Planning and Environmental Consultants

Natura Impact Statement

Strategic Housing Development, Rosshill, Galway

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Table of Contents

1. INTRODUCTION 4
1.1 Background 4
1.2 Statement of Authority 4
1.3 Consultation with Relevant Bodies 5
2. CONCLUSIONS OF ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING REPORT 6
2.1 Galway Bay Complex SAC 6
2.2 Inner Galway Bay SPA 6
3. DESCRIPTION OF THE PROJECT 8
3.1 Site Location 8
3.2 Characteristics of the Proposed project 8
3.2.1 Drainage 11
3.2.1.1 Wastewater Drainage 11
3.2.1.2 Stormwater Drainage 11
3.2.1.3 SUDS 11
3.2.1.4 Flooding 12
3.2.1.5 Landscaping 12
3.3 Construction Best Practice Measures 13
3.3.1 Site Set-up 13
3.3.2 Pollution Prevention 13
3.3.3 Earth Works 14
3.3.4 Waste Management 14
3.3.5 Disturbance Limitation Measures 14
4. CHARACTERISITCS OF THE RECEIVING ENVIRONMENT 15
4.1 Ecological Survey Methodologies 15
4.1.1 Desk Study 15
4.1.2 Ecological Multidisciplinary Walkover Surveys 15
4.1.3 Faunal surveys 16
4.1.3.1 Winter Bird surveys 2020/2021 16
5. DESK STUDY 17
5.1 EPA River Catchments & Watercourses 17
5.2 Galway Bay Complex SAC 17
5.2.1 Review of Conservation Objectives for Galway Bay Complex SAC 17
5.2.2 Review of site-specific pressures and threats for Galway Bay Complex SAC 18
5.2.3 Qualifying Interests - Annex I Habitats 19
5.2.4 Qualifying Interests 20
5.2.5 - Annex II Species 20
5.3 Inner Galway Bay SPA 21
5.3.1 Review of Conservation Objectives for Inner Galway Bay SPA 21
5.3.2 Review of site-specific pressures and threats for Inner Galway Bay SPA 21
5.3.3 Special Conservation Interests - Wetlands of Inner Galway Bay SPA 22
5.3.4 SCI Species of Inner Galway Bay SPA 23
6. ECOLOGICAL SURVEY RESULTS 25
6.1 Habitats 25
6.2 Fauna 29
6.2.1 Birds 29
6.2.1.1 2020-2021 Winter Bird Surveys 29
7. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS 31

7.1 Potential for Direct Effects on the European Sites 31
7.2 Potential for Indirect Effects on the European Sites 31
7.2.1 Identified Pathway for Impact – Deterioration in water quality 31
7.2.2 Preventative measures to avoid identified impact 31
7.2.2.1 Construction Phase 31
7.2.2.2 Operational Phase 33
7.2.2.3 Disturbance and Displacement - Otter and harbour seal 34
7.2.2.4 Disturbance and Displacement -Birds 35
8. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS 39
8.1 Galway Bay Complex SAC [000268] 39
8.1.1 Otter (*Lutra lutra*) 39
8.1.1.1 Determination on potential for adverse effects 39
8.1.2 Harbour seal (*Phoca vitulina*) 40
8.1.2.1 Determination on potential for adverse effects 40
8.1.3 Mudflats and sandflats not covered by seawater at low tide 40
8.1.3.1 Determination on potential for adverse effects 41
8.1.4 Large shallow inlets and bays 41
8.1.4.1 Determination on potential for adverse effects 42
8.1.5 Reefs 42
8.1.5.1 Determination on potential for adverse effects 43
8.1.6 Coastal lagoons 43
8.1.6.1 Determination on potential for adverse effects 44
8.1.7 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] 44
8.1.7.1 Determination on potential for adverse effects 45
8.1.8 Mediterranean salt meadows (*Juncetalia maritimi*) [1410] 45
8.1.8.1 Determination on potential for adverse effects 46
8.1.9 *Salicornia* and other annuals colonising mud and sand [1310] 46
8.1.9.1 Determination on potential for adverse effects 47
8.1.10 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] 47
8.1.10.1 Determination on potential for adverse effects 48
8.1.11 Alkaline Fens [7230] 48
8.1.11.1 Determination on potential for adverse effects 49
8.1.12 Determination on Potential Adverse Effects Galway Bay Complex SAC 50
8.2 Inner Galway Bay SPA [004031] 50
8.2.1 Wetland and Waterbirds 50
8.2.1.1 Determination on potential for adverse effects 50
8.2.2 SCI Bird Species 50
8.2.2.1 Determination on potential for adverse effects 52
8.3 Conclusion of Residual Impact Assessment 52
9. CUMULATIVE EFFECTS 53
9.1 Plans 53
9.2 Other Plans & Projects 56
10. CONCLUDING STATEMENT 58
11. BIBLIOGRAPHY 60

TABLE OF TABLES

Table 5-1: Qualifying Interest and Conservation Objectives 17
Table 5-2 Site-specific threats, pressures and activities 18
Table 5-3 Special Conservation Interest and Conservation Objectives 21
Table 5-4 Site-specific Threats, Pressures and Activities 22
Table 5-5 SCIs of Inner Galway Bay SPA [004031] and their population type 23
Table 5-6: Inner Galway Bay SPA subsite assessment survey 2009/2010 23
Table 6-1 Habitats Recorded Within the Proposed Development Site 25
Table 7-1: Disturbance Distance of SCI species of Inner Galway Bay SPA 37

Table 8-1 Targets and attributes associated with nominated site-specific conservation objectives for Otter (Lutra lutra) [1355] (as per NPWS, 2013) 39

Table 8-2 Targets and attributes associated with nominated site-specific conservation objectives for Harbour Seal (Phoca vitulina) as per NPWS, 2013 40

Table 8-3 Targets and attributes associated with nominated site-specific conservation objectives for Mudflats and sandflats not covered by seawater at low tide [1140] (as per NPWS, 2013) 40

Table 8-4 Targets and attributes associated with nominated site-specific conservation objectives for Large shallow inlets and bays [1160] (as per NPWS, 2013) 41

Table 8-5 Targets and attributes associated with nominated site-specific conservation objectives for Reefs [1170] (as per NPWS, 2013) 42

Table 8-6 Targets and attributes associated with nominated site-specific conservation objectives for Coastal lagoons [1150] 43

Table 8-7 Targets and attributes associated with nominated site-specific conservation objectives for of Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] 44

Table 8-8 Targets and attributes associated with nominated site-specific conservation objectives for of Mediterranean salt meadows (Juncetalia maritimi) [1410] 45

Table 8-9 Targets and attributes associated with nominated site-specific conservation objectives for Salicornia and other annuals colonising mud and sand [1310] 46

Table 8-10 Targets and attributes associated with nominated site-specific conservation objectives for Calcareous fens with Cladium mariscus andd species of the Caricion davallianae [7210] 47

Table 8-11 Targets and attributes associated with nominated site-specific conservation objectives for Alkaline fens [7230] 49

Table 8-12 Targets and attributes associated with site specific conservation objectives for wetlands [A999] (NPWS 2013) 50

Table 8-13 Targets and attributes associated with site specific conservation objectives for SCI bird species (NPWS 2013) 51

Table 9-1 Review and Assessment of Compliance with Plans for Galway City 54

TABLE OF PLATES

Plate 6-1 The majority of the site is comprised of semi-improved Dry neutral grassland (GS1). 26

Plate 6-2 Wet grassland (GS4) to the north-west of the site. 27

Plate 6-3 Dry calcareous and neutral grassland (GS1) in the north-east corner of the site. 27

Plate 6-4 Oak-ash-hazel woodland (WN2) within the development site close to the northern boundary. 27

TABLE OF FIGURES

Figure 3-1 Site Layout 10

Figure 6-1 Habitat Map 28

APPENDICES

Appendix 1 Appropriate Asessment Screening Report
Appendix 2 Correspondence from DAU
Appendix 3 Drainage Layout
Appendix 4 Letter from Irish Water
Appendix 5 Flood Risk Assessment
Appendix 6 Landscape Master Plan
Appendix 7 Winter Bird Survey Report
Appendix 8 Relevé Data
Appendix 9 CEMP

1. INTRODUCTION

1.1 Background

McCarthy Keville O'Sullivan Ltd. (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 strategic housing development located at Rosshill, Co. Galway. The impacts and cumulative assessments provided below deals with the proposed application site only as illustrated on Figure 2-1 of the Appropriate Assessment Screening report (AASR) in Appendix 1 of this document. Any future development in the lands to the south and west of the proposed application site, which form part of the wider landholding, will be subject to its own assessment.

An Appropriate Assessment Screening Report has been prepared and is provided in **Appendix 1**. This 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. It has also identified those qualifying interests/special conservation interests that have the potential to be affected by the proposed development.

This report has been prepared in accordance with the European Commission guidance document 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, 2001), European Communities (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 and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

In addition to the guidelines referenced above, the following relevant guidance was considered in preparation of this report:

1. *European Communities (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
2. *Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
3. *EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission.*

1.2 Statement of Authority

An initial multi-disciplinary walkover survey was undertaken in April 2019 by Sarah Mullen (BSc, PhD) and Claire Stephens (BSc) of MKO. The site was revisited on multiple occasions between July 2019 and May 2021 by MKO ecologists Sarah Mullen, Julie O'Sullivan (B.Sc., M.Sc.), Rachel Walsh (B.Sc.), Neil Campbell (B.Sc.), Colin Murphy (B.Sc., M.Sc.), Laura McEntegart (B.Sc.) and Laura Hynes (B.Sc.). MKO ecologists are trained in field ecology and are experts in undertaking surveys to this level. This report has been reviewed by John Hynes (B.Sc., M.Sc., MCIEEM) who has over 9 years' experience in ecological assessment.

1.3 Consultation with Relevant Bodies

The Development Applications Unit (DAU) of the Department of Culture, Heritage & The Gaeltacht was consulted on the 15th February 2021 (Reference No: G Pre00047/2021). A response was received on the 8th of April 2021 (**Appendix 2**). The recommendations of the DAU have been considered in the preparation of this NIS.

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

The Article 6(3) Appropriate Assessment Screening report, that is provided as **Appendix 1** to this NIS, identified the potential for the proposed development to result in significant effects on the following European Sites:

- Galway Bay Complex SAC
- Inner Galway Bay SPA

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 Galway Bay Complex SAC

The individual pathways for effect that were identified in Table 3-1 of the AA Screening Report (**Appendix 1**) and the QIs with the potential to be affected are described below.

Taking a precautionary approach, a potential pathway for indirect effects on the marine/surface water dependent Qualifying Interests (QIs) was identified in the form of deterioration of water quality resulting from pollution, associated with the construction and operational phases of the development. Although no watercourses were identified on-site, the construction and operational phase of the proposed development may result in pollution to groundwaters via the percolation of polluting materials through the limestone bedrock underlying the site. Pollution of groundwater may result in adverse impacts on the following downstream aquatic or groundwater influenced QI habitats within the SAC in the absence of mitigation:

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210]
- Alkaline fens [7230]
- *Lutra lutra* (Otter) [1355]
- *Phoca vitulina* (Harbour Seal) [1365]

Taking a precautionary approach, a potential pathway for effects on harbour seal and otter via disturbance during the construction and operational phases was also identified.

2.2 Inner Galway Bay SPA

The individual pathways for effect that were identified in Table 3-1 of the AA Screening Report (**Appendix 1**) and the SCIs with the potential to be affected are described below.

Taking a precautionary approach, a potential pathway for indirect effects on the marine/surface water dependent SCIs, including supporting wetland habitat [A999] for SCI bird species, was identified in the

form of deterioration of water quality resulting from pollution associated with the construction and operational phases of the development.

Although no watercourses were identified on-site, the construction and operational phase of the proposed works may result in pollution to groundwaters, via the percolation of polluting materials through the limestone bedrock underlying the site. Pollution of groundwater may result in adverse impacts on the following downstream aquatic or groundwater influenced SCI habitats within the SPA in the absence of mitigation:

- Wetlands [A999] - The supporting wetland habitat of all waterbird species is also considered under this SCI.

Taking a precautionary approach, a potential pathway for indirect effects on Inner Galway Bay SPA via disturbance/displacement of the SCI bird species during the construction and operational phases of the development was also identified. The SCI bird species for which Inner Galway Bay SPA has been designated are listed below:

- *[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*
- *[A140] Golden Plover Pluvialis apricaria*
- *[A142] Lapwing Vanellus vanellus*
- *[A149] Dunlin Calidris alpina alpine*
- *[A157] Bar-tailed Godwit Limosa lapponica*
- *[A160] Curlew Numenius arquata*
- *[A162] Redshank Tringa tetanus*
- *[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*

The sections below describe the details of the desk study and field surveys undertaken to inform this assessment regarding the “Screened in” Sites and associated Qualifying Interests/Special Conservation Interests.

3. DESCRIPTION OF THE PROJECT

3.1 Site Location

The application site is located within the townlands of Roscam, Merlin Park and Murrough in Galway City, immediately south of the Rosshill Road and the railway line (Grid Reference: IG 134208 224980) (Figure 2-1 AASR, **Appendix 1**). The application site is 4.704ha. The study area for the ecological walkover surveys undertaken to inform this assessment included lands to the south and west of the application site which form part of a wider landholding. The study area is also illustrated in Figure 2-1. of the AASR.

3.2 Characteristics of the Proposed project

The application for the proposed works will be made under the Strategic Housing Development (SHD) provisions of the Planning and Development (Housing) and Residential Tenancies Act, 2016. The proposed development will consist of the following:

1. Construction of 102no. residential units comprising of 35 apartments and 67 houses:
    - 4no. Apartment Type '1A' - 1 bed 2 person (1 Storey)
    - 4no. Apartment Type '1B' - 1 bed 2 person (1 Storey)
    - 3no. Apartment Type '1C' - 1 bed 2 person (1 Storey)
    - 11no. Apartment Type '2A' - 2 bed 4 person (1 Storey)
    - 4no. Apartment Type '2B' - 2 bed 4 person (1 Storey)
    - 3no. Apartment Type '2C' - 2 bed 4 person (1 Storey)
    - 3no. Apartment Type '2D' - 2 bed 4 person (1 Storey)
    - 3no. Apartment Type '2E' - 2 bed 3 person (1 Storey)
    - 2no. House Type 'A/A1' - 4 Bed Semi Detached
    - 8no. House Type 'B/B1' - 3 Bed semi detached
    - 4no. House Type 'C/C1' - 3 Bed End of Terrace
    - 2no. House Type 'C2' - 3 Bed Mid Terrace
    - 2no. House Type 'D' - 2 storey town house - end of terrace - 3 bed
    - 4no. House Type 'D1' - 2 storey town house - mid terrace - 3 bed
    - 2no. House Type 'D2' - 3 storey town house - end of terrace - 4 bed
    - 2no. House Type 'E' - 3 bed Long Semi-Detached
    - 2no. House Type 'F' - 4 bed Long Semi-Detached
    - 3no. House Type 'G' - 2 storey town house - end of terrace - 3 bed
    - 6no. House Type 'G1' - 2 storey town house - mid terrace - 3 bed
    - 3no. House Type 'G2' – 3 storey town house- end of terrace- 4 bed
    - 1no. House Type 'H' - 3 Bed semi detached
    - 1no. House Type 'H1' - 3 Bed semi detached - Double front
    - 8no. House Type 'J/J1' - 3 Bed semi detached
    - 4no. House Type 'K' - 3 bed Long Semi-Detached
    - 4no. House Type 'L' - 4 bed Long Semi-Detached
    - 3no. House Type 'M' - 3 Bed End of Terrace
    - 3no. House Type 'M1' - 3 Bed End of Terrace
    - 3no. House Type 'M2' - 3 Bed Mid Terrace
2. Demolition of the existing silage concrete apron (40sqm)
3. Childcare facility (399sqm over 2-storeys) associated outdoor play areas and parking
4. Retail/Commercial space (188.5sqm) including loading bay

5. Provision of shared communal and private open space, including play and fitness equipment
6. Car and cycle parking, including electric vehicle charging points
7. Provision of all associated surface water and foul drainage services and connections including pumping station
8. Landscaping, access routes and public art
9. Lighting and associated works
10. Access and junction improvements at Rosshill Road and Rosshill Stud Farm Road
11. Provision of a footpath connectivity link along Rosshill Road and Rosshill Stud Farm Road
12. All associated works and services

A site layout is shown in Figure 3-1 below.

FOR 1:500 SCALE - SITE LAYOUT PLAN - PART 3 REFER TO SHEET 3005

FOR 1:500 SCALE - SITE LAYOUT PLAN - PART 2 REFER TO SHEET 3004

FOR 1:500 SCALE - SITE LAYOUT PLAN - PART 1 REFER TO SHEET 3003

PUBLIC OPEN SPACES

Required public open space : **4,266sqm** (15% of 28,442sqm Developable area)

Provided:

Open space 01 - Linear Park -	3336sqm
Open space 02 - Pedestrian Plaza -	301sqm
Open space 03 - Central Green-	471sqm
Shared surface 01	329sqm
Total Public open space:	**4,437sqm :- 15.6% of developable area**

Galway City Development plan 2017- 2013 section 11.3.1 (c) states *'shared spaces shall be regarded as communal open space but shall not exceed one third of the total communal open space requirement.'* The proposed shared surface area of 329sqm in this scheme contributes **7.4%** on the overall public open space.

LEGEND

Site boundary outlined in red

Blue outline indicates lands in applicants control

APPLICATION SITE - red line

APPLICATION SITE AREA (RED LINE) :	**47,042 sqm :- 4.704 HA :- 11.624 Acre**
UNDEVELOPABLE AREAS:	
Old Dublin road and local Rosshill Road:	6,894 sqm : 0.689 HA :- 1.703 Acre
Parkland areas & Pumping station access:	11,706 sqm : 1.170HA :- 2.893Acre
Developable Area :	**28,442sqm :- 2.844HA :- 7.028 Acre**

Galway City Council Development plan 2017-2023:
Site zoned Low Density Residential (LDR)

RESIDENTIAL TOTAL NO. OF UNITS = 102

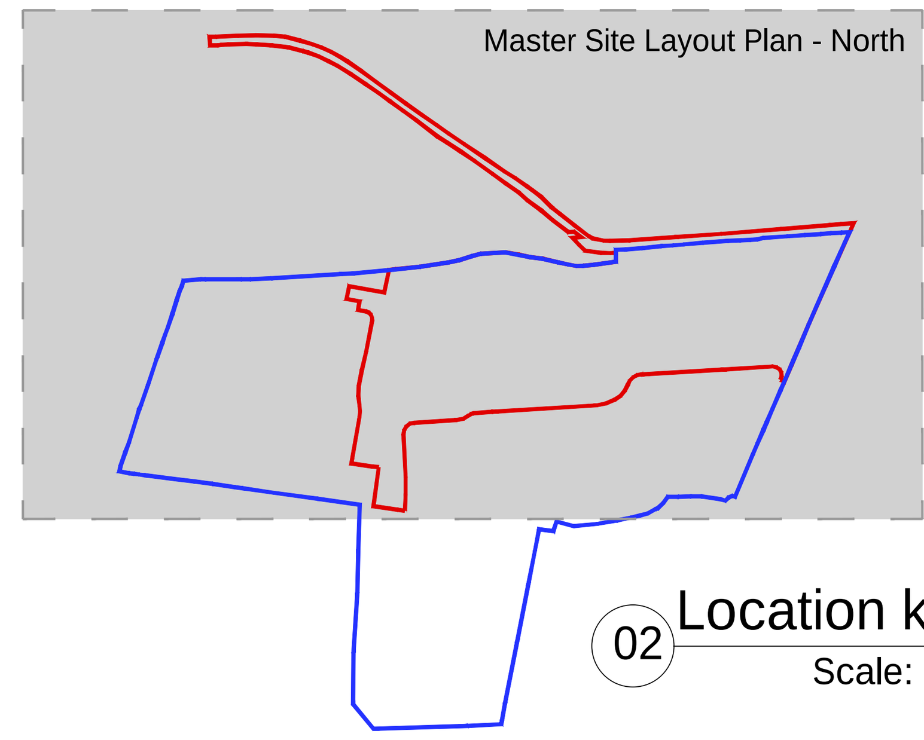
\+ 91 child space creche

Density:

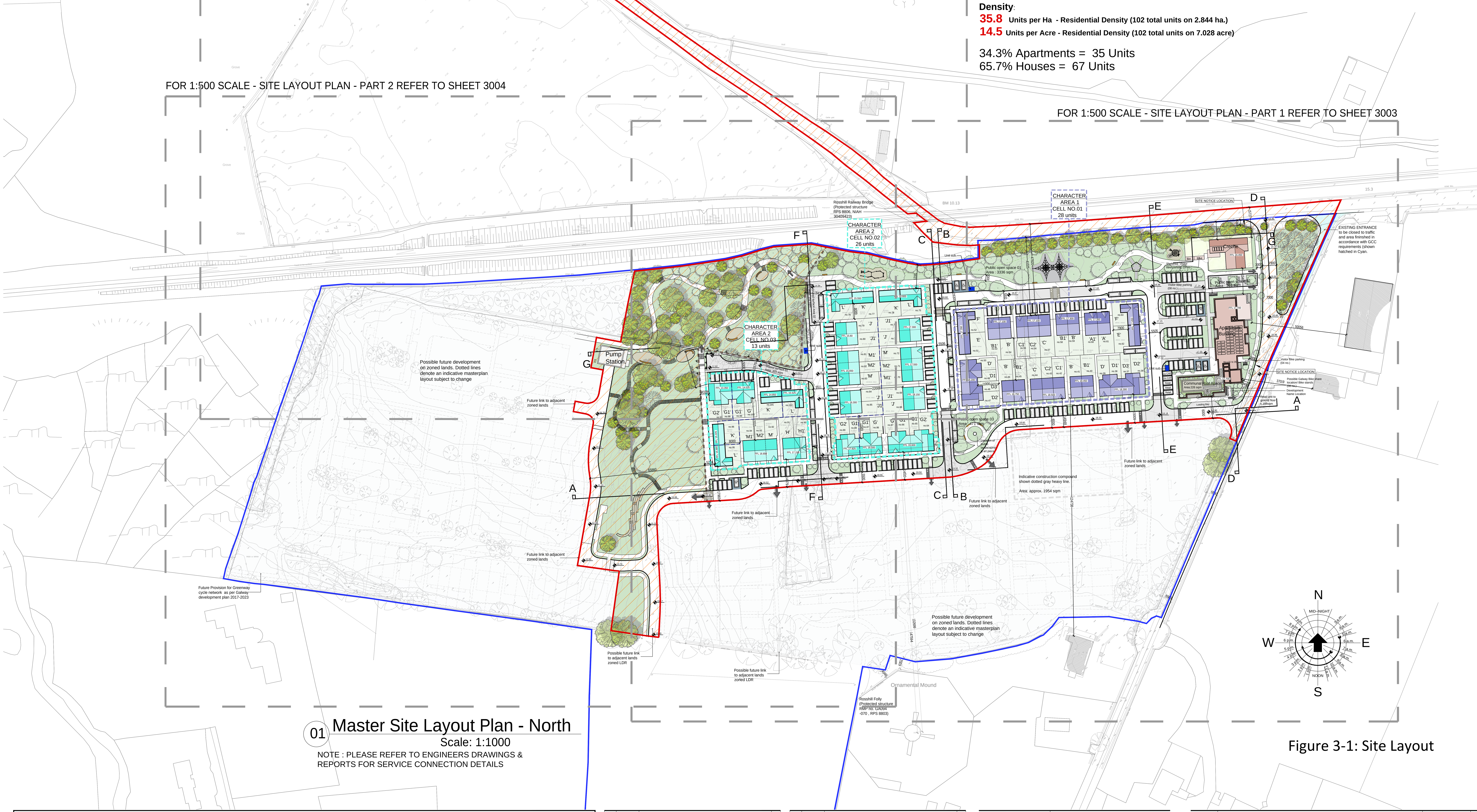
35.8 **Units per Ha - Residential Density (102 total units on 2.844 ha.)**

14.5 **Units per Acre - Residential Density (102 total units on 7.028 acre)**

34.3% Apartments = 35 Units
65.7% Houses = 67 Units



02 Location key
Scale: n.t.s



01 Master Site Layout Plan - North
Scale: 1:1000

NOTE : PLEASE REFER TO ENGINEERS DRAWINGS & REPORTS FOR SERVICE CONNECTION DETAILS

Figure 3-1: Site Layout

MASTER SITE LAYOUT PLAN - north

No.	Date	Comments	By

REVISIONS

No.	Date	Comments	By

REVISIONS

Scale: 1:1000
Drawing Purpose: SHD Application
File Ref. 3.09
Subject: Master Site Layout Plan - North
Project No. 20175
Drawing No. 3001
Rev.

Project: Proposed Development at Rosshill, Galway City
Client: Alber Developments Ltd.
Date: June 2021
Drawn by: SOR
Checked by: JOM
Paper size:
CTB file:
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3.2.1 Drainage

3.2.1.1 Wastewater Drainage

Wastewater from the proposed development will flow via gravity to a pumping station located to the North-West of the site and then discharge via rising main to the existing Merlin Park pumping station. The rising main will transverse through the proposed site, within the proposed roads, and connect to a previously laid rising main on the Rosshill road, constructed during the construction of the adjacent development (in agreement with the developer constructing the adjacent development and in consultation with Irish Water). The details of the proposed wastewater drainage system are shown on Drawing No. 10690-2100 (**Appendix 3**).

The pumping station will be designed in accordance with the requirements set out in the Irish Water specification for wastewater systems IW-CDS-5030-03. It will be designed to cater for 24 hr storage for the total number of properties in accordance with Irish Water requirements. The pumping station will also cater for any future development to the south of the proposed lands. This will be achieved by the installation of additional modular storage connected to the existing tank storage.

The pipework for the drainage system has been designed to provide for six times the dry weather flow in accordance with the Recommendations for Site Development Works as published by the Department of the Environment and Local Government and to Irish Water Code of Practice and Standard Details.

Irish Water have confirmed that there is sufficient capacity to cater for the proposed development (refer to letter from Irish Water in **Appendix 4**).

3.2.1.2 Stormwater Drainage

The storm water drainage design has been designed to cater for all surface water runoff from all hard surfaces in the proposed development including roadways and roofs. All stormwater generated on site will discharge via an oil/petrol interceptor to proposed soakaways which are strategically situated throughout the site. The stormwater will soak away through the underlying fractured rock/boulders. The soakaways will be constructed of a cellular storage unit providing 95% porosity or stone filled soakaway providing 40% void ratio. These will also attenuate storm water during and post storm events prior to infiltrating through the underlying fractured rock/boulders. All soakaways are designed to accommodate a 1 in 100-year storm event (+20% for Climate Change) throughout the site.

The soakaways are designed to hold water for the largest storage required over a 48-hour storm period with rainfall depths taken for the 100-year return period for sliding durations obtained from Met Eireann. The details of the proposed stormwater drainage system are shown on Drawing No. 10690-2100 (**Appendix 3**).

3.2.1.3 SUDS

In order to balance storage and peak flow conveyance during storms, it is proposed to install a number of bioretention swales (bioswales) at the north east of the site. These will drain roads, paths and car parks while incorporating the natural landscape of the area. The proposed bioswales will be designed in accordance with the CIRIA Sustainable Drainage System (SuDS) Manual, 2015.

The bioswales will include a high-level overflow that will connect back into the proposed underground storm network should the bioswale capacity be reached. Further storage will be provided beneath the swale base using gravel or other filter/drainage systems.

3.2.1.4 Flooding

A Flood Risk Assessment (FRA) has been prepared by Tobin Consulting Engineers for the proposed development and is included in **Appendix 5**.

A number of measures were included as part of the proposed development design to mitigate flood risk and ensure that the development would not impact the risk of flooding elsewhere. These measures included:

- Site drainage and storm water storage will be provided to cater for surface water runoff for a design return period 100-year storm event. The storm networks on the western section have been designed to a 1000- year flood event.
- Surface water runoff from the site will be limited to greenfield runoff rates by the proposed surface water management system in accordance with the SUDS design principals.
- The landscaping and topography of the developed site will provide safe exceedance flow paths in the event of extreme flood events or in the case of a blockage of the drainage system, to minimise risks to people and property.
- In an extreme weather event, overflow from the attenuation tank will exit via a high-level overflow to a detention basin located at the north west corner of the proposed development site. During extreme rainfall events, any surface water runoff which exceeds the underground site drainage capacity shall be permitted to flow through a defined flow path to the detention.

The FRA concluded that the risk of fluvial, groundwater, pluvial and coastal flooding to the proposed application site is minimal. According to the FRA, the development will not affect floodplain storage or obstruct the flow path of any existing watercourses elsewhere.

The report concluded:

"It is estimated that the overall risk of flooding at the proposed residential development will be minimal, and it is predicted that the development will not increase the risk of flooding elsewhere".

3.2.1.5 Landscaping

A landscape plan has been prepared for the development site (Landscape Master Plan Drawing 19112-4-100, **Appendix 6**). The overriding aim of the landscape plan is to retain the best of the existing trees present on site. The plan incorporates the retention of existing woodland and trees where possible and the recreation of similar features through tree, hedgerow and native woodland planting in the new development. The landscape plan will facilitate the continuity of the localities sylvan setting through the planting of larger native or naturalised species such as oak, alder and beech and smaller species such as birch, rowan and whitebeam, helping to maintain connectivity with the larger area of woodland to the west of the study area and to the wider landscape.

The landscape plan also allows for the integration of a linear parkland along the northern boundary, facilitating continuous off road pedestrian linkage between the eastern and western sections of the site. This will consist of an access path which will be constructed using a minimalist intervention approach to ensure the preservation of woodland trees. The path will be constructed using a non-dig method using a combination of timber sleepers, cellweb system and gravel to ensure increased access to the root protection areas of the trees occurs in a manner not detrimental to the trees. The pathway will be constructed in a meandering manner so as to avoid the felling of existing trees.

In addition to the planting of native trees and woodland, the landscape plan allows for the planting of strips of wildflower meadow within the site. These will be sown with seed mixes comprising native

pollinator-friendly species to provide a range of forage resources throughout the flowering season for native insect pollinators.

3.3 Construction Best Practice Measures

The following measures will be incorporated within the project design to minimise potential impacts on the surrounding environment:

3.3.1 Site Set-up

- Prior to the commencement of any excavation or construction activities, the construction footprint will be clearly demarcated using temporary fencing and no works will take place outside the fence to prevent damage to areas outside the necessary project footprint.
- A temporary construction compound is proposed for the construction phase of the proposed development, located to the south of the proposed application site. All construction materials and substances will be stored in the site compound. All chemicals will be stored in suitable secure containers to avoid the potential for contamination.
- Access routes will be clearly marked / identified. Access during construction to any working areas will be restricted to land within the outlined works area.
- Prior to the commencement of earthworks, silt fencing will be placed down-gradient of the construction areas. Fences will be embedded into the local soils to ensure all site water (should any arise) is captured and filtered;

3.3.2 Pollution Prevention

- Prior to the commencement of earthworks, silt fencing will be placed down-gradient of the construction areas. Fences will be embedded into the local soils to ensure all site water (should any arise) is captured and filtered;
- Surface and/or ground water generated from the works during construction will be discharged to ground on the site through a silt bag. There will be no direct discharge of construction waters to any watercourse.
- Following installation of the drainage system for the proposed development any waters will be routed towards settlement tanks prior to controlled discharge to the surrounding drainage pipe network.
- All site plant will be inspected at the beginning of each day 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.
- Vehicles will never be left unattended during refuelling. Only dedicated trained and competent personnel will carry out refuelling operations and plant refuelling procedures shall be detailed in the contractor's method statements.
- Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment.
- All fuels, lubricants and hydraulic fludis will be stored at the site compound. The storage area will contain a small bund lined with an impermeable membrane in order to prevent any contamination of the surrounding soils and vegetation.
- Potential impacts caused by spillages etc. during the construction phase will be reduced by keeping spill kits and other appropriate equipment on-site.

3.3.3 Earth Works

- All excavated soil will be stored on site and reused for landscaping or transported off site to a designated waste facility.
- All stockpiles will be damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation.

3.3.4 Waste Management

- All waste will be collected in skips and the site will be kept tidy and free of debris at all times.
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or recycling.
- All construction waste materials will be stored within the confines of the site, prior to removal from the site to a permitted waste facility.

3.3.5 Disturbance Limitation Measures

- All plant and equipment for use will comply with Statutory Instrument No 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996".
- Noisier plant will be positioned to optimise screening by other plant.
- Plant machinery will be turned off when not in use.
- Operating machinery will be restricted to the proposed development site boundary.

4. CHARACTERISITCS 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 in **Appendix 1**. The specific surveys that were undertaken to assess the potential effects on the identified European Sites are described below.

4.1 Ecological Survey Methodologies

4.1.1 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data associated with the study area of the proposed development. Sources of data included the following:

- *Review of online web-mappers: National Parks and Wildlife Service (NPWS), Teagasc, Environmental Protection Agency (EPA), Water Framework Directive (WFD), Office of Public Works (OPW) flood Mapping,*
- *Review of Bird Atlases: (Sharrock, 1976; Lack, 1986; Gibbons et al., 1993; Balmer et al., 2013),*
- *Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper,*
- *Data on potential occurrence of protected bryophytes in the NPWS; recently launched Flora Protection Order Map Viewer – Bryophytes*
- *Inland Fisheries Ireland (IFI) reports, where relevant/available,*
- *Records from the NPWS web-mapper,*
- *Review of NPWS Article 17 metadata and GIS database files.*

4.1.2 Ecological Multidisciplinary Walkover Surveys

A multi-disciplinary ecological walkover survey was undertaken on 16th April 2019, in accordance with NRA *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes* (NRA, 2009) by Sarah Mullen (B.Sc., Ph.D.) and Claire Stephens (B.Sc.) of MKO. The study area for the walkover survey included the application site as well as the surrounding lands outlined in blue in Figure 2-1 of the AASR in Appendix 1. This survey provided baseline data on the ecology of the study area and assessed whether further detailed habitat or species-specific ecological surveys were required. The multi-disciplinary ecological walkover survey comprehensively covered the entire study area. The site was revisited by MKO ecologists in July 2019, September, October, November and December 2020 and in January, February, March, April and May 2021. During these visits, detailed habitat (grassland and woodland), bat and winter bird surveys of the study area were undertaken.

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). A search was conducted for Invasive Alien Species (IAS), with a focus on those listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (As Amended) (S.I. 477 of 2015).

The walkover surveys were designed to detect the presence, or likely presence, of a range of protected habitats and species that may occur in the vicinity of the proposed development. Incidental sighting/observations of birds and additional fauna were noted during the site visits. Surveys were

undertaken in accordance best practice guidance (TII, 2008: Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes).

Seasonal factors that affect distribution patterns and habits of species were taken into account when conducting the surveys. The potential of the site to support certain populations (in particular those of conservation importance that may not have been recorded during the field survey due to their seasonal absence or nocturnal/cryptic habits) was assessed.

All plants were readily identifiable, and it is considered that a comprehensive and accurate assessment of the habitats was achieved.

4.1.3 Faunal surveys

Galway Bay Complex SAC is designated for the Qualifying Interest (QI) species Otter and Harbour Seal. The development site does not provide suitable habitat for either species. There are no watercourses or drainage ditches within the proposed development site and the site offers no suitable habitat for otter, therefore dedicated otter surveys were not carried out.

Inner Galway Bay is designated for a number of wetland bird species. Dedicated bird surveys were undertaken at the proposed development site between October 2020 and March 2021, further details of which can be found in the following subsections.

4.1.3.1 Winter Bird surveys 2020/2021

Dedicated Winter bird surveys were undertaken at the development site (including the wider study area) monthly between October 2020 and March 2021 to assess the suitability of the proposed development site to support a variety of wintering wildfowl and waders, including the bird species listed as Special Conservation Interests (SCIs) for the Inner Galway Bay SPA. Prior to the commencement of surveys, an initial field visit was undertaken to assess the habitats on site and to plan the surveys and identify suitable vantage points. The survey area covered the proposed development site and the area of shoreline within Galway Bay SPA, approximately 600m west of the development site.

Surveys were undertaken monthly at alternate high/low tides, within two hours of high/low tide. A combination of low and high tide counts has been used due to the differences in behaviour and site use between tidal states, with different species likely to be foraging and roosting in different areas of Inner Galway Bay SPA and the surrounding terrestrial habitats, depending on the stage of the tidal cycle.

The surveys were undertaken by appropriately qualified ornithologists. All observations were recorded, and detailed point data was gathered for each species observation, with all bird species denoted using standard British Trust for Ornithology (BTO) codes and with the number of each species recorded next to each registration. The species recorded in the surveys were those covered by Irish Wetlands Bird Survey (I-WeBS) counts, i.e. all divers, grebes, cormorant, shag, herons, swans, geese, ducks, rails, crakes, waders, gulls and kingfisher. In addition to this, all other bird species, including all common and widespread passerines, were also recorded from within the proposed development site.

I-WeBS Surveys

The winter bird surveys at the nearby SPA followed the Irish Wetland Bird Survey (I-WeBS) methodology; the simple 'look-see' method, whereby all birds present within a predefined area are counted (Gilbert et al., 2011; Birdwatch Ireland, 2018). The surveys were carried out at suitable vantage points, located overlooking sections of Inner Galway Bay SPA in close proximity to the proposed development site. Vantage points were chosen to have as large as possible a view of the identified wetland site and potential adjacent daytime foraging habitat in the vicinity of the proposed development. Vantage points focused on areas which were deemed to be of likely significance to wintering waterbirds of Inner Galway Bay SPA.

Details of the surveys carried out including date, time, duration, location and weather conditions are provided in the Winter Bird Survey report in **Appendix 7.**

Transects
The proposed development site was scanned from suitable vantage points that gave unobstructed views of potentially suitable habitat and roosting locations for wintering waterfowl and waders within the study area in advance of walkover surveys.

Walked transects were undertaken within the site boundary. During the surveys species of note were recorded both within and adjacent to the development site. All bird species were denoted using standard British Trust for Ornithology (BTO) codes and with the number of each species recorded next to each registration. Details of the transects walked are shown in Figure 2.2 of the Winter Bird Survey report in **Appendix 7.**

5. DESK STUDY

5.1 EPA River Catchments & Watercourses

The indirect pathway for impact on Galway Bay Complex SAC and Inner Galway Bay SPA is via surface waters and groundwaters.

The proposed development is situated entirely within the EPA River Catchment 29, Galway Bay, South East River Catchment (https://gis.epa.ie/EPAMaps/). There are no adjacent natural or man-made watercourses within the proposed development boundary. The nearest watercourse (EPA Code: 29C05, lies >3km to the east of the proposed development site.

5.2 Galway Bay Complex SAC

5.2.1 Review of Conservation Objectives for Galway Bay Complex SAC

The relevant QIs and the associated conservation objectives of the site are presented in Table 5-1. The Targets and Attributes for the relevant habitats and species, as described in the Galway Bay Complex SAC Conservation Objectives supporting documents, were reviewed and considered in this assessment.

Table 5-1: Qualifying Interest and Conservation Objectives

Qualifying Interest	Conservation Objective
Reefs [1170]	To maintain the favourable conservation condition of Reefs in Galway Bay Complex SAC.
Mudflats and sandflats not covered by seawater at low tide [1140]	To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Galway Bay Complex SAC.
Coastal lagoons [1150]	To restore the favourable conservation condition of Coastal lagoons in Galway Bay Complex SAC.
Salicornia and other annuals colonising mud and sand [1310]	To maintain the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in Galway Bay Complex SAC.
Large shallow inlets and bays [1160]	To maintain the favourable conservation condition of Large shallow inlets and bays in Galway Bay Complex SAC

Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* [1330]	To restore the favourable conservation condition of Atlantic salt meadows (*GlaucoPuccinellietalia maritimae*) in Galway Bay Complex SAC
Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	To restore the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) in Galway Bay Complex 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 Galway Bay Complex SAC.
Alkaline fens [7230]	To maintain the favourable conservation condition of Alkaline fens in Galway Bay Complex SAC.
Lutra lutra (Otter) [1355]	To restore the favourable conservation condition of Otter in Galway Bay Complex SAC.
Phoca vitulina (Harbour seal)	To maintain the favourable conservation condition of Harbour Seal in Galway Bay Complex SAC.

5.2.2 Review of site-specific pressures and threats for Galway Bay Complex SAC

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the SAC were reviewed and considered in relation to the proposed development. These are listed in Table 5-2.

Table 5-2 Site-specific threats, pressures and activities

Negative Impacts		
Rank	Threats and Pressures	
Medium	I01	Invasive non-native species
High	H01.08	Diffuse pollution to surface waters due to household sewage and waste waters
Medium	A04.02.02	Non- intensive sheep grazing
Medium	J02.01.02	Reclamation of land from sea, estuary or marsh
Low	D03.01.01	Slipways
Low	D01.01	Paths, tracks, cycling tracks
Low	J02.05.01	Modification of water flow (tidal & marine currents)
Medium	J02.01.02	Reclamation of land from sea, estuary or marsh
Low	G02.01	Golf course
Medium	C01.01	Sand and gravel extraction
High	H01.05	Diffuse pollution to surface waters due to agricultural and forestry activities
High	J02.12.01	Sea defence or coast protection works, tidal barrages
Medium	A04.02.01	Non- intensive cattle grazing
High	D03	Shipping lanes, ports, marine constructions
Low	F02.03.01	Bait digging / collection
Medium	F06	Hunting, fishing or collecting activities
Low	J02.02.02	Estuarine and coastal dredging
Medium	F01	Marine and freshwater aquaculture
High	D03.01.04	Industrial Ports
Low	E03.03	Disposal of inert materials
Low	G01.01.02	Non-motorized nautical sports
Medium	A02.01	Agricultural intensification
Medium	C01.01.02	Removal of beach materials
Medium	D02.02	Pipelines

The proposed project relates to the construction of a housing estate at Rosshill, Co. Galway. *H01.08 diffuse pollution to surface waters due to household sewage and waste waters (High)* is identified above and is an activity with the potential to impact on the SAC. The activity has the potential, in the absence of best practice and mitigation, to result in *pollution to surface waters.*

No pathways for impact with regard to any additional site-specific threats, pressures and activities were identified.

5.2.3 Qualifying Interests - Annex I Habitats

Mudflats and sandflats not covered by seawater at low tide [1140]

The extent of this habitat is illustrated on Map 3 of the Site-Specific Conservation Objectives (SSCOs) document (NPWS 2013). According to the SSCOs (NPWS, 2013) the extent of this habitat within Galway Bay Complex SAC is estimated as 744ha, using OSI data. The nearest known mapped example of this habitat is located approximately 285m to the west of the application site.

Coastal lagoons [1150]

The extent of this habitat is illustrated on Map 4 of the SSCOs document (NPWS 2013). The nearest mapped extents of this habitat are at Lough Atalia, approximately 2.86km to the north-west of the site and Turreen Lough, approximately 2.8km to the south-east of the application site.

Large shallow inlets and bays [1160]

The extent of this habitat is illustrated on Map 5 of the site-specific conservation objective document (NPWS 2013). According to the site-specific conservation objectives (NPWS, 2013) the extent of this habitat within Galway Bay Complex SAC is estimated as 10,825ha using OSi data and the Transitional Water Body area as defined under the Water Framework Directive. The nearest mapped extent of this habitat is located approximately 850m south of the application site.

