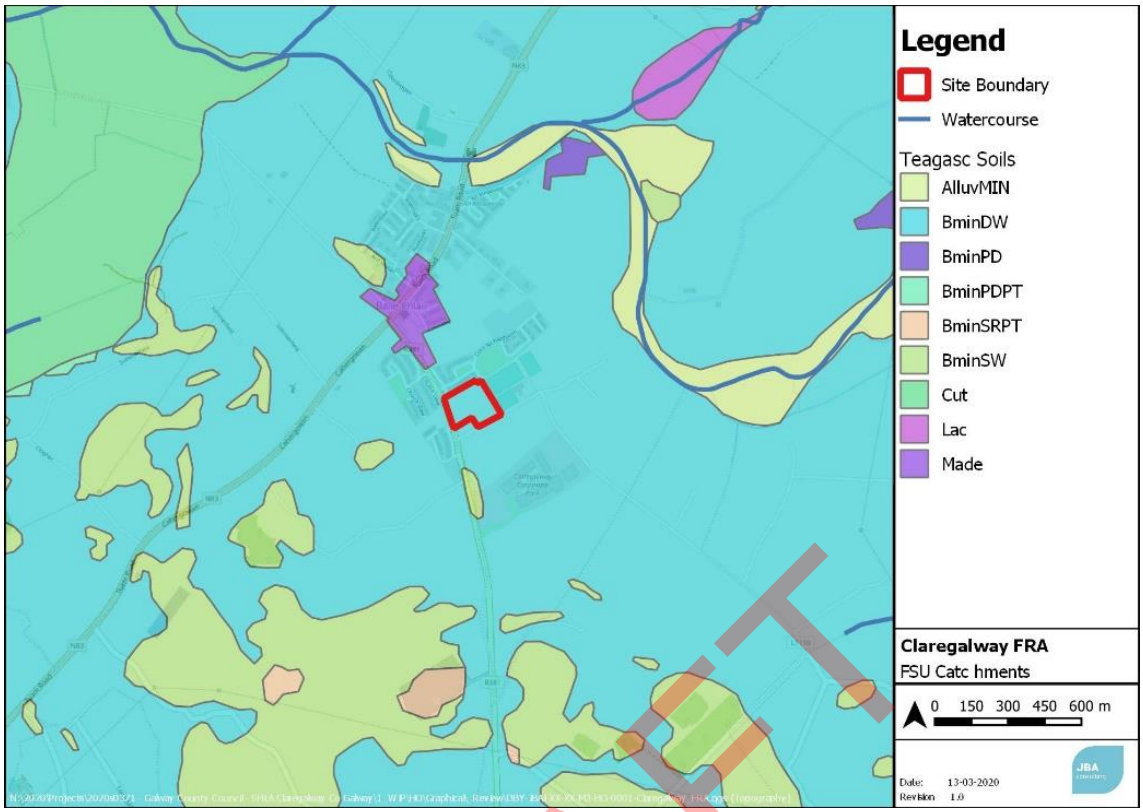


Figure 2-3: Subsoils

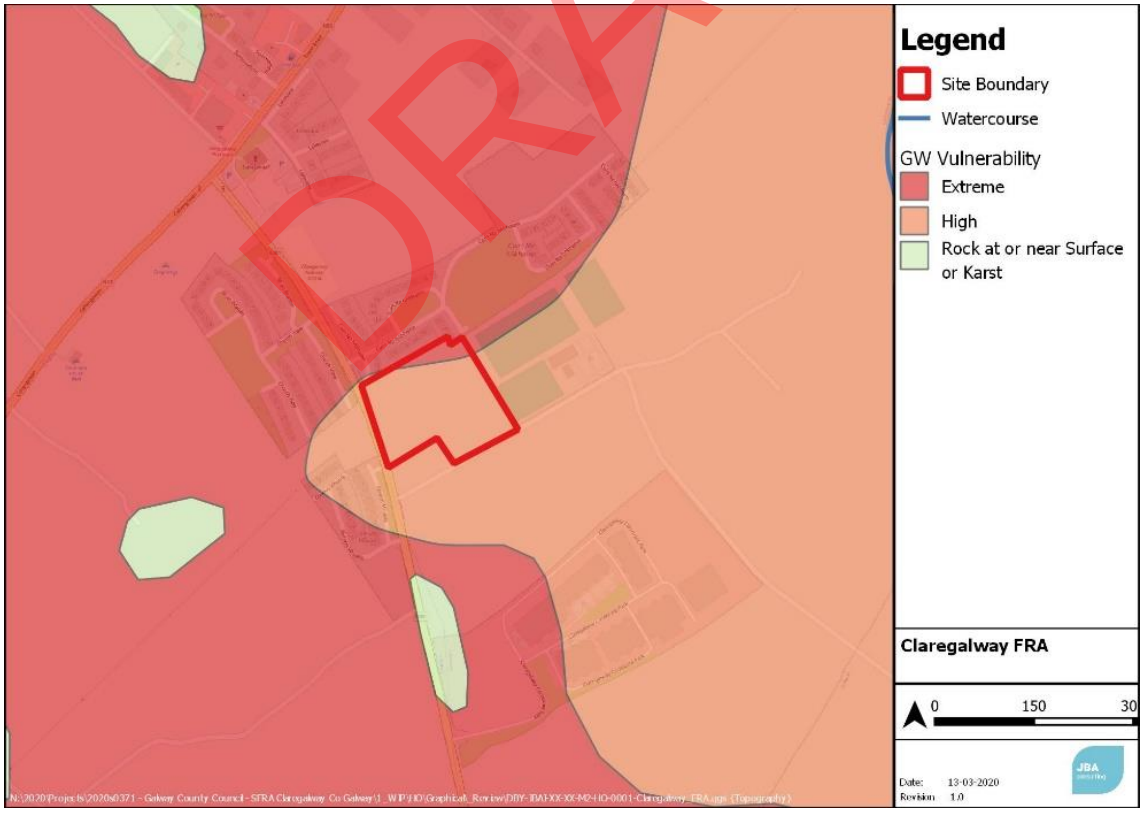


Figure 2-4 Groundwater Vulnerability

From site entrance at R381, looking north

Hedge line across centre of site

Looking north-east towards lowest part of site

Looking south-east, with depression indicated

Eastern site boundary with GAA; access shown is from Cuairt Na hAbhainn to GAA

Looking north-east along route of culverted pipe in Cuairt Na hAbhainn

Figure 2-5 Site photographs

3 Flood Risk Identification

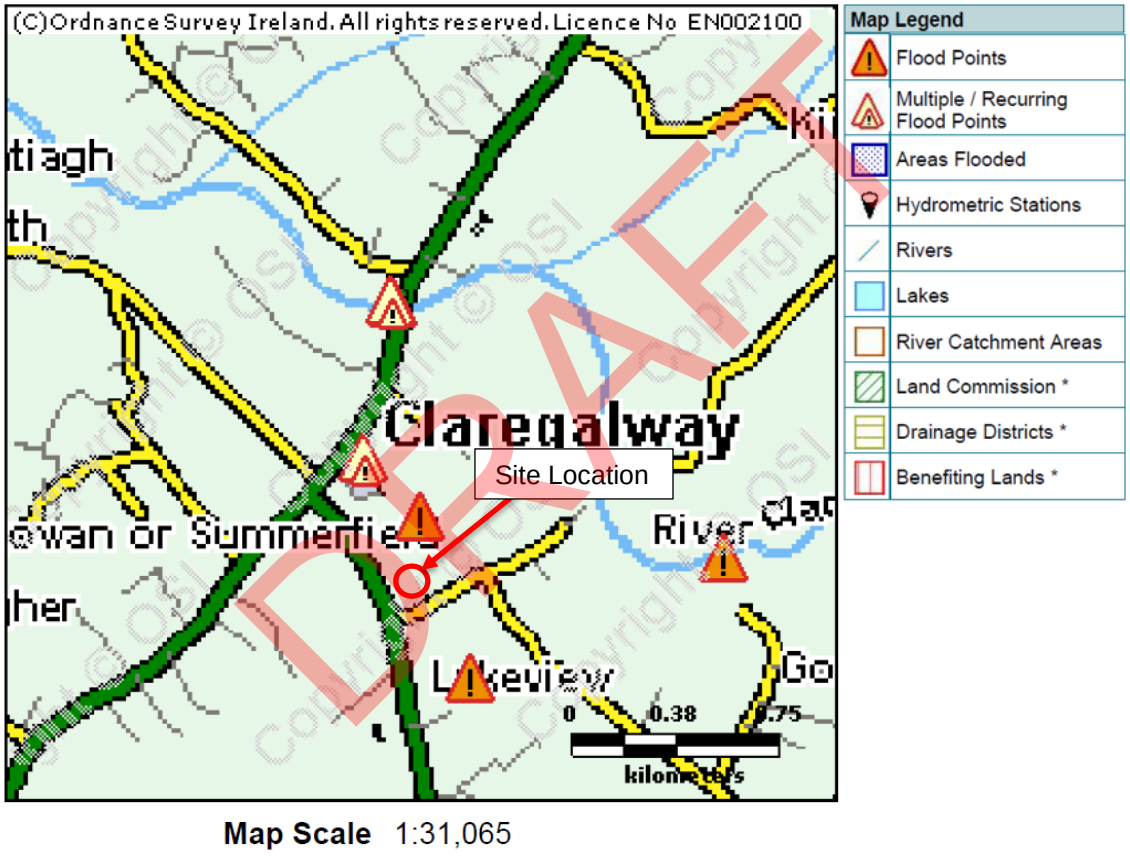
An assessment of the potential for and scale of flood risk at the site is conducted using historical and predictive information. This identifies any sources of potential flood risk to the site and reviews historic flood information. The findings from the flood risk identification stage of the assessment are provided in the following sections.

3.1 Flood History

A number of sources of flood information were reviewed to establish any recorded flood history at, or near the site. This includes the OPW's website, www.floodmaps.ie and general internet searches.

3.1.1 Floodmaps.ie

The OPW host a National Flood hazard mapping website, www.floodmaps.ie, which highlights areas at risk of flooding through the collection of recorded data and observed flood events. See Figure 3-1 for historic flood events in the area.



Map Scale 1:31,065

Figure 3-1: Floodmaps.ie

As can be seen in Figure 3-1, several flood events took place in the Claregalway area.

These events include:

Location	Date
Lakeview Estate Claregalway	Recurring
Corrib-Clare Claregalway Galway	01/Feb/1990
Clare Claregalway	29/Nov/1999
Clare River Lissarulla Claregalway	08/Jan/2005
Clare River Lakeview Claregalway	08/Jan/2005
Lakeview	Recurring
Clare River Claregalway Bridge	08/Jan/2005
Flooding at Claregalway	18/Nov/2009

Location	Date
Claregalway area Galway	01/Jan/1991