Reefs [1170]

The extent of this habitat is illustrated on Map 6 of the SSCOs (NPWS 2013). According to the site-specific conservation objectives (NPWS, 2013) the extent of this habitat within Galway Bay Complex SAC is estimated as 2,773ha, using 2009 and 2010 intertidal survey data and 2009 subtidal survey data (Aquafact, 2010a, b; RPS, 2012). The nearest mapped habitat to the proposed development is approximately 290m to the west of the application site.

Salicornia and other annuals colonising mud and sand [1310]

The extent of this habitat is illustrated on Map 9 of the SSCOs (NPWS 2013). According to the site-specific conservation objectives (NPWS, 2013) the extent of this habitat within Galway Bay Complex SAC is estimated as 1.347ha, based on data from the Saltmarsh monitoring Project (McCorry and Ryle, 2009). This habitat was recorded at eight of the ten sub-sites surveyed with Galway Bay Complex SAC. According to Map 9 of the SSCOs, the nearest mapped extent to the proposed development site is approximately 500m south-west of the application site. According to the site-specific conservation objectives (NPWS, 2013), further unsurveyed examples of this habitat may occur within the SAC.

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

The extent of this habitat is illustrated on Map 9 of the SSCOs (NPWS 2013). According to the SSCOs (NPWS, 2013) the extent of this habitat within Galway Bay Complex SAC is estimated as 114.612ha, based on data from the Saltmarsh monitoring Project (SMP) (McCorry and Ryle, 2009). This habitat was recorded at ten of the ten sub-sites surveyed with Galway Bay Complex SAC. The nearest mapped extent to the proposed project site is approximately 350mm to the west of the application site.

Mediterranean salt meadows *(Juncetalia maritimi)* [1410]

The extent of this habitat is illustrated on Map 9 of the SSCOs (NPWS 2013). According to the SSCOs (NPWS, 2013) the extent of this habitat within Galway Bay Complex SAC is estimated as 114.472 ha, based on data from the Saltmarsh monitoring Project (SMP) (McCorry and Ryle, 2009). This habitat was recorded at six sub-sites surveyed within Galway Bay Complex SAC. The nearest mapped extent to the proposed project site is approximately 3.1km south-east of the site.

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

According to the SSCOs for the SAC, the full extent of this habitat within the SAC is unknown. The habitat occurs in wetland areas to the east of Oranmore and has also been recorded in Ballindereen Lough. Calcareous fen is found in a mosaic with other habitats including the Annex I habitat alkaline fens. The maintenance of groundwater, surface water flows and water table levels within natural ranges is essential for this habitat.

Alkaline fens [7230]

According to the SSCOs for the SAC, the full extent of this habitat within the SAC is unknown. The habitat occurs in wetland areas to the east of Oranmore and has also been recorded in Ballindereen Lough. Alkaline fen is found in a mosaic with other habitats including the Annex I habitat Calcareous fens. The maintenance of groundwater, surface water flows and water table levels within natural ranges is essential for this habitat.

5.2.4 Qualifying Interests

5.2.5 Annex II Species

Otter [1355]

The extent of terrestrial commuting otter habitat is illustrated on Map 11 of the SSCOs (NPWS 2013). According to the site-specific conservation objectives (NPWS, 2013) the extent of terrestrial habitat within Galway Bay Complex SAC is estimated as 262ha, above high-water mark. These areas are mapped to include a 10m terrestrial buffer above the high-water mark along shorelines. The nearest mapped extent of this habitat is located approximately 290m to the west of the application site. The SSCO document notes the importance of maintaining connectivity between commuting routes.

Harbour Seal [1365]

The extent of Seal habitat and breeding, moulting and resting sites is illustrated on Map 12 of the SSCOs document (NPWS, 2013). The harbour seal population monitoring program recorded a maximum count of 105 individuals in Oranmore Bay in 2009 and 122 individuals in 2010 (NPWS, 2010; NPWS 2011). The nearest breeding site to the proposed development is located approximately 1.5km to the south-west of the application site as mapped in Map 12 of the SSCOs.

5.3 Inner Galway Bay SPA

5.3.1 Review of Conservation Objectives for Inner Galway Bay SPA

The relevant SCIs and the associated conservation objectives for the site are presented in Table 5-3. The Targets and Attributes for the species, as described in the Inner Galway Bay SPA Conservation Objectives supporting documents, were reviewed and considered in this assessment (NPWS).

Table 5-3 Special Conservation Interest and Conservation Objectives

Special Conservation Interest	Conservation Objective
Great Northern Diver (*Gavia immer*) [A003]	*To maintain the favourable conservation condition of the bird species as Special Conservation Interests for this SPA.*
Cormorant (*Phalacrocorax carbo*) [A017]	
Grey Heron (*Ardea cinerea*) [A028]	
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	
Wigeon (*Anas penelope*) [A050]	
Teal (*Anas crecca*) [A052]	
Red-breasted Merganser (*Mergus serrator*) [A069]	
Ringed Plover (*Charadrius hiaticula*) [A137]	
Golden Plover (*Pluvialis apricaria*) [A140]	
Lapwing (*Vanellus vanellus*) [A142]	
Dunlin (*Calidris alpina*) [A149]	
Bar-tailed Godwit (*Limosa lapponica*) [A157]	
Curlew (*Numenius arquata*) [A160]	
Redshank (*Tringa totanus*) [A162]	
Turnstone (*Arenaria interpres*) [A169]	
Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	
Common Gull (*Larus canus*) [A182]	
Sandwich Tern (*Sterna sandvicensis*) [A191]	
Common Tern (*Sterna hirundo*) [A193]	
Wetland and Waterbirds [A999]	*'To maintain the favourable conservation condition of wetland habitat in Inner Galway Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it.'*

5.3.2 Review of site-specific pressures and threats for Inner Galway Bay SPA

As per the Natura 2000 Data Form (NPWS, 2015), the site-specific threats, pressures and activities with potential to impact on the SPA are as follows:

Table 5-4 Site-specific Threats, Pressures and Activities

Negative Impacts		
Rank	Threats and Pressures	
Medium	E02	Industrial or commercial areas
Low	A04	Grazing
Medium	F01	Marine and Freshwater Aquaculture
Medium	G01.02	Walking, horse-riding and non-motorised vehicles
Medium	J02.12	Dykes, embankments, artificial beaches, general
High	J02.01.02	Reclamation of land from sea, estuary or marsh
Medium	A08	Fertilisation
High	E01	Urbanised areas, human habitation
Medium	F02.03	Leisure fishing
High	E03	Discharges
Low	F03.01	Hunting
Medium	G01.01	Nautical sports
Medium	D01.02	Roads, motorways

E03 Discharges (High) and *E01 Urbanised areas/human habitation* (High) have been identified as having potential to impact on the SCI bird species and the SCI feature Wetlands [A999] for which the SPA has been designated. These activities have the potential to result in pollution to surface waters and groundwaters, and disturbance of bird species.

The screening assessment of the proposed project, see Table 3-1 **Appendix 1**, identified potential for water pollution associated with the construction phase and operational phases of the development.

5.3.3 Special Conservation Interests - Wetlands of Inner Galway Bay SPA

According to the site-specific conservation objectives the extent of wetland habitat within the SPA was estimated as 13,267ha, using OSi data and relevant orthophotographs (NPWS, 2013). The following relevant extracts have been gleaned from the NPWS site synopsis and Natura 2000 Data From for the SPA:

> *"Inner Galway Bay SPA is a very large, marine-dominated site situated on the west coast of Ireland. The inner bay is protected from exposure to Atlantic swells by the Aran Islands and Black Head. Subsidiary bays and inlets (e.g. Poulnaclough, Aughinish and Kinvarra Bays) add texture to the patterns of water movement and sediment deposition, which lends variety to the marine habitats and communities. The terraced Carboniferous (Viséan) limestone platform of the Burren sweeps down to the shore and into the sublittoral. The long shoreline is noted for its diversity, and comprises complex mixtures of bedrock shore, shingle beach, sandy beach and fringing salt marshes. Intertidal sand and mud flats occur around much of the shoreline, with the largest areas being found on the sheltered eastern coast between Oranmore Bay and Kinvarra Bay. A number of small islands and rocky islets in the Bay are included within the site.*
>
> *The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Great Northern Diver, Cormorant, Grey Heron, Light-bellied Brent Goose, Wigeon, Teal, Shoveler, Red-breasted Merganser, Ringed Plover, Golden Plover, Lapwing, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Black-headed Gull, Common Gull, Sandwich Tern and Common Tern. The E.U. Birds Directive*

pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds

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

5.3.4 SCI Species of Inner Galway Bay SPA

Species listed as Special Conservation Interests (SCIs) for Inner Galway Bay SPA and their population type as listed in the Natura 2000 standard data form are listed in Table 5-5.

Table 5-5 SCIs of Inner Galway Bay SPA [004031] and their population type

Special Conservation Interests	Population type
Common Gull (*Larus canus*) [A182]	Wintering
Great Northern Diver (*Gavia immer*) [A003]	Wintering
Cormorant (*Phalacrocorax carbo*) [A017]	Reproducing
Grey Heron (*Ardea cinerea*) [A028]	Not listed
Brent Goose (*Branta bernicla hrota*) [A046]	Wintering
Wigeon (*Anas penelope*) [A050]	Wintering
Teal (*Anas crecca*) [A052]	Wintering
Shoveler (*Anas clypeata*) [A056]	Wintering
Red-breasted Merganser (*Mergus serrator*) [A069]	Wintering
Ringed Plover (*Charadrius hiaticula*) [A137]	Wintering
Golden Plover (*Pluvialis apricaria*) [A140]	Wintering
Lapwing (*Vanellus vanellus*) [A142]	Wintering
Dunlin (*Calidris alpina*) [A149]	Wintering
Bar-tailed Godwit (*Limosa lapponica*) [A157]	Wintering
Curlew (*Numenius arquata*) [A160]	Wintering
Redshank (*Tringa totanus*) [A162]	Wintering
Turnstone (*Arenaria interpres*) [A169]	Wintering
Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	Wintering
Sandwich Tern (*Sterna sandvicensis*) [A191]	Reproducing
Common Tern (*Sterna hirundo*) [A193]	Reproducing

A review of the Inner Galway Bay conservation objectives supporting document (version 1, NPWS, 2013) pertaining to the SPA was undertaken. This document indicates that the subsite Rosshill (0G496), which is located approximately 100m to the west of the development as shown in the maps in Appendix 6 of the conservation objectives supporting document, was surveyed as part of the Inner Galway Bay Survey Program 2009/10. Data indicates that this subsite is among the more species poor of the subsites surveyed, with mean numbers of 9 and a peak of 12 species recorded on one low tide occasion. A summary of data collect over four surveys of the site at low tide is presented in Table 5-6.

Table 5-6: Inner Galway Bay SPA subsite assessment survey 2009/2010

Species	Total numbers
Common Gull (*Larus canus*)	Low
Great Northern Diver (*Gavia immer*)	Not recorded
Cormorant (*Phalacrocorax carbo*)	Not recorded

Species	Total numbers
Grey Heron (*Ardea cinerea*)	Not recorded
Light-bellied Brent Goose (*Branta bernicla hrota*)	Not recorded
Wigeon (*Anas penelope*)	Low
Teal (*Anas crecca*)	High
Shoveler (*Anas clypeata*)	Not recorded
Red-breasted Merganser (*Mergus serrator*)	Not recorded
Ringed Plover (*Charadrius hiaticula*)	Not recorded
Golden Plover (*Pluvialis apricaria*)	Not recorded
Lapwing (*Vanellus vanellus*)	Low
Dunlin (*Calidris alpina*)	Low
Bar-tailed Godwit (*Limosa lapponica*)	Moderate
Curlew (*Numenius arquata*)	High
Redshank (*Tringa totanus*)	Medium
Turnstone (*Arenaria interpres*)	Not recorded
Black-headed Gull (*Chroicocephalus ridibundus*)	Medium
Sandwich Tern (*Sterna sandvicensis*)	Not recorded
Common Tern (*Sterna hirundo*)	Not recorded

The Inner Galway Bay conservation objectives supporting document does not identify the Rosshill subsite as an important roosting site for any bird species.

6. ECOLOGICAL SURVEY RESULTS

6.1 Habitats

The multidisciplinary walkover survey comprehensively covered the application site and wider study area as illustrated in Figure 2-1 of the AASR in Appendix 1 of this document. The habitats recorded within the application site and the wider study area during the site visit are listed in Table 6-1 below. A habitat map is shown in Figure 6-1.

Table 6-1 Habitats Recorded Within the Proposed Development Site

Habitat	Fossitt (2000) Code
Dry Neutral Grassland/Dry Calcareous and Neutral Grassland	GS1
Wet Grassland	GS4
Treelines	WL2
Stone walls and other Stonework	BL1
Hedgerow	WL1
Scrub	WS1
Oak-Ash-Hazel Woodland	WD1
Buildings and artificial surfaces	BL3

The proposed application site is situated within lands which are a former golf course. The majority of the site comprises a network of semi-improved, species poor ***Dry neutral grassland (GS1)*** (Plate 6-1). The dominant species was Yorkshire fog (*Holcus lanatus*). Other species present included common bent grass (*Agrostis capillaris*), rough meadow grass (*Poa trivialis*), cock's foot (*Dactylis glomerata*), creeping buttercup (*Ranunculus repens*), common sorrel (*Rumex acetosa*), curled dock (*Rumex crispus),* common mouse-ear (*Cerastium fontanum*), creeping thistle (*Cirsium arvense*) and white clover (*Trifolium pratense*). False oat grass (Arrhenatherum elatius), knapweed (*Centaurea nigra*), red clover (*Trifolium pratense*), selfheal (*Prunella vulgaris),* yarrow (*Alchemilla millefolium*) and smooth hawksbeard (*Crepis capillaris*) were recorded close to field boundaries. A total of 4 no. relevés were taken within this habitat (refer to **Appendix 8** of this report for relevé data). The grassland was not found to correspond to Annex I grassland.

A small area of poorly drained grassland at the north-west of the site was classified as ***Wet grassland (GS4)***. Species present included Yorkshire fog, crested dog's tail (*Cynosurus cristatus*) marsh thistle (*Cirsium palustre*) and compact rush (*Juncus conglomeratus*) (Plate 6-2).

The north-eastern corner of the site consists of a relatively disturbed area with imported rock and rubble. Aerial photography was consulted and shows that the site has been subject to disturbance/clearance in this corner in the recent past. The grassland recolonising this area was classified as ***Dry calcareous and neutral grassland (GS1)*** (Plate 6-3). Species present included red clover, selfheal, glaucous sedge (*Carex flacca*), centaury (*Centaurium erythyraea*), medick (*Medicago lupulina*), crested dog's tail, sweet vernal grass (*Anthoxanthum odoratum*), silverweed (*Potentilla anserina*), Yorkshire fog, meadow buttercup (*Ranunculus acris*), common mouse-ear, sheep's fescue (*Festuca ovina*) and tufted vetch (*Vicia cracca*). 1 no. relevé was taken within this habitat (refer to **Appendix 8** for relevé data). Given the low number of positive indicator species, the grassland was not found to correspond to Annex I grassland (O'Neill et al. 2013).

The eastern site boundary is delineated by a stone wall classified as ***Stonewalls and other stonework (BL1)***, and ***Treeline (WL2)*** comprised predominantly of ash. Field boundaries within the site are delineated by stone walls, treeline and ***Hedgerows (WL1)*** comprised of blackthorn (*Prunus spinosa*) and hawthorn. The stone walls were vegetated, predominantly with bramble (*Rubus fructicosus agg.*).

An area of woodland classified as ***Oak-ash-hazel (WN2)*** woodland (Plate 6-4) is present along the north western boundary of the proposed development site. Although immature ash is dominant on lower lying ground, sycamore and beech are also frequent, particularly on more well drained higher ground. Species present in the understorey include hawthorn, hazel (*Corylus avellana*) and occasional holly (*Ilex aquifolium*). Ground flora included lesser celandine (*Ficaria verna*), lords and ladies (*Arum maculatum*), primrose (*Primula vulgaris*) and herb Robert (*Geranium robertianum*). 1 no. 10m x 10m relevé was taken in this habitat (refer to **Appendix 7** for relevé data). The woodland was not found to correspond to Annex I woodland. An area of ***Scrub (WS1)***, comprised of hawthorn, blackthorn and bramble with treelines to its north and south, is present to the west of the woodland area.

Evidence of grazing by horses was recorded both within the grassland and woodland during the site visits.

No invasive species listed under Regulations 49 and 50 of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) were recorded within the proposed site boundary.

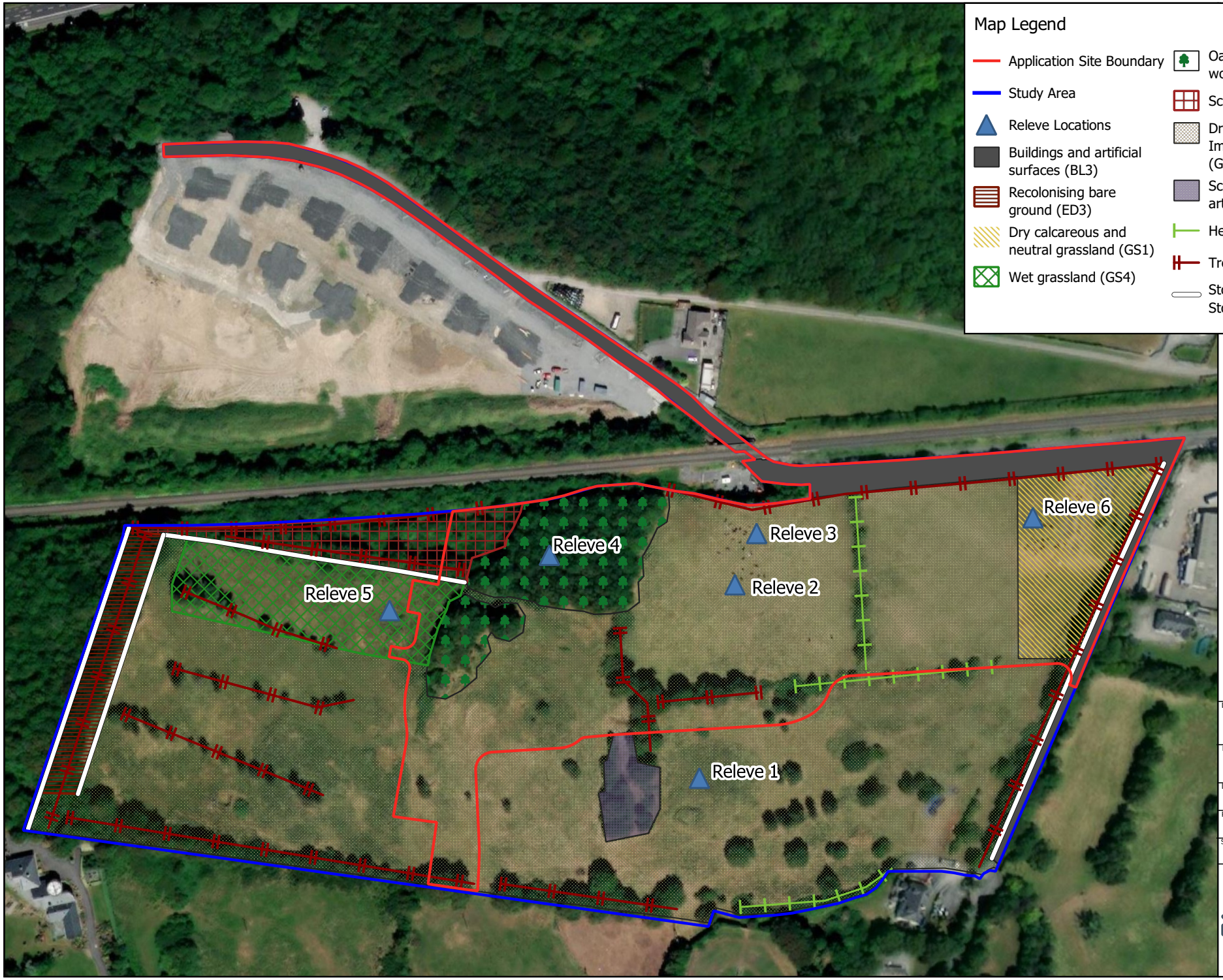
None of the habitats within the site or the wider study area correspond to those listed on Annex I of the EU Habitats Directive. No watercourses were recorded within or adjacent to the development site.

Plate 6-1 The majority of the site is comprised of semi-improved Dry neutral grassland (GS1).

Plate 6-2 Wet grassland (GS4) to the north-west of the site.

Plate 6-3 Dry calcareous and neutral grassland (GS1) in the north-east corner of the site.

Plate 6-4 Oak-ash-hazel woodland (WN2) within the development site close to the northern boundary.



Map Legend

- Application Site Boundary
- Study Area
- Releve Locations
- Buildings and artificial surfaces (BL3)
- Recolonising bare ground (ED3)
- Dry calcareous and neutral grassland (GS1)
- Wet grassland (GS4)
- Oak-ash-hazel woodland (WN2)
- Scrub (WS1)
- Dry neutral grassland (GS1)/ Improved agricultural grassland (GA1) Mosaic
- Scrub (WS1)/ Buildings and artificial surfaces (BL3) Mosaic
- Hedgerows (WL1)
- Treelines (WL2)
- Stone Walls and other Stone Work (BL1)

N

Drawing Title
Habitat Map

Project Title
SHD Rosshill

Drawn By	Checked by
AvdGM	SM
Project No.	Drawing No.
200607	Fig. 6-1
Scale	Date
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6.2 Fauna

No Annex II species associated with any SAC was identified during any of the ecological surveys undertaken between April 2019 and May 2021. The development site is located 136m from Galway Bay Complex SAC which is designated for otter (*Lutra lutra*) and harbour seal (*Phoca vitulina*). The development site does not support suitable habitat for these species. There are no watercourses within or directly adjacent to the proposed development and the shoreline of Galway Bay is buffered from the proposed development by woodland, treelines, residential dwellings and agricultural grassland.

6.2.1 Birds

Bird species recorded within the proposed development site during the walkover surveys included common species such as blackbird (*Turdus merula*), robin (*Erithacus rubecula*), magpie (*Pica pica*), bullfinch (*Pyrrhula pyrrhula*), chaffinch (*Fringilla coelebs*), wood pigeon (*Columba palumbus*), great tit (*Parus major*), jackdaw (*Corvus monedula*), hooded crow (*Corvus cornix*), wren (*Troglodytes troglodytes*), blue tit (*Parus caeruleus*), pied wagtail (*Motacilla alba yarrellii*) and meadow pipit (*Anthus pratensis*).

The development site is located approximately 260m from Inner Galway Bay SPA which is designated for a number of wintering and reproducing wetland bird species. Although the development site does not support suitable wetland habitat for the SCI bird species for which the SPA is designated, dedicated winter bird surveys of the site were undertaken between October 2020 and March 2021.

6.2.1.1 2020-2021 Winter Bird Surveys

Dedicated winter bird surveys were undertaken monthly between October 2020 and March 2021. The full details of the winter bird surveys are contained within the Winter Bird Survey report in Appendix 7 of this document and are summarised below.

No species listed as Special Conservation Interests (SCIs) for Inner Galway Bay SPA were recorded roosting or feeding within the proposed development site during the dedicated bird surveys. The majority of the birds recorded within the site boundary and in the surrounding habitat during the site visit were an assemblage of common birds that are typical of the grassland, woodland and hedgerow habitats found within the wider area. Species recorded within the development site during the winter bird surveys included common farmland species; magpie (Pica pica), robin (Erithacus rubecula), wood pigeon (Columba palumbus), wren (*Troglodytes troglodytes*), long-tailed tit (*Aegithalus caudatus*), Great tit (*Parus major*), Dunnock (*Prunella modularis*), Hooded crow (*Corvus cornix*), Blackbird (*Turdus merula*), Bullfinch (*Pyrrhula pyrrhula*), Pheasant (*Phasianus colchicus*), Raven (*Corvus corax*), Redwing (*Turdus iliacus*), Starling (*Sturnus vulgaris*), Song thrush (*Turdus philomelos*), Pied wagtail (*Motacilla alba yarrellii*) and Mistle thrush (*Turdus viscivorus*).

There were three observations of SCI species flying over the site, including eight black-headed gulls, eight curlew and one grey heron. These species were not recorded using the habitats within the proposed development.

A section of Inner Galway Bay, approximately 600m to the south west of the development was also surveyed. The vantage point overlooked an area of tidal mudflat in order to record bird distribution during high and low tide and to determine whether birds listed as Special Conservation Interests of the Inner Galway Bay SPA may utilize the habitats within the development site. No movements of wintering wildfowl between the SPA and the proposed development site were observed.

The results of the winter bird surveys indicate that the proposed development site does not provide significant habitat for wintering wildfowl or waders listed as SCIs for the Galway Bay Inner SPA. Habitats within the site consist primarily of dry neutral grassland (GS1), hedgerow (WL1) and treeline

(WL2) and oak-ash-hazel woodland (WD1). The site does not contain any supporting wetland habitat and it does not support suitable breeding or roosting habitat for any of the SCI species for which the SPA is designated. Furthermore, the SPA is buffered from the development site by woodland, residential dwellings and agricultural grassland.

7. ASSESSMENT OF POTENTIAL ADVERSE EFFECTS

7.1 Potential for Direct Effects on the European Sites

The proposed development site lies entirely outside the boundary of any European Site. There will be no direct effects on the Qualifying Interest of Galway Bay Complex SAC or the Special Conservation Interests of Inner Galway Bay SPA.

There are no Annex I habitats within the development site and the site does not contain suitable supporting habitat for Annex II species of Galway Bay Complex SAC or SCI bird species of Inner Galway Bay SPA. There will be no impact on supporting habitat areas outside the proposed development site boundary. There is also no direct surface water connectivity between the site of the proposed project and any EU Designated Site. No potential for direct effects on any European Site exists.

7.2 Potential for Indirect Effects on the European Sites

7.2.1 Identified Pathway for Impact – Deterioration in water quality

Although no watercourses were identified within the site, a potential pathway for indirect effects on the marine/surface water dependent Qualifying Interests of Galway Bay Complex SAC and Inner Galway Bay SPA was identified in the form of deterioration of water quality resulting from pollution, associated with the construction and operational phases of the development.

7.2.2 Preventative measures to avoid identified impact

Best practice environmental control measures have been incorporated into the design of the development and are described in the following subsections.

7.2.2.1 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 a risk of surface water runoff from bare soil and soil storage areas during construction works.

There are no adjacent natural or man-made watercourses within the proposed development boundary. However, in the absence of mitigation, the construction activities could result in the overland release of suspended solids. Taking a precautionary approach, the release of suspended solids could potentially affect the water quality of downstream water bodies and water dependent habitats of Galway Bay Complex SAC and Inner Galway Bay SPA.

Mitigation

Best practice environmental control measures will be implemented during the construction phase of the development. These are described below:

On site surface water runoff

- A CEMP has been prepared for the proposed development and is included as Appendix 9. The CEMP will incorporate the mitigating principles to ensure that the work is carried out in a manner which blocks all potential pathways for adverse water quality impacts. The CEMP will be in place prior to the start of the construction phase of the project.
- Prior to the commencement of earthworks, silt fencing will be placed down-gradient of the construction areas. Fences will be embedded into the local soils to ensure all site water (should any arise) is captured and filtered;
- As construction advances there may be a small requirement to collect and treat surface water within the site. This will be completed using perimeter swales at low points around the construction areas, and if required water will be pumped from the swales into sediment bags prior to overland discharge;
- In the event of encountering groundwaters during excavation, it will be pumped from the excavation to temporary on-site drainage system prior to discharge overland through vegetation;
- Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing;
- Any proposed discharge area will avoid potential surface water ponding areas, and will only be located where suitable subsoils are present;
- No pumped construction water will be discharged directly into any local watercourse;
- Daily monitoring and inspections of site drainage during construction will be completed;
- Earthworks will take place during periods of low rainfall to reduce run-off and potential siltation of watercourses;
- All excavated material will be reused for future landscaping works or for backfill of excavations;
- All stockpiles will be damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation;
- Good construction practices such wheel washers and dust suppression on site roads, and regular plant maintenance will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment.

Hydrocarbons

The use of hydrocarbons during the construction process can result in the potential for pollution and accidental spillage to groundwater. The following measures have been built into the construction design phase of the project.

- On site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser.

- Only designated trained and competent operatives will be authorised to refuel plant on site.
- Vehicles will never be left unattended during refuelling
- Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations;
- Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the time period of the construction;
- The plant used will be regularly inspected for leaks and fitness for purpose;
- Spill kits will be available to deal with accidental spillages.

The following guidelines and documents will inform the detailed planning of the works phase:

- Good practice guidelines on the control of water pollution from construction sites developed by the Construction Industry Research and Information Association (CIRIA) in particular;
- C532 Control of water pollution from construction sites: guidance for consultants and contractors (Masters-Williams et al, 2001); and
- SP156 Control of water pollution from construction sites - guide to good practice (Murnane et al, 2002).
- Requirements for the protection of fisheries habitat during construction and development works at river sites developed by the ERFB. http://www.fisheriesireland.ie/Research/recent-publications.html.

7.2.2.2 Operational Phase

Production of Foul Sewage

The operational phase of the proposed project will result in the production of foul sewage. If not adequately treated, there is potential for indirect impacts on water quality.

All foul water will be discharged to the public sewer and will be treated at the Galway Mutton Island Wastewater Treatment Plant before discharge to Galway Bay. Irish Water have upgraded the Mutton Island Wastewater Treatment facility under the Capital Investment Plan 2014-2016 (Galway Sewerage Scheme Phase 3 – Network Upgrade Contract No.1 Volume D). The upgrade increases the capacity of the plant from 92,000 to 170,000 p.e. (Reference City Plan)."

Treatment process includes the following:

- Preliminary Treatment (Screening & Grit Removal)
- Primary Treatment (Upward Flow Settlement Tanks)
- Secondary Treatment (Activated Sludge)

There is full agreement with Irish Water that there is adequate capacity and capability to fully treat all sewage generated by the proposed project in the public sewage treatment system. Correspondence with Irish Water, Reference CDS20006156 is provided in **Appendix 4** of this NIS. The proposed project, as assessed for the confirmation of feasibility, is a standard connection, requiring no network or treatment plant upgrades or water or wastewater by either the customer or Irish Water. Given that waste will be appropriately treated to EPA standards; no potential for adverse impact on water quality exists.

Surface Water Runoff

The storm water drainage design has been designed to cater for all surface water runoff from all hard surfaces in the proposed development including roadways, roofs etc. All stormwater generated on site from roadways and roofs will discharge via an oil/petrol interceptor to soakaways which are strategically situated throughout the site. The stormwater will soak away through the underlying fractured

rock/boulders. The soakaways shall be constructed of a cellular storage unit providing 95% porosity or stone filled soakaway providing 40% void ratio. These will also attenuate storm water during and post storm events prior to infiltrating through the underlying fractured rock/boulders. All soakaways are designed to accommodate a 1 in 100-year storm event (+10% for Climate Change) throughout the site.

Surface water from hard surfaces in the proposed development including roadways and roofs, will flow by gravity to the soakaways.

No potential for adverse impact on water quality exists as a result of the storm water treatment proposal.

7.2.2.3 Disturbance and Displacement - Otter and harbour seal

No evidence of harbour seal was identified within the development site and the site does not contain suitable habitat for this species. The section of Galway Bay Complex SAC closest to the development site is wooded and does not provide suitable habitat for this species. According to the SSCOs for Galway Bay Complex SAC the nearest mapped breeding site is 1.3km from the development. Given the distance between the development and the nearest known breeding site and the intervening natural buffers including woodland, grassland and residential dwellings, no potential for disturbance related impact on harbour seal exists.

Although the site itself does not provide suitable habitat for otter, potential supporting habitat for the species exists in the wider area and the potential for disturbance to the Otter population associated with Galway Bay Complex SAC is considered below on a precautionary basis.

Otter are crepuscular in nature and are unlikely to be adversely impacted by the proposed works. The NPWS Threat Response Plan for Otter acknowledges that "*Little evidence has come to light in recent studies to suggest that disturbance by recreation is a significant pressure.*" It also identifies that Otter are known to travel significant distances from streams and lakes in search of new territory and feeding areas.

Channin P. (2003) provides a literary review with regard to anthropogenic disturbance and refers to several reports which have found that disturbance is not detrimental to Otters (Jefferies (1987), (Durbin 1993), (Green & Green 1997). The report also describes successful breeding in towns, under ferry terminals and under the jetties of one of Europe's largest oil and gas terminals at Sullom Voe in North Scotland.

Irish Wildlife Manual No. 23 (National Otter Survey of Ireland 2004/2005) found no significant relationship between disturbance and otter occurrence. In addition, no significant difference in otter presence was found between sites with and without recreational activity. It also states, "*the lowest percentage occurrence was found at the sites with the lowest recorded disturbance!*"

Irish Wildlife Manual No. 76 (*National Otter Survey of Ireland 2010/2012*) notes that the occurrence of Otter was unaffected by perceived levels of disturbance at the survey sites. It also notes that there is little published evidence demonstrating any consistent relationship between Otter occurrence and human disturbance (Mason & Macdonald 1986, Delibes et al. 1991; Bailey &Rochford, 2006).

Based on the above review of scientific literature, given that no otter evidence was recorded during dedicated surveys and based on the best practice disturbance limitation measures included below, the potential for adverse impact on the integrity of the otter population associated with Galway Bay Complex SAC can be excluded.

Mitigation

Best practice disturbance limitation measures will be implemented during the construction phase of the development. These are described below:

The methodology of British Standard WS 5228: l997 "*Noise and Vibration Control on Construction and Open Sites*" Part I, will be deployed during works, to minimise emission of any noise. In addition, the following best practice measures will be deployed:

- The majority of works will be completed during daylight hours. No artificial lighting will be used to illuminate any works area.
- The best means practical, including proper maintenance of plant, will be employed to minimise the noise produced by on-site operations.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machines which are used intermittently will be shut down or throttled back to a minimum during those periods when they are not in use.
- Any plant such as generators or pumps which are required to work outside of normal working hours will be surrounded by an acoustic enclosure.

7.2.2.4 Disturbance and Displacement -Birds

Taking a precautionary approach, disturbance and displacement were identified as having the potential to result in adverse effects on the following Qualifying Interests of the Inner Galway SPA:

- Great Northern Diver (*Gavia immer*) [A003]
- Cormorant (*Phalacrocorax carbo*) [A017]
- Grey Heron (*Ardea cinerea*) [A028]
- Brent Goose (*Branta bernicla hrota*) [A046]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Shoveler (*Anas clypeata*) [A056]
- Red-breasted Merganser (*Mergus serrator*) [A069]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Lapwing (*Vanellus vanellus*) [A142]
- Dunlin (*Calidris alpina*) [A149]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Turnstone (*Arenaria interpres*) [A169]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Sandwich Tern (*Sterna sandvicensis*) [A191]
- Common Tern (*Sterna hirundo*) [A193]

An assessment of the potential effects on these SCI species in respect of disturbance and displacement impacts is provided below and is based on a detailed desk study of recent scientific literature described. The potential for adverse effects on these species in view of their site-specific conservation objectives have been considered in this assessment.

Inner Galway Bay SPA lies approximatley 260m to the west of the development site. None of the listed SCI species of Inner Galway Bay SPA were recorded utilising habitats within the development site during the site visits undertaken in 2019 and 2020 or during the dedicated winter bird surveys between October 2020 and March 2021. The site consists predominantly of species poor, semi-improved grassland. The site does not consist of any significant wetland habitat and does not support suitable breeding habitat for any of the breeding SCI species for which the SPA is designated. Furthermore, the

SPA is extensively buffered from the development site by woodland, grasslands and residential dwellings.

Whilst no significant disturbance to these SCI bird species is anticipated during construction or operation, an assessment of the distance at which birds respond to human disturbance (flight initiation distance or FID) was undertaken for each of the SCI species.

Flight initiation distances for each of the SCI species listed for Inner Galway Bay SPA are provided in Table 7-1 based on a review of the most recent scientific literature. Livezey *et al.* (2016) provides a literary review with regard to bird flight initiation distances in response to anthropogenic disturbance. The study compiles a database of published alert distances (distances at which birds exposed to an approaching human activity exhibit alert behavior), flight initiation distances (distances at which birds exposed to an approaching human activity initiate escape behavior), and minimum approach distances (distances at which humans should be separated from wildlife) by taxonomic order.

This table demonstrates that the proposed development is outside the disturbance distance for any SCI species of Inner Galway Bay SPA. The most sensitive species are potentially disturbed at 71metres. The proposed development is over 260m from the SPA and separated from it by woodland, treelines, grassland and residential dwellings. The proposed development does not provide any new connectivity or between the development site and the SPA, Based on the above literary review and lack of supporting habitat for SCI species at the development site no potential for adverse disturbance effects on the SCI species of Inner Galway Bay, either within or outside the SPA boundary, are anticipated.

Table 7-1: Disturbance Distance of SCI species of Inner Galway Bay SPA

SCI Species of Inner Galway Bay	Population type	Inner Galway Bay SPA subsite assessment survey 2009/2010: Total numbers	Minimum Approach Distance to pedestrian disturbance by taxonomic order	SCI Species of Inner Galway Bay
Common Gull	Wintering	High	22.3m	59.9m in response to pedestrian disturbance (Møller & Erritzøe, 2010)
Great Northern Diver	Wintering	Not recorded	Not listed	76.8m in response to human recreational activity (Jiang and Møller, 2017). A study of the disturbance response of great northern diver to boat traffic in Inner Galway Bay, found that Great Northern Divers in the area around Galway harbour do not show any significant response to normal ship and boat traffic with no Great Northern Divers flushed by the survey boat, even though the boat passed within 10 to 20 m of some birds (Gittings *et al.* 2015).
Cormorant	Reproducing	High	32.1m	23.5m, in response to motorized vehicle, and 74m, in response to pedestrian disturbance in non- nesting birds (Guay et al., 2014)
Grey Heron	Not listed	Very high	46.8m	47.36m in response to pedestrian disturbance (Møller & Erritzøe, 2010)
Light-bellied Brent Goose	Wintering	Not recorded	71.0m	105m in response to pedestrian disturbance (Smit & Visser, 1993); 23.5m in response to pedestrian disturbance (Møller & Erritzøe, 2010)
Wigeon	Wintering	Very high	71.0m	91m (Holloway, 1997)
Teal	Wintering	Very high	71.0m	58m in response to pedestrian disturbance (Møller, 2008b); 39.23m in response to pedestrian disturbance (Møller & Erritzøe, 2010)
Shoveler	Wintering	Low	71.0m	Flush distance 100m in response to vehicles and walking (Pease, 2005).
Red-breasted Merganser	Wintering	Moderate	71.0m	Flush distance 28m in response to human recreational activity (Knapton, 2000).
Ringed Plover	Wintering	Not recorded	42.2m	22.5m in response to pedestrian disturbance (Møller, 2008b); 121m in response to pedestrian disturbance (Smit & Visser, 1993)
Golden Plover	Wintering	Very high	42.2m	No data listed for disturbance distances as of the date this report was written.
Lapwing	Wintering	Very high	42.2m	41.32m (Møller, 2008b), 39.47m (Møller AP. 2008c) in response to pedestrian disturbance.
Dunlin	Wintering	High	42.2m	163m in response to pedestrian disturbance (Smit & Visser, 1993);

SCI Species of Inner Galway Bay	Population type	Inner Galway Bay SPA subsite assessment survey 2009/2010: Total numbers	Minimum Approach Distance to pedestrian disturbance by taxonomic order	SCI Species of Inner Galway Bay
Bar-tailed Godwit	Wintering	High	42.2m	219m in response to pedestrian disturbance (Smit & Visser, 1993); 22.1m in response to pedestrian disturbance (Blumstein et al., 2003)
Curlew	Wintering	Very high	42.2m	90m in response to dog disturbance, 188m in response to car disturbance and 213m in response to pedestrian disturbance (Smit & Visser, 1993)
Redshank	Wintering	Very high	42.2m	29.71m in response to pedestrian disturbance (Møller, 2008b) (Møller & Erritzøe, 2010)
Turnstone	Wintering	High	42.2m	13.8m in response to pedestrian disturbance (Blumstein et al., 2005), 29.66m (Glover et al., 2011). 47m in response to pedestrian disturbance (Smit and Visser, 1993)
Black-headed Gull	Wintering	High	42.2m	41.20m (Møller and Erritzøe, 2010)
Sandwich Tern	Reproducing	Not recorded	22.3m (nesting) 42.2m	No data listed for disturbance distances as of the date this report was written.
Common Tern	Reproducing	Not recorded	22.3m (nesting) 42.2m	20.5m in response to pedestrian disturbance (Weston et al., 2012)

8. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The sections provided below detail the site-specific residual impact assessment in relation to the relevant QIs and SCIs of the 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.

8.1 Galway Bay Complex SAC [000268]

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

8.1.1 Otter (*Lutra lutra*)

The attributes and targets for this species as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex SAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in the table below.

Table 8-1 Targets and attributes associated with nominated site-specific conservation objectives for Otter (Lutra lutra) [1355] (as per NPWS, 2013)

Attribute	Target	Assessment
Distribution	No significant decline	The site does not support suitable habitat for otter. There will be no decline in the distribution of the otter population for which the SAC has been designated as a result of the proposed development.
Extent of terrestrial habitat	No significant decline.	The site does not support suitable habitat for otter. The proposed development will not result in the loss of any habitat anywhere within or outside of the SAC. In addition, there will be no loss of supporting habitat for the species within the proposed project site, which is located outside the SAC.
Extent of freshwater (river) habitat	No significant decline.	
Extent of freshwater (lake) habitat	No significant decline.	
Couching sites and holts.	No significant decline	The site does not support suitable habitat for otter. There will be no loss of holting or couching sites within the SAC.
Fish biomass available	No significant decline	There will be no decline in availability of fish biomass associated with the proposed project. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during works.
Barriers to connectivity	No significant increase	There will be no barriers to movement of otter at a local level and thus no potential for barrier effect within the SAC.

8.1.1.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely

affect the QI Otter (*Lutra lutra*) associated with the Galway Bay Complex SAC, in any phase of development.

8.1.2 Harbour seal (*Phoca vitulina*)

The attributes and targets for this species as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex SAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in the table below.

Table 8-2 Targets and attributes associated with nominated site-specific conservation objectives for Harbour Seal (Phoca vitulina) as per NPWS, 2013

Attribute	Target	Assessment
Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use.	The site does not support suitable habitat for harbour seal. There will be no decline in access to suitable habitat as a result of the proposed development.
Breeding behaviour	Conserve breeding sites in a natural condition.	The site does not support suitable habitat for harbour seal. The proposed development will not affect breeding, moult or resting sites. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during works.
Moulting behaviour	Conserve moult haul-out sites in a natural condition.	
Resting behaviour	Conserve resting haul-out sites in a natural condition.	
Disturbance	Human activities should occur at levels that do not adversely affect the harbour seal population at the site	The site does not support suitable habitat for harbour seal and is buffered from Galway Bay by woodland, agricultural land and residential dwellings. The proposed development will not cause disturbance to this species. No resting or breeding sites were identified within or adjacent to the development site.

8.1.2.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely affect the QI Harbour seal (*Phoca vitulina*) associated with the Galway Bay Complex SAC, in any phase of development.

8.1.3 Mudflats and sandflats not covered by seawater at low tide

Table 8-3 Targets and attributes associated with nominated site-specific conservation objectives for Mudflats and sandflats not covered by seawater at low tide [1140] (as per NPWS, 2013)

Attribute	Target	Assessment
Habitat Area	The permanent habitat area is stable or	There will be no decline in habitat area with the proposed project. The proposed works are located entirely outside

	increasing, subject to natural processes.	of the SAC boundary. The community types subject to conservation will not be affected as a result of the proposed development. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Community distribution	Conserve the following community types in a natural condition: Intertidal sandy mud community complex; and Intertidal sand community complex.	

8.1.3.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely affect the QI Mudflats and sandflats not covered by seawater at low tide associated with the Galway Bay Complex SAC, in any phase of development.

8.1.4 Large shallow inlets and bays

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex SAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in the table below.

Table 8-4 Targets and attributes associated with nominated site-specific conservation objectives for Large shallow inlets and bays [1160] (as per NPWS, 2013)

Table 8-4 Habitat Area	The permanent habitat area is stable or increasing, subject to natural processes.	There will be no decline in habitat area with the proposed project. The proposed works are located entirely outside of the SAC boundary. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Community extent	Maintain the extent of the *Zostera*-dominated community complex and the maërl-dominated community, subject to natural processes.	The proposed development will not affect the communities characterising this habitat, in terms of extent, structure or distribution. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases. No other pathways for impact on this habitat were identified during the assessment.
Community structure: *Zostera* density	Conserve the high quality of *Zostera*-dominated communities, subject to natural processes	
Community structure	Conserve the high quality of the maërl-dominated community, subject to natural processes	
Community distribution	Conserve the following community types in a natural condition: Intertidal sandy mud	

	community complex; Intertidal sand community complex; Fine to medium sand with bivalves community complex; Sandy mud to mixed sediment community complex; Mixed sediment dominated by Mytilidae community complex; Shingle; Fucoid-dominated community complex; Laminaria-dominated community complex; and Shallow sponge-dominated community complex.	

8.1.4.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely affect the QI Large shallow inlets and bays associated with the Galway Bay Complex SAC, in any phase of development.

8.1.5 Reefs

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex SAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in the table below.

Table 8-5 Targets and attributes associated with nominated site-specific conservation objectives for Reefs [1170] (as per NPWS, 2013)

Attribute	Target	Assessment
Distribution	The distribution of reefs is stable or increasing, subject to natural processes	There will be no decline in habitat area or distribution with the proposed project. The proposed works are located entirely outside of the SAC boundary. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Habitat area	The permanent habitat area is stable, subject to natural processes.	
Community extent	Maintain the extent of the *Mytilus*-dominated reef community, subject to natural processes.	The proposed development will not affect the communities characterising this habitat, in terms of extent or structure. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases. No other pathways for impact on this habitat were identified during the assessment.
Community structure: *Mytilus* density	Conserve the high quality of the *Mytilus*-dominated reef community, subject to natural processes	

Community structure	Conserve the following community types in a natural condition: Fucoid-dominated community complex; Laminaria-dominated community complex; and Shallow sponge-dominated community complex.	

8.1.5.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely affect the QI Reefs associated with the Galway Bay Complex SAC, in any phase of development.

8.1.6 Coastal lagoons

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex SAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in the table below.

Table 8-6 Targets and attributes associated with nominated site-specific conservation objectives for Coastal lagoons [1150]

Attribute	*Target*	Assessment
Habitat area	Area stable, subject to slight natural variation.	There will be no decline in habitat area or distribution as a result of the proposed project.
Habitat distribution	No decline, subject to natural processes.	
Salinity regime	Median annual salinity and temporal variation within natural ranges	There will be no alteration to the salinity or hydrological regime associate with this habitat as a result of the proposed project.
Hydrological regime	Annual water level fluctuations and minima within natural ranges	
Barrier: connectivity between lagoon and sea	Appropriate hydrological connections between lagoons and sea, including where necessary, appropriate management	No barriers between the lagoons and the sea will be created as a result of the proposed development.
Water quality: Chlorophyll a	Annual median chlorophyll a within natural ranges and less than Njg/L	Indirect pathways including water pollution that would allow impacts on water quality to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Water quality: Molybdate Reactive Phosphorus (MRP)	Annual median MRP within natural ranges 0.1mg/L	
Water quality: Dissolved Inorganic Nitrogen (DIN)	Annual median DIN within natural ranges and less than 0.15mg/L	
Depth of macrophyte colonisation	Macrophyte colonisation to at least 2m depth	There will be no alteration of the depth of macrophyte colonisation as a result of the proposed development.

Typical plant species	Maintain number and extent of listed lagoonal specialists, subject to natural variation	No decline in typical species associated with this habitat will occur as a result of the proposed development. No introduction of negative indicator species is expected as a result of the proposed development. Best practice measures have been included in the project design to avoid any such impacts.
Typical animal species	Maintain listed lagoon specialists, subject to natural variation	
Negative indicator species	Negative indicator species absent or under control	

8.1.6.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely affect the QI Coastal Lagoons associated with the Galway Bay Complex SAC, in any phase of development.

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

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex SAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in the table below.

Table 8-7 Targets and attributes associated with nominated site-specific conservation objectives for of Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]

Attribute	*Target*	Assessment
Habitat area	Area increasing, subject to natural processes, including erosion and succession.	There will be no decline in habitat area or distribution as a result of the proposed project. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Habitat distribution	No decline, or change in habitat distribution, subject to natural processes.	
Physical structure: sediment supply	Restore natural circulation of sediments and organic matter, without any physical obstructions	There will be no alteration to the physical structure of the habitat as a result of the proposed development. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession	
Physical structure: flooding regime	Maintain natural tidal regime	
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	There will be no alteration to the vegetation structure of the habitat as a result of the proposed development. Indirect pathways including water

Vegetation structure: vegetation height	Maintain structural variation within sward	pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases. No introduction of common cordgrass is expected as a result of the proposed development. Best practice measures are in place to avoid any such impact to occur.
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated	
Vegetation composition: typical species and subcommunities	Maintain range of sub-communities with the typical species listed in SMP (McCorry and Ryle, 2009)	
Vegetation structure: negative indicator species – *Spartina anglica*	There is currently no common cordgrass (*Spartina anglica*) in this SAC. Prevent establishment of cordgrass	

8.1.7.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely affect the QI Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) associated with the Galway Bay Complex SAC, in any phase of development.

8.1.8 Mediterranean salt meadows (*Juncetalia maritimi*) [1410]

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex SAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in the table below.

Table 8-8 Targets and attributes associated with nominated site-specific conservation objectives for of Mediterranean salt meadows (Juncetalia maritimi) [1410]

Attribute	*Target*	Assessment
Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession.	There will be no decline in habitat area or distribution with the proposed project. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Habitat distribution	No decline, or change in habitat distribution, subject to natural processes.	
Physical structure: sediment supply	Restore natural circulation of sediments and organic matter, without any physical obstructions.	There will be no alteration to the physical structure of the habitat as a result of the proposed development. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession	
Physical structure: flooding regime	Maintain natural tidal regime.	

Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.	There will be no alteration to the vegetation structure of the habitat as a result of the proposed development. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases. No introduction of common cordgrass is expected as a result of the proposed development. Best practice measures are in place to avoid any such impact to occur.
Vegetation structure: vegetation height	Maintain structural variation within sward.	
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated.	
Vegetation composition: typical species and subcommunities	Maintain range of sub-communities with the characteristic species listed in SMP (McCorry and Ryle, 2009).	
Vegetation structure: negative indicator species – *Spartina anglica*	There is currently no common cordgrass (*Spartina anglica*) in this SAC. Prevent establishment of cordgrass.	

8.1.8.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely affect the QI Mediterranean salt meadows (*Juncetalia maritimi*) [1410] associated with the Galway Bay Complex SAC, in any phase of development.

8.1.9 *Salicornia* and other annuals colonising mud and sand [1310]

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex SAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in the table below.

Table 8-9 Targets and attributes associated with nominated site-specific conservation objectives for Salicornia and other annuals colonising mud and sand [1310]

Attribute	*Target*	Assessment
Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession	The proposed development is located 136m from the SAC and buffered from the SAC by woodland, agricultural land and residential dwelligns. There will be no decline in habitat area or distribution with the proposed project. Pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Habitat distribution	No decline, or change in habitat distribution, subject to natural processes	

Physical structure: sediment supply	Maintain natural circulation of sediments and organic matter, without any physical obstructions	There will be no alteration to the physical structure of the habitat as a result of the proposed development. Pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Physical structure: creeks and pans	Maintain, or where necessary restore creek and pan structure, subject to natural processes, including erosion and succession	
Physical structure: flooding regime	Maintain natural tidal regime	
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	There will be no alteration to the vegetation structure of the habitat as a result of the proposed development. Pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases. No introduction of common cordgrass is expected as a result of the proposed development. Best practice measures are in place to avoid any such impact to occur.
Vegetation structure: vegetation height	Maintain structural variation within sward	
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated	
Vegetation composition: typical species and sub-communities	Maintain the range of species-poor communities with typical species listed in SMP (McCorry and Ryle, 2009)	
Vegetation structure: negative indicator species - *Spartina anglica*	There is currently no common cordgrass (*Spartina anglica*) in this SAC. Prevent establishment of cordgrass	

8.1.9.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely affect the QI *Salicornia* and other annuals colonising mud and sand [1310] associated with the Galway Bay Complex SAC, in any phase of development.

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

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex SAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in the table below.

Table 8-10 Targets and attributes associated with nominated site-specific conservation objectives for Calcareous fens with Cladium mariscus andd species of the Caricion davallianae [7210]

Attribute	*Target*	Assessment
Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession.	There will be no decline in habitat area or distribution with the proposed

Habitat distribution	No decline, or change in habitat distribution, subject to natural processes.	project. No fen habitat was recorded within or adjacent to the development. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Hydrological Regime	Appropriate natural hydrological regime necessary to support the natural structure and functioning of the habitat	There will be no abstractions and therefore no changes to the hydrological regime or peat formation as a result of the development.
Peat formation	Active peat formation, where appropriate	
Water quality: nutrients	Appropriate water quality to support the natural structure and functioning of the habitat	There will be no deterioration in surface or ground water quality as a result of the development. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Vegetation composition: typical species	Maintain vegetation cover of typical species including brown mosses and vascular plants	No fen habitat was recorded within or adjacent to the development. There will be no abstraction which could result in changes to the water table and therefore no changes in vegetation composition as a result of the proposed development.
Vegetation composition – percentage trees and shrubs	Cover of scattered native trees and shrubs not more than 10%	
Physical structure: percentage disturbed bare ground	Cover of disturbed bare ground not more than 10%. Where tufa is present, disturbed bare ground not more than 1%	No fen habitat was recorded within or adjacent to the development. Three will be no disturbance of the habitat or alteration to the water table which could lead to changes in physical structure.
Physical structure: percentage drainage	Areas showing signs of drainage as a result of drainage ditches or heavy trampling not more than 10%	

8.1.10.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely affect the QI Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] associated with the Galway Bay Complex SAC, in any phase of development.

8.1.11 Alkaline Fens [7230]

The attributes and targets for this habitat as per the Site Specific Conservation Objectives (SSCOs) for Galway Bay Complex SAC (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in the table below.

Table 8-11 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, including erosion and succession.	There will be no decline in habitat area or distribution with the proposed project. No fen habitat was recorded within or adjacent to the development. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Habitat distribution	No decline, or change in habitat distribution, subject to natural processes.	
Hydrological Regime	Appropriate natural hydrological regime necessary to support the natural structure and functioning of the habitat	There will be no abstractions and therefore no changes to the hydrological regime or peat formation as a result of the development.
Peat formation	Active peat formation, where appropriate	
Water quality: nutrients	Appropriate water quality to support the natural structure and functioning of the habitat	There will be no deterioration in surface or ground water quality as a result of the development. Indirect pathways including water pollution that would allow impacts to occur were considered in the design of the proposed project and a range of measures are in place to avoid all water pollution during all phases.
Vegetation composition: typical species	Maintain vegetation cover of typical species including brown mosses and vascular plants	No fen habitat was recorded within or adjacent to the development. There will be no abstraction which could result in changes to the water table and therefore no changes in vegetation composition as a result of the proposed development.
Vegetation composition – percentage trees and shrubs	Cover of scattered native trees and shrubs not more than 10%	
Physical structure: percentage disturbed bare ground	Cover of disturbed bare ground not more than 10%. Where tufa is present, disturbed bare ground not more than 1%	No fen habitat was recorded within or adjacent to the development. Three will be no disturbance of the habitat or alteration to the water table which could lead to changes in physical structure.
Physical structure: percentage drainage	Areas showing signs of drainage as a result of drainage ditches or heavy trampling not more than 10%	

8.1.11.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely affect the QI Alkaline fens [7230] associated with the Galway Bay Complex SAC, in any phase of development.

8.1.12 Determination on Potential Adverse Effects Galway Bay Complex SAC

Based on the above review of the individual Qualifying Interests, and following implementation of best practice and mitigation measures described in Section 3 of this report, it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect this SAC.

8.2 Inner Galway Bay SPA [004031]

The potential for adverse residual effects on each of the individual Special Conservation Interest that was identified as being at risk of potential effects in the AA Screening Report is assessed in this section in view of the Conservation Objectives of that habitat.

8.2.1 Wetland and Waterbirds

The attributes and targets for Wetland and Waterbirds as per the Site Specific Conservation Objectives (SSCOs) for Inner Galway Bay SPA (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the SCI is provided in the table below.

Table 8-12 Targets and attributes associated with site specific conservation objectives for wetlands [A999] (NPWS 2013)

Attribute	Target	Assessment
Habitat area	The permanent area occupied by wetland habitat should be stable other than that occurring from natural patterns of variation.	The site does not support significant suitable wetland habitat for SCI bird species. There will be no reduction in the area occupied by wetland habitat as a result of the development. A suite of best practice measures has been incorporated into the project design to avoid and minimise potential impacts caused by degradation in water quality. Taking into consideration the preventative measures to avoid impact, it can be concluded that the proposed development will not result in any impacts which could adversely affect the extent of wetland habitat area.

8.2.1.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely affect the QI Wetland and Waterbirds associated with the Inner Galway Bay SPA in any phase of development.

8.2.2 SCI Bird Species

The attributes and targets for the SCI bird species as per the Site Specific Conservation Objectives (SSCOs) for Inner Galway Bay SPA (NPWS, 2013) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in the table below.

Table 8-13 Targets and attributes associated with site specific conservation objectives for SCI bird species (NPWS 2013)

Species	Attribute	Target	Assessment
• Great Northern Diver • Grey Heron • Brent Goose • Wigeon • Teal • Shoveler • Red-breasted Merganser • Ringed Plover • Golden Plover • Lapwing • Dunlin • Bar-tailed Godwit • Curlew • Turnstone • Black-headed Gull • Common Gull • Cormorant	Population trend	Long term population trend stable or increasing	The site does not support significant suitable wetland habitat for any of these SCI bird species and no SCI species were recorded utilizing the habitats within the development site during winter bird surveys undertaken in 2020 and 2021. The proposed development will have no effect on population trends of these species.
	Distribution	No significant decrease in the range, timing or intensity of use of areas by the species, other than that occurring from natural patterns of variation	The site does not support significant suitable wetland habitat for any of these SCI bird species and no SCI species were recorded utilizing the habitats within the development site during winter bird surveys undertaken in 2020 and 2021. There will be no changes in the distribution of these species as a result of the proposed development.
• Sandwich tern • Common tern • Cormorant	Breeding population abundance; apparently occupied nests	No significant decline	There will be no significant decline in any of these attributes. The site does not support significant suitable wetland habitat for these SCI bird species and no SCI species were recorded utilizing the habitats within the development site during winter bird surveys undertaken in 2020 and 2021.
	Productivity rate: fledged young per breeding pair		
	Distribution: breeding colonies		
	Prey biomass available		
	Barriers to connectivity		
	Disturbance at breeding site	Human activities should occur at levels that do not adversely affect the breeding population	There will be no increase in disturbance to these species. The site does not support significant suitable wetland habitat for these SCI bird species and no SCI species were recorded utilizing the habitats within the development site during winter bird surveys undertaken in 2020 and 2021. The proposed development will not provide additional connectivity between the site and the SPA.

8.2.2.1 Determination on potential for adverse effects

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information and the conservation objectives of the site, that the Proposed Project will not adversely affect the SCI bird species associated with the Inner Galway Bay SPA in any phase of development.

8.3 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 surface or ground water 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 via this identified pathway, which has 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 project will not adversely affect the Qualifying Interests/Special Conservation Interests associated with Galway Bay Complex SAC or Inner Galway Bay SPA.

9. 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 for which potential pathway for impact were identified at the screening stage (**Appendix 1**). 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.

9.1 Plans

The proposed project lies within land zoned as residential in the Galway City Council Development Plan 2017-2023. The policies and objectives of this plan have already been assessed in the Galway City Development Plan Natura Impact Report (NIR) (RPS, 2016). This report concluded that having incorporated mitigation measures, the GCDP 2017-2023 will not have a significant adverse effect on the integrity of the European sites either individually or in combination with other plans or projects.

The following plans have been reviewed and are taken into consideration as part of this assessment:

- Galway City Development Plan 2017-2023
- Galway County Heritage and Biodiversity Plan 2017-2022
- Galway BAP 2014 – 2020
- Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032
- Galway City Transport Project 2015

The review focused on policies and objectives that relate to European Sites and natural heritage (Table 9-1). **No potential for cumulative impacts when considered in conjunction with the current proposed conservation works were identified**.

Table 9-1 Review and Assessment of Compliance with Plans for Galway City

Plans	Key Policies/Issues/Objectives Directly Related to European Sites, Biodiversity and Sustainable Development in The Zone of Influence	Assessment of Conservation Works Compliance with Policy
Galway City Council Development Plan 2017-2023	**Policy 4.1 Green Network** Support sustainable use and management of areas of ecological importance, parks and recreation amenity areas and facilities through an integrated green network policy approach in line with Galway City Recreation and Amenity Needs Study, where it can be demonstrated that there will be no adverse impacts on the integrity of European Sites. **Policy 4.2 Protected Spaces: Sites of European, National and Local Ecological Importance** › *Protect European sites that form part of the Natura 2000 network (including Special Protection Areas and Special Areas of Conservation) in accordance with the requirements in the EU Habitats Directive (92/43/EEC), EU Birds Directive (2009/147/EC) and associated national legislation.* › *Protect, conserve and promote the nationally designated sites of ecological importance, including existing and proposed Natural Heritage Areas (NHAs and pNHAs) in the city.* › *Protect, conserve and support the development of an ecological network throughout the city which will improve the ecological coherence of the Natura 2000 network in accordance with Article 10 of the Habitats Directive.* › *Protect Local Biodiversity Areas, wildlife corridors and stepping stones identified in the Galway City Habitat Inventory 2005 and Galway Biodiversity Action Plan 2014-2024 in supporting the biodiversity of the city and in the Council's role/responsibilities, works and operations, where appropriate.* › *Protect and conserve rare and threatened flora and fauna and their key habitats, (wherever they occur) listed on Annex I and Annex IV of the EU Habitats Directive (92/43EEC) and listed for protection under the Wildlife Acts 1976-2000* **Policy 4.3 Blue Spaces: Coast, Canals and Waterways** › *Conserve and protect natural conservation areas within the coastal area and along waterways and ensure that the range and quality of associated habitats and the range and populations of species are maintained.*	The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. No potential for cumulative impacts when considered in conjunction with the current proposal were identified. There will be no impact on designated sites as a result of the development. Best practice preventative measures will be implemented to avoid effects on European Sites as outlined in sections 3.3 and 7.2 of this report. There will be no adverse effects on receptors listed as QIs/SCIs of European Sites, as a result of the development.

	➢ *Ensure the protection of the River Corrib as a Salmonid River, where appropriate.* ➢ *Protect and maintain, where feasible, undeveloped riparian zones and natural floodplains along the River Corrib and its tributaries. Ensure that development does not have a significant adverse impact, incapable of satisfactory mitigation, on protected species.*	
National Biodiversity Action Plan 2017-2021	**Target 6.2** - Sufficiency, coherence, connectivity, and resilience of the protected areas network substantially enhanced by 2020.	The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. No potential for cumulative impacts when considered in conjunction with the current proposal were identified. There will be no impact on designated sites as a result of the development. Best practice preventative measures will be implemented to avoid effects on European Sites as outlined in sections 3.3 and 7.2 of this report. There will be no adverse effects on receptors listed as QIs/SCIs of European Sites, as a result of the development.
Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032	**Regional Policy Objective 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. **Regional Policy Objective 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 strategy was reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. No potential for cumulative impacts when considered in conjunction with the current proposal were identified. There will be no impact on designated sites as a result of the development. Best practice preventative measures will be implemented to avoid effects on European Sites as outlined in sections 3.3 and 7.2 of this report. There will be no adverse effects on receptors listed as QIs/SCIs of European Sites, as a result of the development.

9.2 Other Plans & Projects

The potential for the proposed development to contribute to a cumulative impact on European Sites was considered. The online planning system for Galway City Council was consulted on the 18/06/2021. Additional projects identified in the Rosshill and nearby Roscam area from the last 5 years include permission for the following;

- Permission for development which will consist of; variations to domestic garage design from that previously granted under 16/228 to include proposed domestic garage and gym and associated works (Planning ref: 2128)
- Permission for development which will consist of a new two storey side extension, alterations to front entrance porch, internal alterations and all ancillary site works (Planning ref: 2134)
- Permission for development which will consist of amendments to previously granted planning permission (ref 16/228). The amendments consist of the following changes : 1. Minor changes to boundaries of sites 8,9,10,11 to accommodate revised house types. 2. Minor changes to alignment of proposed access road and junction between sites 8 and 12. 3 Change of house types on sites 8,9,10,11 which are to remain 5 bedroom two storey detached houses. 4. Minor amendments to side and rear elevation of house type A1 currently granted on site 15. 5. Minor amendments to side and rear elevation of house type B2 currently granted on sites 12 and 13. 6. Proposed garages for sites 8,12,13,15 (Planning ref: 2173)
- Permission to construct 23 two storey Dwellinghouses consisting of Detached, Semi-dectached and terrace including access/egress off the old coast road to Oranmore with sewer connection to adjacent sewer pumping station adjacent the Dublin Road and all associated service (Planning ref: 17/238)
- Permission for a development which will consist of demolition of existing single storey house, construction of new replacement house consisting of two storey and single storey elements, renovation of two existing sheds, upgrade of existing septic tank system to a tertiary wastewater treatment system, widening of existing site entrance, together with all associated landscaping and site works (Planning ref: 20168)
- Permission for development which will consist of (1) Retention permission for (i) laying of subsurface piping for the purpose of agricultural irrigation in respect to the agricultural use of the land (ii) 1 no bore well and associated water pump and concrete plinth upon which it is placed, (iii) 2 no. 6,500 litre water holding tanks on sand footing, and (iv) revised agricultural field entrance arrangement with new timber gate and (2) Planning Permission for (i) connection to ESB electrical supply network for the purpose of powering the water pump mentioned under item 1 (ii) above (in lieu of the existing on-site generator) including, erection of surface mounted electricity supply metering box/plinth as per the site-specific requirements and recommendations of the ESB guidance, and (iii) all associated site works (Planning ref: 20225).
- Permission for a change of house type to previously granted planning permission (reference 16/228). These amendments consist of a change of house type C (on site 6 only) which is a 5 bedroom two storey detached house (Planning Ref: 18187)
- Permission for a new residential development. The development consists of 16 no. 2-storey, five bedroom, detached houses, together with individual garages, as applicable, new vehicular site accesses and roads with all ancillary site works, landscape (Planning Ref: 16228)
- Permission and Retention permission for a development consisting of a change of House type to the residential dwelling on Site No. 1 which was granted planning permission under Reg. Ref 10/212 (extended under Reg. Ref 16/109) to now provide for a ne (Planning Ref: 18232)

- Permission is sought for the change of house type to the residential dwelling on site No. 1, previously granted planning permission under Pl. Ref. 10/212 & 16/109 & associated garden shed / garage store and all associated site works & services (Planning Ref: 19186)
- E.O.D on Pl. Reg. Ref. No. 10/212 - Permission for the construction of 4 no. dwellinghouses (in dormer and two storey typology), 4 no. garden sheds and 4 no. individual effluent treatment plants and percolation areas on lands zoned 'L.D.R.' in the Ga (Planning Ref: 16109)
- Permission is sought for the change of house type B at site 2 previously granted planning permission under P.L. ref 10/212 & 16/109 & associated garage store and all associated site works and services (Planning Ref: 19291)
- Permission to construct a garage with all associated services (Planning Ref: 16187)
- Permission is sought for change of house plan (from type D) and garage/store and all associated services previously granted under Planning Reg. Reference 10/212 and 16/109 (Planning Ref: 20110)
- Permission for a new residential development which contains 3 no. 2 storey 4 bedroom detached houses with individual vehicular entrances and sewage treatment systems together with all ancillary site works, landscaping and service connections (Planning Ref: 16354)
- Permission is sought for the development which will consist of 1) Demolish Existing Derelict Dwelling House, 2) Construct a new two storey Dwelling House with carport and external store (370m2), 3) Retain existing site entrance, 4) Provision for new (Planning Ref: 20100)
- Permission for the construction of a single storey extension and all associated services onto an existing domestic garage. The extension will incorporate a studio and a home office (Planning Ref: 20174)
- Permission for development which will consist of the construction of a dwelling house, external store, waste water treatment system and all associated site development and external works (Planning Ref: 1844)
- Permission for development which will consist of the construction of a dwelling house, waste water treatment system and all associated site development and external works (Planning Ref: 17295)
- Permission for development which consists of the construction of a dwelling house, external store, waste water treatment system and all associated site development and external works (Planning Ref: 1989)
- Permission for development which consists of the demolition of existing sun room and to replace it with a single storey extension to the front of dwelling house and a back porch to the side (Planning Ref: 1954)
- Permission for development which consists of the constructing 51 No. one, two and three bedroom apartments and two one bedroom Town Houses in 6 no. Blocks ranging in height from one storey up to four storey, with sewer connection to adjacent pumping station adjacent Dublin road, together with access/egress off the old coast road to Oranmore and all associated services at Doughiska and Merlin Park Townlands. (Previous Planning Ref No. 17/283) (Planning ref: 1995)
- Permission for modifications to domestic garage plan approved under Planning Reference Number 12/232 to include carport extension at (Planning Ref: 16167)

In addition to the above, the following developments are also planned within the immediate and wider area:

- Proposed SHD development at Moneyduff, Oranmore, Co. Galway. The proposed development will consist of the construction of 212 no. residential houses, amenity areas, a creche and associated parking facilities.
- A proposed Greenway cycling network runs along the south of the development site. It is a policy of the Galway City Development Plan to continue to develop and improve the greenway network in the city, including to facilitate a linked greenway from the city to the country area including Oranmore. According to the

Development Plan, proposed greenways will be subject to a route selection process which will take cognisance of site-specific circumstances including consideration of ecological sensitivity.

- According to the Galway City Development Plan it is planned to develop Murrough, an area to the west of the development, in accordance with a Local Area Plan which will reserve a substantial bank of land for recreational purposes, allow for public access and allow for mixed use development which will create a sustainable neighbourhood and maximise the sustainable development of appropriate recreation facilities.
- The Natura Impact Statement and habitat mapping undertaken for the proposed N6 Galway City Ring Road was also consulted. The NIS concluded that '*following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted impacts from the proposed road development and with the implementation of the mitigation measures proposed, that the proposed road, development does not pose a risk of adversely affecting (either directly or indirectly) the integrity of any European Site, either alone or in combination with other plans or projects, and there is no reasonable scientific doubt in relation to this conclusion*'.

The proposed development will not contribute to any water pollution effects. It will not result in any disturbance to any SCI or QI species.

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 project 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. There are no watercourses located on site that could provide surface water connectivity with other proposed developments in the area. In addition, the best practice measures incorporated into the proposal will ensure that there are no impacts on EU Designated sites, and therefore there is no potential for cumulative impacts to occur.

Taking into consideration any reported residual impacts within NIS's, or other ecological reporting, from other plans and projects in the area and the predicted impacts from the current proposal, there is no likelihood of significant in-combination or cumulative effects between the other plans and projects in the area and the proposed project.

10. CONCLUDING STATEMENT

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. This NIS has provided an assessment of all potential direct or indirect pathways for adverse effects on the QI/SCI habitats and species of Galway Bay Complex SAC and Inner Galway Bay SPA.

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 construction, operation of the proposed development does not adversely affect the integrity of European sites.

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.

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

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APPENDIX 1

APPROPRIATE ASSESSMENT SCREENING REPORT

Article 6 (3) Appropriate Assessment Screening Report

Strategic Housing Development, Rosshill, Galway

DOCUMENT DETAILS

Client:	**Alber Developments Ltd.**
Project title:	**Strategic Housing Development, Rosshill, Galway**
Project Number:	**200607**
Document Title:	**Article 6 (3) Appropriate Assessment Screening Report**
Document File Name:	**AASR F – 2021.07.01 – 200607**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

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01	Final	01/07/2021	SM	JH

Table of Contents

1. **Introduction** **1**

1.1 Background 1
1.2 Appropriate Assessment 2
1.2.1 Screening for Appropriate Assessment 2
1.2.2 Statement of Authority 2

2. **Description of the Proposed Development** **3**

2.1 Site Location 3
2.2 Characteristics of the Proposed Development 3
2.3 Description of the Baseline Ecological Environment 6
2.3.1 Fauna 8

3. **Identification of Relevant European Sites** **9**

3.1 Identification of the European Sites within the Likely Zone of Impact 9
3.2 Likely Cumulative Impact of the Works on European Sites, in-combination with other plans and projects 22

4. **Article 6(3) Appropriate Assessment Screening Statement and Conclusions** **23**

4.1 Data Collected to Carry Out Assessment 23
4.2 Concluding Statement 23

5. **Bibliography** **24**

Table of Tables

Table 3-1 Designated sites within the Likely Zone of Impact 11

Table of Plates

Plate 2-1 The majority of the site is comprised of semi-improved dry neutral grassland (GS1). 6
Plate 2-2 Dry calcareous and neutral grassland (GS1) in the north-east corner of the site. 7
Plate 2-3 Wet grassland (GS4) to the north-west of the site. 7
Plate 2-4 Oak-ash-hazel woodland (WN2) within the development site close to the north western boundary. 8

Table of Figures

Figure 2-1 Site Location 5
Figure 3-1 European Sites within 15km of the proposed development 10

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 of a proposed strategic housing development located on lands at Rosshill Road, Roscam, Co. Galway. The impacts and cumulative assessments provided below deals with the proposed application site only (refer to Figure 2-1). Any future development in the lands to the south and west of the proposed application site, which form part of a wider landholding, will be subject to its own assessment.

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 desk study and field surveys undertaken during 2019, 2020 and 2021. 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, 2001) 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).

In addition to the guidelines referenced above, the following relevant documents were also considered in the preparation of this report:

1. *Council of the European Commission (1992) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Official Journal of the European Communities. Series L 20, pp. 7-49.*
2. *EC (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg.*
3. *EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence. Opinion of the commission.*
4. *EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.*

1.2 Appropriate Assessment

1.2.1 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be carried out by the Competent Authority. As per Section 177U of the Planning and Development Act, 2000, as amended '*A screening for appropriate assessment shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site*'. The Competent Authority's determination as to whether an Appropriate Assessment is required must be made on the basis of objective information and should be recorded. The Competent Authority may request information to be supplied to enable it to carry out screening.

Consultants or project proponents may provide for the competent authority, the information necessary for them to determine whether an Appropriate Assessment is required and provide advice to assist them in the Article 6(3) Appropriate Assessment Screening decision.

Where it cannot be excluded beyond reasonable scientific doubt at the Screening stage, that a proposed plan or project, individually or in combination with other plans and projects, would have a significant effect on the conservation objectives of a European site, an Appropriate Assessment is required.

Where an Appropriate Assessment is required, the Competent Authority may require the applicant to prepare a Natura Impact Statement.

The term Natura Impact Statement (NIS) is defined in legislation[1]. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to 1) the implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and 2) whether there will be adverse effects on the integrity of a European site. The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

This Article 6(3) Appropriate Assessment Screening Report has been prepared in compliance with the provision of section 177U of the Planning & Development Act 2010 as amended.

1.2.2 Statement of Authority

An initial multi-disciplinary walkover survey was undertaken in April 2019 by Sarah Mullen (BSc, PhD) and Claire Stephens (BSc) of MKO. The site was revisited on multiple occasions between July 2019 and May 2021 by MKO ecologists Sarah Mullen, Julie O'Sullivan (B.Sc., M.Sc.), Rachel Walsh (B.Sc.), Neil Campbell (B.Sc.), Colin Murphy (B.Sc., M.Sc.), Laura McEntegart (B.Sc.) and Laura Hynes (B.Sc.). MKO ecologists are trained in field ecology and are experts in undertaking surveys to this level. This report has been reviewed by John Hynes (B.Sc., M.Sc., MCIEEM) who has over 9 years' experience in ecological assessment.

[1] As defined in Section 177T of the Planning and Development Act, 2000 as amended, an NIS means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own and in combination with other plans and projects, for a European site in view of its conservation objectives. It is required to include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for the European site in view of its conservation objectives

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site Location

The proposed development site (application site) is located within the townlands of Roscam, Merlin Park and Murrough in Galway City, immediately south of the Rosshill Road and the railway line (Grid Reference: IG 134208 224980) (Figure 2-1). The proposed development site is 4.704ha. The study area for the ecological walkover surveys undertaken to inform this assessment included lands to the south and west of the application site which form part of a wider landholding. The study area is also illustrated in Figure 2-1.

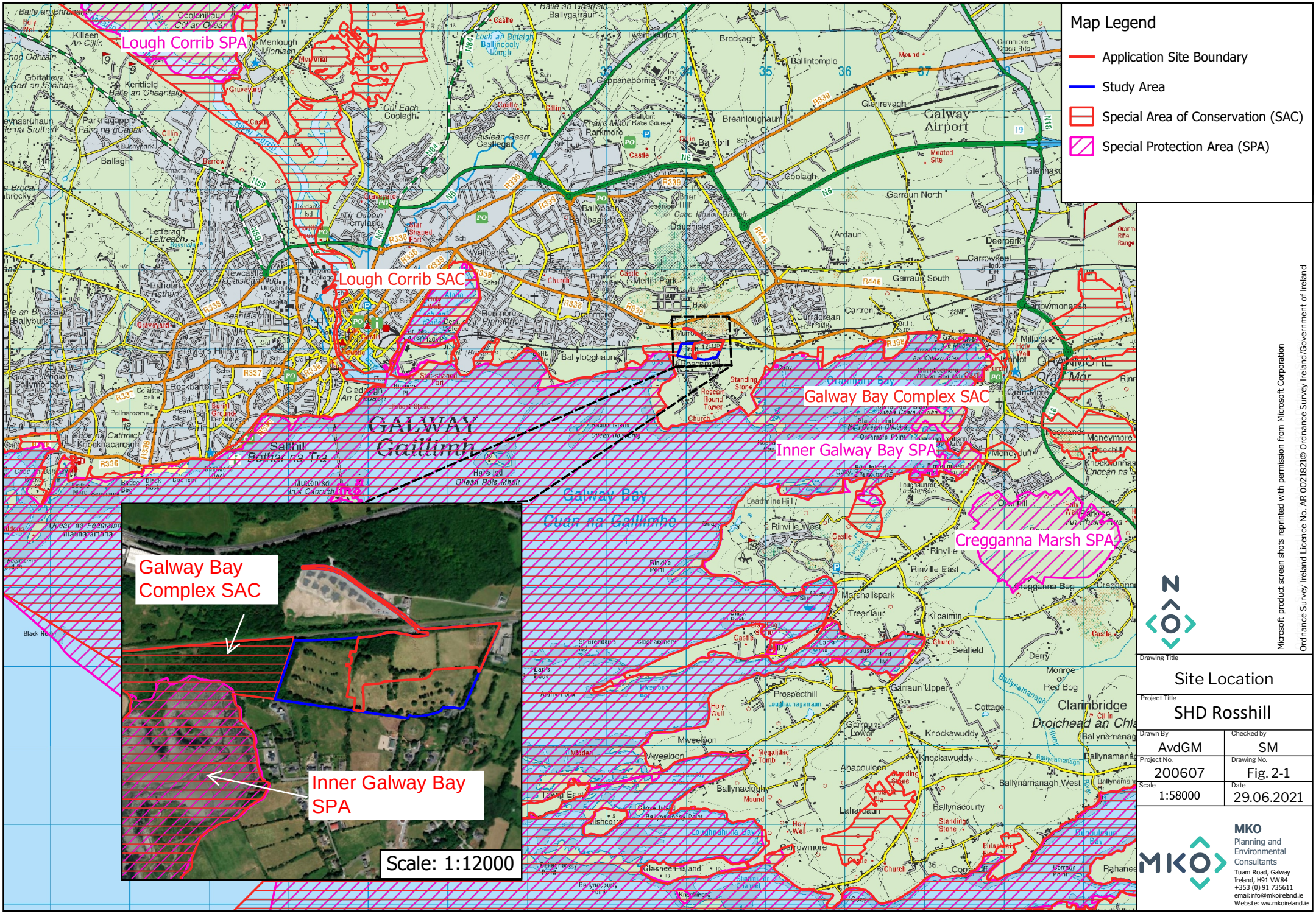
2.2 Characteristics of the Proposed Development

The application for the proposed works will be made under the Strategic Housing Development (SHD) provisions of the Planning and Development (Housing) and Residential Tenancies Act, 2016. The proposed development will consist of the following:

1. Construction of 102no. residential units comprising of 35 apartments and 67 houses:
    - 4no. Apartment Type '1A' - 1 bed 2 person
    - 4no. Apartment Type '1B' - 1 bed 2 person
    - 3no. Apartment Type '1C' - 1 bed 2 person
    - 11no. Apartment Type '2A' - 2 bed 4 person
    - 4no. Apartment Type '2B' - 2 bed 4 person
    - 3no. Apartment Type '2C' - 2 bed 4 person
    - 3no. Apartment Type '2D' - 2 bed 4 person
    - 3no. Apartment Type '2E' - 2 bed 3 person
    - 2no. House Type 'A/A1' - 4 Bed Semi Detached
    - 8no. House Type 'B/B1' - 3 Bed semi detached
    - 4no. House Type 'C/C1' - 3 Bed End of Terrace
    - 2no. House Type 'C2' - 3 Bed Mid Terrace
    - 2no. House Type 'D' - 2 storey town house - end of terrace - 3 bed
    - 4no. House Type 'D1' - 2 storey town house - mid terrace - 3 bed
    - 2no. House Type 'D2' - 3 storey town house - end of terrace - 4 bed
    - 2no. House Type 'E' - 3 bed Long Semi-Detached
    - 2no. House Type 'F' - 4 bed Long Semi-Detached
    - 3no. House Type 'G' - 2 storey town house - end of terrace - 3 bed
    - 6no. House Type 'G1' - 2 storey town house - mid terrace - 3 bed
    - 3no. House Type 'G2' – 3 storey town house- end of terrace- 4 bed
    - 1no. House Type 'H' - 3 Bed semi detached
    - 1no. House Type 'H1' - 3 Bed semi detached - Double front
    - 8no. House Type 'J/J1' - 3 Bed semi detached
    - 4no. House Type 'K' - 3 bed Long Semi-Detached
    - 4no. House Type 'L' - 4 bed Long Semi-Detached
    - 3no. House Type 'M' - 3 Bed End of Terrace
    - 3no. House Type 'M1' - 3 Bed End of Terrace
    - 3no. House Type 'M2' - 3 Bed Mid Terrace
2. Demolition of the existing silage concrete apron (40sqm)
3. Childcare facility (399sqm over 2-storeys), associated outdoor play areas and parking

4. Retail/Commercial space (188.5sqm) including loading bay
5. Provision of shared communal and private open space, including play and fitness equipment
6. Car and cycle parking, including electric vehicle charging points
7. Provision of all associated surface water and foul drainage services and connections including pumping station
8. Landscaping, access routes and public art
9. Lighting and associated works
10. Access and junction improvements at Rosshill Road and Rosshill Stud Farm Road
11. Provision of a footpath connectivity link along Rosshill Road and Rosshill Stud Farm Road
12. All associated works and services

The site layout is shown in Figure 2-2.



Drawing Title
Site Location

Project Title
SHD Rosshill

Drawn By	Checked by
AvdGM	SM
Project No.	Drawing No.
200607	Fig. 2-1
Scale	Date
1:58000	29.06.2021

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PUBLIC OPEN SPACES

Required public open space : **4,266sqm** (15% of 28,442sqm Developable area)

Provided:

Open space 01 - Linear Park -	3336sqm
Open space 02 - Pedestrian Plaza -	301sqm
Open space 03 - Central Green-	471sqm
Shared surface 01	329sqm
Total Public open space:	**4,437sqm :- 15.6% of developable area**

Galway City Development plan 2017- 2013 section 11.3.1 (c) states *'shared spaces shall be regarded as communal open space but shall not exceed one third of the total communal open space requirement.'* The proposed shared surface area of 329sqm in this scheme contributes **7.4%** on the overall public open space.

LEGEND

Site boundary outlined in red

Blue outline indicates lands in applicants control

APPLICATION SITE - red line

APPLICATION SITE AREA (RED LINE) :	**47,042 sqm :- 4.704 HA :- 11.624 Acre**
UNDEVELOPABLE AREAS:	
Old Dublin road and local Rosshill Road:	6,894 sqm : 0.689 HA :- 1.703 Acre
Parkland areas & Pumping station access:	11,706 sqm : 1.170HA :- 2.893Acre
Developable Area :	**28,442sqm :- 2.844HA :- 7.028 Acre**

Galway City Council Development plan 2017-2023:
Site zoned Low Density Residential (LDR)

RESIDENTIAL TOTAL NO. OF UNITS = 102

\+ 91 child space creche

Density:

35.8 **Units per Ha - Residential Density (102 total units on 2.844 ha.)**

14.5 **Units per Acre - Residential Density (102 total units on 7.028 acre)**

34.3% Apartments = 35 Units
65.7% Houses = 67 Units

01 Master Site Layout Plan - North
Scale: 1:1000

NOTE : PLEASE REFER TO ENGINEERS DRAWINGS & REPORTS FOR SERVICE CONNECTION DETAILS

02 Location key
Scale: n.t.s

Figure 2-2: Site Layout

MASTER SITE LAYOUT PLAN - north

No.	Date	Comments	By

REVISIONS

No.	Date	Comments	By

REVISIONS

Scale:	Drawing Purpose:	File Ref.	Subject:	Project No.	Drawing No.	Rev.
1:1000	SHD Application	3.09	Master Site Layout Plan - North	20175	3001	

Project: Proposed Development at Rosshill, Galway City
Client: Alber Developments Ltd.
Date: June 2021 Drawn by: sor Checked by: JOM
Paper size: CTB file: LTScale:
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2.3 Description of the Baseline Ecological Environment

A multidisciplinary walkover survey was conducted on the 16th of April 2019 in line with NRA (2009) guidelines (*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*) by Sarah Mullen (BSc., Ph.D.) and Claire Stephens (B.Sc.). The study area for the walkover survey included the application site as well as the surrounding lands outlined in blue in Figure 2-1. The site was revisited on the 9th July 2019 by Sarah Mullen with subsequent visits undertaken by MKO ecologists in 2020 and 2021. Surveys were undertaken within the optimal time of year to undertake a habitat and flora survey (Smith *et. al* 2011) and all habitats within and adjacent to the proposed application site were readily identifiable during the site visit.