Clare-Corrib Claregalway	Recurring
Clare Montiagh	Recurring

The events most relevant to the site involve flooding in the Lakeview area. The picture below, provided in a report on floodmaps.ie from the Lakeview residents association, shows the site, which has been added in red, with flooding occurring to the northeast of the site. This can also be seen in Figure 3-3 which shows the northeast corner of the site and the west part of the Cuairt na hAbhainn estate inundated in 2005 as a result of groundwater flooding due to turloughs.

Figure 3-2 Lakeview flooding December 2006

Figure 3-3 Lakeview flooding, 2005

3.1.2 Internet Search and Anecdotal Evidence

An internet search was conducted to gather information about whether the site was affected by flooding previously. No flooding incidents were recorded at the site the itself, however several

records of flooding in Claregalway due to the Clare river, and past ground water flooding due to turloughs exist. The residents of Cuirt na hAlbhainn housing estate directly to the northwest of the site recorded flood levels to come within 100mm of FFLs in 2009. Residents of Lakeview estate also reported high levels of water in the area and have photographic records since 1990. Images found via internet searches were included as part of reports found on floodinfo.ie and shown in the previous section.

3.2 Predictive Flood Mapping

The area has been a subject to two predicative flood mapping or modelling studies and other related studies:

- OPW Preliminary Flood Risk Analysis;
- Catchment Flood Risk Assessment and Management Study (CFRAM);
- Clare River Flood Relief Scheme

The level of detail presented by each method varies according to the quality of the information used and the approaches involved. The Western CFRAM is the most detailed assessment of flood extent and supersedes the fluvial flood outlines presented by the OPW PRFA study.