The proposed application site consists predominantly of a network of semi-improved, species poor ***Dry neutral grassland (GS1)*** (Plate 2-1). Other habitats present within the site include ***Dry calcareous and neutral grassland (GS1)*** (Plate 2-2), ***Wet grassland (GS4)*** (Plate 2-3), ***Treelines (WL2)***, ***Hedgerows (WL1),*** and ***Stonewalls and other stonework (BL1)***.

An area of ***Oak-ash-hazel woodland (WN2)*** (Plate 2-4) is present along the north western boundary of the site. An area of ***Scrub (WS1)***, comprised of hawthorn, blackthorn and bramble (*Rubus fruticosus* agg.), with treelines to the north and south is present to the west of the woodland area.

None of the habitats within the site correspond to those listed on Annex I of the EU Habitats Directive. Galway Bay Complex SAC is located approximately 136m from the western boundary of the proposed application site. No watercourses were recorded within or adjacent to the site. No suitable habitat for otter or seal were identified within the development site and the site does not support suitable wetland habitat for SCI species associated with Inner Galway Bay SPA.

No invasive species listed under Regulations 49 and 50 of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) were recorded within the proposed site boundary.

A full description of the baseline ecological environment, within the site, can be found in the accompanying NIS.

Plate 2-1 The majority of the site is comprised of semi-improved dry neutral grassland (GS1).

Plate 2-2 Dry calcareous and neutral grassland (GS1) in the north-east corner of the site.

Plate 2-3 Wet grassland (GS4) to the north-west of the site.

Plate 2-4 Oak-ash-hazel woodland (WN2) within the development site close to the north western boundary.

2.3.1 Fauna

A thorough survey of the study area was undertaken for mammals in 2019, 2020 and 2021. The application site is located 136m from Galway Bay Complex SAC which is designated for otter (*Lutra lutra*) and harbour seal (*Phoca vitulina*). The site does not support suitable habitat for these species. There are no watercourses within or directly adjacent to the proposed development and the shoreline of Galway Bay is buffered from the proposed development by woodland, treelines and agricultural grassland.

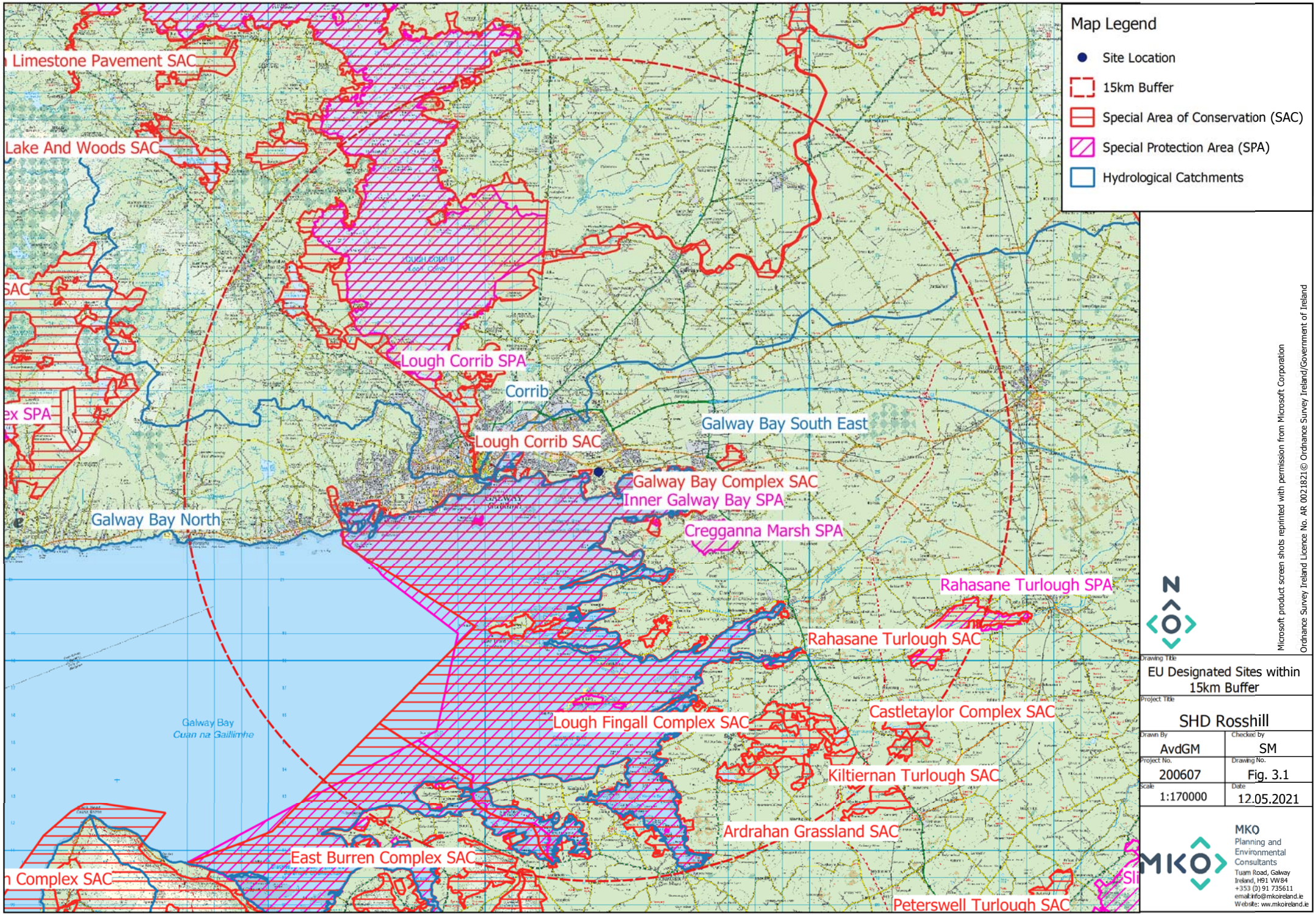
Inner Galway Bay is located approximately 260m from the proposed application site and is designated for a number of bird species. Dedicated winter bid surveys of the entire study area site were undertaken monthly between October 2020 and March 2021. No SCI species associated with any SPA were recorded utilising the proposed development site for roosting or foraging during these dedicated winter bird surveys or during any of the other site visits. The site consists predominantly of semi-improved grassland and does not support suitable wetland habitat for any of the SCI species for which Inner Galway Bay SPA is designated. Furthermore, the SPA is buffered from the development site by woodland, residential dwellings and agricultural grassland.

3. IDENTIFICATION OF RELEVANT EUROPEAN SITES

3.1 Identification of the European Sites within the Likely Zone of Impact

The following methodology was used to establish which European Sites are within the Likely Zone of Impact 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 30/06/2021. The datasets were utilized to identify European Sites which could feasibly be affected by the proposed development.
- All European Sites within a distance of 15km surrounding the development site were identified and are shown on Figure 3-1. In addition, the potential for connectivity with European Sites at distances of greater than 15km from the proposed development was also considered in this initial assessment. In this case, no potential connectivity with sites located at a distance of over 15km from the proposed development was identified.
- 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.
- 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 which are within the likely Zone of Impact. 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 the following criteria: 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 screening 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 30/06/2021. Figure 3-1 shows the location of the proposed development in relation to all European sites within 15km of the proposed development.
- Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Impact and further assessment is required.



Drawing Title
EU Designated Sites within 15km Buffer

Project Title
SHD Rosshill

Drawn By	Checked by
AvdGM	SM
Project No.	Drawing No.
200607	Fig. 3.1
Scale	Date
1:170000	12.05.2021

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Table 3-1 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 30/06/2021	Conservation Objectives	Likely Zone of Impact Determination
Special Areas of Conservation (SAC)			
Galway Bay Complex SAC [000268] **Distance:** 136m	› [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*) › [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	Detailed conservation objectives for this site (Version 1, April 2013), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the devlopment is located entirely outside of the SAC. There is no potential for indirect effects on the following QIs due to either a) the lack of connectivity between the proposed development and habitats for which the site has been designated and/or b) the terrestrial nature of the QIs: › *Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]* › *Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]* › *Limestone pavements [8240]* › *Perennial vegetation of stony banks [1220]* › *Turloughs [3180]* › *Juniperus communis formations on heaths or calcareous grasslands [5130]* Taking a precautionary approach, a potential pathway for indirect effects on the following marine/surface/groundwater water dependent Qualifying Interests was identified in the form of deterioration of water quality resulting from pollution associated with the construction and operational phases of the development:

			› *Mudflats and sandflats not covered by seawater at low tide [1140]* › *Large shallow inlets and bays [1160]* › *Reefs [1170]* › *Coastal lagoons [1150]* › *Lutra lutra (Otter) [1355]* › *Phoca vitulina (Harbour Seal) [1365]* › *Salicornia and other annuals colonising mud and sand [1310]* › *Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]* › *Mediterranean salt meadows (Juncetalia maritime) [1410]* › *Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210]* › *Alkaline fens [7230]* Galway Bay has potential to support otter and harbour seal. Although the development site is buffered from suitable habitat for the species in the SAC the potential for disturbance requires further consideration on a precautionary basis. Consequently, the potential for significant effects on this European Site cannot be excluded at this stage of the Appropriate Assessment process. **This site is therefore considered to be within the Likely Zone of Impact and further assessment is required.**

Lough Corrib SAC [000297] **Distance:** 4.1km	› [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 › [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*	Detailed conservation objectives for this site (Version 1, April 2017), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the proposed development is located entirely outside the designated site. This European site is located in a separate hydrological catchment and there is no hydrological connectivity between the development site and the SAC. No pathway for indirect effect was identified. The lesser horseshoe bat roost for which the SAC has been selected (roost id. 217 in NPWS database) is located more than 37km to the north-west of the site of proposed works. This is significantly outside the foraging range (2.5km) of Lesser Horseshoe bat (NPWS, 2013). There is therefore no potential for significant effect on the lesser horseshoe bat population for which the SAC has been designated. No complete impact source-pathway-receptor chain for impact exists. Potential for impact on the European Site can be excluded. **The site is not within the Likely Zone of Impact and no further assessment is required.**

	• [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*		
Lough Fingall Complex SAC [000606] **Distance:** 10.5km	• [1303] Lesser Horseshoe Bat *Rhinolophus hipposideros* • [3180] Turloughs* • [4060] Alpine and Boreal heaths • [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** • [8240] Limestone pavements*	Detailed conservation objectives for this site, (Version 1, January 2019), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the proposed development is located entirely outside the designated site. There is no connectivity between the proposed development and this European Site. There are no watercourses which could act as a conduit for pollution and the SAC is located within a different groundwater body/bodies, i.e. Clarinbridge GWB and GWDTE-Tullynafrankagh Turlough GWB (EPA Envision Webmapper, 2021), to the proposed development. No pathway for indirect effect was identified. The lesser horseshoe bat roost for which the SAC has been (roost id. 244 in NPWS database) is located approximately 13km to the south-east of the site of proposed works. This is significantly outside the foraging range (2.5km) of Lesser Horseshoe bat (NPWS, 2013). There is therefore no potential for significant effect on the lesser horseshoe bat population for which the SAC has been designated.

			No complete impact source-pathway-receptor chain for impact exists. Potential for impact on the European Site can be excluded. **The site is not within the Likely Zone of Impact and no further assessment is required.**
Rahasane Turlough SAC [000322] **Distance:** 13.1km	› [3180] Turloughs*	Detailed conservation objectives for this site, (Version 1, December 2020), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the proposed development is located entirely outside the designated site. There is no hydrological connectivity between the proposed development site and the SAC. The SAC is located in a different groundwater body, i.e. GWDTE-Rahasane Turlough GWB (EPA Envision Webmapper, 2021), to the development. No pathway for indirect effect was identified. This European site is separated from the site of proposed development by 13.1km of varied landscapes. No watercourses were identified within the site and no rivers are mapped within the area surrounding the site. Therefore, no surface water connectivity exists between the proposed development and the designated site. No complete impact source-pathway-receptor chain for impact exists. Potential for impact on the European Site can be excluded. **The site is not within the Likely Zone of Impact and no further assessment is required.**
Kiltiernan Turlough SAC [001285] **Distance:** 13.2km	› [3180] Turloughs*	Detailed conservation objectives for this site, (Version 1, January 2021), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the proposed development is located entirely outside the designated site.

			There is no hydrological connectivity between the proposed development site and the SAC and the SAC is located in a different groundwater body/bodies, i.e. GWDTE-Kiltiernan Turlough GWB and Clarinbridge GWB (EPA Envision Webmapper, 2021), to the development. No pathway for indirect effect was identified. This European site is separated from the site of proposed development by 13.2km of varied landscapes. No watercourses were identified on-site, and no rivers are mapped within the area surrounding the site. There is no surface water connectivity between the development and the SAC. No complete impact source-pathway-receptor chain for impact exists. Potential for impact on the European Site can be excluded. **The site is not within the Likely Zone of Impact and no further assessment is required.**
Castletaylor Complex SAC [000242] **Distance:** 13.6km	› [3180] Turloughs* › [4060] Alpine and Boreal heaths › [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)* › [8240] Limestone pavements*	This site has the generic conservation objective: "To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected." (Generic Version, 8.0, 2021)	There will be no direct effects as the proposed development is located entirely outside the designated site. There is no hydrological connectivity between the proposed development site and the SAC and the SAC is located in a different groundwater body/bodies, i.e. GWDTE-Kiltiernan Turlough GWB and Clarinbridge GWB (EPA Envision Webmapper, 2019), to the development. No pathway for indirect effect was identified.

			This European site is separated from the site of proposed development by 13.6km of varied landscapes. No watercourses were identified on-site, and no rivers are mapped within the area surrounding the site. Hydrologically, the designated site is not linked to the proposed development. No complete impact source-pathway-receptor chain for impact exists. Potential for impact on the European Site can be excluded. **The site is not within the Likely Zone of Impact and no further assessment is required.**
East Burren Complex SAC [001926] **Distance:** 14.3km	› [3140] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. › [3180] Turloughs* › [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation › [4060] Alpine and Boreal heaths › [5130] *Juniperus communis* formations on heaths or calcareous grasslands › [6130] Calaminarian grasslands of the *Violetalia calaminariae* › [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites) › [6510] Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) › [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae**	This site has the generic conservation objective: 'To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.' (NPWS Generic version 8.0, 2021)	There will be no direct effects as the proposed development is located entirely outside the designated site. This European site is located in a separate hydrological sub-catchment to the development and there is no hydrological connectivity between the development site and the SAC. No pathway for indirect effect was identified. The proposed development site lies outside the 2.5km core foraging range for lesser horseshoe bat as outlined in the Conservation Objectives Supporting Document for Lesser Horseshoe Bat (NPWS, 2018). There is therefore no potential for indirect effects on lesser horseshoe bat as a result of the proposed development. No complete impact source-pathway-receptor chain for impact exists. Potential for impact on the European Site can be excluded.

	› [7220] Petrifying springs with tufa formation (*Cratoneurion*)* › [7230] Alkaline fens › [8240] Limestone pavements* › [8310] Caves not open to the public › [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)		**The site is not within the Likely Zone of Impact and no further assessment is required.**
Ardrahan Grassland SAC [002244] **Distance:** 14.5km	› [4060] Alpine and Boreal heaths › [5130] *Juniperus communis* formations on heaths or calcareous grasslands › [8240] Limestone pavements	Detailed conservation objectives for this site, (Version 1, April 2019), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the proposed development is located entirely outside the designated site. This European site is located in a separate hydrological sub-catchment to the development. The site is designated for terrestrial habitats and there is no hydrological connectivity between the development site and the SAC. No pathway for indirect effect was identified. No complete impact source-pathway-receptor chain for impact exists. Potential for impact on the European Site can be excluded. **The site is not within the Likely Zone of Impact and no further assessment is required.**
Special Protection Area (SPA)			
Inner Galway Bay SPA [004031] **Distance:** 260m	› [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*)	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 will be no direct effects as the works are located entirely outside of this European Site. This European Site is located approximately 260m from the development. Although the development site is buffered from suitable habitat for the SCI species in the SPA, the potential for disturbance

	› [A069] Red-breasted Merganser *Mergus serrator* › [A137] Ringed Plover › [A140] Golden Plover *Pluvialis apricaria* › [A142] Lapwing *Vanellus vanellus* › [A149] Dunlin *Calidris alpina alpine* › [A157] Bar-tailed Godwit *Limosa lapponica* › [A160] Curlew *Numenius arquata* › [A162] Redshank *Tringa tetanus* › [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		requires further consideration on a precautionary basis. Taking a precautionary approach, a potential pathway for indirect effects on the marine/surface water dependent SCIs including supporting habitat [A999] was identified in the form of deterioration of water quality resulting from pollution associated with the construction and operational phases of the development. Consequently, the potential for significant effects on this European Site cannot be excluded at this stage of the Appropriate Assessment process. **This site is therefore considered to be within the Likely Zone of Impact and further assessment is required.**
Cregganna Marsh SPA [004142] **Distance:** 3.8km	› Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	This site has the generic conservation objective: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA." (Generic Version 8.0, 2021)	There will be no direct effects as the proposed development is located entirely outside the designated site. This European site is located within the core foraging range for Greenland white-fronted goose as per Scottish Natural Heritage (SNH) guidance 2016), however the site does not provide suitable supporting habitat for this species. No SCI species associated with any SPA were recorded utilising the proposed development site for roosting or foraging during dedicated winter bird surveys of the development site undertaken between October 2020 and March 2021. There is no connectivity between the development site and the SPA. Given the absence of connectivity and the absence of suitable habitat, no pathway for effect was identified.

			No complete impact source-pathway-receptor chain for impact exists. Potential for impact on the European Designated site can be excluded. **The site is not within the Likely Zone of Impact and no further assessment is required.**
Lough Corrib SPA [004042] **Distance:** 6.5km	› [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* › [A182] Common Gull *Larus canus* › [A193] Common Tern *Sterna hirundo* › [A194] Arctic Tern *Sterna paradisaea* › [A395] Greenland White-fronted Goose *Anser albifrons flavirostris*	This site has the generic conservation objectives: 'To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.' (NPWS Generic version 8.0, 2021) and "To maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly-occurring migratory waterbirds that utilise it." (Generic Version 8.0, 2021)	There will be no direct effects as the proposed development is located entirely outside the designated site. There is no connectivity between the proposed development and the SPA. The site does not provide suitable supporting habitat for the SCI bird species for which the SPA is designated. No SCI species associated with any SPA were recorded utilising the proposed development site for roosting or foraging during dedicated winter bird surveys of the development site undertaken between October 2020 and March 2021. Given the absence of connectivity and suitable habitat for SCI species, as well as the distance of this SPA from the works, no pathway for effect was identified. No complete impact source-pathway-receptor chain for impact exists. Potential for impact on the European Designated site can be excluded. **The site is not within the Likely Zone of Impact and no further assessment is required.**
Rahasane Turlough SPA [004089] **Distance:** 13.0km	› [A038] Whooper Swan *Cygnus cygnus* › [A050] Wigeon *Anas Penelope* › [A140] Golden Plover *Pluvialis apricaria* › [A157] Bar-tailed Godwit *Limosa lapponica*	This site has the generic conservation objectives: 'To maintain or restore the favourable conservation condition of the bird species listed as	There will be no direct effects as the proposed development is located entirely outside the designated site.

	› [A395] Greenland White-fronted Goose *Anser albifrons flavirostris*	Special Conservation Interests for this SPA.' (NPWS Generic version 8.0, 2021) and "To maintain or restore the favourable conservation condition of the wetland habitat at Rahasane Turlough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it." (Generic Version 8.0, 2021)	There is no hydrological (surface water or groundwater) connectivity between the proposed development and the SPA. The site does not provide suitable supporting habitat for the SCI bird species for which the SPA is designated. No SCI species associated with any SPA were recorded utilising the proposed development site for roosting or foraging during dedicated winter bird surveys of the development site undertaken between October 2020 and March 2021. Given the absence of connectivity and suitable habitat for SCI species, as well as the distance of this SPA from the works, no pathway for effect was identified. No complete impact source-pathway-receptor chain for impact exists. Potential for impact on the European Designated site can be excluded. **The site is not within the Likely Zone of Impact and no further assessment is required.**

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

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. Cumulative effects are assessed in the NIS.

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, 2001) 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 online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA), Water Framework Directive (WFD), Office of Public Works (OPW) flood Mapping and Irish Wetland Bird Survey I-WeBS.*
- *Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.*
- *Review of Bird Atlases: (Sharrock, 1976; Lack, 1986; Gibbons et al., 1993; Balmer et al., 2013).*
- *Review of OS maps and aerial photographs of the site of the development.*
- *Review of N6 Galway City Transport Project; Ecological information presented in the Route Selection Report: Chapter 4: http://www.n6galwaycity.ie.*
- *Review of N6 Galway City Ring Road Environmental Impact Assessment Report (2018)*
- *Review of the publicly available National Biodiversity Data Centre web-mapper and available literature of previous surveys conducted in the area.*
- *Records from the NPWS web-mapper and review of specially requested records from the NPWS Rare and Protected Species Database for the hectads which overlap with the study area.*
- *Review of other plans and projects within the area.*
- *Site visits conducted by Sarah Mullen (B.Sc., PhD), Claire Stephens (B.Sc.), Neil Campbell (B.Sc.), Rachel Walsh (B.Sc.), Colin Murphy (B.Sc., M.Sc.), Julie O'Sullivan (B.Sc., M.Sc.) and Laura McEntegart (B.Sc.) between 2019 and 2021.*

4.2 Concluding Statement

It cannot be concluded 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 not have a significant effect on the Galway Bay Complex SAC and Inner Galway Bay SPA.

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

5. BIBLIOGRAPHY

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APPENDIX 2

CORRESPONDENCE FROM DAU

An Roinn Turasóireachta, Cultúir,
Ealaíon, Gaeltachta, Spóirt agus Meán
Department of Tourism, Culture,
Arts, Gaeltacht, Sport and Media

Your Ref: Rosshill Development
Our Ref: G Pre00047/2021 (Please quote in all related correspondence)

MKO
Tuam Road
Galway
H91 VW84

Via email: tblackwell@mkoireland.ie

Re: Kegata Limited: planning permission for a residential development under the Strategic Housing Provisions

A chara

I refer to your pre-planning correspondence received on 16th February in connection with the above proposed development.

Outlined below are heritage-related observations/recommendations co-ordinated by the Development Applications Unit under the stated headings.

Archaeology

All proposed development and strategies should be in compliance with the National Monuments Acts 1930 to 2004 and with the national policy on protection of archaeological heritage – 'Framework and Principles for the Protection of the Archaeological Heritage' published in 1999.

General Guidance

1. All areas of archaeological heritage should be addressed, including;
   a) Immovable cultural heritage e.g., monuments and ancient field boundaries.
   b) Underwater cultural heritage.
   c) Movable cultural heritage e.g., loose carved stones, sculptures, architectural fragments etc.

2. All impacts which may impinge on the archaeological heritage should be assessed by a suitably qualified archaeologist.

3. Where appropriate, specialists in the field of archaeological heritage should be consulted throughout the process, from design through to implementation.
4. All surveys pertaining to archaeological heritage must be of a high standard in order to allow informed decisions to be taken.
5. All impacts must be assessed, to include ground disturbance, impacts on the setting of the monuments and visual impacts. These should include direct, indirect, temporary and cumulative impacts.
6. Mitigation of impacts, identified through consultation, should be taken into account within the development at the earliest possible stages. Various approaches should be considered, such as avoidance, design modification and relocation where appropriate.
7. Where there are no archaeological monuments present but the development is large in scale, e.g., over 0.5 hectares in area and over 1 kilometre in length, it is recommended that an archaeological assessment should be undertaken, unless there are substantial grounds to show that it is not necessary. Refer to Framework and Principles for the Protection of the Archaeological Heritage 1999, in particular section 3.6.6 in regard to EIA.

Further information and relevant publications can be obtained on www.archaeology.ie

Nature Conservation

The Department refers to your email correspondence and Scoping Documents of the 16th Feb 2021, in relation to a proposed Strategic Housing Development (SHD) at Rosshill, Roscam, Galway City. The project drawing and proposed layout are noted, as is the indicative ecological scope of works. Please note that the Legend on Figure 2.1 Site Layout Plan is not clear and the title of the red boundary lands is illegible in the referral documents. The Department notes that the blue-lined area suggests an 'Overall Masterplan' area. The comments below refer to the blue lined area.

This submission is made by the Department in its advisory role in relation to biodiversity, nature conservation, and the nature directives (i.e. the Birds and Habitats Directives). The observations are not exhaustive and focus on key issues of potential relevance to European sites, natural habitats and protected species, biodiversity protection, aspects of proper planning and sustainable development, and the scope of the environmental assessments that may be required. The observations are made on the basis of the information provided and are without prejudice to any future recommendation that may be made by the Department if/when a planning application is made.

The following documents and guidelines should be consulted during preparation of any EIAR or EIAR screening document:

- Circular Letter: PL 05/2018 Transposition into Planning Law of Directive 2014/52/EU

- Dept. of Housing, Planning and Local Government (2018), Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment,
- Other important guidance documents that should be consulted include the following:
- Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2017.
- European Commission guidance document on the implementation of the EIA Directive (Directive 2011/92/EU as amended by 2014/52/EU): Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impacts Assessment Report, European Commission, 2017. Noting in particular the 'Review Checklist'.

General ecological considerations

Assessment of the direct and indirect significant effects of the project on biodiversity should be made, where applicable, with regard to:

- Natura 2000 sites, i.e. Special Areas of Conservation (SAC) designated under the EC Habitats Directive (Council Directive 92/43/EEC) and Special Protection Areas (SPA) designated under the EC Birds Directive (Directive 2009/147 EC),
- Habitats and species protected under Habitats Directive – Annex I habitats, Annex II species and their habitats, and Annex IV species and their breeding sites and resting places (wherever they occur), Bird species protected under the Birds Directive – Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur),
- Other designated sites, or sites proposed for designation, such as Natural Heritage Areas and proposed Natural Heritage Areas, Nature Reserves and Refuges for Fauna or Flora, designated under the Wildlife Acts 1976 to 2018
- Species protected under the Wildlife Acts including protected flora
- Important bird areas such as those identified by Birdwatch Ireland,
- Features of the landscape, which are of major importance for wild flora and fauna, such as those with a "stepping stone" and ecological corridors function, as referenced in Article 10 of the Habitats Directive.
- Other habitats of ecological value in a national to local context (such as those identified as locally important biodiversity areas within Local Biodiversity Action Plans and County Development Plans),
- Red data book species,
- and biodiversity in general.

Reference should be made to the National Biodiversity Action Plan 2017-2021, Galway City Development Plan 2017-2023, Galway City Biodiversity Action Plan, as well as the All Ireland Pollinator Plan 2015-2020.

Likely significant effects on European sites

The site adjoins part of Galway Bay Complex SAC (Site code 000268) and is close to Inner Galway Bay SPA (Site code 004031). Both European sites have site specific conservation objectives, and associated supporting documents and habitat and species datasets, all of which should be accessed and utilised in producing the NIS, if necessary.

In relation to potential significant effects on a European site, assessments are carried out with respect to the implications for the conservation objectives of that site. Where available, the attributes, targets and notes specified as part of the conservation objectives will determine the scope and detail of surveys, data and analyses required to produce an NIS[1], if required. The NIS should present the scientific examination of all necessary evidence and data. It should be noted that the conservation objectives of a European site are wider in scope than the qualifying interests or special conservation interests alone, and will encompass other habitats and species, as well as aspects of habitat structure and function, and existing environmental problems and trends. The final analyses are carried out with respect to whether the conservation objective is to maintain or to restore the favourable conservation condition of the habitat or species in question within the site.

The key concerns in relation to likely significant effects of the project alone and in combination with other plans and projects, on these European sites, in view of their conservation objectives, include the following:

- Disturbance of coastal areas, woodlands and other green areas in and adjacent to European sites arising from the development, from increased local populations, and from increased formal and informal amenity and recreation requirements and provision
- Added pressures on existing water services which, in this case, are linked to European sites, e.g. increased water abstraction from, and increased discharges of treated effluent to SACs and SPAs
- Added pressures on other existing services and infrastructure, including transport infrastructure, and the need for future developments such as roads and cycleways which may be unable to avoid European sites, e.g. as set out in the Galway Transport Strategy
- Increased disturbance and displacement of species, and progressive habitat loss, fragmentation and deterioration within European sites arising the development, increased local populations and urban encroachment, and the pressures outlined above
- Consideration should also be given to Article 4(4) of the Birds Directive specifically to avoid pollution or deterioration of bird habitats outside Special Protection Areas. As the species of Special Conservation Interest (SCI) also depend on habitats and landscape features outside designated sites (e.g. birds will use surrounding agricultural lands for

[1] Noting the definition and function of 'NIS' in planning law, and the tests and standards of the appropriate assessment process

feeding and roosting). For example, Light-bellied Brent Goose (*Branta bernicla hrota*) an SCI species of Inner Galway Bay SPA can use a number of fields within this peninsula for feeding.

Likely significant effects on the environment

The site is partly wooded and contains hedgerows and trees. These interlink with Uncleen, Aunteen Woods and onto Merlin Woods, other wooded areas and hedgerows, the coastal margin and inner bay, and other natural and semi-natural habitats to form an ecological network on the south-eastern edge of Galway city. These areas have a role in relation to the maintenance and restoration of biodiversity, including under Article 10 of the Habitats Directive and as part of the 'green network' of Galway city, and this should be recognised and the layout, design and scale of the development should be planned accordingly. Merlin Woods and other local sites are identified as important biodiversity and natural heritage features in Galway City Development Plan.

Taking the above, and the results of habitat and species surveys, into account, a constraints-led approach should be adopted in planning and designing the layout and scale of the development, and in devising mitigation measures, including mitigation by avoidance. At a minimum, it is advised that areas of woodland and treelines on and bordering the site should be retained and protected by appropriate setback distances, landscaping and boundary treatments.

The development of the site should be consistent with protective policies and objectives in Galway City Development Plan, including Policy 4.1: Green network, and Policy 4.2: Protected spaces: Sites of European, national and local importance, Policy 4.3: Blue spaces: Coast, canals and waterways, Policy 4.4: Green spaces: Urban woodlands and trees, in particular.

Recent habitat mapping is available for the much of Galway city and should be sourced. Substantial data on species, particularly the more mobile species such as bats, are also available for parts of the city and the environmental assessment documentation associated with the proposed N6 Galway City Ring Road should be consulted. Local studies of Merlin Woods have been carried out.

Ecological surveys required

Ecological surveys should be carried out in accordance with recognised methodologies, and should provide a comprehensive description and evaluation of the ecological baseline of the site, and an assessment of the likely direct, indirect and cumulative effects of all aspects of the proposed development.

Surveys should be carried out by suitably qualified persons at an appropriate time of the year depending on the species being surveyed for. The EIAR should include the results of the surveys, and detail the survey methodology and timing of such surveys. It is expected by this Department, that in any survey methodology used, best practice will be adhered to and if necessary non-Irish methodology adapted for the Irish situation. CIEEM's recent advice titled '**Advice note on the Lifespan of Ecological Reports and Surveys'** should be noted.

Specific attention should be given to assessment of:

- Bird usage of the site and surrounding areas (notably for feeding and roosting) and,
- Bats, including building inspections, roost presence/absence activity surveys, walked transects and automated static detectors.

Baseline data

With regard to the scope of baseline data, details of designated sites can be found at www.npws.ie. For flora and fauna the data of the National Parks and Wildlife Service (NPWS) should be consulted at www.npws.ie. Where further detail is required on any information on the website, a data request form should be submitted. This can be found at https://www.npws.ie/maps-and-data/open-data-policy. Further information may be found at http://dahg.maps.arcgis.com/home/index.html . Other sources of information relating to habitats and species include that of the National Biodiversity Data Centre (www.biodiversityireland.ie), Inland Fisheries Ireland (www.fisheriesireland.ie), BirdWatch Ireland (www.birdwatchireland.ie) and Bat Conservation Ireland (www.batconservationireland.org). Data may also exist at a County level within the Planning Authority.

Appropriate Assessment (AA) Guidance

Guidance on AA is available in the Departmental guidance document on Appropriate Assessment, which is available on the NPWS web site at www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf and in the EU Commission guidance entitled "*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*" which can be downloaded from http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf. However CJEU and Irish case law has clarified some issues and should also be consulted.

Mitigation measures

Mitigation measures need to be assessed against the adverse effects the project or plan is likely to cause (alone or in combination with other projects or plans). To assess mitigation measures, the following tasks must be completed:

- list each of the measures to be introduced (e.g. noise bunds, tree planting);
- explain how the measures will avoid the adverse impacts on the site;
- explain how the measures will reduce the adverse impacts on the site.

Then, for each of the listed mitigation measures:

- provide evidence of how they will be secured and implemented and by whom;
- provide evidence of the degree of confidence in their likely success;
- provide a timescale, relative to the project or plan, when they will be implemented;

Where residual impacts remain, further mitigation measures may be required.

In addition, under Article 10 of the Habitats Directive, member states must maintain and where possible **enhance** landscape features to improve the coherence of the Natura 2000 network. Particular note should be given to the EU Green Infrastructure Strategy[2]. Opportunities for landscape enhancement should be considered within the landscape plan which should seek to integrate Green Infrastructure and 'Nature Based Surface Water Management' into the project design and consideration of SuDS requirements. The Inland Fisheries Ireland recent publication "Planning for Watercourse in the Urban Environment" (2020)[3] provides a useful guide.

The Landscape management plan should be guided by valuable resources available as part of the National All-Ireland Pollinator Plan https://pollinators.ie/resources/, and avoid planting of potential invasive species such as Cotoneaster (*Cotoneaster franchetii*).

The procedures outlined in '*Guidance Note 08/18 Bats and Artificial Lighting in the UK'* [4] and Eurobats *'Guidelines for Consideration of Bats in Lighting Projects*'[5] should be consulted with respect to the overall lighting design. This should also take into consideration Dark Sky Ireland guidance "Best practice in public lighting"[6], notably that "warm" colour temperatures should be used at 2700K or less. Final sign off and testing of lighting scheme should be carried out at night to ensure that the lighting is directional and targeted and should not spill

[2] http://ec.europa.eu/environment/nature/ecosystems/docs/green_infrastructure_broc.pdf
[3] http://www.fisheriesireland.ie/fisheries-management-1/86-planning-for-watercourses-in-the-urban-environment-1/file
[4] http://www.bats.org.uk/news.php/406/new_guidance_on_bats_and_lighting
[5] http://www.eurobats.org/publications/eurobats_publication_series
[6] https://www.darksky.ie/wp-content/uploads/2020/04/BestPracticesInPublicLighting_BEspey2020.pdf

over onto treelines and hedgerows which can have adverse impacts on bats and biodiversity in general. Bat species are strictly protected under Annex IV of the Habitats Directive.

Monitoring

Evidence should be provided of how the mitigation measures will be monitored, and, should mitigation failure be identified, how that failure will be rectified.

The applicant should not use any proposed post construction monitoring as mitigation to supplement inadequate information in the assessment.

You are requested to send further communications to the Development Applications Unit (DAU) at **manager.dau@chg.gov.ie**, or to the following address:

The Manager
Development Applications Unit (DAU)
Government Offices
Newtown Road
Wexford
Y35 AP90

Is mise, le meas

Diarmuid Buttimer
Development Applications Unit

APPENDIX 3

DRAINAGE LAYOUT

10690-2105

Merlin Park Wood

ϕ200mm watermain and ϕ150mm Rising main to tie into existing previously constructed

Foul Pumping Station - Refer to drawing 10906-2116 for details

Possible future phase shaded - not subject to this application

200mm Static storage tank for Fire Fighting purposes. Refer to drawing 10690-2102 & 10690-2110 for details

Possible future phase shaded - not subject to this application

10690-2101,2103, 2106, 2117, 2119, 2121

10906-2102, 2104, 2107, 2113, 2120, 2122

Ornamental Mound

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

LEGEND:

- Site Boundary
- Existing Ø200mm Watermain
- Existing Rising Main
- Proposed Ø200mm PE100 SDR 17 Water Supply Pipe
- Proposed Ø150mm PE100 SDR 17 Water Supply Pipe
- Proposed Watermain House Connection
- Proposed Ø150mm HDPE Rising Main
- Proposed Foul Sewer and Manhole
- Proposed Inspection Chamber and Connection
- Proposed Storm Sewer and Manhole
- Proposed Soakpit
- Thrust Block
- Proposed Level
- Possible Future Phase of Lands - Not Subject to this Planning Application
- Lands in Control of Applicant

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.
P05	28.06.2021	Revised Layout - Issued for Planning	MN	RD
P04	16.06.2021	Issue for Planning Revision to Drainage	EC	RD
P03	19.05.2021	Draft Issue For Planning	EC	SH
P02	14.05.2021	Issued For Comment	MN	SH
P01	12.05.2021	First Issue	MN	RD

Client: ALBER DEVELOPMENTS

Project: Rosshill Residential Development

Title: Combined Services Layout Key Plan

Scale @ A1: 1:1000 / @A3 1:2000

Prepared by:	Checked:	Date:
MN	RD	June 2021

Project Director: Michael McDonnell

Drawing Status: Planning

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Drawing No.: 10690-2100 Revision: P05

APPENDIX 4

IRISH WATER LETTER

Brendan Heaney
Tobin Consulting Engineers
Fairgreen House
Fairgreen Road
Galway

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

30 October 2020

Re: CDS20006156 pre-connection enquiry - Subject to contract | Contract denied

Connection for Multi/Mixed Use Development of 102 housing unit and a creche at Rosshill, Galway City, Co. Galway

Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Rosehill, Galway City, Co. Galway (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water and subject to the conditions outlined below, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	OUTCOME OF PRE-CONNECTION ENQUIRY THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.
Water Connection	Feasible without infrastructure upgrade by Irish Water. Please see the site specific comments below for further information.
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water. Please see the site specific comments below for further information.
SITE SPECIFIC COMMENTS	
Water Connection	The nearest point of connection to the watermain network is to a 200mm diameter watermain which has been extended to a point north of the railway bridge on the Coast Road. A connection can be facilitated to this watermain. This watermain may be third party owned. Should that be the case then you will require permission from any third parties to facilitate a connection. Please be aware that Irish Water is now responsible for the delivery of the connection related works in the public domain. The costs and conditions associated with the connection would be detailed in a connection offer at connection application stage.
Wastewater Connection	Your pre connection enquiry submission indicates a total development of 102 housing units and a creche. It is proposed to connect to the Irish Water network via pumping station and rising main. Your scale of development can be accommodated by the existing network infrastructure subject to you putting in place a night time pumping regime for the discharge to the Irish

	Water network. In order to accommodate any future additional development which may be proposed on your lands outside of that proposed under this pre connection enquiry upgrade works are required to be delivered at Merlin Park No. 1 Pumping Station to provide additional storage. Irish Water is currently delivering a capital project to provide this additional storage. The proposed pumping station layout should be sized to cater for any future development on your lands and any future development on adjoining lands to the south which are currently zoned low residential. The sizing will be confirmed at connection application stage. Your proposed development appears to be high density; therefore the densities of future development on your lands and those adjoining lands will require to be determined.

Irish Water notes that the scale of this development may dictate that that it is subject to the Strategic Housing Development planning process. in advance of submitting your full application to An Bord Pleanala for assessment, you must have reviewed this development with Irish Water and received a Statement of Design Acceptance in relation to the layout of water and wastewater services.

A design proposal for the water and/or wastewater infrastructure should be submitted to Irish Water for assessment. The design proposal can be submitted to cdsdesignqa@water.ie

The development will be subject to Irish Water's Quality Assurance Requirements for Design and Field Inspections. The overall Quality Assurance requirements will be incorporated into a Connection Agreement at connection application stage as part of a Connection Offer from Irish Water. Please note there is a requirement for wayleaves to be provided along the routes of watermain and wastewater pipes in favour of Irish Water as part of the Connection Agreement. This is to facilitate the vesting of the watermain and wastewater infrastructure. This wayleave requirement extends to the arterial route of connection to the Irish Water network should a connection be proposed via third party/private infrastructure. Further guidance in relation to IW design requirements is available at https://www.water.ie/connections/developer-services/QA-Design-Req-Manual.pdf.

The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.

The feasibility analysis undertaken by Irish Water as part of the pre-connection enquiry process relates only to the capacity of the Irish Water owned infrastructure to cater for the demand of the proposed development.

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.

6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact James O'Malley from the design team at jomalley@water.ie For further information, visit **www.water.ie/connections.**

Yours sincerely,

Maria O'Dwyer

Connections and Developer Services

APPENDIX 5

FLOOD RISK ASSESSMENT

TOBIN
CONSULTING ENGINEERS
BUILT ON KNOWLEDGE

ALBER
DEVELOPMENTS

Alber Developments Limited

Proposed Residential Development, Rosshill, Galway

Flood Risk Assessment

Proposed Residential Development, Rosshill, Galway
Flood Risk Assessment

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Client Address:	1st Floor, Fairgreen House, Fairgreen Rd, Galway, H91 AXK8
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TOBIN Consulting Engineers

TABLE OF CONTENTS

1 Introduction 1
2 Planning & Flood Risk Management Guidelines 3
2.1 The Planning System & Flood Risk Management Guidelines 3
2.1.1 Flood Zones and Vulnerability Classes 3
2.1.2 The Justification Test 4
2.2 The Flood Risk Management Climate Change Sectoral Adaption Plan 5
2.3 Galway County Development Plan (2015-2021) 6
2.4 Galway City Development Plan 7
3 Historical Flooding & Flood Maps 10
3.1 OPW Flood Maps 10
3.2 OPW Preliminary Flood Risk Assessment (PFRA) Maps 11
3.3 Irish Coastal Protection Strategy Study 13
3.4 Western CFRAM Study 15
4 Flood Risk Assessment 17
4.1 Fluvial Flood Risk 17
4.2 Groundwater Flood Risk 17
4.3 Pluvial Flood Risk 18
4.4 Coastal Flood Risk 18
4.5 Flood Risk Mitigation Measures 19
4.6 Impact of the Development Elsewhere 19
4.7 The Justification Test 20
5 Conclusions 21

TABLE OF FIGURES

Figure 1-1 – Site Location 2
Figure 1-2 - Proposed Site Development Plan 2
Figure 2-1 Criteria of the Justification Test 4
Figure 2-2 - Galway City SFRA Flood Zone Mapping 9
Figure 3-1 – OPW Map of Past Flood Events [National Flood Hazard Mapping database] 10
Figure 3-2 - Indicative Flood Mapping from OPW PFRA Study 11
Figure 3-3 – Irish Coastal Protection Strategy Study Flood Extent Mapping 14
Figure 3-4 – Western CFRAM Study Fluvial MRFS Flood Extents 15
Figure 3-5 - Western CFRAM Study Coastal MRFS Flood Extents 16
Figure 4-1 - Karst features in vicnity of proposed site [GSI database] 17
Figure 4-2 – National Parks and Wildlife Services SAC/SPA Mapping 20

TABLE OF TABLES

Table 1 Decision Matrix for Determining the Appropriateness of a Development (PSFRM) 3
Table 2 Climate Change Adaptation Allowances for Future Flood Risk Scenarios 5
Table 3 Estimated Design Coastal Flood Level 18

1 Introduction

TOBIN Consulting Engineers were appointed in September 2020 to provide engineering and environmental consultancy services for a proposed residential development at Rosshill, in Galway City (Figure 1-1 & Figure 1-2).