3.2.1 OPW Preliminary Flood Risk Analysis

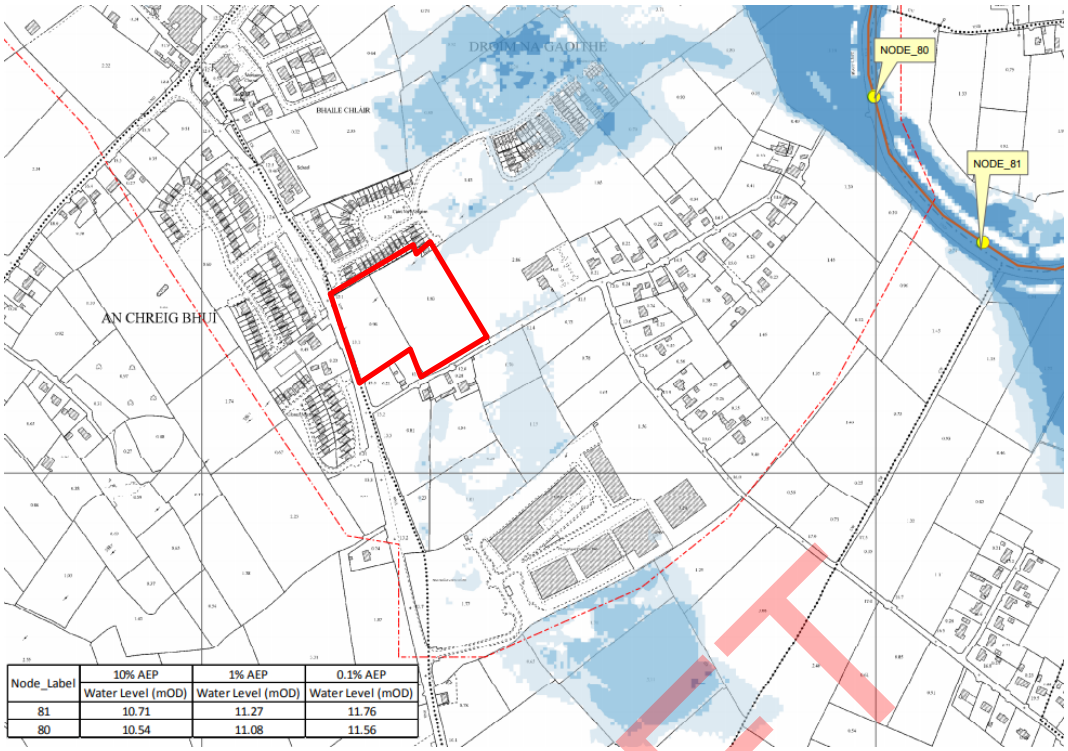
The preliminary Flood Risk Assessment (PFRA) is a requirement of the EU Flood Directive (2007/60/EC). One of the PFRA deliverables is flood probability mapping for various sources: fluvial and tidal. The PFRA is a preliminary or 'indicative' assessment and analysis has been undertaken to identify areas potentially prone to flooding. The OPW PFRA study has largely been superseded by the CFRAM programme.

Review of the OPW PFRA study highlights fluvial risk at the proposed site.

3.2.2 Western Catchment-based Flood Risk Assessment and Management Study

The primary source of data with which to identify fluvial flood risk is the Eastern Catchment Flood Risk Assessment and Management Study (CFRAM). This study involved detailed hydraulic modelling of the Corrib and the River Clare catchment and its tributaries.

Due to the distance of the site from the coast, tidal flooding from this source has been scoped out. The Western CFRAM identifies the site as being predominantly in Flood Zone C and at low risk of fluvial. There is a small part of the site to the north in Flood Zone B. An extract from the CFRAM mapping can be seen in Figure 3 5. The low point at the northwest of the site correlates with the area of inundation as seen in the mapping below. The topology at the site goes as low as 10.15mOD in this area, with a flood level of 11.76mOD predicted at node 80.



Node_Label	10% AEP Water Level (mOD)	1% AEP Water Level (mOD)	0.1% AEP Water Level (mOD)
81	10.71	11.27	11.76
80	10.54	11.08	11.56

Figure 3-4 Extract from Western CFRAM mapping

3.2.3 Clare Rive Flood Relief Scheme

Due to recurring flood events on the Clare River and its tributary the Abbert River, a study was commissioned to identify measures to provide flood relief in the Claregalway and surrounding areas. The study included development of a hydraulic model and analysis of previous flood events in the area. The study discusses flooding in the Lakeview area and the impact more recent developments had on the area. The contribution of recent developments to flooding in the Lakeview area and throughout the catchment in general was considered to be outside of the scope of the study, however the catchment was examined and measures proposed to alleviate the effects of flooding in the area. Modelled flood levels relevant to the site are shown in Table 3-1.

The report also states that in the Lakeview area flooding appears to be related to turloughs and not from river channel. The Cuirt na hAbhainn housing estate road varies from 10.55mOD to 10.8mOD. Flooding is known to occur in this area during the winter months, particularly when water levels are high in the river. It would appear from the aerial photographs taken in 2009 that the flooding in this area occurs in two separate turloughs, one in the vicinity of the Corporate Park and one in the vicinity of the Cuirt na hAbhainn housing development northwest of the site, refer to Figure 3 5 and Figure 3 6 for labelled image of turloughs close to the site in 2005 and 2009 respectively.

It was ascertained that the turlough at the corporate park, south of the development site, is higher than the turlough closer to the village to the northwest of the site. The higher turlough drains to the lower turlough via a narrow neck located at the GAA pitch. A topographical survey of the area taken for the study suggests that the water level on the 23 November 2009 in the vicinity of the corporate park was c. 11.3mOD, whereas the flood level in the lower turlough was at c. 11.10mOD. The corresponding peak water level in the Clare River at the time is predicted by the model at 11.16mOD at the upstream end of the relevant section and 10.8mOD at the downstream end of the reach. There is no surface water link between the ground water flooding and the river water flooding seen in any photographic evidence.

It can be seen from the images below that the site was partially inundated during both the 2005 and 2009 events. A map of the affected areas in 2009 is shown in Figure 3-6.

Further details of the scheme, which is largely complete, are provided in Section 4.2.

Table 3-1 Modelled flood levels

Location	Scenario	Mean annual flood mOD	Nov 2009 Flood mOD	100 year flood mOD	100 year Flood with CC mOD
Lakeview, Cuirt na hAbhainn	Existing	10.22	11.02	11.36	11.85
Lakeview, Cuirt na hAbhainn	Channel Widening	9.70	10.29	10.51	10.91

Figure 3-5 Lakeview Turloughs 2005

Figure 3-6 Lakeview Turloughs 2009

Figure 3-7 Extract of flood map (Source: Clare River Flood Relief Study)

3.3 Sources of Flooding

The initial stage of a Flood Risk Assessment requires the identification and consideration of probable sources of flooding. Following the initial phase of this Flood Risk Assessment, it is possible to summarise the level of potential risk posed by each source of flooding. The flood sources are described below.

3.3.1 Fluvial

The CFRAM modelling suggests that the site is predominantly in Flood Zone C with a small area in the northwest of the site located in Flood Zone B. The Clare River Flood Relief Study also suggests that the risk of flooding by fluvial sources is low.

3.3.2 Pluvial

Pluvial, or surface water, flooding is the result of rainfall-generated flows that arise before run-off can enter a watercourse or sewer. The OPW PFRA mapping shows the central, low-lying, part of the site may act as a collection point for rainfall.

Pluvial flooding could be a risk to the site combined with groundwater flooding due to hardstanding ground lain over turloughs to the south and northwest of the site. Increased hard standing ground can pose a risk of pluvial flooding at the site.

3.3.3 Groundwater

Groundwater flooding results from high sub-surface water levels that impact upper levels of the soil strata and overland areas that are usually dry. Groundwater flooding has been identified as the primary risk to the site. The site is located at an area with high groundwater vulnerability which implies a depth to bedrock of between 3 and 10m. Directly north of the site the groundwater vulnerability is classed as extreme which implies a depth to bedrock of less than 3m. Low depths to bedrock can increase the risk of high groundwater levels and flooding. Previous flooding at the site

has been identified as groundwater flooding due to turloughs located to the northwest and south of the site.