This preliminary Flood Risk Assessment (FRA) has been prepared in accordance with a Stage 2 Initial Flood Risk Assessment as defined by the guidelines produced by the Department of Environment, Heritage and Local Government (DoEHLG), *The Planning and Flood Risk Management Guidelines for Planning Authorities, 2009* as follows:

> *"to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information and to scope the extent of the risk of flooding which may involve preparing indicative flood zone maps. Where hydraulic models exist the potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures can be assessed. In addition, the requirements of the detailed assessment should be scoped."*[1]

The proposed residential development is located along Rosshill Road, just off the Old Dublin Road (see Figure 1-1). The Galway-Dublin railway line passes along the northern boundary of the site.

The greenfield site pertaining to this application and report, highlighted red in Figure 1-1, is approximately 4.7ha with the overall lands under the applicant's ownership approximately 10ha in area. Existing ground elevations associated with the proposed development site (redline boundary) vary from approximately 7.01mOD and 20.50mOD.

The aim of this FRA is to appraise the adequacy of existing information[1] to identify the risk, if any, of flooding in relation to the proposed development.

[1] *The Planning and Flood Risk Management Guidelines for Planning Authorities, 2009*

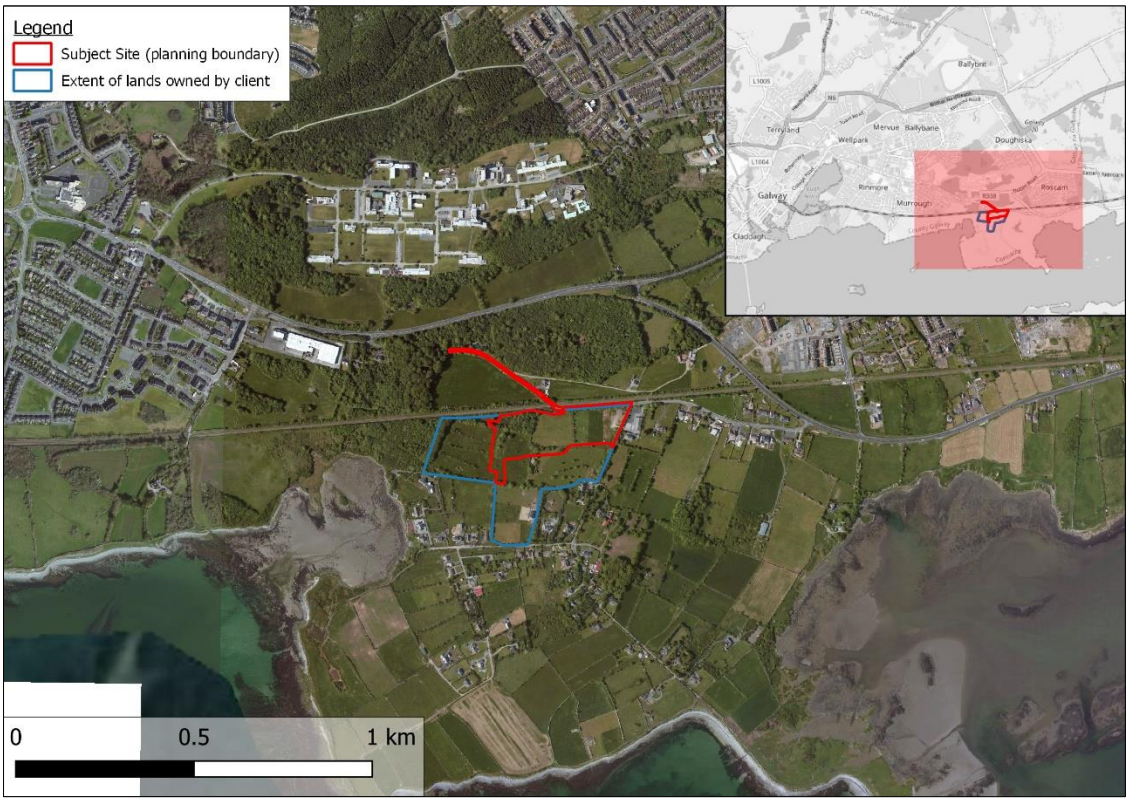


Figure 1-1 – Site Location

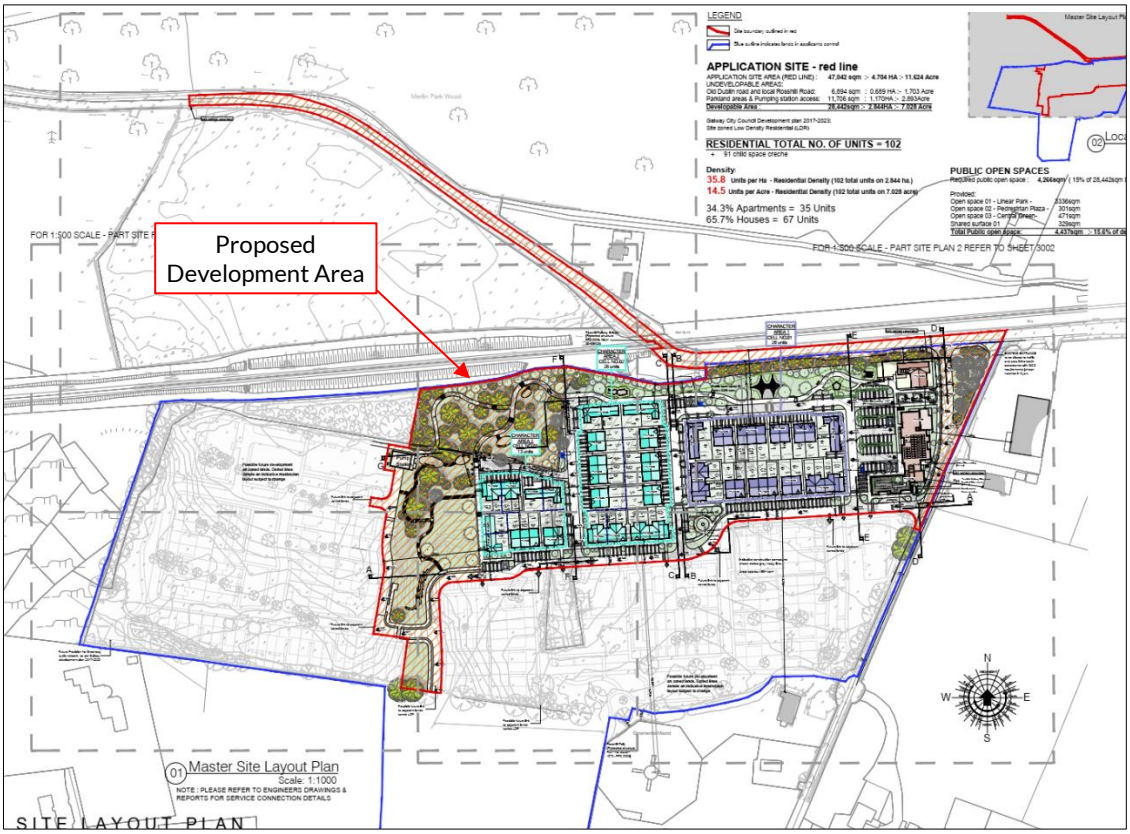


Figure 1-2 - Proposed Site Development Plan

2 Planning & Flood Risk Management Guidelines

This Flood Risk Assessment was carried out for the proposed residential development in accordance with the following plans and guidance documents:

- The Planning System and Flood Risk Management Guidelines (OPW & DOEHLG 2009)
- The Flood Risk Management Climate Change Sectoral Adaption Plan (OPW 2019)
- The Galway County Development Plan 2017-2023
- The Galway City Development Plan 2017-2023

2.1 The Planning System & Flood Risk Management Guidelines

The *'The Planning System and Flood Risk Management'* (PSFRM) guidance document, published in 2009 by The Department of Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW), aims to ensure that flood risk is considered in development proposals and the assessment of planning applications.

2.1.1 Flood Zones and Vulnerability Classes

The PSFRM Guidelines discuss flood risk in terms of flood zones A, B, and C, which correspond to areas of high, medium, or low probability of flooding, respectively. The extents of each flood zone are based on the Annual Exceedance Probability (AEP) of various flood events.

The PSFRM Guidelines also categorise different types of development into three vulnerability classes based on their sensitivity to flooding.

Table 1 shows a decision matrix that indicates which types of development are appropriate in each flood zone and when the PSFRM Justification Test (Section 2.1.2) must be satisfied. The annual exceedance probabilities used to define each flood zone are also provided.

Table 1 Decision Matrix for Determining the Appropriateness of a Development (PSFRM)

Flood Zone (Probability)	Annual Exceedance Probability (AEP)	Development Appropriateness		
		Highly Vulnerable	Less Vulnerable	Water Compatible
A (High)	Fluvial & Pluvial Flooding More frequent than 1% AEP Coastal Flooding More frequent than 0.5% AEP	Justification Test	Justification Test	Appropriate
B (Medium)	Fluvial & Pluvial Flooding 0.1% to 1% AEP Coastal Flooding 0.1% to 0.5% AEP	Justification Test	Appropriate	Appropriate
C (Low)	Fluvial, Pluvial & Coastal Flooding Less frequent than 0.1% AEP	Appropriate	Appropriate	Appropriate

The PSFRM Guidelines state that 'dwelling houses', such as the proposed residential development subject of this flood risk assessment, are classified as "highly vulnerable" in terms of their sensitivity to flooding. Accordingly, the proposed development has been assessed against the 1000-year (0.1% AEP) flood event.

2.1.2 The Justification Test

Any proposed development being considered in an inappropriate flood zone (as determined by Table 1) must satisfy the criteria of the Justification Test outlined in Figure 2-1 (taken from the PSFRM Guidelines).

Box 5.1 Justification Test for development management (to be submitted by the applicant)

When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:

1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.
2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:
   - (i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;
   - (ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;
   - (iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and
   - (iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.

Note: See section 5.27 in relation to major development on zoned lands where sequential approach has not been applied in the operative development plan.

Refer to section 5.28 in relation to minor and infill developments.

Figure 2-1 Criteria of the Justification Test

2.2 The Flood Risk Management Climate Change Sectoral Adaption Plan

The Flood Risk Management Climate Change Sectoral Adaptation Plan was published in 2019 under the National Adaptation Framework and Climate Action Plan. This plan outlines the OPW's approach to climate change adaptation in terms of flood risk management.

This approach is based on a current understanding of the potential impacts of climate change on flooding and flood risk. Research has shown that climate change is likely to worsen flooding through more extreme rainfall patterns, more severe river flows, and rising mean sea levels.

To account for these changes, the Adaptation Plan presents two future flood risk scenarios to consider when assessing flood risk:

- Mid-Range Future Scenario (MRFS)
- High-End Future Scenario (HEFS)

Table 2 sets out the allowances for both scenarios.

Table 2 Climate Change Adaptation Allowances for Future Flood Risk Scenarios

Parameter	Mid-Range Future Scenario (MRFS)	High-End Future Scenario (HEFS)
Extreme Rainfall Depths	+ 20%	+ 30%
Peak River Flood Flows	+ 20%	+ 30%
Mean Sea Level Rise	+ 0.5 m	+ 1 m

For the purpose of this flood risk assessment, we have assessed the proposed development against the Mid-Range Future Scenario as it represents a likely future scenario.

2.3 Galway County Development Plan (2015-2021)

The current Galway County Development Plan provides a strategic framework for land use planning for 2015 to 2021; whereby all development within the County should adhere to the strategies and policies within. Chapter 8 of the 2015-2021 County Development Plan (CDP) deals with the area of flood risk.

The following are the key policies described in the CDP pertaining to flood risk:

Policy FL 1 *"It is the policy of Galway County Council to support, in co-operation with the OPW, the implementation of the EU Flood Risk Directive (2007/60/EC), the Flood Risk Regulations (SI No. 122 of 2010) and the DEHLG/OPW publication The Planning System and Flood Risk Management Guidelines (2009) (and any updated/superseding legislation or policy guidance). Galway County Council will also take account of the Shannon International and Western Catchment Flood Risk Assessment and Management Studies."*

Policy FL 4 *"The Council shall implement the key principles of flood risk management set out in the Flood Risk Management Guidelines as follows:*

(a) Avoid development that will be at risk of flooding or that will increase the flooding risk elsewhere, where possible;

(b) Substitute less vulnerable uses, where avoidance is not possible; and

(c) Mitigate and manage the risk, where avoidance and substitution are not possible.

Development should only be permitted in areas at risk of flooding when there are no alternative, reasonable sites available in areas at lower risk that also meet the objectives of proper planning and sustainable development.

Development in areas which have the highest flood risk should be avoided and/or only considered in exceptional circumstances (through a prescribed Justification Test) if adequate land or sites are not available in areas which have lower flood risk."

A Stage 1 Strategic Flood Risk Assessment (SFRA) was carried out as part of the 2015-2021 Galway County Development Plan. The SFRA notes that the Western CFRAM study identified Galway City as one of the areas for further study. The findings of the CFRAM study are detailed in Section 3.4 of this Flood Risk Assessment report.

2.4 Galway City Development Plan

Section 9.3 of the 2017-2023 Galway City Development Plan deals with the assessment of flood risk.

The key policies in the City Development Plan relevant flood risk assessment are given below:

Support, in co-operation with the OPW, the implementation of EU Flood Risk Directive (2007/60/EC), the Flood Risk Regulations (SI no. 122 of 2010), the DECLG and OPW Guidelines for Planning Authorities, the Planning System and Flood Risk Management (2009), updated/superseding legislation or departmental guidelines and have regard to the findings and relevant identified actions of the future Corrib Catchment Flood Risk Assessment and Management (CFRAM) Study, as the study progresses and incorporate these into the Development Plan, where appropriate.

Have regard to the recommendations of the Strategic Flood Risk Assessment (SFRA) for the Galway City Development Plan 2017-2023 in the assessment of development in identified areas of flood risk (See Figure 2-2).

Restrict the location of structures other than structures with essential links to the waterway and public utilities within 10 metres of the River Corrib in G agricultural zoned lands.

Protect and promote sustainable management and uses of water bodies and watercourses from inappropriate development, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains.

Ensure flood risk is addressed in any future local area plans, framework plans and masterplans in the city and have regard to the findings of the Strategic Flood Risk Assessment for Three Local Area Plans 2012 in the preparation of LAPs for Ardaun, Headford Road area, and Murrough.

Require a site-specific Flood Risk Assessment (FRA) for planning applications in identified areas at risk of flooding, where appropriate, in accordance with the recommendations of the Strategic Flood Risk Assessment (SFRA) for the Galway City Development Plan 2017-2023.

Facilitate sustainable flood defence and coastal protection works in order to prevent flooding and coastal erosion, subject to environmental, visual and built heritage considerations.

Ensure any proposal aimed at alleviating flooding will be subject to Appropriate Assessment in accordance with Article 6 of the EU Habitats Directive, where appropriate.

Ensure the use of SUDS, sustainable urban drainage systems, wherever practical, in the design of development to reduce the rate and quantity of surface water run-off.

Ensure new development, where appropriate, is designed and constructed to meet the flood design standards outlined under Section 11.27 Flood Risk Management and the recommendations of the Strategic Flood Risk Assessment (SFRA) for the Galway City Development Plan 2017-2023.

Have regard to the findings of the OPW's Irish Coastal Protection Strategy Study (2013) of the west coast.

Continue to protect the coastal area and foreshore and avoid inappropriate development in areas at risk of coastal erosion and/or would cause and escalate coastal erosion in adjoining areas.

Protect and maintain, where feasible, undeveloped riparian zones and natural floodplains along the River Corrib and its tributaries.

The design standards outlined under Section 11.27 Flood Risk Management in the Galway City Development Plan (as referenced above) are as follows:

- *Where development is proposed in identified flood risk areas under Western CFRAM, the type or nature of the development needs to be carefully considered and the potential risks mitigated and managed through on-site location, layout and design of the development to reduce flood risk to an acceptable level.*
- *Development shall have regard to the flood resilient design guidance and flood mitigation measures in the City Council's Strategic Flood Risk Assessment for Galway City Development Plan 2017-2023*
- *In identified flood risk areas, Flood Zone A or B, it will be necessary to carry out a Site-Specific Flood Risk Assessment (FRA), appropriate to the scale and nature of the development and the risks arising. Proposals shall demonstrate appropriate mitigation and management measures in the layout and design of development.*
- *All proposed development must consider the impact of surface water flood risk in drainage design. Consideration should be given in the design of new development to the incorporation of SUDS. The drainage design should ensure no increase flood risk to the site or downstream catchment.*
- *Development proposals in identified flood risk areas shall consider and incorporate the potential impacts of climate change and residual risk into development layout and design.*
- *In areas of identified flood risk all developments including minor works and changes of use should include an appropriate level of FRA. This assessment must demonstrate that the development would not increase flood risk in the context of use, emergency access and infrastructure. Development should demonstrate principles of flood resilient design.*

A Strategic Flood Risk Assessment (SFRA)[2] was completed by JBA Consulting in 2015 to accompany the City Development Plan. The SFRA largely summarises the recommendations of the OPW's Planning System and Flood Risk Management guidance document. The SFRA Flood Zone mapping (Figure 2-2) was taken from the Western CFRAM Study, which has been reviewed in Section 3.4 of the report.

[2] Galway City Development Plan, Strategic Flood Risk Assessment, JBA Consulting (December 2015)

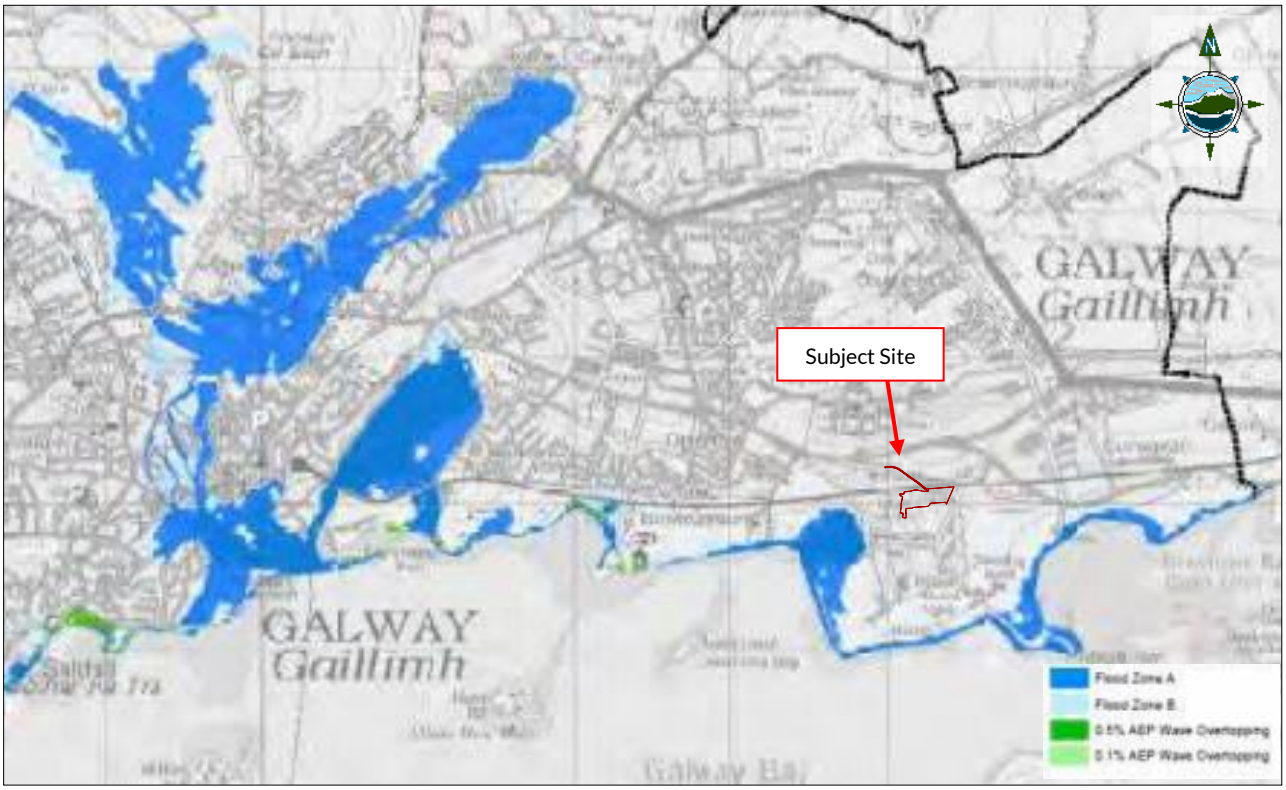


Figure 2-2 - Galway City SFRA Flood Zone Mapping

3 Historical Flooding & Flood Maps

3.1 OPW Flood Maps

Between the years 2004 to 2006 the OPW developed the Flood Hazard Mapping website, www.floodmaps.ie, which provided information about the location of known flood events in Ireland and showed supporting information in the form of reports, photos and press articles about those floods. During this time a huge data collection program was undertaken, visiting over 50 organisations (mainly local authorities and national organisations, eg Waterways Ireland, DoEHLG, and Teagasc) to collect and collate a vast array of information about flooding. The type of information varied from photographs of flood events, to consultants' reports, recordings from gauging stations, eyewitness accounts from staff plus letters from members of the public and minutes of meetings with key officials.

All this information was reviewed, verified, assessed and catalogued to create a National Flood Data Archive. From this the floods were mapped and uploaded to the website. Since 2006, as flood events occurred or as information was submitted to OPW from different sources, including information from the public, new floods and reports were added to the website on an ongoing basis. Past Flood Event information, which has been submitted to and approved by the OPW, is currently accessible for events which occurred pre Autumn 2014. Information on floods that have occurred since then will be uploaded to the website in due course.[3]

The OPW's online National Flood Hazard Mapping database (floodmaps.ie) does not provide any record of flood events occurring at the proposed development site (see Figure 3-1).

Figure 3-1 – OPW Map of Past Flood Events [National Flood Hazard Mapping database]

[3] www.floodmaps.ie

3.2 OPW Preliminary Flood Risk Assessment (PFRA) Maps

In 2009 the OPW produced a series of maps to assist in the development of a Preliminary Flood Risk Assessment (PFRA) throughout the country. These maps were produced from a number of sources. It should be noted that *"the flood extents shown on these maps are based on broad-scale simple analysis and may not be accurate for a specific location"*[4] and that the presented flood extents are for the current probability of flooding and exclude any allowance for climate change.

Figure 3-2 provides an overview of the fluvial, coastal, pluvial, and groundwater indicative flood extents in the vicinity of the subject site.

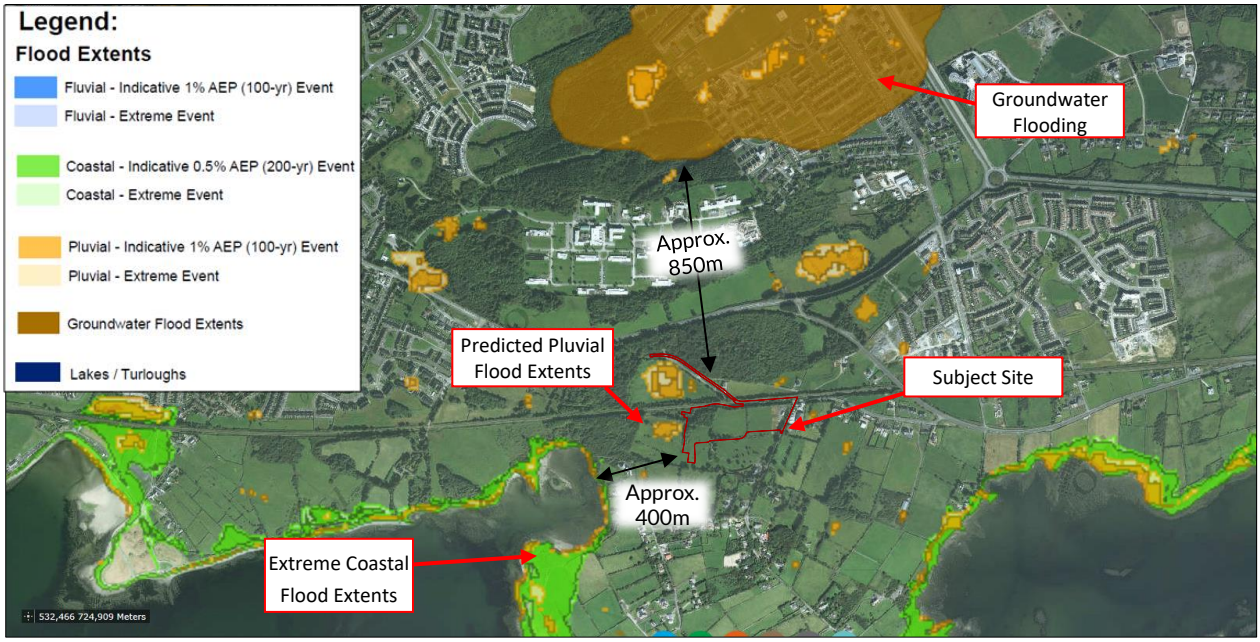


Figure 3-2 - Indicative Flood Mapping from OPW PFRA Study

Fluvial Flood Risk

There are no watercourses in the vicinity of the subject site. As shown in Figure 3-2, the PFRA indicates that the risk of fluvial (river) flooding to the development is minimal and does not identify any areas in the vicinity of the proposed site as being liable to fluvial flooding.

Pluvial Flood Risk

Pluvial modelling was carried out by HR Wallingford in November 2010 as part of the PFRA study. The 100- and 1000-year (1% and 0.1% AEP, respectively) flood extents were generated by analysing 1, 3, 6, and 24-hour rainfall events. The design storm rainfall was applied to the National Digital Terrain Model (DTM) with an allowance for infiltration based on the soil type in the area.

The DTM used for the PFRA study's flood plain mapping was generated from RADAR based technology in 2007 and is stated to have a 5m horizontal resolution (re-sampled to 10m

[4] The National Preliminary Flood Risk Assessment (PFRA) Overview Report, OPW (March 2012)

resolution) and 0.01m vertical resolution, to a quoted vertical accuracy of 0.5m RMSE [5]. The accompanying report to the PFRA notes that the process *"due to the scale of analysis, has not taken into account local drainage structures such as culverts through embankments or other local drainage that would not be resolved in the DTM at a national scale".*

The PFRA pluvial flood maps were also adapted by the OPW to show only the extents where the flood depths were greater than 200mm (on the basis that depths lower than this would not cause significant damage given door-step levels above ground level) [6].

The analysis carried out by HR Wallingford as part of their PFRA study indicates that pluvial flooding (ponding of surface water) is not predicted to occur within the proposed residential development site following an extreme rainfall event (see Figure 3-2).

It was noted that pluvial flooding is predicted immediately to the west of the subject site, in land also owned by the client. Any proposals to develop the adjacent site will be subject to a separate planning application and site-specific flood risk assessment in the future.

Groundwater Flood Risk

As part of the PFRA study indicative groundwater flood mapping was produced by Mott Mac Donald Ltd. A model-based approach to generate groundwater flood extents was not possible due to the lack of available data; therefore, the following methods were used:

1) *"The use of existing mapping of past groundwater flood events (e.g., from 1994/95, and late 2009), developed from ground-based observation, aerial photography or satellite imagery and the maximum extents observed";*

2) *"The delineation of flood extents around turloughs based on an assumed height of flooding of 4m above the base elevation of the turlough (the median of observed ranges) using the OPW's national DTM, with manual adjustment to ensure pragmatic extents";*

3) *"The use of records of past groundwater flood events to validate or adjust the flood extents derived using the other approaches".*

"It should be noted that due to the absence of a model-based approach, only one set of flood extents were generated, with no specific event probability (although where observed flood data was used, these are likely to represent quite extreme events)."[6]

The PFRA mapping did not indicate any sources of groundwater flooding in the vicinity of the proposed residential development site. The indicative flood mapping shows the proposed site is located approximately 850m from the nearest groundwater flood extents (see Figure 3-2).

Coastal Flood Risk

The PFRA study indicates coastal flood extents in the adjacent Galway Bay. Based on the PFRA flood mapping (Figure 3-2), the proposed development is located approximately 400m outside of the extreme coastal flood event extents. More detailed analysis and mapping of coastal flooding is available from the Irish Coastal Protection Strategy Study and the Western CFRAM Study; refer to Sections 3.3 and 3.4 of this report.

[5] National Pluvial Screening Project for Ireland (HR Wallingford, November 2012)
[6] The National Preliminary Flood Risk Assessment (PFRA) Overview Report (OPW, March 2012)

3.3 Irish Coastal Protection Strategy Study

RPS Consulting Engineers, in conjunction with the OPW, undertook a project to develop maps indicating coastal and estuarine areas prone to flooding from the sea. The predicted flood extents which were produced under the Irish Coastal Protection Strategy Study (ICPSS)[7] are based on analysis and modelling. The project included:

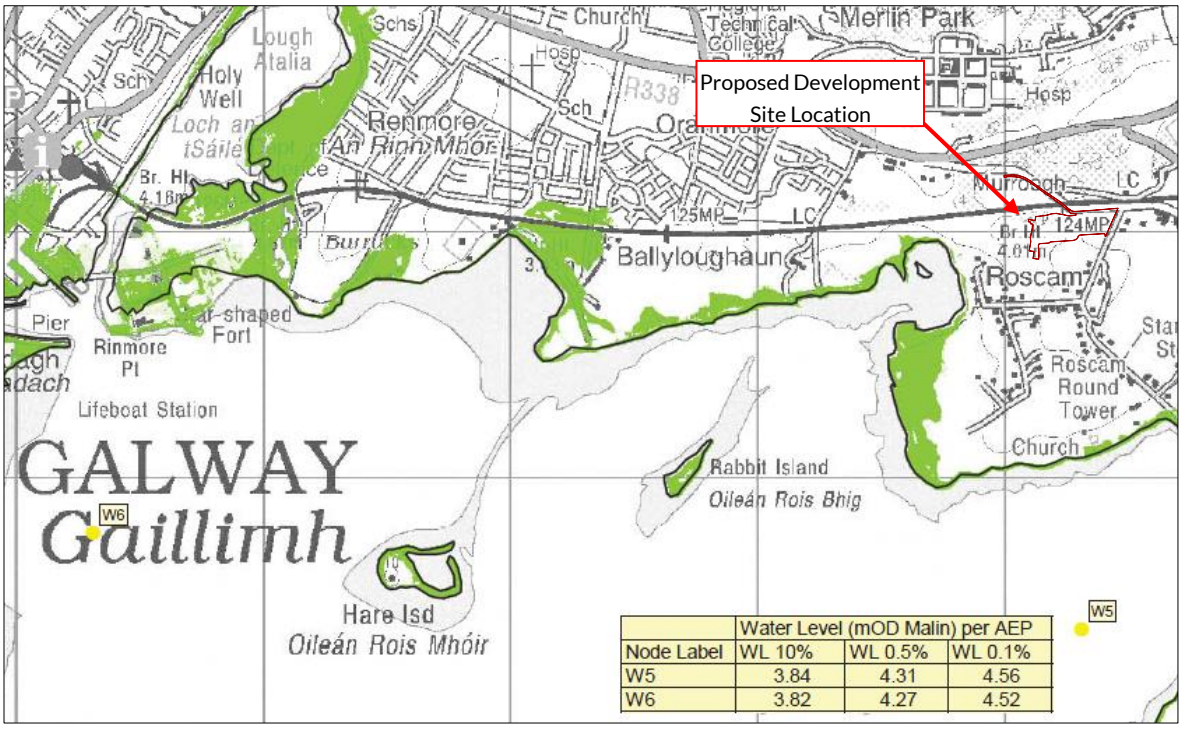
- *"Numerical Modelling of combined storm surges and tide levels which was used to estimate extreme water levels along the coastline"*
- *"Statistical extreme value analysis and joint probability analysis to both historic recorded tide gauge data and data generated by numerical modelling, which allowed an estimation of the extreme water levels of defined annual exceedance probability (AEP) to be established along the coastline Calculation of the extent of the predictive flooding, by comparing calculated extreme tide and surge waters levels along the coast with ground level based on a Digital Terrain Model (DTM)"*
- *"Definition of the plan extent of the predictive floodplain, by use of a Digital Terrain Model (DTM) commissioned by the Office of Public Works"*

The ICPSS flood mapping was produced by combining the results of the surge and tide level modelling, the statistical analysis, and the DTM. The mapping also incorporates future allowances for both mean sea level rise and glacial isostatic adjustment (GIA). The maps have been produced at a strategic level to provide an overview of coastal flood hazard and risk in Ireland, and minor or local features may not have been included in their preparation.[8]

The ICPSS flood mapping for the Mid-Range Future Scenario is shown in Figure 3-3. The proposed development site is located on existing ground with elevations between 7.01mOD and 20.50mOD, 2.45 meters above the estimated 1000-year (0.1% AEP) MRFS coastal flood level in Galway Bay of 4.56mOD (Node W5). The mapping indicates that the proposed development site is not likely to be affected by coastal flooding.

[7] Irish Coastal Protection Strategy Study, Work Package 9A - Strategic Assessment of Coastal Flooding Extents – Future Scenario

[8] *"The maps have been produced at a strategic level to provide an overview of coastal flood hazard and risk in Ireland, and minor or local features may not have been included in their preparation. A DTM is used to generate the maps, which is a 'bare earth' model of the ground surface with the digital removal of man-made and natural landscape features such as vegetation, buildings, bridges and embankments. The mapping process can show some of these man-made features, such as bridges and embankments, as flooded on the flood maps, when in reality they do not flood."* [Extract from Irish Coastal Protection Strategy Study, Work Package 9A - Strategic Assessment of Coastal Flooding Extents – Future Scenario]



	Water Level (mOD Malin) per AEP		
Node Label	WL 10%	WL 0.5%	WL 0.1%
W5	3.84	4.31	4.56
W6	3.82	4.27	4.52

Figure 3-3 – Irish Coastal Protection Strategy Study Flood Extent Mapping

3.4 Western CFRAM Study

As part of the Western Catchment Flood Risk Assessment and Management (CFRAM) programme, hydraulic modelling of Galway Bay and Galway City's watercourses was carried out by JBA Consulting in 2015. Joint probability analysis was carried out to assess fluvial and coastal flood risk in combination. The final flood extents mapping was published in October 2016.

Fluvial Flood Risk

The predicted fluvial flood extents during the 100- and 1000-year (1% and 0.1% AEP, respectively) Mid-Range Future Scenarios (MRFS) are shown in Figure 3-4.

The CFRAM Study flood mapping (see Figure 3-4) does not identify any fluvial (river) flooding in the vicinity of the proposed site.

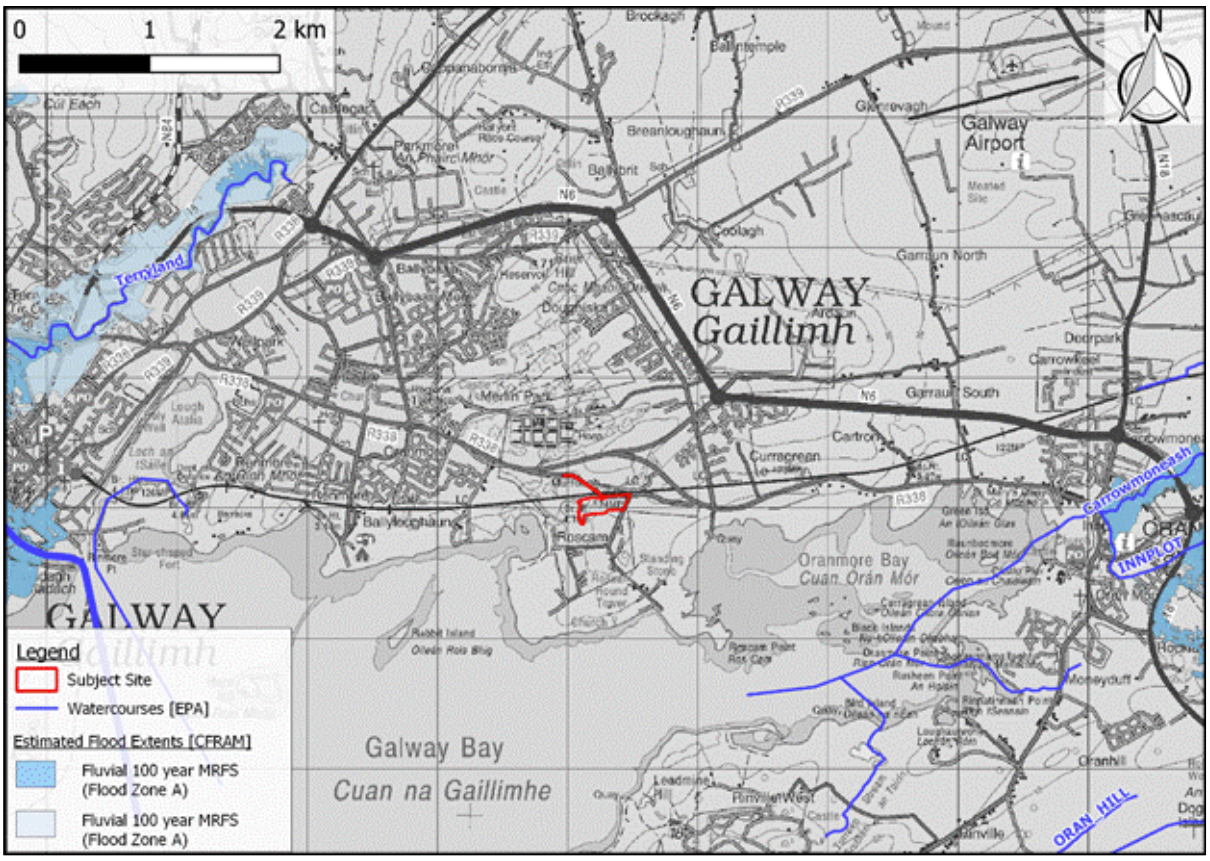


Figure 3-4 – Western CFRAM Study Fluvial MRFS Flood Extents

Coastal Flood Risk

The predicted coastal flood extents during the 100-, 200- and 1000-year (1%, 0.5% and 0.1% AEP, respectively) Mid-Range Future Scenarios (MRFS) are shown in Figure 3-5.

This mapping was produced using a digital terrain model based on a combination of LiDAR and other ground elevation data. The OSI quote the vertical accuracy of LiDAR data as being +/- 25cm.

Based on the results of the CFRAM study (Figure 3-5), the proposed residential development site is unlikely to be affected by flooding during the 1000-year MRFS.

Figure 3-5 - Western CFRAM Study Coastal MRFS Flood Extents

4 Flood Risk Assessment

In accordance with the Planning System and Flood Risk Management Guidelines (discussed in Section 2.1 of this report), the proposed residential development is classified as "highly vulnerable" in terms of its sensitivity to flooding.

The PSFRM guidance document recommends that such developments are constructed in flood zone C, where there is less than a 0.1% Annual Exceedance Probability (AEP) of flooding. Accordingly, the proposed development has been assessed against a 1000-year flood event (i.e. 0.1% AEP).

4.1 Fluvial Flood Risk

There are no rivers or streams evident in the vicinity of the site.

The Western CFRAM Study indicative flood mapping (Figure 3-4) of the area does not indicate the subject site as being liable to fluvial (river) flooding.

4.2 Groundwater Flood Risk

Based on a review of the PFRA study and Geological Survey Ireland (GSI) subsurface mapping of karst features in the area (Figure 4-1), there is no evidence to suggest groundwater flooding at the proposed development site.

Figure 4-1 - Karst features in vicnity of proposed site [GSI database]

4.3 Pluvial Flood Risk

Pluvial modelling carried out by HR Wallingford as part of the PFRA study indicated that the proposed development is not liable to pluvial flooding, see Figure 3-2.

It was noted that pluvial flooding was predicted immediately to the west of the subject site, within lands owned by the Client. Separate to the current proposal/planning application, any future plans to develop this area will require a separate site-specific FRA.

Mitigation measures proposed by the design team to mitigate future potential pluvial flooding are discussed in Section 4.5.

4.4 Coastal Flood Risk

Due to the proximity of the site to Galway Bay, coastal flooding was considered as a potential source of risk to the proposed development. Modelling of coastal flood risk along the west coast was carried out as part of the Irish Coastal Protection Strategy Study (ICPSS) (see Section 3.3). and the Western CFRAM Study (see Section 3.4).

Based on the coastal flood mapping produced by the Irish Coastal Protection Strategy Study (see Figure 3-3) the subject site is not liable to coastal flooding during a 1-in-1000 year event including allowances for climate change, i.e. the site is located in Coastal Flood Zone C.

Similarly, the Western CFRAM Study (Figure 3-5) also indicates that the subject site is not liable to flooding during a 1000-year event.

A breakdown of the coastal flood level for the 200- and 1000-year events including allowances for climate change, upper 95% confidence interval, and freeboard are summarised in Table 3.

Table 3 Estimated Design Coastal Flood Level

	200-Year Flood 0.5% AEP	**1000-Year Flood 0.1% AEP**
Flood Level[N1]	3.81mOD	4.06mOD
Allowance for 95% Confidence [N1]	0.18m	0.18m
Allowance for MRFS Mean Sea Level Rise [N2]	0.5m	0.5m
Allowance for MRFS Land Movement [N2]	0.03m	0.03m
Design Flood Level	**4.49mOD**	**4.77mOD**
Minimum Freeboard [N3]	0.30m	0.30m
Design Flood Level + Minimum Freeboard	**4.82mOD**	**5.07mOD**

Note 1: Design flood level, and allowance for 95% confidence, is taken from Irish Coastal Protection Strategy Study (ICPSS) (see Section 3.3).
Note 2: Allowance for mean sea level rise and land movement as per the Flood Risk Management Climate Change Sectoral Adaptation Plan (2019) (see Section 2.2). Allowance for land movement was taken as 0.5mm per year for 60 years (Flood Risk Management Climate Change Adaptation Plan, May 2015).
Note 3: Freeboard taken from the Multi-Coloured Manual (2010) produced by the Flood Hazard Research Centre (FHRC), Appendices to Chapter 4: Flood damage to residential properties and related social impacts. The manual indicates damage is incurred for residential properties for flood levels at and above 0.3m below ground floor level.

Existing ground elevations at the site (7.01mOD to 20.50mOD) are 2m or more above the 1000-year design coastal flood level (4.74mOD).

Finished flood levels of the proposed dwellings (15.65mOD or higher) are over 10m above the predicted 1000-year design flood level (4.74mOD).

It is therefore estimated that the risk of coastal flooding to the proposed development are minimal.

4.5 Flood Risk Mitigation Measures

A number of measures were included as part of the proposed development design to mitigate flood risk, and to ensure that the development would not impact the risk of flooding elsewhere.

These measures include:

- Site drainage and storm water storage will be provided to cater for surface water runoff for a design return period 100-year storm event. The storm networks on the western section have been designed to a 1000- year flood event.
- Surface water runoff from the site will be limited to greenfield runoff rates by the proposed surface water management system in accordance with the SUDS design principals.
- The landscaping and topography of the developed site shall provide safe exceedance flow paths in the event of extreme flood events or in the case of a blockage of the drainage system, to minimise risks to people and property.
- In an extreme weather event, overflow from the attenuation tank will exit via a high-level overflow to a detention basin located at the north west corner of the proposed development site. During extreme rainfall events, any surface water runoff which exceeds the underground site drainage capacity shall be permitted to flow through a defined flow path to the detention.

4.6 Impact of the Development Elsewhere

It is predicted that the proposed development will not be at risk from flooding during the 1000-year Mid-Range Future Scenario. Therefore, the development will not affect floodplain storage or obstruct the flow path of any existing watercourses.

As noted in Section 4.5, surface water arising onsite will be managed by a dedicated storm water drainage system designed by TOBIN Consulting Engineers. The site drainage will include measures in accordance with the requirements of SUDS to limit runoff from the development to greenfield runoff rates. On this basis, it is predicted that the proposed development will not contribute towards flood risk elsewhere in the area.