4 Flood Risk and Mitigation

4.1 Flood Risk

From reviewing the available sources of flooding history outlined in Section 3, there is historic evidence of groundwater flooding at the site, but no historic evidence of fluvial risk. Following review of the available information, the site is classified as predominantly located in Flood Zone C therefore, the proposed works to the site are in agreement with "The Planning System and Flood Risk Management" guidance. The Flood Zones do not include the effects of other forms of flooding such as from groundwater or artificial drainage systems.

Floodmaps.ie and the Clare River Flood Relief Study identify a risk to the site in the form of groundwater flooding at the proposed development. Measures were undertaken as part of the Clare River Flood Relief Study to alleviate groundwater flood levels in the area and are discussed in the following sections. Potential residual flood risk will also be discussed further in the following sections.

4.2 Mitigation

4.2.1 River Clare Flood Relief Scheme

Given the risk of groundwater flooding to the site, careful consideration of inundation depths and the design of mitigation to the development is required. A key factor governing the future operation of the site is that the Clare River FRS will provide flood mitigation to the site. It is noted that no existing or residual fluvial flood risk is present to the site, therefore mitigation measures will focus on potential pluvial and groundwater flooding. Groundwater Flood Risk\Surface Water Flood Risk (Clare River Flood Relief Scheme).

Historic groundwater flooding was recorded at the site on floodmaps.ie and in the Clare Flood Relief Study. There are turloughs present to the northwest and the south of the site at Cuirt na hAbhainn and the Corporate Park respectively. These turloughs tend to fill at time of high rainfall and when water levels on the Clare River are high. An indicative route for flood relief measure 6a is shown in Figure 4 1. Measure 6a relates to the provision of a 1.65km surface water outfall pipeline between Claregalway Corporate Park and the Clare River, upstream of the Claregalway Bridge. This was designed to reduce the impact of flooding in areas affected by groundwater flooding. In relation to measure 6a some changes were made from the original proposals outlined in the image below.

- The outfall to the Clare River was originally planned downstream of the bridge but is now located c. 60m upstream of the bridge.
- The original report proposed a combination of piping and open channel, whereas the scheme resulted in a predominately piped system with a maximum pipe diameter of 1.5m.

Despite changes to the scheme, it provides the same level of flood relief as the original report, of 1% AEP and an additional allowance of 20% for climate change.

Measures 4a and 4b relate to widening of the channel and the addition of a flood eye to the bridge in Claregalway. These measures should also benefit surface water drainage in the Lakeview and surrounding areas due to outfalls to the Clare River being able to discharge due to lower water levels.

All elements of the scheme relevant to the function of flood defence in Claregalway have been completed at the time of writing this report, with the Lakeview pipeline completed in about 2018.

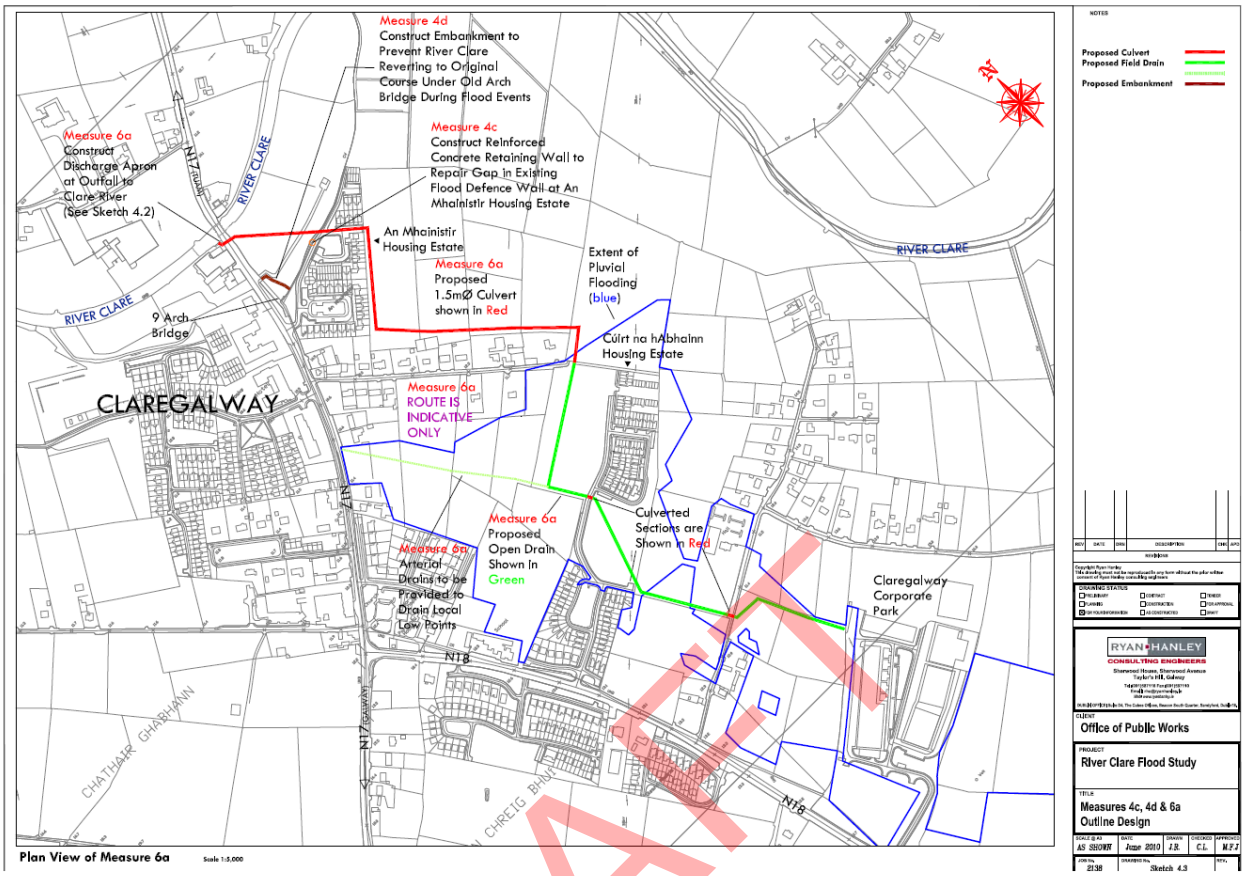


Figure 4-1 Indicative route measure 6a (pre-exhibition)

4.2.2 Surface Water Drainage

The site should have a surface water drainage system that replicates existing greenfield conditions, and should be designed according to the GDSDS.

Although it is not a requirement of the Planning Guidelines that compensatory storage is provided for loss of areas which natural capture surface water ponding, areas of greenspace can be shaped to provide rain water attenuation, mimicking the ponding that occurs currently.

4.2.3 Finished Floor Levels

Finished Floor Levels for the site should be set to 1% AEP event levels, including a freeboard of 300mm. The design FFL has been recommended as 11.38m OD and represents a freeboard of 300mm above the Western CFRAM 1% AEP flood level of 11.08mOD on the Clare River. Climate Change has not been a direct consideration when setting the FFL, this is because the site will be protected under the Clare River flood relief scheme.