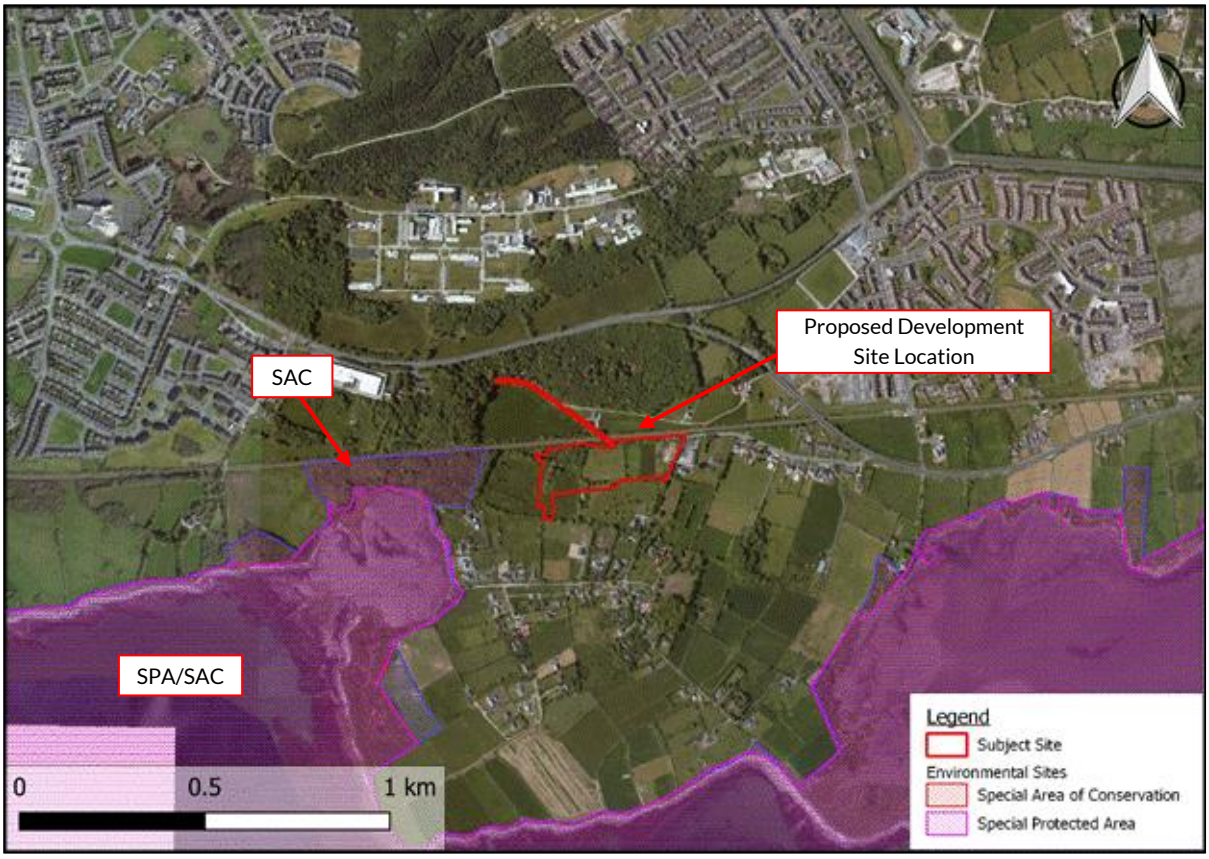


Figure 4-2 – National Parks and Wildlife Services SAC/SPA Mapping

4.7 The Justification Test

With reference to the PSFRM Guidelines, the proposed residential development is classified as "highly vulnerable" in terms of sensitivity to flooding.

Based on the findings of this Flood Risk Assessment, the subject site is located in Flood Zone C, i.e. there is less than a 0.1% Annual Exceedance Probability (AEP) of pluvial/fluvial/groundwater flooding, and less than a 0.5% AEP of coastal flooding.

As the Planning System and Flood Risk Management Guidelines consider residential development appropriate for Flood Zone C, the Justification Test does not need to be applied.

5 Conclusions

TOBIN Consulting Engineers were appointed in May 2019 to provide engineering and environmental consultancy services for the proposed residential development at Rosshill, in Galway City (Figure 1-1 & Figure 1-2).

The Flood Risk Assessment (FRA) undertook a review of:

- OPW Flood Hazard mapping
- OPW Preliminary Flood Risk Assessment (PFRA) Study
- The Planning System & Flood Risk Management (PSFRM) Guidelines
- Flood Risk Management Climate Change Sectoral Adaptation Plan
- Galway County Development Plan (2015-2021);
- Galway City Development Plan (2017-2023);
- Western CFRAM Study;
- Irish Coastal Protection Strategy Study;

With reference to the PSFRM guidelines, the proposed residential development is classified as a "highly vulnerable development" in terms of its sensitivity to flooding. Such developments are considered appropriate within Flood Zone C, i.e. in areas not liable to flooding during a 1000-year (0.1% AEP) Mid-Range Future Scenario (MRFS).

The outcome of the Flood Risk Assessment is summarised as follows:

Fluvial Flooding

Based on the results of the PFRA (Figure 1-1) and Western CFRAM study (Figure 3-4) it is predicted that the subject site is not liable to fluvial (river) flooding during a 1000-year MRFS.

It is therefore estimated that the risk of fluvial flooding to the proposed residential development is minimal.

Groundwater Flooding

Based on a review of the PFRA study relevant groundwater flood mapping and GSI mapping of karst features in the area, there is no evidence to suggest groundwater flooding at the site.

It is therefore estimated that the risk of groundwater flooding to the proposed residential development is minimal.

Pluvial Flooding

Pluvial modelling carried out by HR Wallingford as part of the PFRA study indicated that the proposed site is not liable to pluvial flooding. It was noted that flooding is predicted in the adjacent site to the west (see Figure 3-2); any future plans for this area are outside the scope of this assessment.

A number of mitigation measures have been included as part of the proposed residential development design to minimise associated flood risk, including:

- Site drainage and storm water storage will cater for surface water runoff for a design return period 100-year storm event.

- Surface water runoff from the site will be limited to greenfield runoff rates by the proposed surface water management system in accordance with Sustainable Drainage Systems (SUDS) design principals.
- The landscaping and topography of the developed site shall provide safe exceedance flow paths in the event of extreme flood events or in the case of a blockage of the drainage system, to minimise risks to people and property.
- In an extreme weather event, overflow from the attenuation tank will exit via a high-level overflow to a detention basin located at the north west corner of the proposed development site. During extreme rainfall events, any surface water runoff which exceeds the underground site drainage capacity shall be permitted to flow through a defined flow path to the detention.

It is therefore estimated that the risk of pluvial flooding to the proposed residential development is minimal.

Coastal Flooding

Based on the results of coastal modelling by the ICPSS and Western CFRAM Studies, it is estimated that the subject site is not at risk from coastal flooding during a 1000-year coastal flood event. Existing ground levels at the site (7.01mOD to 20.50mOD) are 2m or more above the estimated 1000-year (0.1% AEP) MRFS coastal flood level of 4.56mOD. Finished flood levels of proposed dwellings (15.65mOD or higher) provide over 11m of freeboard above the extreme coastal flood level.

It is therefore estimated that the risk of coastal flooding to the proposed residential development is minimal.

It is estimated that the overall risk of flooding at the proposed residential development will be minimal, and it is predicted that the development will not increase the risk of flooding elsewhere.

Appendix 1 – Not Used

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Mayo,
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Ireland.
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APPENDIX 6

LANDSCAPE PLAN

Existing scrub woodland

Retained existing dry stone walls

Outdoor fitness equipment stations / woodland trail

Timber agility excercise trail over safety surface ages 6-12+

Existing woodland scrub retained and augmented by additional planting of selected native species and selective removal of non natives - managed to enhance visual and ecological value.

Twin-net over safety surface age group 6-12+

Mowing margin / line of uncut native wildflower meadow grass to rear along woodland margins

Timber 5 way swing over safety surface fitted with under 6 swing type

Under 6's play structure enclosed with 1.2m fence and self closing gate.

Existing entrance to be closed to traffic and area fininshed in accordance with GCC requirements.

Rosshill Railway Bridge

Unit sub.

Public open space 01
Area : 3336 sqm

Public open space 02
Area : 301 sqm

Public open space 03
Area : 471 sqm

Retained dry stone walls

Retained dry stone walls

Shared surface Area 02 :
Area: 151 sqm

Shared surface 01 :
Area: 329 sqm

Pump Station.

Apartment Building

Nos 01 to 35

Communal Roof Space
Area 226 sqm

Loading Bay

Site boundary outlined in red

Fastigiate street trees in mounded grass verge.

Possible Galway Bike share location(08 no.)

Entrance signage

Private communal open space roof garden to apartment block.

BBQ

Ornamental gravel drainage

Artificial grass surface

Continuous hardwood seating integrated to planters

Raised planters with toughened glass screen to outer edge

Swale retention landscape feature with specimen tree & shrub planting set among ornamental rocks /cobble creating 'dry river bed' to attenuate water run off.

Feature curved bench seating & ornamental shrub & tree planting.

Landmark sculpture / public art location

Amphitheatre style embankment seating creating feature of existing landform.

LEGEND

- Trees Retained
- Street Tree
- Native Tree (Large)
- Native Woodland Trees
- Ornamental shrub mix (medium to tall height)
- Ornamental shrub mix (medium to low height)
- Feature shrubs
- Wildflower meadow grass (infrequent cut regime)
- Grass Pubic Open Space (frequent cut regime)
- Perennials & Seasonal Bulbs
- Existing scrub vegetation
- Formal clipped hedging
- Brushed concrete or tarmac paths
- Cycle racks
- Bench seating
- Exposed aggregate setts or paving slabs
- Drystone Wall
- Public communal open space
- Private communal open space
- Additional green space provided within the application - not counted as part of 15% requirement.
- Site boundary

Rosshill Folly

REV	DATE	AMENDMENT

CUNNANE STRATTON REYNOLDS
LAND PLANNING & DESIGN

GALWAY OFFICE
ARDACONG, BALLYTRASNA, TUAM, CO GALWAY
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N

PROJECT: **ROSSHILL, GALWAY.**	DATE: JUNE 2021
	SCALE: 1:500 @ A1
DRAWING: **LANDSCAPE MASTER PLAN** ~~LANDSCAPE MASTER PLAN~~	DRAWN: KM CHECKED: KM
	DRAWING NO: **19112-4-100**

APPENDIX 7

BIRD SURVEY REPORT

Planning and Environmental Consultants

Winter Bird Survey Report

Proposed Strategic Housing Development, Rosshill, Galway

DOCUMENT DETAILS

Client:	**Alber Developments Ltd**
Project Title:	**Proposed Strategic Housing Development, Rosshill, Galway**
Project Number:	**200607**
Document Title:	**Winter Bird Survey Report**
Document File Name:	**200607- F - BS – 2021-05-19**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Final	19/05/2021	CM	JH

Table of Contents

1. **INTRODUCTION** **2**
1.1 Statement Of Authority 2
2. **METHODLOGY** **3**
2.1 Desk Study 3
2.2 Field Survey Methodology 3
2.2.1 I-WeBS Surveys 3
2.2.2 Transects 3
2.2.3 Survey Details 4
2.2.4 Survey Constraints 4
3. **RESULTS** **6**
3.1 Desk Study 6
3.1.1.1 Breeding and Wintering Bird Atlases 6
3.1.1.2 Sites designated for Wintering Bird Species within 15km of the Proposed Development Site 8
3.1.1.3 Inner Galway Bay SPA (0004031) 11
3.1.1.4 Creganna March SPA (004142) 12
3.1.1.5 Lough Corrib SPA (004042) 13
3.1.1.6 Rahasane Turlough SPA (004089) 14
3.2 Field Survey 15
3.2.1 Species records within the Rosshill site 15
3.3 Species records for Inner Galway Bay SPA 19
4. **SUMMARY OF FIELD SURVEY AND DISCUSSION** **22**
5. **CONCLUSION** **23**
6. **REFERENCES** **24**

1. INTRODUCTION

MKO has been appointed by Alber Developments Ltd to undertake winter bird surveys for the period October 2020 to March 2021 for a proposed Strategic Housing Development scheme located on lands at Rosshill Road, Roscam, Co. Galway. A site location map is provided as Figure 1.1.

The objective of the winter surveys is to assess the suitability of the proposed development site to support a variety of wintering wildfowl and waders, including the bird species listed as Special Conservation Interests (SCIs) for the Inner Galway Bay Special Protection Area (SPA).

The assessment objectives can be summarised as follows:

- To undertake field surveys to assess for the presence of suitable habitat and the occurrence of wintering bird species within and adjacent to the development site.
- To identify and assess the direct, indirect and cumulative effects of the proposed development on wintering bird species, in particular the Special Conservation Interest bird species of the Inner Galway Bay SPA (Site Code: 004031).
- The study seeks to determine the distribution of the species within and adjacent to the proposed development site and to determine the presence of feeding/roosting areas within/adjacent to the proposed development site.

Section two of this report provides the methodology, constraints, survey information, weather conditions and survey coverage. The results of the desk study and field surveys are presented in section three of this report. An evaluation and discussion of the results is provided in Section four. The concluding section of the report considers the findings and potential impacts of the proposal in-combination with other developments within the environs of designated sites.

1.1 Statement Of Authority

Bird surveys were undertaken by Julie O'Sullivan (B.Sc, M.Sc) and Colin Murphy (B.Sc. M.Sc). Julie is an experienced ornithologist with over five years professional experience. This report has been prepared by Colin Murphy and has been reviewed by John Hynes. Colin is an experienced ecologist with over one years 'experience. John Hynes (B.Sc., M.Sc., MCIEEM) is an experienced ecologist who has over 10 years' experience in ecological assessment.

Drawing Title
Special Protection Area within 15km

Project Title
Alber Developments Ltd SHD Rosshill

Drawn By	Checked by
CM	JH
Project No.	Drawing No.
200607	Figure3.1
Scale	Date
1:43928	21.04.2021

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2. METHODLOGY

2.1 Desk Study

A number of sources were assessed to determine the likely usage of both breeding and wintering bird species, including Bird Atlases, National Biodiversity Data Centre (NDBC), birdwatch Ireland and Conservation Objectives Supporting Documents from the National Parks and Wildlife Service (NPWS) for nearby Special Protection Areas (SPAs). Results of the desk study are provided in section 3.1.

2.2 Field Survey Methodology

Prior to the commencement of surveys, an initial field visit was undertaken to assess the habitats on site and plan the surveys as well as to identify suitable vantage points. The survey area covered the development site and the area of shoreline within Galway Bay SPA, approximately 600m west of the proposed development site. The surveys to were undertaken at the site over six dates; 30th October 2020, 23rd November 2020, 14th December 2020 21st January 2021, 24th February 2021 and 23rd March 2201. Surveys were undertaken monthly at alternate high/low tides, within two hours of high/low tide. A combination of low and high tide counts has been used due to the differences in behaviour and site use between tidal states, with different species likely to be foraging and roosting in different areas of Inner Galway Bay SPA and the surrounding terrestrial habitats, depending on the stage of the tidal cycle.

The surveys were undertaken by appropriately qualified ornithologists. All observations were recorded, and detailed point data was gathered for each species observation, with all bird species denoted using standard British Trust for Ornithology (BTO) codes and with the number of each species recorded next to each registration. The species recorded in the surveys were those covered by Irish Wetlands Bird Survey (I-WeBS) counts, i.e. all divers, grebes, cormorant, shag, herons, swans, geese, ducks, rails, crakes, waders, gulls and kingfisher. However, in addition to this, all other bird species, including all common and widespread passerines, were also recorded from within the proposed development site.

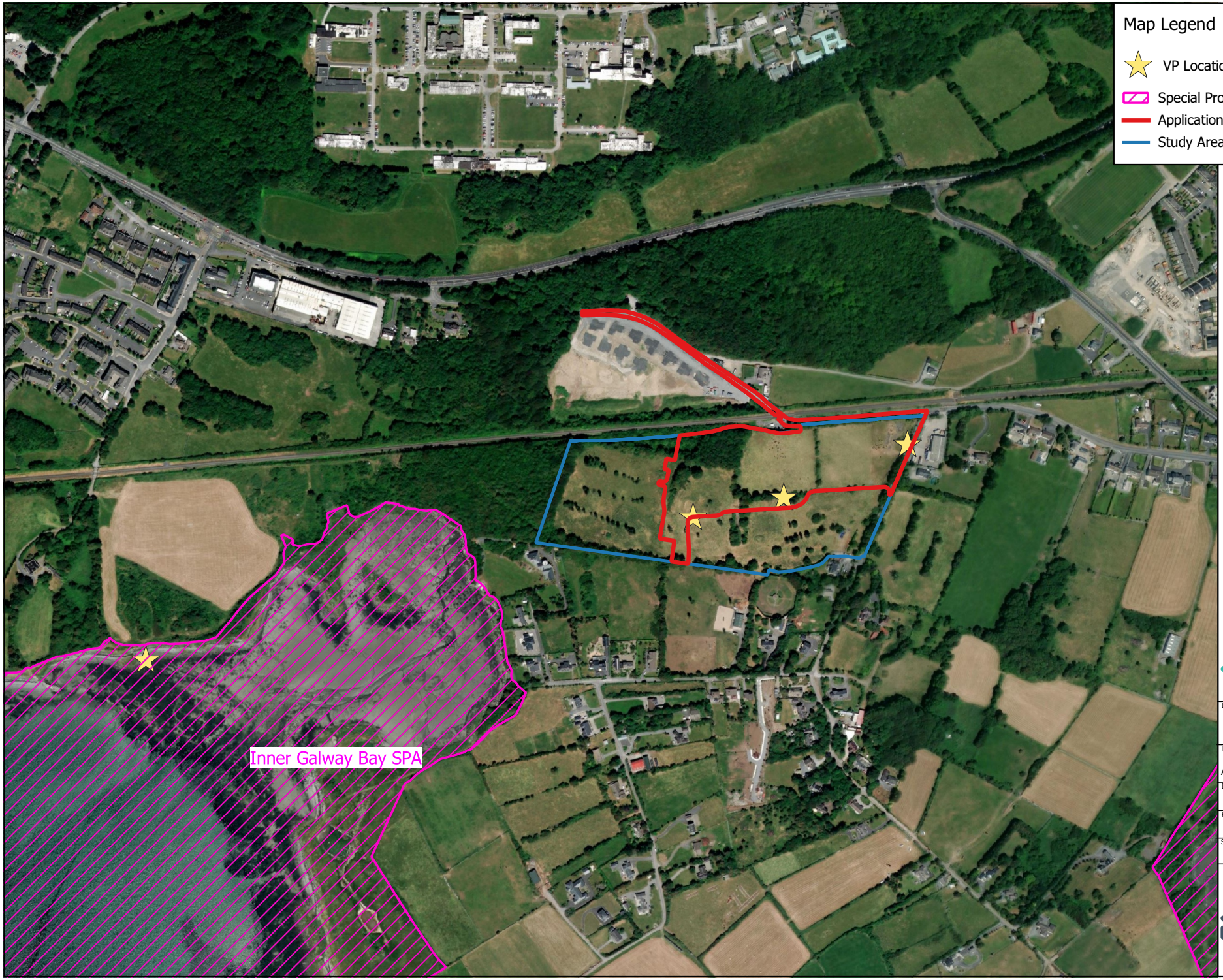
2.2.1 I-WeBS Surveys

The winter bird surveys at the nearby SPA followed the Irish Wetland Bird Survey (I-WeBS) methodology; the simple 'look-see' method, whereby all birds present within a predefined area are counted (Gilbert et al., 1998; Birdwatch Ireland, 2018). The surveys were carried out at suitable vantage points, located overlooking sections of Inner Galway Bay SPA in close proximity to the proposed development site. Vantage points were chosen to have as large as possible a view of the identified wetland site and potential adjacent daytime foraging habitat in the vicinity of the proposed development. Vantage points focused on areas which were deemed to be of likely significance to wintering waterbirds of Inner Galway Bay SPA.

Details of the surveys carried out including date, time, duration, location and weather conditions are provided in Table 2.2. A map of the vantage point locations used during the surveys is presented in Figure 2.1.

2.2.2 Transects

Walked transects were undertaken within the site boundary. During the surveys species of note were recorded both within and adjacent to the development site. All bird species were denoted using standard British Trust for Ornithology (BTO) codes and with the number of each species recorded next to each registration. Transects walked are shown in Figure 2.2. During the surveys species of note were recorded both within and adjacent to the development site.


Map Legend
VP Locations
Special Protection Area (SPA)
Application site boundary
Study Area
Inner Galway Bay SPA
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Microsoft product screen shots reprinted with permission from Microsoft Corporation
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VP Locations
Project Title
Alber Developments Ltd SHD Rosshill
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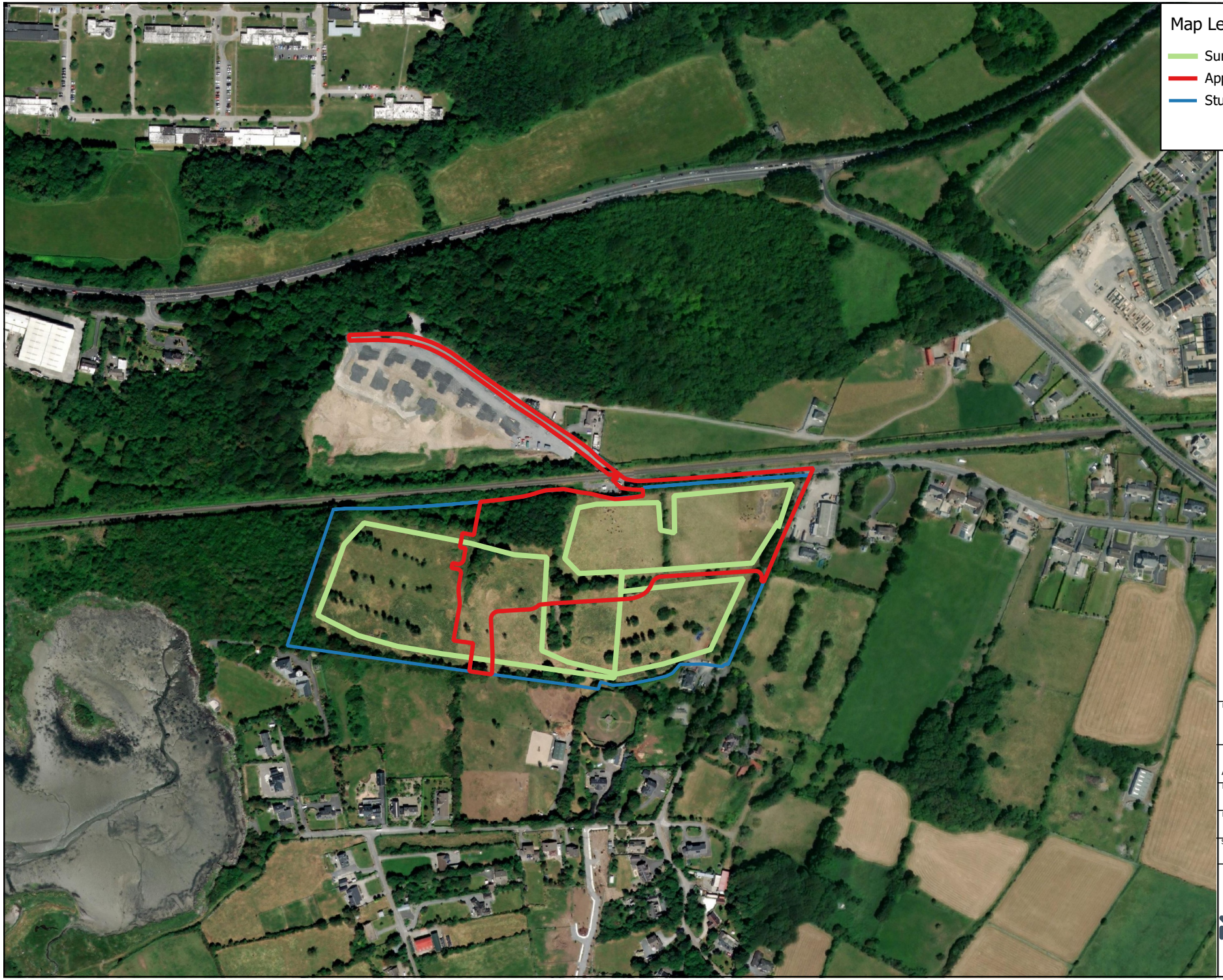

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Drawing Title

Survey Transects

Project Title

Alber Developments Ltd SHD Rosshill

Drawn By	Checked by
CM	JH
Project No.	Drawing No.
200607	Figure 2.2
Scale	Date
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2.2.3 Survey Details

Details of the surveys including survey dates, weather conditions and survey duration are provided in Table 2.1.

Table 2-1 Survey Effort

Date	Survey duration	Tide	Weather conditions
30/10/2020	3 hours	Low tide	Wind speed: Light breeze Cloud cover: approx.60% Visibility: Good (> 2km) Rain: No Frost: None Snow: None
23/11/2020	3 hours	High tide	Wind speed; Moderate breeze Cloud cover: approx.100% Visibility: Poor (<2km) Rain: Yes Frost: None Snow: None
14/12/2020	3 hours	Low tide	Wind speed: Light breeze Cloud cover: approx. 80% Visibility: Good (> 2km) Rain: No Frost: None Snow: None
21/01/2021	3 hours	High tide	Wind speed: Light breeze Cloud cover: approx. 70% Visibility: Good (> 2km) Rain: No Frost: Yes Snow: None
24/02/2021	3 hours	Low tide	Wind speed: Light breeze Cloud cover: approx. 60% Visibility: Good (>2km) Rain: No Frost: No Snow: No
23/03/2021	3 hours	High tide	Wind speed: Moderate breeze Cloud cover: 40% Visibility: Good Rain: No Frost: No Snow: No

2.2.4 Survey Constraints

Constraints and limitations of the survey were identified during the course of the undertaking the surveys. Examples of survey limitations and survey constraints are listed in the following sub-sections. However, no significant survey constraints limited the survey approach and a comprehensive assessment was undertaken.

Surveys were undertaken during optimal weather conditions where possible as poor weather conditions and high wind can lead to decreased bird movements and hinder surveyor visibility.

All lands within the proposal boundary were accessible during the survey visits. Surrounding private lands were not accessed. However, these lands were scanned using a spotting scope from elevated vantage points along the public road. Any significant flocks of wintering wildfowl or waders are typically recorded using such an approach.

3. RESULTS

3.1 Desk Study

A number of sources were assessed to determine the likely usage of the site by both breeding and wintering bird species, including Bird Atlases, National Biodiversity Data Centre (NBDC), BirdWatch Ireland and Conservation Objectives Supporting Documents from the National Parks and Wildlife Service (NPWS) for nearby Special Protection Areas (SPAs).

3.1.1.1 Breeding and Wintering Bird Atlases

The Bird Atlas 2007-11: The breeding and wintering birds of Britain and Ireland (Balmer et al., 2013) provides the most up-to-date information regarding the distribution and relative abundance of bird species in Britain and Ireland, based on surveys carried out between 2007 and 2011.The atlases show data for breeding and wintering birds respectively in individual 10 km x 10 km squares (hectads). Table 3.1 shows those species found in the relevant hectad (M32) which are recorded as breeding in the most recent atlas. It also provided species that have been recorded within the relevant tetrads (M32M & M32H) on National Biodiversity Data Centre (NBDC) datasets as well as those listed in Annex I of the EU Birds Directive recorded on the BoCCI Red List. Birds listed under Annex I are offered special protection by the EU Birds Directive. Those listed on the Birds of Conservation Concern in Ireland (BoCCI) Red List meet one or more of the following criteria:

- IUCN: Global conservation status (Critically Endangered (CE), Endangered (E)or Vulnerable (V), but not Near Threatened. These species are recognised as the highest priorities for action at a global scale and are thus priorities at an all-Ireland level.
- European conservation status. The conservation status of all European species was assessed most recently by Birdlife International (2004), one of the main changes in the revision being to include the IUCN criteria. These species are those of global conservation concern (including those classified as Near Threatened) and are Red-listed.
- The Irish breeding population has undergone significant historical decline since 1800.
- The Irish non-breeding population has undergone a significant decline of 50% in the last 25 years.
- The Irish breeding range has undergone a decline of 70% or more in the last 25 years.

Seven species listed under Annex I of the EU Birds Directive have been recorded within the relevant tetrad (M32M & M32H) A further four red-listed birds of conservation concern have been recorded breeding within the relevant tetrads.

Table 3.1 – NBDC Bird data and Bird Atlas data (Tetrad M32M & M32H)

Common Name	Scientific name	Bird Atlas		Designation
		Breeding 2008-2011	Wintering 2007-2011	
Bar-tailed Godwit	*Limosa lapponica*	No	Present	Protected EU Birds Directive Annex I Bird Species
Dunlin	*Calidris alpina*	Present (non-breeding)	Present	
Little Egret	*Egretta garzetta*	Confirmed	Present	
Sandwich Tern	*Sterna sandvicensis*	Present (non-breeding)	No	
Arctic Tern	*Sterna paradisaea*	Confirmed	No	
Common Tern	*Sterna hirundo*	Confirmed	No	
Great Northern Diver	*Gavia immer*	No	Present	
Black-headed Gull	*Larus ridibundus*	Confirmed	Present	Birds of Conservation Concern – Red list
Common Redshank	*Tringa totanus*	No	Present	
Herring Gull	*Larus argentatus*	Present (non-breeding)	Present	
Kestrel	*Falco tinnunculus*	Present (non-breeding)	Present	

3.1.1.2 Sites designated for Wintering Bird Species within 15km of the Proposed Development Site

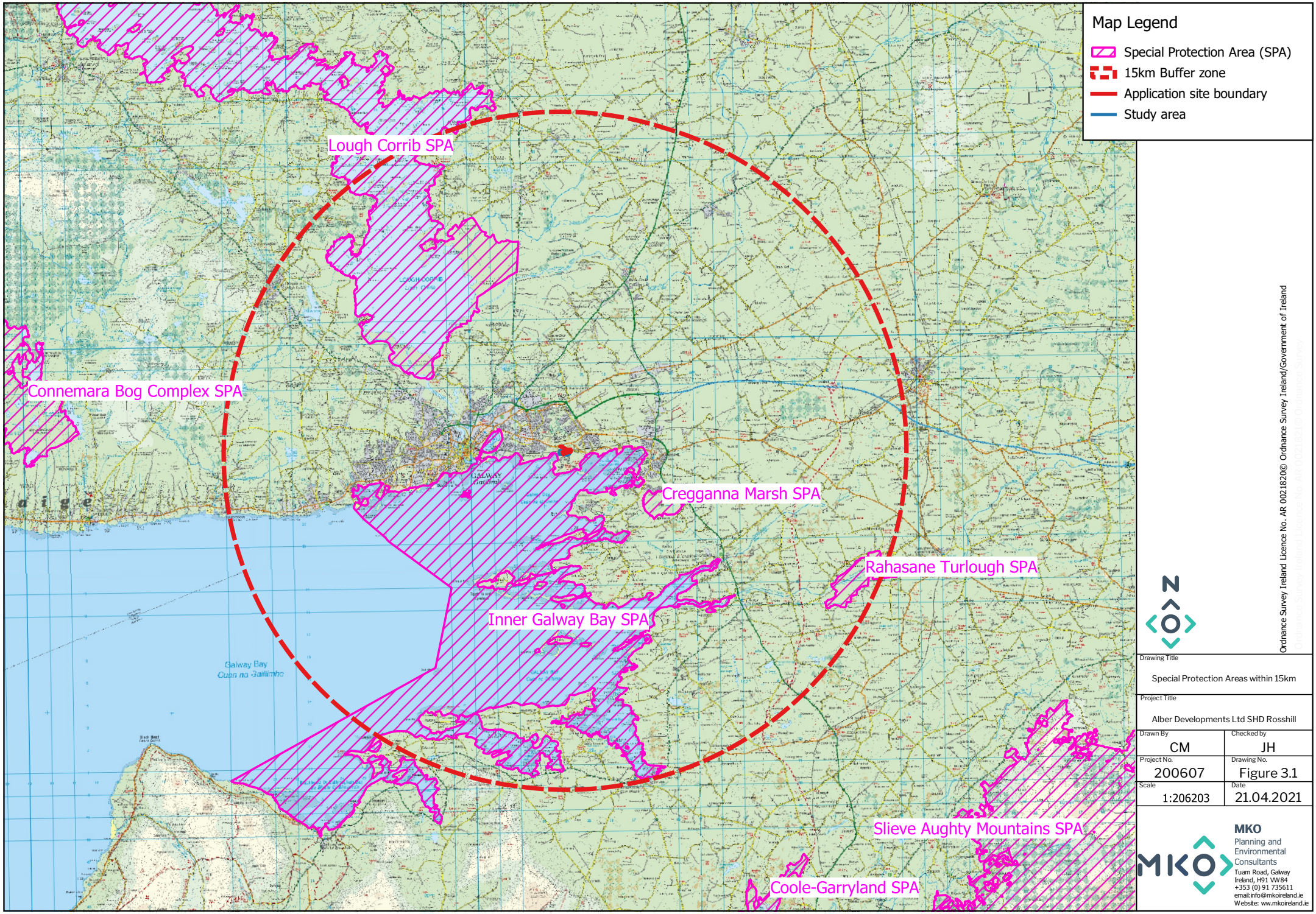
Using QGIS Software (Version 3.16.5) designated sites within a 15km radius of the proposed development site were identified. The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were considered at the time of preparation of this report (20/04/2021). Details of these sites, including their distance from the proposed development site, are provided in Table 3.2. Figure 3.1 shows the location of the proposed works in relation to all sites designated for wintering bird species within 15 km.

Table 3.2 – EU Designated sites within 15km of the proposed works

EU Designated Site	**Distance from Proposed development site (km)**	**Qualify Interests/Special Conservation Interests for which the Natura 2000 Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 19/04/2021)**	**Conservation Objective**
Inner Galway Bay SPA (004031)	0.09km	Great Northern Diver (*Gavia immer*) [A003] Cormorant (*Phalacrocorax carbo*) [A017] Grey Heron (*Ardea cinerea*) [A028] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Shoveler (*Anas clypeata*) [A056] Red-breasted Merganser (*Mergus serrator*) [A069 Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] Black-headed Gull (*Chroicocephalus ridibundus*)	This site has site specific conservation objectives (Version 1, 2013). Each species has the conservation objective to: "Maintain the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA." This site has the additional conservation objective: "To maintain the favourable conservation condition of wetland habitat in Inner Galway Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it," (Version 1, NPWS, 2013)

EU Designated Site	Distance from Proposed development site (km)	Qualify Interests/Special Conservation Interests for which the Natura 2000 Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 19/04/2021)	Conservation Objective
		[A179] Common Gull (*Larus canus*) [A182] Sandwich Tern (*Sterna sandvicensis*) [A191] Common Tern (*Sterna hirundo*) [A193] Wetland and Waterbirds [A999]	
Cregganna Marsh SPA (004142)	3.8km	Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	This site has the generic conservation objective to: "Maintain the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA," (Generic Version 8.0, NPWS, 2021).
Lough Corrib SPA (004042)	6.4km	Gadwall (*Anas strepera*) [A051] Shoveler (*Anas clypeata*) [A056] Pochard (*Aythya ferina*) [A059] Tufted Duck (*Aythya fuligula*) [A061] Common Scoter (*Melanitta nigra*) [A065] Hen Harrier (*Circus cyaneus*) [A082] Coot (*Fulica atra*) [A125] Golden Plover (*Pluvialis apricaria*) [A140] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	This site has the generic conservation objective to: "Maintain the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA," (Generic Version 8.0, NPWS, 2021). This site has the additional conservation objective: "To maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly-occurring migratory waterbirds that utilise it."

EU Designated Site	**Distance from Proposed development site (km)**	**Qualify Interests/Special Conservation Interests for which the Natura 2000 Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 19/04/2021)**	**Conservation Objective**
Rahasane Turlough SPA (004089)	13.07km	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Golden Plover (*Pluvialis apricaria*) [A140] Black-tailed Godwit (*Limosa limosa*) [A156] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999]	This site has the generic conservation objective to: "Maintain the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA," (Generic Version 8.0, NPWS, 2021).



Drawing Title
Special Protection Areas within 15km

Project Title
Alber Developments Ltd SHD Rosshill

Drawn By	Checked by
CM	JH
Project No.	Drawing No.
200607	Figure 3.1
Scale	Date
1:206203	21.04.2021

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3.1.1.3 Inner Galway Bay SPA (0004031)

A detailed conservation objectives document is available for Inner Galway Bay SPA (www.npws.ie, accessed on 19/04/2021). The Special Conservation Interests of Inner Galway Bay SPA and the conservation objective for each species is listed in Table 3.2.

Table 3.2- SCIs of Inner Galway Bay SPA

Special Conservation Interests	Conservation Objectives
Common Gull (*Larus canus*) [A182]	Maintain the favourable conservation condition of the Special Conservation Interest of Inner Galway Bay SPA.
Great Northern Diver (*Gavia immer*) [A003]	
Cormorant (*Phalacrocorax carbo*) [A017]	
Grey Heron (*Ardea cinerea*) [A028]	
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	
Wigeon (*Anas penelope*) [A050]	
Teal (*Anas crecca*) [A052]	
Shoveler (*Anas clypeata*) [A056]	
Red-breasted Merganser (*Mergus serrator*) [A069]	
Ringed Plover (*Charadrius hiaticula*) [A137]	
Golden Plover (*Pluvialis apricaria*) [A140]	
Lapwing (*Vanellus vanellus*) [A142]	
Dunlin (*Calidris alpina*) [A149]	
Bar-tailed Godwit (*Limosa lapponica*) [A157]	
Curlew (*Numenius arquata*) [A160]	
Redshank (*Tringa totanus*) [A162]	
Turnstone (*Arenaria interpres*) [A169]	
Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	
Sandwich Tern (*Sterna sandvicensis*) [A191]	
Common Tern (*Sterna hirundo*) [A193]	
Wetland and Waterbirds [A999]	To maintain the favourable conservation condition of wetland habitat in Inner Galway

Special Conservation Interests	Conservation Objectives
	Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

A review of desktop literature pertaining to the SPA was conducted. The Site Synopsis, as updated in 2014, states;

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

3.1.1.4 Creganna March SPA (004142)

A generic conservation objectives document is available for Cregganna Marsh SPA (www.npws.ie, accessed on 19/04/2021). The Special Conservation Interests of Cregganna Marsh SPA and the conservation objective for each species is listed in Table 3.4 below.

Table 3.4- SCIs of Creganna Marsh SPA

Special Conservation Interests	Conservation Objectives
Greenland White-fronted Goose (*Anser albifrons flavirostris)* [A395]	This site has the generic conservation objective to: "Maintain the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA," (Generic Version 8.0, NPWS, 2021).

A review of desktop literature pertaining to the SPA was conducted. The Site Synopsis, as updated in 2015, states; states that the population of Greenland White Fronted Goose for which the SPA was designated was a sub-population of the population that form the Rahasane flock. The standard data form, updated in 2017, lists the population size as 129 individuals and states;

> *"Cregganna Marsh is of importance as it is the principal alternative feeding site for the nationally important population of Anser albifrons flavirostris that is based at nearby Rahasane turlough. Numbers using Cregganna Marsh vary between winters but in most winters the qualifying threshold for national importance is exceeded."*

3.1.1.5 Lough Corrib SPA (004042)

A generic conservation objectives document is available for Lough Corrib SPA (www.npws.ie, accessed on 19/04/2021). The Special Conservation Interests of Lough Corrib SPA and the conservation objective for each species is listed in Table 3.5 below.

Table 3.5- SCIs of Lough Corrib SPA

Special Conservation Interests	Conservation Objectives
Gadwall (*Anas strepera*) [A051]	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for Lough Corrib SPA.
Shoveler (*Anas clypeata*) [A056]	
Pochard (*Aythya ferina*) [A059]	
Tufted Duck (*Aythya fuligula*) [A061]	
Common Scoter (*Melanitta nigra*) [A065]	
Hen Harrier (*Circus cyaneus*) [A082]	
Coot (*Fulica atra*) [A125]	
Golden Plover (*Pluvialis apricaria*) [A140]	
Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	
Common Gull (*Larus canus*) [A182]	
Common Tern (*Sterna hirundo*) [A193]	
Arctic Tern (*Sterna paradisaea*) [A194]	
Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	
Wetland and Waterbirds [A999]	To maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

A review of desktop literature pertaining to the SPA was conducted. The Site Synopsis, as updated in 2014, states;

> *"Lough Corrib is an internationally important site that regularly supports in excess of 20,000 wintering waterbirds including an internationally important population of wintering Pochard (10,107) – except where indicated all figures are five year mean peaks for the period 1995/96 to 1999/2000. The site also supports nationally important populations of wintering Greenland White-fronted Goose (160 - five year mean peak for the period 1994/95 to 1998/99), Gadwall (48), Shoveler (90), Tufted Duck (5,486), Coot (14,426) and Golden Plover (1,727). Other species which occur*

include Mute Swan (182), Whooper Swan (35), Wigeon (528), Teal (74), Mallard (155), Goldeneye (74), Lapwing (2,424) and Curlew (114). In winter nationally important numbers of Hen Harrier (8 - four year mean peak count between 2006 and 2009) also utilise the site as a communal roost. Lough Corrib is also a traditional breeding site for gulls and terns, with various islands being used for nesting each year. There are important colonies of Common Tern (37 pairs in 1995) and Arctic Tern (60 pairs in 1995). The site supports substantial colonies of Black-headed Gull (431 pairs in 2000) and Common Gull (186 pairs in 2000), these representing 3% and 11% of the respective all-Ireland totals. Small numbers of Lesser Black-backed Gull, Great Black-backed Gull and Herring Gull have also been recorded breeding within the site."

3.1.1.6 Rahasane Turlough SPA (004089)

A generic conservation objective document is available for Lough Gara (www.npws.ie, accessed on 19/04/2021). The Special Conservation Interest of Rahasane Turlough SPA and the conservation objectives for the species is listed in Table 3.6 below.

Table 3.6- SCIs of Rahasane Turlough SPA

Special Conservation Interests	Conservation Objective
Whooper Swan (*Cygnus cygnus*) [A038]	To maintain the favourable conservation condition of wetland habitat in Rahasane Turlough SPA as a resource for the regularly occurring migratory waterbirds that utilise it.
Wigeon (*Anas penelope*) [A050]	
Golden Plover (*Pluvialis apricaria*) [A140]	
Black-tailed Godwit (*Limosa limosa*) [A156]	
Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	
Wetland and Waterbirds [A999]	

The following extract has been taken from the Site Synopsis;

"Rahasane is a traditional site for Greenland White-fronted Goose, and supports a population of national importance (157 individuals - five year mean peak for the period 1994/95 to 1998/99). It is of international importance for Black-tailed Godwit (437 - all figures are five year mean peaks for the period 1995/96 to 1999/2000). It also has nationally important populations of Whooper Swan (165), Wigeon (3,430), and Golden Plover (6,613). The site has the largest inland population of Dunlin (864) in the country and also supports Mute Swan (57), Teal (307), Mallard (142), Pintail (19), Shoveler (28), Tufted Duck (32), Grey Heron (31), Lapwing (2,220), Curlew (197), Redshank (134) and Black-headed Gull (280). Little Egret, a species which has recently colonised Ireland, also occurs at this site"

3.2 Field Survey

The following section provides the results of the six site visits undertaken (October 2020-March 2021, inclusive).