The recommended FFL also lies above water levels as estimated at the Corporate Park during the 2009 event relating to groundwater flooding therefore providing protection against both fluvial and groundwater flood risks. This would require some infilling across the northwest section of the site and in some localised areas, but most of the site is already above this level.

4.3 Residual Risk

Residual risks are defined as risks that remain after all risk avoidance, substitution and mitigation measures have been taken. The flood risk assessment identifies two main sources of residual risk to the proposed development which are as follows:

- Failure of designed stormwater system (pluvial flooding risk)
- Failure of Lakeview pipeline

The primary residual risk to the site since the flood relief scheme has been completed will be failure of the Lakeview pipeline, either through blockage of exceedance flows. The pipeline is

predominantly culverted and there are no open channels at the site so risk of overflow to the site itself is low. In the case of failure at the Corporate Park, the risk is managed by suitably high FFLs.

The widening of the channel reduces risk of fluvial flooding and surface water flooding in that routes to outfalls to the Clare River do not get backed up in times of high rainfall. The risk of outfalls blocking or backing up, is again managed by the suitably high finished floor levels

4.4 Proposed Development and Impact on Flood Risk

The proposed development will result in a small loss of available floodplain as the footprint of the proposed development will cover some previous areas of flooding. However, the impacts of any loss of floodplain has been negated by the construction of the flood relief scheme for Clare River.

5 Conclusion

JBA Consulting has undertaken a flood risk assessment for the proposed residential development at Claregalway, Co. Galway. The site is within Flood Zone C for fluvial and tidal influences, but at risk of flooding due to groundwater sources.

The land is zoned for residential under the current Galway County Development Plan 2015-2021. A factor governing the future operation of the site is that the Clare River Flood Relief Scheme will directly protect the site from ground water flooding.

A number of factors have been drawn together and used to establish a design strategy for flood risk management:

The design FFL has been recommended as 11.38mOD and represents a freeboard of 300mm above the Western CFRAM 1% AEP flood level on the Clare River. Furthermore, the proposed development will not significantly increase risk to the surrounding area.

The site mitigation and management measures presented in this FRA have considered both the existing risk status and the future defended status and has presented measures that are flexible and robust enough to deal with uncertainty and risk both pre and post- flood relief scheme.

It is concluded that the site is in compliance with the core principles of the Planning System and Flood Risk Management Guidelines and has been subject to a commensurate assessment of risk.

Appendices

A Understanding Flood Risk

Flood risk is generally accepted to be a combination of the likelihood (or probability) of flooding and the potential consequences arising. Flood risk can be expressed in terms of the following relationship:

Flood Risk = Probability of Flooding x Consequences of Flooding

A.1 Probability of Flooding

The likelihood or probability of a flood event (whether tidal or fluvial) is classified by its Annual Exceedance Probability (AEP) or return period (in years). A 1% AEP flood has a 1 in 100 chance of occurring in any given year.

In this report, flood frequency will primarily be expressed in terms of AEP, which is the inverse of the return period, as shown in the table below and explained above. This can be helpful when presenting results to members of the public who may associate the concept of return period with a regular occurrence rather than an average recurrence interval, and is the terminology which will be used throughout this report.

Return period (years)	Annual exceedance probability (%)
2	50
10	10
50	2
100	1
200	0.5
1000	0.1

Table: Conversion between return periods and annual exceedance probabilities

A.2 Flood Zones

Flood Zones are geographical areas illustrating the probability of flooding. For the purposes of the Planning Guidelines, there are 3 types or levels of flood zones, A, B and C.

Zone	Description
Flood Zone A	Where the probability of flooding is highest; greater than 1% (1 in 100) from river flooding or 0.5% (1 in 200) for coastal/tidal flooding.
Flood Zone B	Moderate probability of flooding; between 1% and 0.1% from rivers and between 0.5% and 0.1% from coastal/tidal.
Flood Zone C	Lowest probability of flooding; less than 0.1% from both rivers and coastal/tidal.

It is important to note that the definition of the flood zones is based on an undefended scenario and does not take into account the presence of flood protection structures such as flood walls or embankments. This is to allow for the fact that there is a residual risk of flooding behind the defences due to overtopping or breach and that there may be no guarantee that the defences will be maintained in perpetuity.

Indicative Flood Zones (OPW & DoEHLG 2009)

A.3 Consequence of Flooding

Consequences of flooding depend on the hazards caused by flooding (depth of water, speed of flow, rate of onset, duration, wave-action effects, water quality) and the vulnerability of receptors (type of development, nature, e.g. age-structure, of the population, presence and reliability of mitigation measures etc.).

The 'Planning System and Flood Risk Management' provides three vulnerability categories, based on the type of development, which are detailed in Table 3.1 of the Guidelines, and are summarised as:

- Highly vulnerable, including residential properties, essential infrastructure and emergency service facilities;
- Less vulnerable, such as retail and commercial and local transport infrastructure;
- Water compatible, including open space, outdoor recreation and associated essential infrastructure, such as changing rooms.

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APPENDIX IV

PROPOSED LANDSCAPE PLAN

LANDSCAPE MASTERPLAN

LEGEND

- Large Native Tree Species
- Medium Native Tree Species
- Ornamental Tree Species
- Street/Front Garden Tree Species
- Amenity grass
- Wildflower meadow grass
- Perennials & Seasonal Bulbs
- Low Height Ornamental Shrub Mix
- Medium Height Buffer Planting Ornamental Shrub Mix
- Clipped Hedge
- Feature bench
- Native woodland
- Rubbercrump play surface
- Concrete paving setts
- Brushed concrete paths
- Tarmac Roadways
- Parking Spaces
- Reinforced Grass Access Road


Typical Playground Fence


Indicative Medium Height Planting Mix


Woodland


Tilia cordata


Ilex aquifolium


Typical Toddler Play Equipment

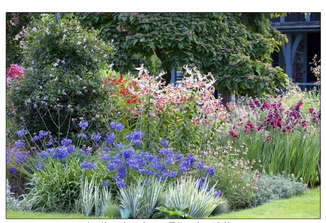

Typical Bench Seating


Malus Rudolph


Typical Play Equipment 7+


Typical Toddler Play Equipment


Carpinus betulus 'Fastigiata'