3.2.1 Species records within the Rosshill site

Table 3.7 provides an overview of the target species of conservation interest recorded during the surveys carried out between October and March 2020/2021. Non-target bird species recorded within the development site are presented in Table 3.8 along with their Birds of Conservation Concern in Ireland (BoCCI) status. No target species were recorded roosting or feeding within the proposed development site.

During each of the site visits undertaken, there were observations of Special Conservation Interests species associated with the Inner Galway Bay SPA. This included observations of Curlew, and Black-headed Gull flying over the development site. A Peregrine was recorded flying through the western section of the site during the October site visit. A Kestrel was recorded flying over the site and hunting in the woodland to the north west of the site during the December, January and February site visits. SCIs of Inner Galway Bay flight lines recorded during the survey are provided in Figure 3.2.

Table 3.7. Target bird survey results Rosshill bird survey

Species	Number of Individuals	Notes	Date	Conservation status
Black-headed Gull (*Larus ridibundus*)	1	Flew west over the north west section of the site	30/10/2020	Bird of Conservation Concern- Red list SCI of Inner Galway Bay SPA
Herring Gull (*Larus argentatus*)	1	Flew east over south section of site	30/10/2020	Bird of Conservation Concern- Red list
Peregrine (*Falco peregrinus*)	1	Flew south from wooded area along northern boundary of site perched on tree, flew north back into wooded area	30/10/2020	Annex I
Curlew (*Numenius arquata*)	6	Flew over north west boundary, in west direction towards coastline	23/11/2020	Bird of Conservation Concern- Red list SCI of Inner Galway Bay SPA
Black-headed Gull (*Larus ridibundus*)	1	Flew west to east over centre of the site	23/11/2020	Bird of Conservation Concern- Red list SCI of Inner Galway Bay SPA

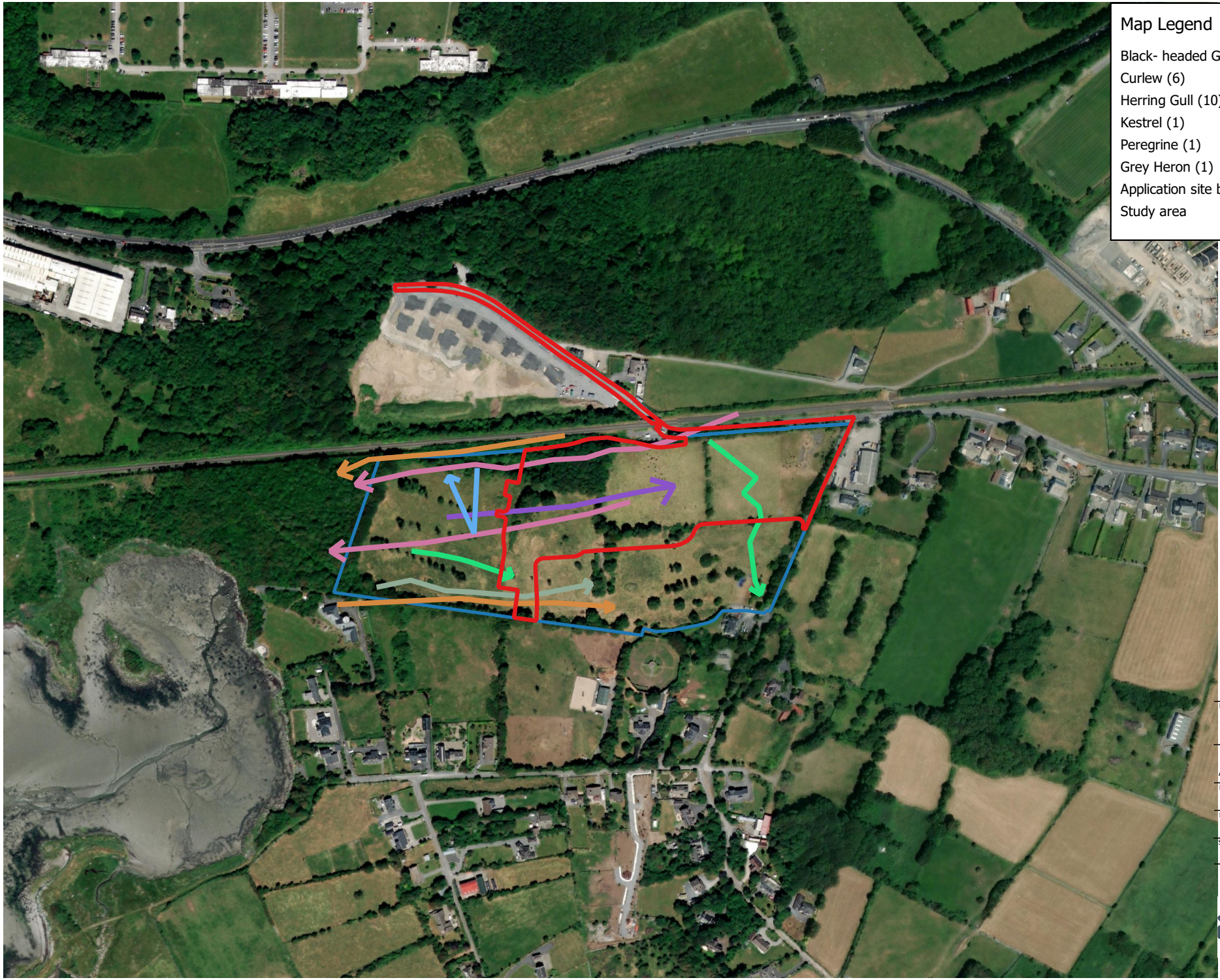
Species	Number of Individuals	Notes	Date	Conservation status
Herring Gull (*Larus argentatus*)	1	Flew east to west over north of the site	23/11/2020	Bird of Conservation Concern- Red list
Herring Gull (*Larus argentatus*)	8	Flew east to west over north/ centre of the site	14/12/2020	Bird of Conservation Concern- Red list
Curlew (*Numenius arquata*)	1	Flew west over north west of the site	14/12/2020	Bird of Conservation Concern- Red list SCI of Inner Galway Bay SPA
Kestrel (*Falco tinnunculus*)	1	Flew north east over the northern section of the site, hunted in woodland area north of the site	14/12/2020	Bird of Conservation Concern- Red list
Kestrel (*Falco tinnunculus*)	1	Flew south east over the north western section of site (mobbed by rooks)	21/01/2021	Bird of Conservation Concern- Red list
Black-headed Gull (*Larus ridibundus*)	3	Flew west over north section of site	21/01/2021	Bird of Conservation Concern- Red list SCI of Inner Galway Bay SPA
Curlew (*Numenius arquata*)	1	Flew east over south section of the site	21/01/2021	Bird of Conservation Concern- Red list SCI of Inner Galway Bay SPA
Kestrel (*Falco tinnunculus*)	1	Flew east to west over centre of the site	24/02/2021	Bird of Conservation Concern- Red list
Grey Heron (*Ardea cinerea*)	1	Flew west to east over centre of the site	24/02/2021	SCI of Inner Galway Bay SPA

Species	Number of Individuals	Notes	Date	Conservation status
Black-headed Gull (*Larus ridibundus*)	3	Flew west over north section of site	22/03/2021	Bird of Conservation Concern- Red list SCI of Inner Galway Bay SPA

Table 3.8- Non-target bird species recorded at Rosshill (within development site).

Species	Scientific name	BoCCI Status	Date
Magpie	*Pica pica*	Green	30/10/2020 23/11/2020 14/12/2020 21/01/2021
Robin	*Erithacus rubecula*	Green	30/10/2020 21/01/2021 24/02/2021 22/03/2021
Wood pigeon	*Columba palumbus*	Green	30/10/2020 23/11/2020 14/12/2020 21/01/2021 22/03/2021
Wren	*Troglodytes troglodytes*	Green	30/10/2020 14/12/2020
Long-tailed tit	*Aegithalus caudatus*	Green	30/10/2020
Great tit	*Parus major*	Green	30/10/2020 14/12/2020 21/01/2021 22/03/2021

Species	Scientific name	BoCCI Status	Date
Dunnock	*Prunella modularis*	Green	30/10/2020 23/11/2020
Hooded crow	*Corvus cornix*	Green	30/10/2020 22/03/2021
Blackbird	*Turdus merula*	Green	23/11/2020 14/12/2020 24/02/2021
Bullfinch	*Pyrrhula pyrrhula*	Green	23/11/2020
Pheasant	*Phasianus colchicus*	Green	14/12/2020 22/03/2021
Raven	*Corvus corax*	Green	21/01/2021
Redwing	*Turdus iliacus*	Green	21/01/2021 24/02/2021
Starling	*Sturnus vulgaris*	Amber	21/01/2021
Song thrush	*Turdus philomelos*	Green	21/01/2021
Pied wagtail	*Motacilla alba yarrellii*	Green	24/02/2021
Mistle thrush	*Turdus viscivorus*	Green	21/01/2021



Drawing Title

Flight lines

Project Title

Alber Developments Ltd SHD Rosshill

Drawn By	Checked by
CM	JH
Project No.	Drawing No.
200607	Figure 3.1
Scale	Date
1:5559	21.04.2021

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3.2.2 Species records for Inner Galway Bay SPA

A section of the Inner Galway bay SPA, approximately 600 meters south west of the development site was surveyed. The vantage point overlooked an area of tidal mudflat in order to record bird distribution during high and low tide and to determine whether birds listed as Special Conservation Interests of the Inner Galway Bay SPA may utilize the habitats within the development site. During the surveys there were no movements of wintering wildfowl between the development site and this SPA. Table 3.9 provides records an overview of species recorded.

Table 3.9 Bird survey results for Inner Galway Bay SPA

Species	Number of Individuals	Notes	Date and Tidal Conditions
Herring gull (*Larus argentatus)*	6	Feeding	30/10/2020- Low Tide
Curlew (*Numenius arquata*)	3	Feeding	
Grey heron (*Ardea cinerea*)	1	Roosting	
Sandpiper (*Actitus hypoleucos*)	1	Feeding	
Little Egret (*Egretta garzetta*)	2	Feeding	
Greenshank (*Tringa nebularia*)	1	Feeding	
Redshank (*Tringa tetanus*)	2	Feeding	
Dunlin (*Calidris alpine*)	4	Feeding	
Mallard (*Anas platyrhynchos*)	4	Roosting	
Wigeon (*Anas Penelope*)	15	Roosting	23/11/2020 – High Tide
Herring gull (*Larus argentatus)*	5	Roosting	
Redshank (*Tringa tetanus*)	3	Feeding	
Black-headed gull (*Larus ridibundus*)	1	Roosting	
Herring gull (*Larus argentatus)*	20	Roosting/feeding	

Species	Number of Individuals	Notes	Date and Tidal Conditions
Oystercatcher (*Haematopus ostralegus*)	3	Feeding	14/12/2020- Low Tide
Light-bellied Brent goose (*Branta bernicla hrota*)	12	Roosting/feeding	
Curlew (*Numenius arquata*)	16	Feeding	
Black-headed gull (*Larus ridibundus*)	2	Feeding	
Wigeon (*Anas Penelope*)	19	Roosting/feeding	21/01/2021- High Tide
Redshank (*Tringa tetanus*)	14	Roosting/feeding	
Black-headed gull (*Larus ridibundus*)	1	Roosting	
Turnstone	3	Roosting	
Greenshank (*Tringa nebularia*)	1	Roosting	
Curlew (*Numenius arquata*)	1	Flying	
Red-throated diver (*Gavia stellate*)	2	Feeding	
Herring gull (*Larus argentatus)*	1	Roosting	
Curlew (*Numenius arquata*)	3	Roosting	24/02/2021- Low Tide
Light-bellied Brent goose (*Branta bernicla hrota*)	22	Feeding	
Oystercatcher (*Haematopus ostralegus*)	1	Feeding	
Little egret (*Egretta garzetta*)	1	Feeding	

Species	Number of Individuals	Notes	Date and Tidal Conditions
Greenshank (*Tringa nebularia*)	1	Feeding	
Mallard (*Anas platyrhynchos*)	2	Feeding	
Teal (*Anas crecca*)	4	Feeding	
Grey Heron (*Ardea cinerea*)	1	Feeding	22/03/2021- High tide
Herring gull (*Larus argentatus)*	5	Roosting/feeding	
Light-bellied Brent goose (*Branta bernicla hrota*)	8	Feeding	
Black-tailed godwit (*Limosa limosa*)	15	Feeding	
Black-headed gull (*Larus ridibundus*)	2	Feeding	
Shellduck (*Tadorna tadorna*)	2	Feeding	
Sanderling (*Calidris alba*)	5	Feeding	
Curlew (*Numenius arquata*)	2	Feeding	
Wigeon (*Anas Penelope*)		Feeding	

4. SUMMARY OF FIELD SURVEY AND DISCUSSION

The surveys undertaken over the period winter period October 2020 to March 2021 provide a complete and clear understanding of the usage of the proposed development site by wintering bird species. A total of 23 bird species were recorded within or immediately adjacent to the proposed development site during the winter site visits. The majority of the birds recorded within the site boundary and in the surrounding habitat during the site visit were an assemblage of common birds that are typical of the grassland, woodland and hedgerow habitats found within the wider area.

Only one Annex I species, peregrine, was recorded using the site during the October site visit. This observation was of an individual bird hunting/flying, on one occasion. Kestrel listed as red list species on the Bird of Conservation Concern in Ireland (BoCCI) (Gilbert et, al., 2021), was recorded using the site during the December, January and February site visits. These observations were of an individual bird hunting/flying within or adjacent to the site. Herring gull, also listed as red list species, was recorded flying over the site during the October, November and December site visits.

There were three observations of Special Conservation Interests species (SCIs) of Inner Galway Bay SPA flying over the site, including eight black-headed gulls, eight curlew and one grey heron. These species were not recorded using the habitats within the proposed development. No SCIs of the Inner Galway Bay were recorded roosting or feeding within the proposed development site during the site visits.

The results of the winter bird survey (October 2020 - March 2021) indicate that the proposed development site does not provide significant habitat for wintering wildfowl or waders listed as SCIs for the Galway Bay Inner SPA. Habitats within the site consist primarily of dry neutral grassland (GS1), hedgerow (WL1) and treeline (WL2). Species listed as SCIs for the Inner Galway Bay SPA are unlikely to depend on the habitats within the development site.

Waterfowl species listed as SCIs species of the Inner Galway Bay SPA, including light-bellied brent goose, wigeon, teal, shoveler and red-breasted merganser are generally associated with a variety of coastal, marine and inland freshwater habitats. Sandwich tern and common tern are associated with coastal and marine habitats, marshes and inland lakes. Common gull and black-headed gull are very adaptable and utilise a wide variety of habitats including, urban, coastal, marine and wetland habitats. None of these habitats occur within the development boundary or in the surrounding habitats and there is no potential for loss of supporting habitat for SCI species of surrounding SPA (Inner Galway Bay SPA) have been designated for.

5. CONCLUSION

Based on the wintering bird assemblages recorded over the six surveys carried out between October 2020 and March 2021, it can be concluded that the site does not support important assemblages of wintering wildfowl, waders or SCI species for which Inner Galway Bay SPA is designated.

Only three species listed as Special Conservation Interests for the Inner Galway Bay SPA were recorded during the surveys, flying over the proposed development site. No SCI species of Inner Galway Bay SPA were recorded using the habitats within the proposed development site. The survey results indicate that there will be no potential for loss of supporting habitat or displacement for SCI species for which the Inner Galway Bay SPA is designated for.

No potential for adverse effects on the SCI species of which Inner Galway Bay SPA has been designated for have been identified. For this reason, there is not considered to be potential for adverse effects alone or in-combination with other developments within the environs of the Inner Galway Bay SPA.

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APPENDIX 8

RELEVÉ DATA

Relevé 1 Semi-improved dry neutral grassland, grid reference: 34244 24936

Common Name	Scientific Name	Percentage cover
Yorkshire fog	*Holcus lanatus*	60%
Creeping thistle	*Cirsium arvense*	15%
Curled dock	*Rumex crispus*	7%
Common mouse-ear	*Cerastium fontanum*	2%
Creeping buttercup	*Ranunculus repens*	3%
Common sorrel	*Rumex acetosa*	3%
Ragwort	*Senecio jacobaea*	3%
Rough meadow grass	*Poa trivialis*	5%
Common bent	*Agrostis capillaris*	5%
Cleavers	*Galium aparine*	+

Relevé 2 Semi-improved dry neutral grassland, grid reference: 34262 25034

Common Name	Scientific Name	Percentage cover
Yorkshire fog	*Holcus lanatus*	40%
Creeping buttercup	*Ranunculus repens*	25%
Common sorrel	*Rumex acetosa*	15%
Sweet vernal grass	*Anthoxanthum odoratum*	3%
Rough meadow grass	*Poa trivialis*	5%
Common bent	*Agrostis capillaris*	4%
Cock's foot	*Dactylis glomerata*	2%
Hogweed		+
Knapweed	*Centaurea nigra*	+
Ribwort plantain	*Plantago lanceolata*	1
Common mouse-ear	*Cerastium fontanum*	2%
Red clover	*Trifolium pretense*	+

Relevé 3 Semi-improved Dry neutral grassland (close to field boundary), grid reference: 34273 25060

Common Name	Scientific Name	Percentage cover
Yorkshire fog	*Holcus lanatus*	20%
Common bent	*Agrostis capillaris*	25%
Sweet vernal grass	*Anthoxanthum odoratum*	10%
Common sorrel	*Rumex acetosa*	7%
Common mouse-ear	*Cerastium fontanum*	1%
Knapweed	*Centaurea nigra*	3-4%
Selfheal	*Prunella vulgaris*	1-2%
Meadow buttercup	*Ranunculus acris*	7%
White clover	*Trifolium repens*	3%
Creeping buttercup	*Ranunculus repens*	+
Ribwort plantain	*Plantago lanceolata*	4%
Yarrow	*Alchemilla millefolium*	1%
Red clover	*Trifolium pretense*	+
Rough meadow grass	*Poa trivialis*	2%
False oat grass	*Arrhenatherum elatius*	+
Germander speedwell	*Veronica chamaedrys*	+
Dandelion	*Taraxacum officinale agg.*	+
Smooth hawksbeard	*Crepis capillaris*	+

Relevé 4 Oak-ash-hazel woodland (WN2), grid reference: 34168 25049

Common Name	Scientific Name	Percentage cover
Ash	*Fraxinus excelsior*	30%
Beech	*Fagus sylvatica*	50%
Sycamore	*Acer pseudoplatanus*	5%
Hazel		15%
Hawthorn	*Crataegus monogyna*	7%
Ivy	*Hedera helix*	20%
Lords and ladies	*Arum maculatum*	1%
Herb Robert	*Geranium robertianum*	+
Wood avens	*Geum urbanum*	+
Hart's tongue		+
	Brachythecium rutuabulum	5%
	Thamnobryum alopercum	2%
Bare ground / Litter		85%

Relevé 5 Wet grassland, grid reference: 34087 25021

Common Name	Scientific Name	Percentage cover
Yorkshire fog	*Holcus lanatus*	20%
Common bent	*Agrostis capillaris*	20%
Sweet vernal grass	*Anthoxanthum odoratum*	2%
Crested dog's tail	*Cynosurus cristatus*	6%
Marsh thistle	*Cirsium palustre*	5%
Creeping buttercup	*Ranunculus repens*	30%
Compact rush	*Juncus conglomeratus*	8%
Common sorrel	*Rumex acetosa*	7%
Curled dock	*Rumex crispus*	2%
White clover	*Trifolium repends*	4%
Rough meadow grass	*Poa trivialis*	1%
False oat grass	*Arrhenatherum elatius*	2%
Dandelion	*Taraxacum officinale agg.*	+

Relevé 6 Dry calcareous grassland, grid reference: 34413 25068

Common Name	Scientific Name	Percentage cover
Red clover	*Trifolium pretense*	25%
Selfheal	*Prunella vulgaris*	10%
Glaucous sedge	*Carex flacca*	10%
Common mouse-ear	*Cerastium fontanum*	1%
White clover	*Trifolium repends*	3%
Centaury	*Centaurium erythyraea*	4%
Black medick	*Medicago lupulina*	20%
Dandelion	*Taraxacum officinale agg.*	1%
Common sorrel	*Rumex acetosa*	2%
Crested dog's tail	*Cynosurus cristatus*	3%
Sweet vernal grass	*Anthoxanthum odoratum*	10%
Yorkshire fog	*Holcus lanatus*	3%
Silverweed	*Potentilla anserina*	1%
Meadow buttercup	*Ranunculus acris*	1%
Tufted vetch	*Vicia cracca*	+
Ribwort plantain	*Plantago lanceolata*	5%
Hawkbit	*Leontodon sp.*	+
Sheep's fescue	*Festuca ovina*	30%
	Calliergonella cuspidata	10%
Compact rush	*Juncus conglomeratus*	2%
Ragwort	*Senecio jacobaea*	4%

APPENDIX 9

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

Planning and Environmental Consultants

Construction and Environmental Management Plan (CEMP)

Rosshill Strategic Housing Development, Co. Galway

DOCUMENT DETAILS

Client:	**Alber Developments Limited**
Project Title:	**Rosshill Strategic Housing Development, Co. Galway**
Project Number:	**181058-b**
Document Title:	**Construction and Environmental Management Plan (CEMP)**
Document File Name:	**CEMP F – 2021.07.02 – 181058-b**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Final	02.07.2021	TB	PH

Table of Contents

1. INTRODUCTION 1
1.1 General Introduction 1
1.2 Scope of Construction and Environmental Management Plan 1
2. SITE AND PROJECT DETAILS 3
2.1 Site Location 3
2.2 Description of the Proposed Development 3
2.3 Targets and Objectives 4
2.4 Construction Methodologies Overview 6
2.4.1 Introduction 6
2.4.2 Site Enabling Works 6
2.4.3 Temporary Site Compound 6
2.4.4 Perimeter Hoarding 6
2.4.5 Demolition of Existing Silage Apron 7
2.4.6 Site Roads 7
2.4.7 Services and Utilities 7
2.4.8 Existing Underground Services 8
2.4.9 House/Building Construction 8
2.4.10 Landscaping Works 9
2.4.11 Construction Works Sequence 9
3. ENVIRONMENTAL MANAGEMENT 10
3.1 Site Drainage 10
3.2 Cement Based Products Control Measures 10
3.3 Refuelling, Fuel and Hazardous Materials Storage 11
3.4 Spill Control Measures 11
3.5 Dust Control 12
3.6 Noise & Vibration Control 12
3.7 Invasive Species Management 13
3.8 Traffic Management Proposals 13
3.8.1 Construction Traffic Access and Management 13
3.9 Environmental Management Implementation 14
3.10 Construction & Demolition Waste Management Plan 14
4. ENVIRONMENTAL MANAGEMENT IMPLEMENTATION 15
4.1 Construction Manager/Site Supervisor 15
4.2 Environmental Manager 15
4.3 Emergency Response 16
4.3.1 Roles and Responsibilities 16
4.3.2 Initial Steps 17
4.3.3 Spill Control Measures 18
4.4 Contacting the Emergency Services 19
4.4.1 Emergency Communications Procedure 19
4.4.2 Contact Details 20
4.4.3 Procedure for Personnel Tracking 20
4.4.4 Induction Checklist 20
5. MITIGATION PROPOSALS 22
6. COMPLIANCE AND REVIEW 40
6.1 Site Inspections and Environmental Audits 40
6.2 Environmental Compliance 40
6.3 Corrective Action Procedure 40

TABLE OF TABLES

Table 2-1 Sequence of Operations for the Construction Phase 9
Table 4-1 Hazards associated with potential emergency situations 17
Table 4-2 Emergency Contacts 20
Table 4-3 Emergency Response Plan Items Applicable to the Site Induction process 21
Table 4-4 Mitigation Measures 23

TABLE OF FIGURES

Figure 2-1 Site Location Map 5
Figure 4-1 Emergency Response Procedure Chain of Command 17

Appendix 1 **Site Drainage Plan**

Appendix 2 **Construction and Demolition Wast Management Plan**

1. INTRODUCTION

1.1 General Introduction

This Construction and Environmental Management Plan (CEMP) has been developed by McCarthy Keville O' Sullivan Ltd. (MKO) on behalf of Alber Developments Ltd., which intends to apply to An Bord Pleanála (ABP) under the Planning and Development Act 2000 (as amended by the Residential Tenancies Act 2016) for a strategic housing scheme located in the townlands of Roscam, and Merlin Park to the south east of Galway City. The application is being made under the Strategic Housing Provisions of the Planning and Development (Housing) and Residential Tenancies Act, 2016. The CEMP will require further updating and final agreement with the various stakeholders should the project secure Planning Permission, in line with all conditions which apply and in order to identify, assess and satisfy the contract performance criteria. The final CEMP will also require updating by the selected contractor.

This report provides the environmental management framework to be adhered to during the pre-commencement, construction and operational phases of the proposed development and it incorporates the mitigating principles to ensure that the work is carried out in a way that minimises the potential for any environmental impacts to occur. This report has been prepared in accordance with the mitigation measures and commitments made in the Environmental Impact Assessment Report and other planning submissions for the development.

This CEMP identifies for the incoming Contractor, the key planning and environmental considerations that must be adhered to and delivered during site construction. This report is intended as a single, amalgamated document that can be used during the future phases of the project, as a single consolidated point of reference relating to all construction, environmental and drainage requirements for the Planning Authority, developer and contractors alike.

1.2 Scope of Construction and Environmental Management Plan

This report is presented as a guidance document for the management of construction activities and waste materials generated during the works and following completion. It outlines clearly the mitigation measures that are required to be adhered to in order to manage activities and waste materials in an appropriate manner. The report is divided into six sections, as outlined below.

Section 1 provides a brief introduction as to the scope of the report.

Section 2 outlines the site and project details and an overview of the proposed works along with detailing the targets and objectives of this plan.

Section 3 sets out details of the environmental management plan for the site as well as the environmental controls on site in particular noise and dust controls and the protection of water quality. A construction and demolition waste management plan is also provided.

Section 4 sets out a fully detailed implementation plan for the environmental management of the proposed project outlining the roles and responsibilities of the project team as well as an emergency response procedure in terms of site health and safety and environmental protection.

Section 5 consists of a summary table of all mitigation proposals to be adhered to during the implementation of the proposed project, categorised into two separate headings, 1) pre-commencement measures; 2) construction-phase measures.

Section 6 provides details of the compliance review process to ensure all commitments set out in this document are being adhered to by means of audit and inspection.

2. SITE AND PROJECT DETAILS

2.1 Site Location

The site area comprises approximately 4.71ha of land located within the townlands of Roscam and Merlin Park, Galway City. The proposed site is located within the eastern suburbs of Galway, approximately 4 kilometres from the city centre. A site location map is presented in Figure 2.1 with the site location highlighted in red.

2.2 Description of the Proposed Development

Planning permission is sought by Alber Developments Ltd. for development on a site in the townlands of Roscam, and Merlin Park in Galway City. The proposed development will consist of the following:

1. *Construction of 102no. residential units comprising of 35 apartments and 67 houses:*
    - *4no. Apartment Type '1A' - 1 bed 2 person*
    - *4no. Apartment Type '1B' - 1 bed 2 person*
    - *3no. Apartment Type '1C' - 1 bed 2 person*
    - *11no. Apartment Type '2A' - 2 bed 4 person*
    - *4no. Apartment Type '2B' - 2 bed 4 person*
    - *3no. Apartment Type '2C' - 2 bed 4 person*
    - *3no. Apartment Type '2D' - 2 bed 4 person*
    - *3no. Apartment Type '2E' - 2 bed 3 person*
    - *2no. House Type 'A/A1' - 4 Bed Semi Detached*
    - *8no. House Type 'B/B1' - 3 Bed Semi Detached*
    - *4no. House Type 'C/C1' - 3 Bed End of Terrace*
    - *2no. House Type 'C2' - 3 Bed Mid Terrace*
    - *2no. House Type 'D' - 2 storey town house - end of terrace - 3 bed*
    - *4no. House Type 'D1' - 2 storey town house - mid terrace - 3 bed*
    - *2no. House Type 'D2' - 3 storey town house - end of terrace - 4 bed*
    - *2no. House Type 'E' - 3 bed Long Semi-Detached*
    - *2no. House Type 'F' - 4 bed Long Semi-Detached*
    - *3no. House Type 'G' - 2 storey town house - end of terrace - 3 bed*
    - *6no. House Type 'G1' - 2 storey town house - mid terrace - 3 bed*
    - *3no. House Type 'G2' – 3 storey town house- end of terrace- 4 bed*
    - *1no. House Type 'H' - 3 Bed Semi Detached*
    - *1no. House Type 'H1' - 3 Bed Semi Detached - Double front*
    - *8no. House Type 'J/J1' - 3 Bed semi detached*
    - *4no. House Type 'K' - 3 bed Long Semi-Detached*
    - *4no. House Type 'L' - 4 bed Long Semi-Detached*
    - *3no. House Type 'M' - 3 Bed End of Terrace*
    - *3no. House Type 'M1' - 3 Bed End of Terrace*
    - *3no. House Type 'M2' - 3 Bed Mid Terrace*

2. *Demolition of the existing silage concrete apron (40sqm)*
3. *Childcare facility (399sqm over 2-storeys) associated outdoor play areas and parking*
4. *Retail/Commercial space (188.5sqm) including loading bay*
5. *Provision of shared communal and private open space, including play and fitness equipment*
6. *Car and cycle parking, including electric vehicle charging points*
7. *Provision of all associated surface water and foul drainage services and connections including pumping station*
8. *Landscaping, access routes and public art*

9. *Lighting and associated works*
10. *Access and junction improvements at Rosshill Road and Rosshill Stud Farm Road*
11. *Provision of a footpath connectivity link along Rosshill Road and Rosshill Stud Farm Road*
12. *All associated works and services*

2.3 Targets and Objectives

The key site targets are as follows;

- Ensure construction works and activities are completed in accordance with mitigation and best practice approach as presented in the Natura Impact Statement (NIS) and associated planning documentation;
- Ensure construction works and activities are completed in accordance with all planning conditions for the development;
- Ensure construction works and activities have minimal impact/disturbance to local landowners and the local community;
- Ensure construction works and activities have minimal impact on the Natural Environment;
- Adopt a sustainable approach to construction; and,
- Provide adequate environmental training and awareness for all project personnel.

The key site objectives are as follows;

- Using recycled materials if possible, including material generated during the proposed demolition of existing ruins e.g. excavated soil, stone and clean inert material;
- Ensure sustainable sources for materials supply where possible;
- Avoidance of any pollution incident or near miss as a result of working around or close to existing watercourses and having emergency measures in place;
- Avoidance of vandalism;
- Keeping all watercourses free from obstruction and debris;
- Keep impact of construction to a minimum on the local environment, watercourses and wildlife;
- Correct fuel storage and refuelling procedures to be followed;
- Good waste management and house-keeping to be implemented;
- Air and noise pollution prevention to be implemented; and,
- Monitoring of the works and any adverse effects that it may have on the environment.
- Construction Methods and designs will be altered where it is found there is an adverse effect on the environment;
- Comply with all relevant water quality legislation;
- Ensure a properly designed, constructed and maintained drainage system appropriate to the requirements of the site is kept in place at all times.

Map Legend

EIAR Study Area

N

Drawing Title: Site Location Map

Project Title: Rosshill Strategic Housing Development

Drawn By	Checked By
TB	MW
Project No.	Drawing No.
181058-b	Figure 2-1
Scale	Date
1:15000	02.07.21

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2.4 Construction Methodologies Overview

2.4.1 Introduction

An experienced main contractor will be appointed for the civil works for the construction phase. The main contractor for the works will be required to comply with this CEMP and any revisions made to this document. An overview of the proposed Construction Methodologies is provided below under the following main headings:

- Site Enabling Works
- Temporary Site Compound
- Perimeter Hoarding
- Demolition of ruins and concrete storage area
- Site Excavation
- Site Roads
- Services and Utilities
- House Construction
- Landscaping Works

2.4.2 Site Enabling Works

The site will be accessed from the east of the site off the Rosshill Road at the proposed vehicular access location. Prior to the commencement of any construction, this site entrance will need to be fully established with security gates. A parking area for construction worker's vehicles will be provided within the confines of the site. There will be no parking permitted for any vehicles associated with the project on the public road during the construction phase of the development.

2.4.3 Temporary Site Compound

One temporary construction compound is proposed for the construction phase of the proposed development, located to the south of the site within lands controlled by the developer. The proposed temporary compound area incorporates temporary site offices, staff facilities and car-parking areas.

A dedicated waste management area will be located within the compound, with waste to be sorted and collected from site by permitted collectors. Potable drinking water will be supplied via water coolers located within the staff facilities, which will be restocked on a regular basis as required during the construction phase. A supply contract will be set up with a water cooler supply company with water supplies delivered to site as required for the duration of the construction period.

Temporary port-a-loo toilets located within portacabins will be used during the construction phase. Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewater being tankered off site by permitted waste collector to wastewater treatment plants. Power will be supplied by a diesel generator, located within the compound until a temporary power supply is established. The construction compound will be used for temporary storage of some construction materials, prior to their delivery to the required area of the site..

2.4.4 Perimeter Hoarding

Perimeter hoarding will be provided around the site to provide a barrier against unauthorised access from the public areas. A controlled access point in the form of a gated main site entrance will be kept locked outside of normal working hours.

The hoarding will be well maintained and painted or covered with graphics portraying project information. Due to the nature of the works and the construction traffic using the site entrance, appropriate signage will be

provided along the footpath and site entrance to alert pedestrians to the traffic exiting/entering the site. Likewise, appropriate signage will be installed within and outside the site to alert drivers of the pedestrians crossing ahead.

2.4.5 Demolition of Existing Silage Apron

There is an existing 40 square metre concrete silage apron on the proposed site that will be demoloshied

Standard best practice construction methodologies will be adhered to during the demolition process. The structure will be demolished by means of mechanical excavator. The management of waste materials generated during the demolition phase is detailed in Section 3 of this document. Site Excavation

Soil stripping and temporary stockpiling of soils and subsoils will be required around the site as the proposed development progresses. Where these works occur, the following will apply:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Gas Networks Ireland, Eir, Galway City Council etc. will be contacted and all drawings for all existing services sought.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- All plant operators and general operatives will be inducted and informed as to the identification of invasive species.
- A tracked 360-degree excavator will be used to strip the topsoil, and a dumper will be used to move the excavated materials to the temporary stockpile location.
- All excavated material which is not required for future landscaping works or for backfill of excavations will be removed to an authorised waste recovery facility. This will also apply to material which is not suitable for reuse on site.
- All stockpiles will be damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation.
- .

2.4.6 Site Roads

The construction methodology for the proposed access road is outlined as follows:

- Excavation will take place until a competent stratum is reached.
- The competent stratum will be overlain with up to 500mm of granular fill.
- A layer of geogrid/geotextile may be required at the surface of the competent stratum.
- A final hard surface layer will be placed over the excavated road to provide a road profile to accommodate construction traffic.
- Prior to completion of the construction works on site, the finished asphalt road surface will be applied.

2.4.7 Services and Utilities

The proposed on-site foul sewers will discharge by gravity to a pumping station to the west of the site, and the foul waste will discharge from this pumping station via pumped rising main to the adjacent public (Irish Water) foul sewer network.

It is proposed that the development will drain via gravity to 6 no. soakaways proposed on site. Water draining to soakaways will pass through silt traps and hydrocarbon interceptors prior to reaching each soakaway. No surface water from roofs or paved surfaces will be discharge from the site, other than via the soakaways to ground.

The site drainage details are included in Appendix 1.

The installation of services and connections to the residential units will be carried out as follows:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Gas Networks Ireland, Eir, Galway City Council etc. will be contacted and all drawings for all existing services sought.
- A traffic management plan will be produced if required for connection works to the existing service network.
- A road opening licence will be obtained where required for connection to existing services.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator or similar will be used to excavate the trench to the required dimensions.
- All excavated material will be removed to an authorised waste recovery facility or, if suitable, stock piled and reused for backfilling and landscaping where appropriate.
- Once the trench has been excavated the ducting/pipework will then be placed in the trench as per specification.
- Once the service ducts/pipework has been installed couplers will be fitted as required and capped to prevent any dirt etc. entering the ducts/pipes.
- The as built location of the ducting/pipework will be surveyed using a total station/GPS.
- Backfill material will be carefully placed so as not to displace the ducting/pipework within the trench.
- The appropriate warning/marker tape will be installed above the ducts/pipes at the appropriate depths.
- The surface will be reinstated as per original specification or to the requirements of the site layout/Local Authority as appropriate.

2.4.8 Existing Underground Services

Any underground services encountered during the works will be surveyed for level and where possible will be left in place. If there is a requirement to move the service, then the appropriate body (ESB, Gas Networks Ireland, etc.) will be contacted, and the appropriate procedure put in place. Back fill around any utility services will be with dead sand/pea shingle where appropriate. All works will be in compliance with required specifications.

2.4.9 House/Building Construction

The buildings will be constructed by the following methodology:

- The area where excavations are planned will be surveyed and all existing services will be identified.
- All relevant bodies i.e. ESB, Bord Gáis, Eircom, Galway City Council etc. will be contacted and all drawings for all existing services sought.
- The area of each building will be marked out using ranging rods or wooden posts and the soil and overburden stripped and removed to nearby storage area for later use in landscaping. Any excess material will be sent to an authorised recovery facility.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- A tracked 360-degree excavator or similar will be used to excavate the area down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it;
- The block work walls will be built up from the foundation (including a DPC) and the floor slab constructed, having first located any ducts or trenches required by the follow on mechanical and electrical contractors;

- The block work will then be raised to wall plate level and the gables & internal partition walls formed. Scaffold will be erected around the outside of the buildings for this operation;
- Any concrete slabs will be lifted into position using an adequately sized mobile crane;
- The timber roof trusses will then be lifted into position using a telescopic load all or mobile crane depending on site conditions. The roof trusses will then be felted, battened, tiled and sealed against the weather.
- Windows, electrics, plumbing and all other building components and services will be installed in as timely a manner as is possible.
- Each building will be inspected and certified by an engineer at the appropriate stages of construction.

2.4.10 Landscaping Works

Prior to completion of works on the development site, the landscaping works will be carried out. The finishes include areas of amenity grassland and tree planting. This work will be carried out before the completion of each phase of construction in order to ensure that the development will be aesthetically pleasing place for residents to live. These works will involve the use of plant and machinery in order to carry out tasks such as earth moving. Materials which have been stockpiled for the task will be used as much as possible, and material will only be imported where it is required. Solid barriers will be erected around the site boundary for the duration of the construction works.

2.4.11 Construction Works Sequence

The sequencing of construction phase works has is summarised Table 2-1. This provides a schedule of the expected sequence of operations for the works to be completed during the construction phase.

Table 2-1 Sequence of Operations for the Construction Phase

No.	Waste Materials Arising
1	Foundations excavation and formation level establishment
2.	Foundations: formwork and steel reinforcement installation
3.	Masonry Blockwork: including insulation installation
4.	Carpentry 1st fix: timber roof structure and coverings
5.	Window/Door installation
6.	Plastering (external)
7.	Painting (external)
8.	Internal services (electrical and plumbing)
9.	Plastering (internal)
10.	Floor: Sand and cement screed
11.	Services connection: electrical, sewage, telecoms.
12.	Painting (internal)
13.	Tiling: Floors, walls etc.
14.	Carpentry 2nd fix: doors, flooring etc.
15.	Landscaping
16.	Road finishes: Tarmacadam roads and parking areas

3. ENVIRONMENTAL MANAGEMENT

3.1 Site Drainage

Prior to the commencement of any construction activities, the necessary mitigation measures will be put in place to ensure the protection of surface water during the works. Surface waters will be managed, allowing water to percolate naturally to ground.

Particular emphasis will also be placed on hazardous materials entering the surface water management system as well as spills or leaks of fuel oils. Section 4 provides an Emergency Response Plan for dealing with spillages which may result in adverse environmental effects.

The excavation phase of the development has the potential to encounter sub-surface and ground water during the works. However, the Flood Risk Assessment (FRA) completed by Tobins Engineers reported that the site is well drained therefore the potential for the requirement to manage a large volume of groundwater as part of excavation dewatering is minimal. In the event of encountering groundwaters during excavation, it will be pumped from the excavation to temporary on-site drainage system prior to discharge overland through vegetation. This will ensure any suspended silt or sediment is captured through the use of a silt bag on the pump outlet and a series of silt traps as required prior to discharge.

In general, the site of the proposed development is well drained, with a gently sloping topography which is likely to reflect the direction of groundwater flow at the site. No watercourses are present on the development site, Small stream channels can be seen along the Roshill beach which emerges ~ 300m west of the western boundary of the site. It is likely that runoff from these streams is flowing along the field boundaries and discharging to the Galway Bay at this point.

It is proposed that the development will drain via gravity to 6 no. soakaways proposed on site. Water draining to soakaways will pass through silt traps and hydrocarbon interceptors prior to reaching each soakaway. No surface water from roofs or paved surfaces will be discharge from the site, other than via the soakaways to ground.

Water supply to the site will be via connection to the adjacent public (Irish Water) watermain.

The proposed on-site foul sewers will discharge by gravity to a pumping station to the west of the site, and the foul waste will discharge from this pumping station via pumped rising main to the adjacent public (Irish Water) foul sewer network.

3.2 Cement Based Products Control Measures

The complete washing out of concrete trucks will not be permitted at the site. Suppliers will be directed back to their own facility to complete the washout process. However, a washout area for chute cleaning will be provided at various locations in close proximity to the concrete pour locations.

The following mitigation measures are proposed to avoid release of cement leachate from the site:

- No batching of wet-cement products will occur on site;
- Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place. Where possible pre-cast elements for culverts and concrete works will be used;
- 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 the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.
- Use weather forecasting to plan dry days for pouring concrete;

- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event;

3.3 Refuelling, Fuel and Hazardous Materials Storage

The following measures are proposed to avoid release of hydrocarbons at the site:

- Minimal refuelling or maintenance of construction vehicles or plant will take place on site. Off-site refuelling should occur at a controlled fuelling station;
- On-site refuelling will take place by direct refuelling from the delivery truck or using a mobile double skinned fuel bowser. The fuel bowser, a double-axel custom-built refuelling trailer will be re-filled off site and will be towed around the site as required. The fuel bowser will be parked on a level area in the construction compound when not in use. Only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.
- Fuels volumes stored on site should be minimised. Any fuel storage areas will be bunded appropriately for the volume of fuel stored. volume for the time period of the construction. The bunded area will be roofed to prevent the ingress of rainwater;
- The plant used should be regularly inspected for leaks and fitness for purpose; and,
- Spill kits will be available to deal with and accidental spillage in and outside the refuelling area. Spill control measures are outlined in the section that follows.

3.4 Spill Control Measures

It is not proposed to store any large volumes of oils/fuels for the purpose of refuelling on the site. A bunded fuel tank will be stored at the temporary construction compound which will be used for smaller plant and equipment i.e. site dumpers and teleporters. This will be stored on an impermeable surface and will be equipped with spill kit. Onsite plant (excavator) will be refuelled by an external contractor who will call to site as required. Road vehicles will not be refuelled at the site.

In the event of minor spills and leaks from road vehicles and the onsite excavator the following steps provide the procedure to be followed in the event of any significant spill or leak.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains or watercourses.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the applicant immediately giving information on the location, type and extent of the spill so that they can take appropriate action and further investigate the incident to ensure it has been contained adequately.
- External consultants will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The applicant will notify the appropriate regulatory body such as Galway Council if deemed necessary

3.5 Dust Control

Construction dust can be generated from many on-site activities such as excavation and backfilling. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, *i.e.* soil, sand, etc and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Construction traffic movements also have the potential to generate dust as they travel along the haul route. The measures below will also prevent construction debris arising on the public road network.