Indicative Low Planting Mix

INDICATIVE PLANTING SCHEDULE

	Parkland, Open Space and Feature Trees	
T1	*Acer pseudoplatanus 'Atropurpureum'*	14-16 cm.g, 4m+ h., 2 m clear stem. RB/CG
T2	*Quercus petrea*	14-16 cm.g, 4m+ h., 2 m clear stem. RB/CG
T3	Fagus sylvatica	14-16 cm.g, 4m+ h., 2 m clear stem. RB/CG
T4	*Sorbus aria 'Lutescens'*	14-16 cm.g, 4m+ h., 2 m clear stem. RB/CG
T5	*Sorbus aucuparia*	14-16 cm.g, 4m+ h., 2 m clear stem. RB/CG
T6	*Pyrus 'Chanyicleer'*	14-16 cm.g, 4m+ h., 2 m clear stem. RB/CG
T7	*Ilex aquifolium*	1 - 1.25m h RB/CG
T8	*Quercus ilex*	10-12 cm. g, 3m+ h., 2m clear stem RB/CG
	Front Garden Trees / Street Trees	
T9	*Tilia cordata* 'Greenspire'	12-14 cm.g, 4m+ h., 2 m clear stem. RB/CG
T10	*Acer campetre* 'Elsrijk'	12-14 cm.g, 4m+ h., 2 m clear stem. RB/CG
T11	*Sorbus aucuparia 'Streetwise'*	M/S, 3brks, 400/450cm ht, RB/CG
T12	*Malus* 'Evereste'	12-14 cm.g, 4m+ h., 2 m clear stem. RB/CG
T13	*Malus Rudolph*	12-14 cm.g, 4m+ h., 2 m clear stem. RB/CG
T14	*Pyrus 'Chanyicleer'*	12-14 cm.g, 4m+ h., 2 m clear stem. RB/CG
T15	*Malus floribunda*	12-14 cm.g, 4m+ h., 2 m clear stem. RB/CG
T16	*Carpinus betulus* 'Fastigiata'	12-14 cm.g, 4m+ h., 2 m clear stem. RB/CG
NH	**Native Woodland Mix 0 m²**	
	Alnus glutinosa	8-10 cm.g, 2m+ h . RB/CG
	Populus tremula	8-10 cm.g, 2m+ h . RB/CG
	Betula pubescens	8-10 cm.g, 2m+ h . RB/CG
	Salix spp.	8-10 cm.g, 2m+ h . RB/CG
	Prunus padus	8-10 cm.g, 2m+ h . RB/CG
	Pinus sylvestris	8-10 cm.g, 2m+ h . RB/CG
	Corylus avellana	8-10 cm.g, 2m+ h . RB/CG
	Quercus petraea	8-10 cm.g, 2m+ h . RB/CG
	Ilex aquifolium	8-10 cm.g, 2m+ h . RB/CG
	Sorbus spp.	8-10 cm.g, 2m+ h . RB/CG
	Crataegus monogyna	8-10 cm.g, 2m+ h . RB/CG
GH	**Garden Hedging /Shrub Planting**	
	Erica carnes 'Vivellii' 0 l/m	2lt c.g. @ 3 lm
	Lavandula angustifolia "Blue Cushion" 0 l/m	3lt c.g. 30-40cm Ht/Sprd @ 4 lm
	Hebe buxifolia 'nana" 0 l/m	2lt c.g. @ 4 lm
	Prunus laurocerasus 'Otto Luyken" 0 l/m	2lt c.g. @ 3 lm
CH	**Clipped Hedging**	
	Fagus sylvatica" 0 l/m	1+2 60-80cm h, BR/CG @ 6 l/m
	Ligustrum vulgare" 0 l/m	1+1 60-80cm h, BR/CG @ 6 l/m
SM1	**Low Ornamental Planting Mix - Mix 0 m²**	
An	*Aster novi-beigii 'Rosenwichtel'*	2lt c.g. @ 3 m²
Ba	*Berberis 'Amstelveen'*	2lt c.g. @ 1 m²
Cp	*Carex pendula*	2lt c.g. @ 1 m²
Cbm	*Ceanothus 'Blue Mound'*	2lt c.g. @ 1 m²
Cm	*Centaurea montana*	2lt c.g. @ 2 m²
Es	*Erica spp.*	2lt c.g. @ 3 m²
Gm	*Geranium m. 'Czakor'*	2lt c.g. @ 3 m²
Ct	*Choisya ternata*	5lt c.g. 40-60cm Ht/Sprd @ 1 m²
La	*Lavandula angustifolia 'Blue Cushion'*	2lt c.g. @ 5 m²
Ps	*Potentilla spp.*	5lt c.g. 40-60cm Ht/Sprd @ 1 m²
Rg	*Rudbeckia 'Goldstrum'*	2lt c.g. @ 3 m²
Sj	*Spirea japonica 'Firelight*	2lt c.g. @ 1 m²
St	*Stipa tenuissima*	2lt c.g. @ 3 m²
Ku	*Kniphofia uvaria Flamenco*	2lt c.g. @ 3 m²
Hs	*Heuchera sp.*	2lt c.g. @ 3 m²
Cag	*Cytissus 'All Gold'*	5lt c.g. 40-60cm Ht/Sprd @ 1 m²
Cxc	*Crocosmia × crocosmiiflora 'Emily McKenzie*	2lt c.g. @ 3 m²
SM2	**Medium to High Ornamental Planting Mix 0 m²**	
Hh	*Hypericum hidcote*	2lt c.g. @ 3 m²
Ee	*Eleagnus ebbingei*	2lt c.g. @ 4 m²
Ep	*Eleagnus pungens*	2lt c.g. @ 2 m²
MaA	*Mahonia aquifolium 'Apollo'*	2lt c.g. @ 4 m²
Rfc	*Rosa 'Flower Carpet'*	2lt c.g. @ 3 m²
Vd	*Viburnum davidii*	2lt c.g. @ 3 m²
Bt	*Berberis thunbergii*	2lt c.g. @ 3 m²
Hv	*Hebe (Various)*	2lt c.g. @ 3 m²
Ho	*Kniphofia 'Royal Castle'*	2lt c.g. @ 3 m²
Pt	*Pittosporum tenufolium 'Irene Paterson'*	2lt c.g. @ 1 m²
Hq	*Hydrangea quercifolia 'Snow Queen'*	2lt c.g. @ 1 m²
Hcc	*Viburnum tinus 'Eve Price'*	2lt c.g. @ 3 m²
Hf	*Rosa 'Munstead Wood'*	2lt c.g. @ 3 m²
BP	**Bulb Planting Mix 0 m²**	
	Crocus vernus 'Remembrance'	@ 50 m²
	Narcissus 'Toto'	@ 10 m²
	Narcissus 'Tete a Tete'	@ 10 m²
	Galanthus 'nivalis'	@ 50 m²

REV	DATE	AMENDMENT

CUNNANE STRATTON REYNOLDS

LAND PLANNING & DESIGN

GALWAY OFFICE
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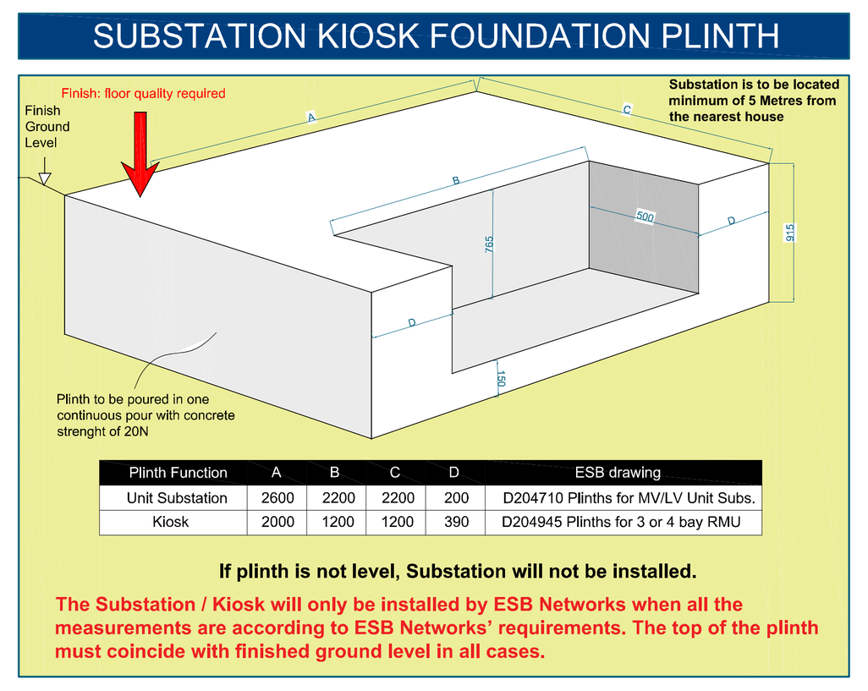
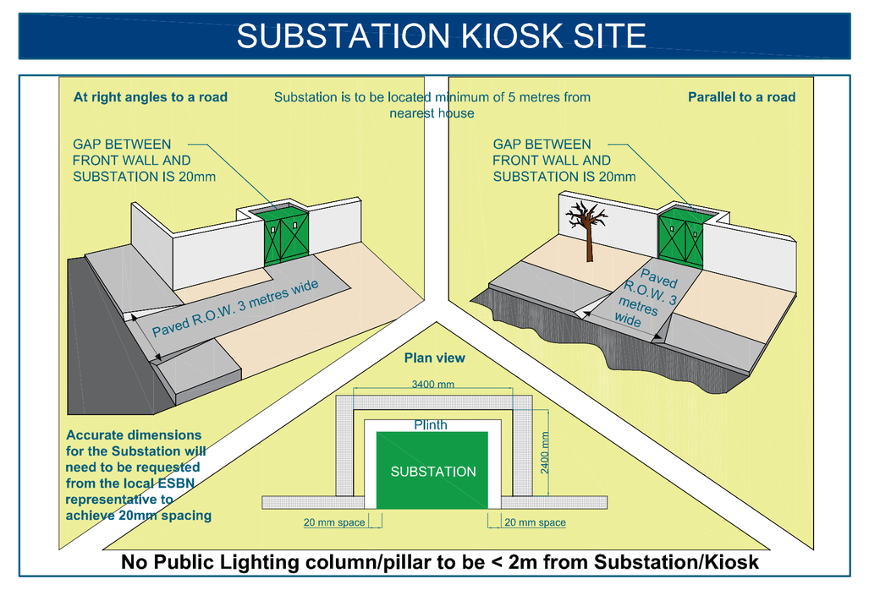
PROJECT: **Cluain na Gaoithe Claregalway, Co. GALWAY**	DATE: July 2022
	SCALE: 1:500@A1
DRAWING: **LANDSCAPE PLAN**	DRAWN: RH CHECKED: KM
	DRAWING NO: **22242_1_100**

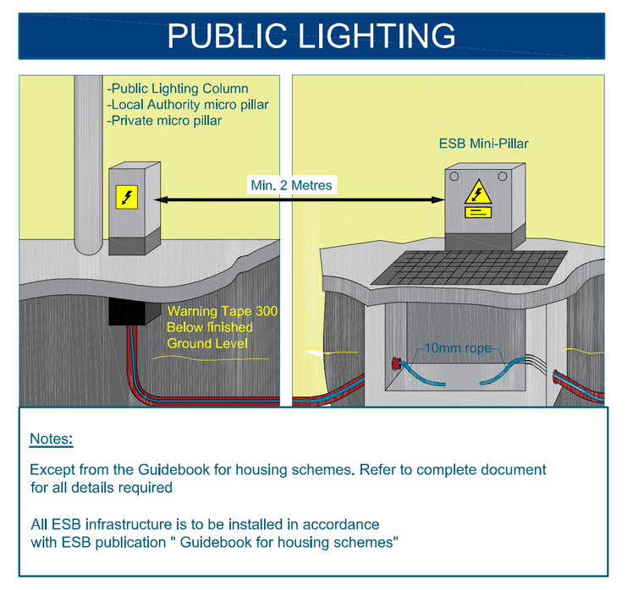
CAD REFERENCE: S:\CSR GALWAY\Landscape\PROJECT FOLDERS\2022\22242_Cluain na Gaoithe Claregalway\CSR\22242_1_100RH.dwg

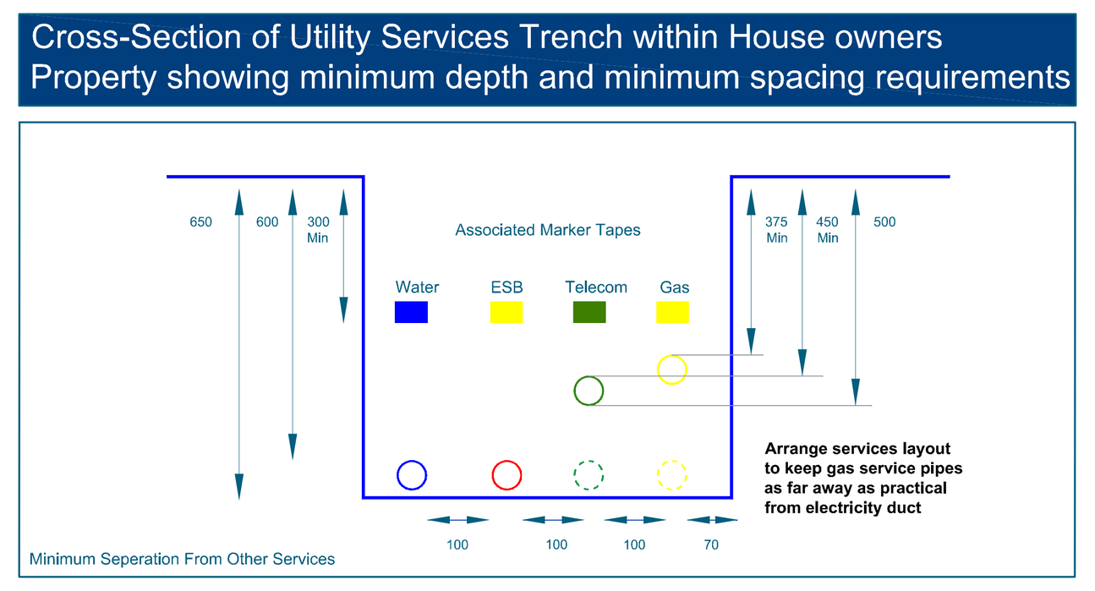
APPENDIX V

PROPOSED PUBLIC LIGHTING LAYOUT AND REALITY CONTOURS DRAWINGS









Notes:
1. Do **NOT** scale from this drawing.
2. The actual results achieved may vary from predicted values due to normal deviation in luminaire installation, electrical supply, equipment tolerances, obstructions including poles, brackets and mounting arms, reflectances etc.
3. This design is based on a preliminary assessment only and will be developed during the detailed design stage.

Calculation Summary

Description	E_{av}	E_{min}	E_{max}	E_{min}/E_{max}	E_{min}/E_{av}	E_{max}/E_{av}
Road / Path 1	6.29	1.23	23.04	0.05	0.20	3.66
Road / Path 2	7.04	1.38	23.15	0.06	0.20	3.29
Road / Path 3	7.46	1.46	23.24	0.06	0.20	3.12
Road / Path 4	6.47	1.26	23.04	0.05	0.19	3.56
Road / Path 5	7.40	1.30	23.05	0.06	0.18	3.12

Luminaire Schedule

Symbol	Type	Lamp(s)	MF	Quantity
(red)	Veelite Metro Streetlight 27w LED Street Optic R03	12; 3000K	0.80	11
(green)	Veelite Metro Streetlight 27w LED Forward Throw A Optic	12; 3000K	0.80	18

Legend

(red)	Luminaire A Column
(green)	Luminaire B Column
○	Beam Aiming Target
□	Photometric Centre

Veelite Metro Streetlight on 6m Pole
By Electrical Contractor

Rev	Description	Date	Ckd
P3	Revised Site Layout	21.04.23	RK
P2	Revised Site Layout	05.08.22	RK
P1	Preliminary Issue	11.04.22	RK

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info@ccengineering.ie
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Client: Galway County Council

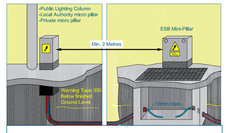
Site: House Development at Cluain na Gaoithe, Baile an Chláir,Co.na Gaillimhe

Title: Builders Work
Public Lighting Layout

Job no: 5236
Drawing no.: BLD-100

Approved: BC Checked: RK Drawn: IV
Scale: 1:250
Size: A0

PUBLIC LIGHTING



Notes:

Except from the Guidebook for housing schemes. Refer to complete document for all details required

All ESB Infrastructure is to be installed in accordance with ESB publication " Guidebook for housing schemes"

Cross-Section of Utility Services Trench within House owners Property showing minimum depth and minimum spacing requirements

Notes:

1. Do **NOT** scale from this drawing.
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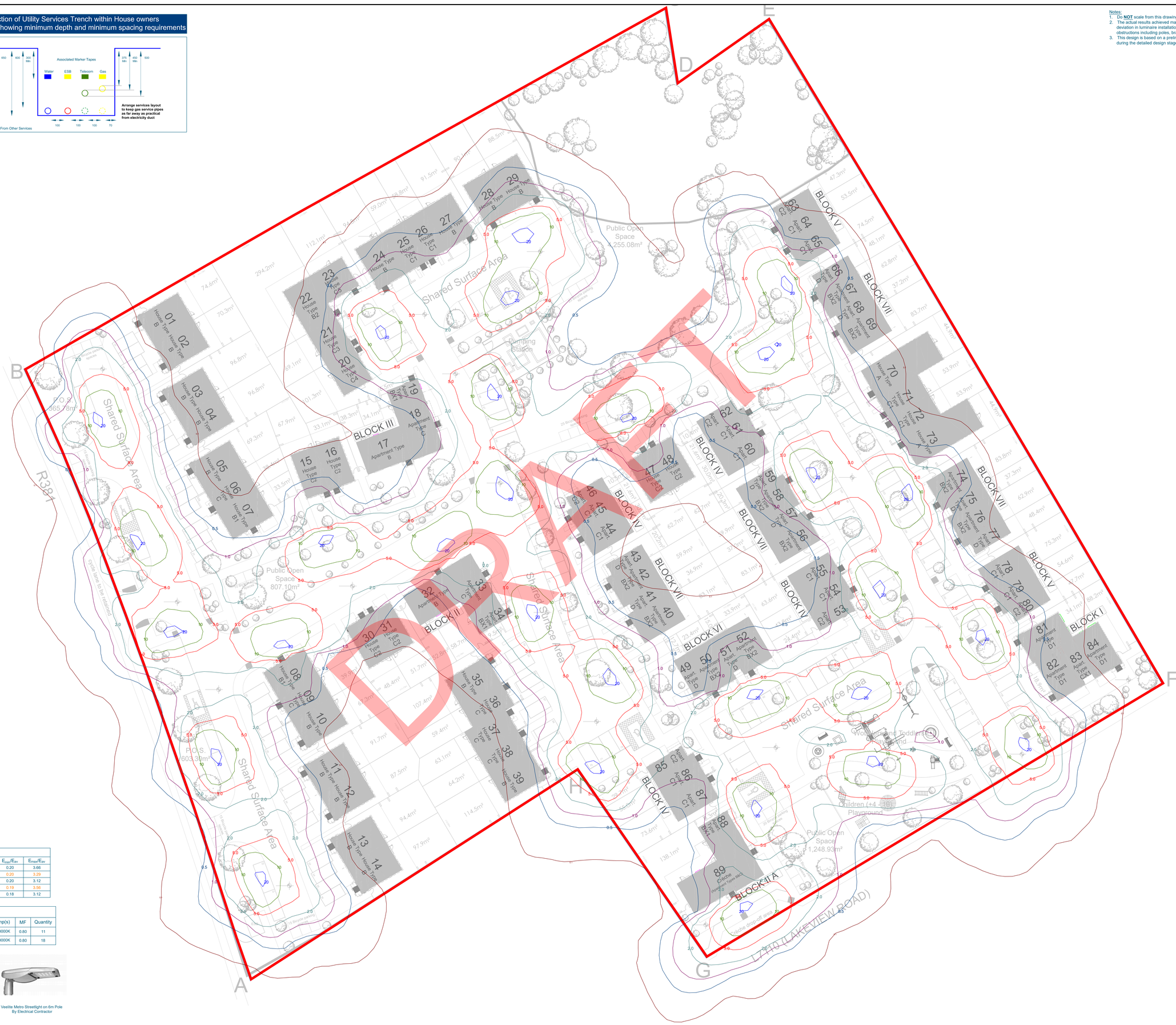
3. This design is based on a preliminary assessment only and will be developed during the detailed design stage.



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	Luminaire B Column
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Veelite Metro Streetlight on 6m Pole By Electrical Contractor

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Rev	Description	Date	Ord

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Client: Galway County Council

Site: House Development at Cluain na Gaothe, Baile an Chláir,Co.na Gaillimhe

Title: Builders Work
Reality Lighting Contours

Job no: 5236

Drawing no.: BLD-101

Approved: BC Checked: RK Drawn: IV

Scale: 1:250

Size: A0