Proposed measures to control dust include:

- Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions;
- The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by Site Management for cleanliness, and cleaned as necessary;
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind;
- Water misting or bowsers will operate on-site as required to mitigate dust in dry weather conditions;
- The transport of soils or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary;
- All construction related traffic will have speed restrictions on un-surfaced roads to 15 kph;
- Daily inspection of construction sites to examine dust measures and their effectiveness.
- When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper; and,
- All vehicles leaving the construction areas of the site will pass through a wheel cleansing area prior to entering the local road network.

3.6 Noise & Vibration Control

The operation of plant and machinery, including construction vehicles, is a source of potential noise impacts During the works, any plant introduced to the site will not be excessively noisy. Exhaust and silencer systems on plant will be maintained in a satisfactory condition and operating correctly at all times. Defective silencers will be immediately replaced.

Proposed measures to control noise include:

- Diesel generators will be enclosed in sound proofed containers to minimise the potential for noise impacts;
- Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All construction plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations;
- Plant with the potential of generating noise or vibration will be placed as far away from sensitive properties as permitted by site constraints.
- Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works;
- Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers;
- Machines, which are used intermittently, will be shut down during those periods when they are not in use;

- Training will be provided by the Site Management to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation; and,
- Local areas of the haul route will be condition monitored and maintained if necessary.

It is recommended that drivers of heavy goods vehicles (HGVs) associated with the development extend due care and courtesy to other road users. Excessive use of and unnecessary engine racing will be avoided.

The proposed construction working hours are as follows:

08:00 – 19:00 Monday to Friday

08:00 – 14:00 Saturday

Closed Sunday

3.7 Invasive Species Management

No invasive species (listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477 of 2011) were recorded within the development site, however, an invasive species survey will be carried out at the site prior to the commencement of construction to determine whether there have been any changes to the baseline environment. The following general biosecurity measures will be in place:

- Good construction site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (e.g. Rhododendron, Japanese Knotweed, Giant Rhubarb etc.) by thoroughly washing vehicles prior to entering the site.
- Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.

3.8 Traffic Management Proposals

3.8.1 Construction Traffic Access and Management

During construction, the appointed contractor will be required to prepare a Construction Traffic Management Plan.

Below is a list of the proposed traffic management measures to be adopted during the construction works. Please note that this is not an exhaustive list, and it will be the appointed contractor's responsibility to further develop the traffic management measures which will be set out within their Construction Phase Traffic Management Plan.

- Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction access locations;
- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes;
- Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on HGVs carrying dust producing material;
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds;
- No vehicle will be allowed to stop or park on the access road to the proposed development site.
- Ample parking will be provided within the site to cater for the staff and visitors during the construction phases of the proposed development.

- On site wheel washing will be undertaken for construction vehicles to remove any debris prior to leaving the site, to remove any potential debris on the local roads if it is deemed necessary;
- All vehicles will be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol or diesel. All scheduled maintenance will not be carried out on the public highway; and
- A detailed haulage plan will be put in place to ensure minimal impact on the surrounding road network

3.9 Environmental Management Implementation

The Site Supervisor/Construction Manager will have overall responsibility for the organisation and execution of the construction phase of the development in accordance with the provisions of this CEMP. A series of daily checks of all works and the implementation of the mitigation measures set out throughout this document will be maintained. The findings of these daily checks will be documented by the site manager and will inform the overall site audit and inspection procedure as set out in Section 4.

3.10 Construction & Demolition Waste Management Plan

A detailed Construction and Demolition Waste Management Plan (CDWMP) is included as Appendix 2 of this CEMP. The CDWMP outlines the best practice procedures during the demolition of the existing building on site and the construction phase of the project. The CDWMP outlines the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage. Disposal of waste will be seen as a last resort.

The CDWMP will be properly adhered to by all staff involved in the project which will be outlined within the induction process for all site personnel. The waste hierarchy should always be employed when designing the plan to ensure that the least possible amount of waste is produced during the construction phase. Reuse of certain types of construction wastes will cut down on the cost and requirement of raw materials therefore further minimising waste levels.

4. ENVIRONMENTAL MANAGEMENT IMPLEMENTATION

4.1 Construction Manager/Site Supervisor

The Construction Manager/Site Supervisor will have overall responsibility for the organisation and execution of all related environmental activities as appropriate, in accordance with regulatory and project environmental requirements. The duties and responsibilities of the Site Supervisor/Construction Manager will include:

- Ensure that all works are completed safely and with minimal environmental risk;
- Approve and implement the CEMP and supporting environmental documentation, and ensure that all environmental standards are achieved during the construction phase of the project;
- Take advice from the Site Environmental Manager on legislation, codes of practice, guidance notes and good environmental working practice relevant to their work;
- Ensure compliance through audits and management site visits;
- Ensure timely notification of environmental incidents; and,
- Ensure that all construction activities are planned and performed such that minimal risk to the environment is introduced.

4.2 Environmental Manager

The main contractor appointed to carry out the works on site will be required to provide a level of supervision on site in the form of an Environmental Manager who will also fulfil the role of Waste Manager. Due to the scale of activity proposed for the site, this role can be adopted by a Site Manager/Foreman as part of their duties. In general, this Environmental Manager will maintain responsibility for monitoring the works and Contractors/Sub-contractors from an environmental perspective. The Environmental Manager will act as the regulatory interface on environmental matters by reporting directly to the client and liaising with Galway City Council and other statutory bodies as required. The Site Environmental Manager will report to the Site Supervisor/Construction Manager. The duties of the appointed Environmental Manager are summarised as follows:

- Maintain and update as required the Construction Phase CEMP and supporting environmental documentation and review/approval of contractor method statements;
- Undertake inspections and reviews to ensure the works are carried out in compliance with the CEMP;
- Monitor the implementation of the CEMP, particularly all proposed/required Environmental Monitoring;
- Generate environmental reports as required to show environmental data trends and incidents and ensure environmental records are maintained throughout the construction period;
- Advise site management/contractor/sub-contractors on:
    - Prevention of environmental pollution and improvement to existing working methods;
    - Changes in legislation and legal requirements affecting the environment;
    - Suitability and use of plant, equipment and materials to prevent pollution;
    - Environmentally sound methods of working and systems to identify environmental hazards;
- Ensure proper mitigation measures are initiated and adhered to during the construction phase;
- Liaise with Project Team and present the findings of site audits/inspections that are completed;
- Ensure adequate arrangements are in place for site personnel to identify potential environmental incidents;

- Ensure that details of environmental incidents are communicated in a timely manner to the relevant regulatory authorities, initially by phone and followed up as soon as is practicable by email;
- Support the investigation of incidents of significant, potential or actual environmental damage, and ensure corrective actions are carried out, recommend means to prevent recurrence and communicate incident findings to relevant parties;
- Identify environmental training requirements and arrange relevant training for all levels of site-based staff/workers; and
- Fulfil the role of Waste Manager and implement the objectives of the Waste Management Plan as set out in Section 3 above.
- Coordinate the Emergency Response in terms of site health and safety and environmental protection as outlined in the section below

4.3 Emergency Response

The Emergency Response Plan (ERP) is presented in this section of the CEMP. It provides details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection. The site ERP includes details on the response required and the responsibilities of all personnel in the event of an emergency. The ERP will require updating and submissions from the contractor/PSCS and suppliers as the proposed project progresses. Where sub-contractors that are contracted on site are governed by their own emergency response procedure a bridging arrangement will be adopted to allow for inclusion of the sub-contractor's ERP within this document.

This is a working document that requires updating throughout the various stages of the project.

4.3.1 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Manager will lead the emergency response which makes him responsible for activating and coordinating the emergency response procedure. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 4.1. In a situation where the Site Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command outlined in Figure 4.1. This will be updated throughout the various stages of the project.

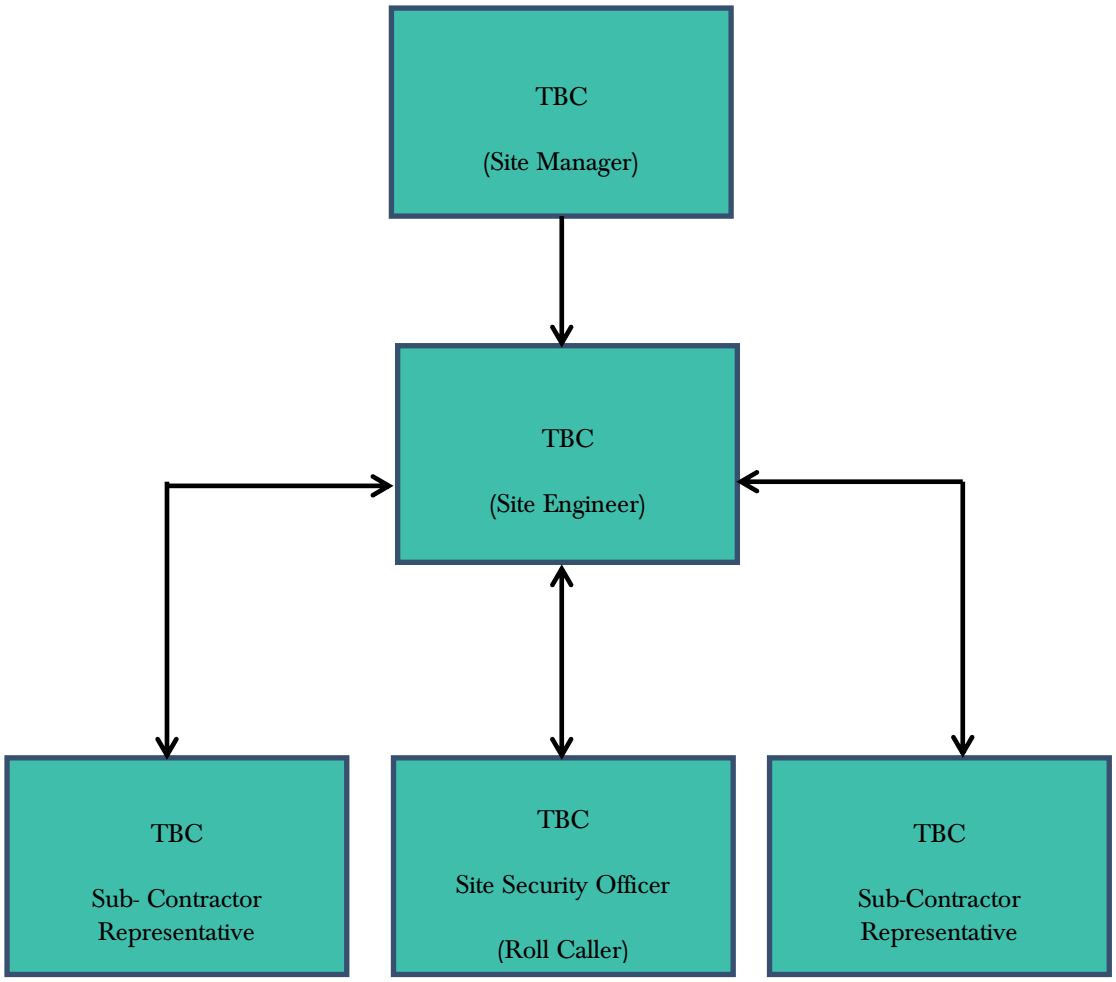


Figure 4-1 Emergency Response Procedure Chain of Command

4.3.2 Initial Steps

In order to establish the type and scale of potential emergencies that may occur, the following hazards have been identified as being potential situations that may require an emergency response in the event of an occurrence.

Table 4-1 Hazards associated with potential emergency situations

Hazard	Emergency Situation
Construction Vehicles: Dump trucks, tractors, excavators, cranes etc.	Collision or overturn which has resulted in operator or third-party injury.
Abrasive wheels/Portable Tools.	Entanglement, amputation or electrical shock associated with portable tools.
Contact with services.	Electrical shock or gas leak associated with an accidental breach of underground services.
Fire	Injury to operative through exposure to fire.
Sickness	Illness unrelated to site activities of an operative e.g. heart attack, loss of consciousness, seizure.

In the event of an emergency situation associated with, but not restricted to, the hazards outlined in Table 4.1 the Site Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, have been injured or are at risk of injury.
- Where necessary, sound the emergency siren/fog horn that activates an emergency evacuation on the site.
- Make safe the area if possible and ensure that there no identifiable risk exists with regard to dealing with the situation e.g. if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone if he is unable to do so. If delegating the task, ensure that they follow the procedures for contacting the emergency services as set out in Section 4.4.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g. cordon off an area where an incident associated with electrical issues has occurred.
- Contact any regulatory body or service provider as required e.g. ESB Networks the numbers for which as provided in Section 4.4.2.
- Contact the next of kin of any injured personnel where appropriate. The procedure for this is outlined in Section 4.4.3.

4.3.3 Spill Control Measures

Every effort will be made to prevent an environmental incident during the construction and operational phase of the proposed project. Oil/Fuel spillages are one of the main environmental risks that will exist on the proposed site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. The following steps provide the procedure to be followed in the event of such an incident.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- The Environmental Manager will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The Environmental Manager will notify the appropriate regulatory body such as Galway City Council, The Department of Communications, Climate Action and Environment and the Department of Housing, Planning and Local Government , if deemed necessary.

Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps.

- The Environmental Manager must be immediately notified.

- If necessary, the Environmental Manager will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures used to follow the incident. The form will also include any recommendations made to avoid reoccurrence of the incident.
- If the incident has impacted on an ecologically sensitive receptor, such as a sensitive habitat, protected species or designated conservation site (pSPA or cSAC), the Environmental Manager will liaise with a Project Ecologist.
- If the incident has impacted on a sensitive receptor such as an archaeological feature the Environmental Manager will liaise with a Project Archaeologist.
- A record of all environmental incidents will be kept on file by the Environmental Manager and the Main Contractor. These records will be made available to the relevant authorities such as Galway City Council, DCCAE and DHPLG if required.

The Environmental Manager will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the Main Contractor as appropriate.

4.4 Contacting the Emergency Services

4.4.1 Emergency Communications Procedure

In the event of requiring the assistance of the emergency services the following steps should be taken:

Stay calm. It's important to take a deep breath and not get excited. Any situation that requires 999/112 is, by definition, an emergency. The dispatcher or call-taker knows that and will try to move things along quickly, but under control.

Know the location of the emergency and the number you are calling from. This may be asked and answered a couple of times but don't get frustrated. Even though many emergency call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for some reason you are disconnected, at least emergency crews will know where to go and how to call you back.

Wait for the call-taker to ask questions, then answer clearly and calmly. If you are in danger of assault, the dispatcher or call-taker will still need you to answer quietly, mostly "yes" and "no" questions.

If you reach a recording, listen to what it says. If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.

Let the call-taker guide the conversation. He or she is typing the information into a computer and may seem to be taking forever. There's a good chance, however, that emergency services are already being sent while you are still on the line.

Follow all directions. In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly, and ask for clarification if you don't understand.

Keep your eyes open. You may be asked to describe victims, suspects, vehicles, or other parts of the scene.

Do not hang up the call until directed to do so by the call taker.

4.4.2 Contact Details

A list of emergency contacts is presented in Table 4.2. A copy of these contacts will be included in the Site Safety Manual and in the site offices and the various site welfare facilities

Table 4-2 Emergency Contacts

Contact	Telephone no.
Emergency Services – Ambulance, Fire, Gardaí	999/112
Doctor – Roscam Medical Centre	091 779 860
Hospital –University Hospital Galway	091 524 222
ESB Emergency Services	1850 372 999
Gas Networks Ireland	1850 20 50 50
Gardaí – Oranmore Garda Station	091 388 030
Health and Safety Coordinator - Health & Safety Services	TBC
Health and Safety Authority	1890 289 389
Project Supervisor Construction Stage (PSCS): TBC	TBC
Project Supervisor Design Stage (PSDS): TBC	TBC
Client – Alber Developments Ltd.	TBC

4.4.3 Procedure for Personnel Tracking

All operatives on site without any exception will have to undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.

In the event of a site operative becoming involved in an emergency situation where serious injury has occurred, and hospitalisation has taken place, it will be the responsibility of the Site Manager or next in command if unavailable to contact the next of kin to inform them of the situation that exists.

4.4.4 Induction Checklist

Table 4.3 provides a list of items highlighted in this ERP which must be included or obtained during the mandatory site induction of all personnel that will work on the site. This will be updated throughout the various stages of the project.

Table 4-3 Emergency Response Plan Items Applicable to the Site Induction process

ERP Items to be included in Site Induction	Status
All personnel will be made aware of the evacuation procedure during site induction.	
Due to the location of the site it may be necessary to liaise with and assist the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This should form part of the site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable.	
All operatives on site without any exception will have undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.	

5. MITIGATION PROPOSALS

The Mitigation Measures are presented in the following pages. Any conditions attached to a grant of planning permission will be incorporated into the audit list including an addition or regulatory amendment or standard changes prior to or during construction.

By presenting the mitigation proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the future phases of the project. The tabular format in which the below information is presented, can be further expanded upon during the course of future project phases to provide a reporting template for site compliance audits.

Table 4-4 Mitigation Measures

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
Pre-Commencement Phase			
1	All measures identified in the Construction Environmental Management Plan, which will be finalised subsequent to any permission granted by An Bord Pleanála and updated prior to construction will include all mitigation measures identified to be adhered to during the pre-commencement, construction and operational phases of the proposed development.		
2	Construction Manager engaged who will also fulfil the role of Environmental Manager (EM), and to monitor all site works and to ensure that methodologies and mitigation are followed throughout construction to avoid negatively impacting on the receiving environment.		
3	Prior to the commencement of any excavation or construction activities, the works area will be clearly demarcated with fencing and no works will take place outside the fences. Where potential for run off from the site is identified (i.e. along the stream to the east) a silt fence will be attached to the fencing and buried beneath the ground to filter any runoff that may occur as a result of the proposed works.		
4	The compound for the site will be of adequate size to accommodate site staff parking appropriate to the level of site activity anticipated for a site of this scale.		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
5	Baseline laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken prior to construction at two locations on the Truskey stream.		
6	An environmental officer with the responsibility for ensuring the environmental measures prescribed in this document are adhered to will be assigned to the project.		
Construction Phase			
Construction Management			
7	A site-specific Health and Safety Plan will be in place for the proposed facility. In the event that Covid-19 restrictions are in place at the commencement of the construction phase, the Health and Safety Plan will include provisions regarding compliance with relevant Covid-19 restrictions. All site staff will be made aware of and adhere to the Health and Safety Plan		
8	A Site Induction Process for all site staff will be maintained which will also ensure all staff will have current 'Safe Pass' cards		
9	Only appropriately qualified and trained personnel will be permitted to operate machinery onsite.		
10	The proposed development site will not be accessible to members of the public. Appropriate barriers and signage will be used. The site will also be secured to prevent the risk of trespass through signage and provision of barriers.		
11	Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place. No batching of wet-cement products will occur on site.		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
12	No washing out of any plant used in concrete transport or concreting operations will be allowed on-site;		
13	Whilst significant inundation of surface or ground water is not anticipated, any such water arisings that require pumping out during construction will be discharged to ground within the site through a silt bag. There will be no direct discharge of construction waters to any watercourse.		
Soils and Ground Water Protection			
14	• Excavated (existing) overburden material will be reused on site, where possible; • A minimal volume of topsoil and subsoil will be removed to allow for infrastructural work to take place due to optimisation of the layout by mitigation by design; and, • Construction of service trenching, pumping station and surface water attenuation features will generate excess material, and all excess material will be used locally within the site for landscaping.		
15	• All plant and machinery will be serviced before being mobilised to site; • No plant maintenance will be completed on site, any broken down plant will be removed from site to be fixed; • Refuelling will be completed in a controlled manner using drip trays at all times; • Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water; • Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores; • Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored;		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	• Ancillary equipment such as hoses and pipes will be contained within the bund; • Taps, nozzles or valves will be fitted with a lock system; • Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage; • Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills; • Only designated trained operators will be authorised to refuel plant on site; • Procedures and contingency plans will be set up to deal with emergency accidents or spills; and, • An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment. Highest standards of site management will be maintained, and utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the site and surrounding environment during construction. A named person will be given the task of overseeing the pollution prevention measures agreed for the site to ensure that they are operating safely and effectively		
16	Any infill material/landscaping that is required will be placed and levelled in appropriate lift thicknesses to ensure the material is not over compacted thereby retaining it drainage properties.		
Drainage and Surface Water Quality			
17	• Management of surface water runoff and subsequent treatment prior to release off-site will be undertaken during construction work as follows: • Prior to the commencement of earthwork silt fencing will be placed down-gradient of the construction areas where unmapped drains or drainage		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	pathways are located, if present. These will be embedded into the local soils to ensure all site water is captured and filtered; • As construction advances there may be a small requirement to collect and treat surface water within the site. This will be completed using perimeter swales at low points around the construction areas, and if required water will be pumped from the swales into sediment bags prior to overland discharge allowing water to percolate naturally to ground; • Discharge onto ground will be via a silt bag which will filter any remaining sediment from the pumped water. The entire discharge area from silt bags will be enclosed by a perimeter of double silt fencing; • Any proposed discharge area will avoid potential surface water ponding areas, and will only be located where suitable subsoils are present; • Daily monitoring and inspections of site drainage during construction will be completed; • Earthworks will take place during periods of low rainfall to reduce run-off and potential siltation of watercourses; and, • Good construction practices such as wheel washers and dust suppression on site roads, and regular plant maintenance will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment.		
18	• Soil and subsoil excavated at the site will be temporarily stored and used for the landscaping at the proposed development site. The volume removed from the site will essentially be neutral, thus the average thickness of soil/subsoil will remain the same at the site. • Surface water drainage from the site will be directed towards soakaways, which will be constructed in areas of considerable overburden thickess.		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	• There will be no wastewater discharge directly to site.		
19	• On site re-fuelling of machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double-axel custom-built refuelling trailer will be re-filled off site and will be towed around the site by a 4x4 jeep to where machinery is located. The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use and only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations; • Fuels stored on site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the time period of the construction; • The plant used should be regularly inspected for leaks and fitness for purpose; and, • An emergency plan for the construction phase to deal with accidental spillages will be contained within Environmental Management Plan. Spill kits will be available to deal with accidental spillages.		
20	• A self-contained port-a-loo with an integrated waste holding tank will be used at the site compound, maintained by the providing contractor, and removed from site on completion of the construction works; and, • No wastewater will be discharged on-site during either the construction or operational phase.		
21	• No batching of wet-cement products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place; • 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 the chute need be cleaned, using the smallest volume of water possible. No discharge of cement contaminated		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Chute cleaning water is to be tanked and removed from the site to a suitable, non-polluting, discharge location; • Use weather forecasting to plan dry days for pouring concrete; and, • Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.		
Biodiversity			
22	The development has been designed to retain the vast majority of the woodland within the site boundary and to maintain connectivity with the woodland to the west of the study area, with only a small section of the woodland's eastern edge to be lost to the development. Whilst no significant loss of woodland will occur, a landscaping plan has been prepared for the proposed development which provides for the replanting of native woodland habitat within the development site to ameliorate any tree loss and to maintain connectivity with the wider landscape.		
23	• A landscaping plan has been prepared for the proposed development (Refer to Appendix 6-4) which includes for the planting of a linear strip of native woodland (70 trees approx.) along the site's northern boundary to ameliorate any tree loss and ensure there is no net loss in suitable ecological habitat features. • Planting will use predominantly native species found in the wider area. • Access pathways through the woodland will be constructed using a minimalist intervention approach to ensure the preservation of woodland trees. The path will be constructed using a non-dig method using a combination of timber sleepers, cellweb system and gravel to ensure increased access to the root protection areas of the trees occurs in a manner not detrimental to the trees. The pathway will be constructed in a meandering manner so as to avoid the felling of existing trees.		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	• The construction area within the site will be fenced off at the outset of construction. There will be no construction activities, access or storage of materials in the area outside the defined construction site. • Trees to be retained will be protected in accordance with BS: 5837 (Trees in relation to Construction).		
24	• A landscaping plan has been prepared for the proposed development (refer to Appendix 6.4). The plan includes for the planting of trees and treelines (>55 native trees in addition to the native woodland to be planted within the site as described in Table 5.15 above) throughout the site to ameliorate any tree loss and to maintain connectivity to the wider area. Additional street trees will also be planted throughout the site. The number of trees to be planted within the site far outnumbers the number of trees to be lost and there will be no net loss in suitable ecological habitat features. • Planting will use predominantly native species found in the wider area. • The construction area within the site will be fenced off at the outset of construction. There will be no construction activities, access or storage of materials in the area outside the defined construction site. • Trees to be retained will be protected in accordance with BS: 5837 (Trees in relation to Construction).		
25	• Habitat loss will be minimised by temporarily fencing off the construction site during the construction phase of the development and not permitting any construction activity outside this fence. • A pre-construction survey will be undertaken on all trees with suitable potential roost features, to be felled, by a qualified ecologist prior to any works, to ensure there are no roosting bats. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the surveys in 2019 and 2020.		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	• If bats are found to be roosting in any of the structures during the pre-commencement surveys, a bat derogation licence will be obtained, and further mitigation prescribed by a licenced ecologist.		
26	Where removal of trees or hedgerows is unavoidable, additional hedgerow or tree planting will be carried out using predominantly native species. This has been incorporated into the Landscape Plan. There will be not net loss of linear landscape connectivity		
27	The majority of works, during the construction phase, will occur during daylight hours. Therefore, there will be no requirement for exterior lighting within the site. Where lighting is unavoidable (i.e. health and safety), low-intensity lighting and motion sensors will be used to limit illumination. Exterior lighting, during construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the proposed development, and consequently on bats i.e. Lighting will be directed away from mature trees/hedgerows/treelines around the periphery of the site boundary to minimize disturbance to bats. Directional accessories will be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands.		
28	• A pre-construction badger survey of the development site will be undertaken by a suitably qualified ecologist prior to the commencement of any works to determine if badger have occupied the site. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the surveys in 2019, 2020 and 2021. • If potential setts are identified within 50m of the development they will subsequently be monitored for a minimum period of 2 weeks using remote		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	cameras in order to ascertain use by badgers and levels of activity. All badger survey work will be undertaken in line with current best practice guidance[1]. • Should the pre-construction survey identify badger have occupied the site, it will be necessary to apply to NPWS for a licence prior to undertaking any works. • All conditions within the licence will be adhered to and further mitigation prescribed by a licenced ecologist. • All works will be completed during daylight hours and there will be no requirement for artificial lighting at any stage of the proposed construction works.		
29	Where possible, all cutting of trees, scrub and tall vegetation will be undertaken outside the bird nesting season which runs from the 1st March to the 31st August. Any cutting of vegetation that may be required outside the season described above will be supervised by a suitably qualified ecologist to ensure that no birds nests are present. Should nesting birds be encountered, the trees will be left until nesting activity has concluded.		
Air Quality and Dust Control			
30	All vehicles to switch off engines when not in use – no idling vehicles		
31	Effective vehicle cleaning and wheel washing on leaving site and damping down of haul routes		
32	• On-road vehicles to comply to set emission standards. • All non-road mobile machinery (NRMM) to be fitted with appropriate exhaust system and be regularly serviced.		

[1] *National Roads Authority (2006) Guidelines for the treatment of badgers prior to the construction of National Road Schemes.*

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
33	Hard surfacing and effective cleaning of haul routes and appropriate speed limit around site		
34	Dust control will be achieved by: • Dampening down the dust at the source • Sheeting will be used as required for stockpiled materials • Use of barriers such as debris netting on scaffolding around the building to block dust escaping where the building is within 10m of the site boundary where residential properties exist. • Site road ways will be maintained in a stoned hard core condition not allowing soil to accumulate which when dry can create dust. • Wheel wash equipment will be set up at the site exit gate for all construction vehicles to pass through prior to leaving the site thus ensuring that no dirt etc. is transported outside the site onto the roadways. • Plant and equipment that have the potential to create volumes of dust will have appropriate attachments to allow water source to dampen dust to not allow it to get airborne. • Plant and equipment that have the potential to create volumes of dust will be located away from sensitive receptors where possible. • Deploy Road Sweeper as required on External Roads. • Deployment of dust monitors across the site if required		
35	• All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. • Machinery were switched off when not in use.		
36	• All construction vehicles and plant will be maintained in good operational order while onsite, thereby minimising any emissions that arise. • Overburden will be progressively removed from the working area in advance of construction.		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	• Dampening down the dust at the source by the use of barriers such as debris netting on scaffolding around the building to block dust escaping where the building is within 10m of the site boundary where residential properties exist. • Site roadways will be maintained in a stoned hard core condition not allowing soil to accumulate which when dry can create dust. • Wheel wash equipment will be set up at the site exit gate for all construction vehicles to pass through prior to leaving the site thus ensuring that no dirt etc. is transported outside the site onto the roadways. • Plant and equipment that have the potential to create volumes of dust will have appropriate attachments to allow water source to dampen dust to not allow it to get airborne. • Deploy Road Sweeper as required on External Roads. • Dust levels will be monitored visually, on a daily basis by the project Environmental Manager. If dust levels become an issue, then all dust generating activities on site will cease until such time as weather conditions improve (e.g. wind levels drop or rain falls) or mitigation measures such as damping down of the ground are completed.		
Noise			
37	All vehicles to switch off engines when not in use – no idling vehicles		
38	Best practice measures for noise control will be adhered to onsite during the construction phase of the proposed development. The measures include: • Construction operations will in general be confined to the period Monday-Friday 0800-1900 h, and Saturday 0800-1400 h. • Where it is proposed to operate plant during the period 0700-0800 h, standard 'beeper' reversing alarms will be replaced with flat spectrum alarms.		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	• Hooting will be prohibited onsite. Drivers of plant and vehicles will be instructed to avoiding hooting at all times. • Plant used onsite during the construction phase will be maintained in a satisfactory condition and in accordance with manufacturer recommendations. In particular, exhaust silencers will be fitted and operating correctly at all times. Defective silencers will be immediately replaced. • Queuing of trucks outside the site entrance will be prohibited. • A site representative will be appointed as a liaison officer with the local community. Prior to commencement of construction, contact details for the officer will be circulated to all local residents. The officer will notify local residents of upcoming works phases and likely noise sources. • Where evening or night-time operations are required, local residents will be notified through the liaison officer. • All complaints of noise received during the construction phase will be logged in a register, and investigated immediately. Details of follow-up action will be included in the register. • Where it is proposed to import potentially noisy plant to the site, the potential impact of noise emissions will be assessed in advance. • Guidance set out in British Standard BS 5228-1:2009+A1:2014 with respect to noise control will be applied throughout the construction phase. The above mitigation measures relating to noise will be implemented to minimise potential impacts on Human Health during the construction phase		
Material Assets			
39	All construction activities will be managed and directed by a Traffic Management Plan (TMP). The details of the TMP will be agreed with the roads department of the Local Authority in advance of construction activities commencing on-site.		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
40	• A detailed haulage plan will be put in place to ensure minimal impact on the surrounding road network. • All deliveries and removals will be subject to stringent site rules governing the loading / off-loading times, location of loading / off loading, covering of loads and cleaning of vehicles exiting the site, etc. • No vehicle will be allowed to stop or park on the access road to the proposed development site. • Ample parking will be provided within the site to cater for the staff and visitors during the construction phases of the proposed development. • Construction traffic will be managed and scheduled to ensure no queueing occurs on either the internal road system or the main approach roads. The provision of an on-site vehicle staging area will facilitate waiting vehicles. • Routine sweeping/cleaning of the road and footpaths in front of the site; and • No uncontrolled runoff to the public road from dewatering/pumping carried out during construction activity.		
41	Mitigation measures proposed during the operational stage are as follows; • Provision of "STOP" road markings at the access junctions in accordance with Figure 7.35 of the Traffic Signs Manual (TII, 2019). • Suitable Lighting of all junctions with lighting columns being positioned at the back of the footways. • It is proposed to provide advanced warning signs on the Rosshill road as it approaches the site entrance. The signage will be in accordance with Chapter 6 of the Traffic Signs Manual (TSM) for road users travelling in the eastern and western direction towards the entrance to the development. • The extension of the existing footpath on the Rosshill Road will allow connectivity to the existing Bus Stops on the Dublin Road.		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	• The provision of bicycle stands to encourage cycling. The proposed extension of the cycle lanes on the Dublin Road will also encourage residents to cycle. • The existing Oranmore train station on the Galway-Dublin line is 2.8km away and will provide a sustainable alternative to travel by car into the city. • The development management company will include a GoCar scheme for the apartment blocks. › Charging points for electric vehicles are being provided for the apartments.		
42	• Any area where excavations are planned will be surveyed and all existing services will be identified prior to commencement of any works. • Liaison will be had with the relevant sections of the Local Authority including all the relevant area engineers to ensure all services are identified. • Excavation permits will be completed and all plant operators and general operatives will be inducted and informed as to the location of any services.		
Cultural Heritage			
43	• A pre-construction Geophysical Survey of the proposed development site should be undertaken and a report compiled detailing the results of same. • A programme of pre-construction targeted archaeological testing of any potential geophysical anomalies within the proposed development site (licensed by the National Monuments Service). This measure will provide greater clarity as to the potential nature and extent of sub-surface archaeological remains if they exist within the site. Should planning permission be granted, by carrying out these measures in advance of construction, it minimises the risk of delays occurring on site due to previously unidentified archaeological features being revealed. The		

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
	developer will make provision to allow for and fund whatever archaeological work may be required at the site and the post excavation requirements in accordance with the National Monuments Legislation (1930–2004). All recommendations are subject to the approval of the National Monuments Service of the DHLGH. A full report on the findings will be compiled on completion of the testing. • Preservation in-situ and preservation by record may be required depending on the results of the Geophysical Survey and targeted testing.		
44	• A full photographic, descriptive and drawn record of any elements of the range of outbuildings to be directly impacted by the proposed development should be carried out prior to the commencement of any works on site. A report on same should be compiled and submitted to the relevant authorities. • Given the proximity of the remainder of the outbuildings to the proposed development site, measures should be put in place to ensure the preservation of those buildings. A structural engineers report on the buildings should be undertaken to determine any Health and Safety issues or considerations associated with the structures and their future retention. › A protective buffer zone should be established around the remainder of the outbuildings prior to the commencement of any site works and should be maintained for the duration of the construction phase of the project.		
45	Construction Stage archaeological monitoring of all topsoil removal associated with the development by a suitably qualified archaeologist. A report on the monitoring will be compiled on completion of the works and submitted to the relevant authorities. Should archaeological finds or features be uncovered during the course of the monitoring the National Monuments Service shall be informed of such findings and further mitigation in the form of preservation in situ or preservation by record (excavation) may be required.		
Environmental Management			

Mitigation Measure	Mitigation Measure	Audit Result	Action Required
46	Effective vehicle cleaning and wheel washing on leaving site and damping down of haul routes		
47	The machinery used to install the outfalls to the Trusky Stream will be thoroughly cleaned, dried and disinfected prior to arrival on site and before relocating to another site post-works using Virkon 1% biocide and departure from the site to prevent the spread of invasive species such as Asian Clam, Zebra Mussel, Crayfish plague. This process will be detailed in the method statement.		
48	All operatives working on the site will be made fully aware of the environmental responsibilities, conditions and requirements along with a full description of the methods to be employed. This information will be imparted at a dedicated site induction prior to commencing work on the site.		
49	The construction management team will be regularly monitoring the works and will be fully briefed and aware of the environmental constraints and protection measures to be employed.		
50	A checklist will be filled in on a weekly basis to show how the measures above have been complied with. Any environmental incidents or non-compliance issues will immediately be reported to the project team.		

6. COMPLIANCE AND REVIEW

6.1 Site Inspections and Environmental Audits

Routine inspections of activities will be carried out on a daily and weekly basis by the Site Environmental Manager/Construction Manager as appointed by the applicant to ensure all controls to prevent environmental impact, relevant to the construction activities taking place at the time, are in place.

Environmental inspections will ensure that the works are undertaken in compliance with this CEMP. Environmental site inspections will be carried out by suitably trained staff.

6.2 Environmental Compliance

The following definitions shall apply in relation to the classification of Environmental Occurrences during the infilling works:

Environmental Near Miss: An occurrence which if not controlled or due to its nature could lead to an Environmental Incident.

Environmental Incident: Any occurrence which has potential, due to its scale and nature, to migrate from source and have an environmental impact beyond the site boundary.

Environmental Non-Compliance: Non-fulfilment of a requirement and includes any deviations from established procedures, programs and other arrangements related to the CDMP.

6.3 Corrective Action Procedure

A corrective action is implemented to rectify an environmental issue on-site. Corrective actions will be implemented by the Construction Manager, as advised by the Site Environmental manager. Corrective actions may be required as a result of the following;

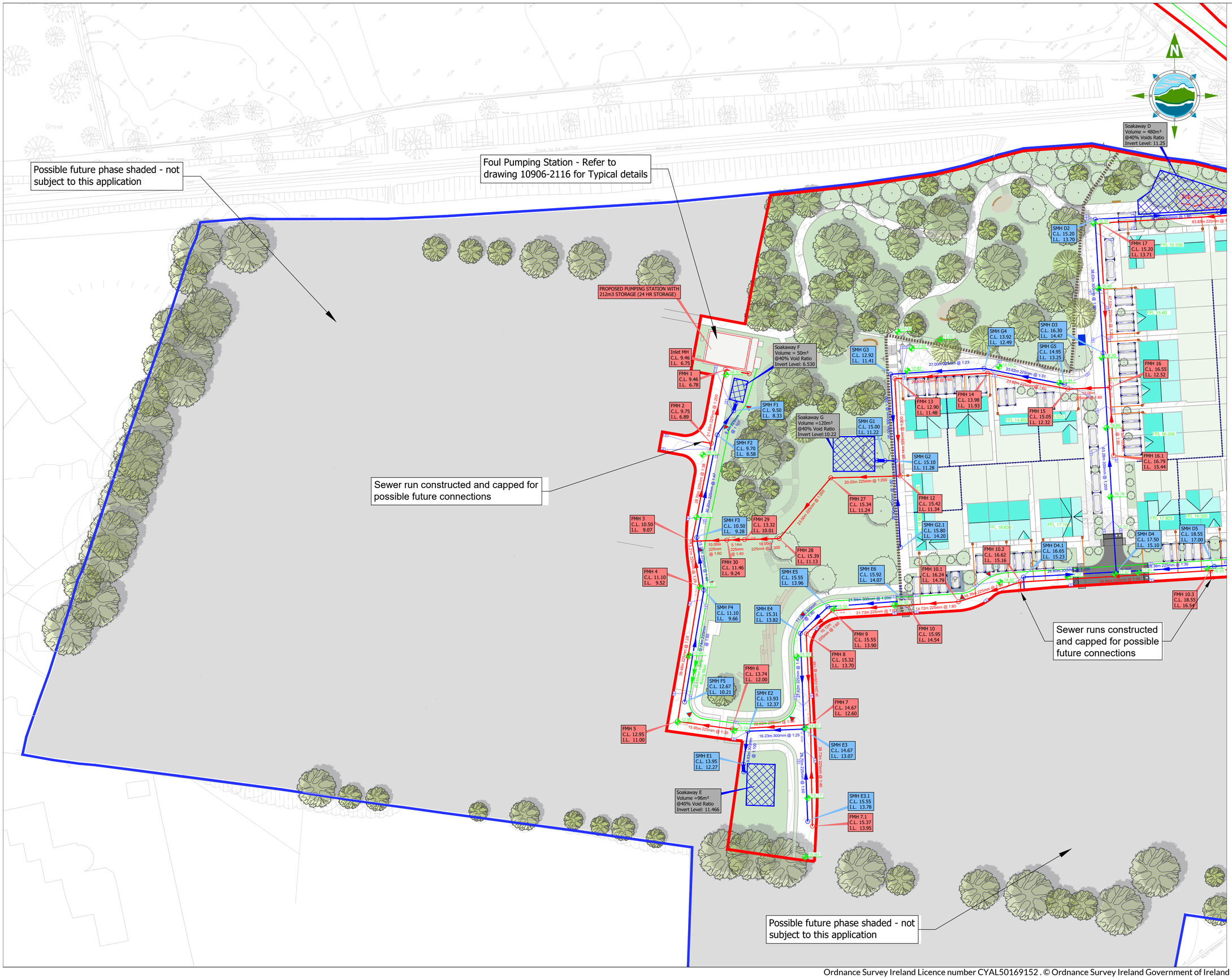
- Environmental Audits;
- Environmental Inspections and Reviews;
- Environmental Incidents; and,
- Environmental Complaints.

A Corrective Action Notice will be used to communicate the details of the action required to the main contractor. A Corrective Action Notice is a form that describes the cause and effect of an environmental problem on site and the recommended corrective action that is required. The Corrective Action Notice, when completed, will include details of close out and follow up actions.

If an environmental problem occurs on site that requires immediate attention direct communications between the Construction Manager and the Site Environmental manager will be conducted. This in turn will be passed down to the site staff involved. A Corrective Action Notice will be completed at a later date.

APPENDIX 1

SITE DRAINAGE PLAN



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

LEGEND:

- Site Boundary
- Existing Rising Main
- Proposed Ø150mm HDPE Rising Main
- Proposed Foul Sewer and Manhole
- Proposed Inspection Chamber and Connection
- Proposed Storm Sewer and Manhole
- Proposed Soakaway
- Rising Main Thrust Block
- Proposed Level
- Road Gully & Connection to Storm Sewer
- Bio-Swale Overflow to Storm Sewer
- Possible Future Phase of Lands - Not Subject to this Planning Application
- Lands in Control of Applicant

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.
P05	28.06.2021	Revised Layout - Issued for Planning	MN	RD
P04	16.06.2021	Issue for Planning Revision to Drainage	EC	RD
P03	19.05.2021	Draft Issue For Planning	EC	SH
P02	14.05.2021	Issued For Comment	MN	SH
P01	12.05.2021	First Issue	MN	RD

Client: ALBER DEVELOPMENTS

Project: Rosshill Residential Development

Title: Drainage Layout (Sheet 1 of 2)

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

Prepared by:	Checked:	Date:
MN	RD	June 2021

Project Director: Michael McDonnell

Drawing Status: Planning

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Drawing No.: 10690-2103 Revision: P05

ϕ150mm Rising Main to tie into existing previously constructed from adjacent development. Refer to drawing 10906-2105 for details.

Sewer runs constructed and capped for possible future connections

Possibly future phase shaded - not subject to this application.

Ornamental Mound

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

LEGEND:

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- Proposed Ø150mm HDPE Rising Main
- Proposed Foul Sewer and Manhole
- Proposed Inspection Chamber and Connection
- Proposed Storm Sewer and Manhole
- Proposed Soakpit
- Rising Main Thrust Block
- Proposed Level
- Road Gully & Connection to Storm Sewer
- Bio-Swale Overflow to Storm Sewer
- Drop Kerb to Bio-Swale
- Possible Future Phase of Lands - Not Subject to this Planning Application
- Proposed Bio-Swale
- Lands in Control of Applicant

NOTES:

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Client: ALBER DEVELOPMENTS

Project: Rosshill Residential Development

Title: Drainage Layout (Sheet 2 of 2)

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

Prepared by:	Checked:	Date:
MN	RD	June 2021

Project Director: Michael McDonnell

Drawing Status: Planning

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Drawing No.: 10690-2104 Revision: P05

APPENDIX 2

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN

ROSSHILL MANOR

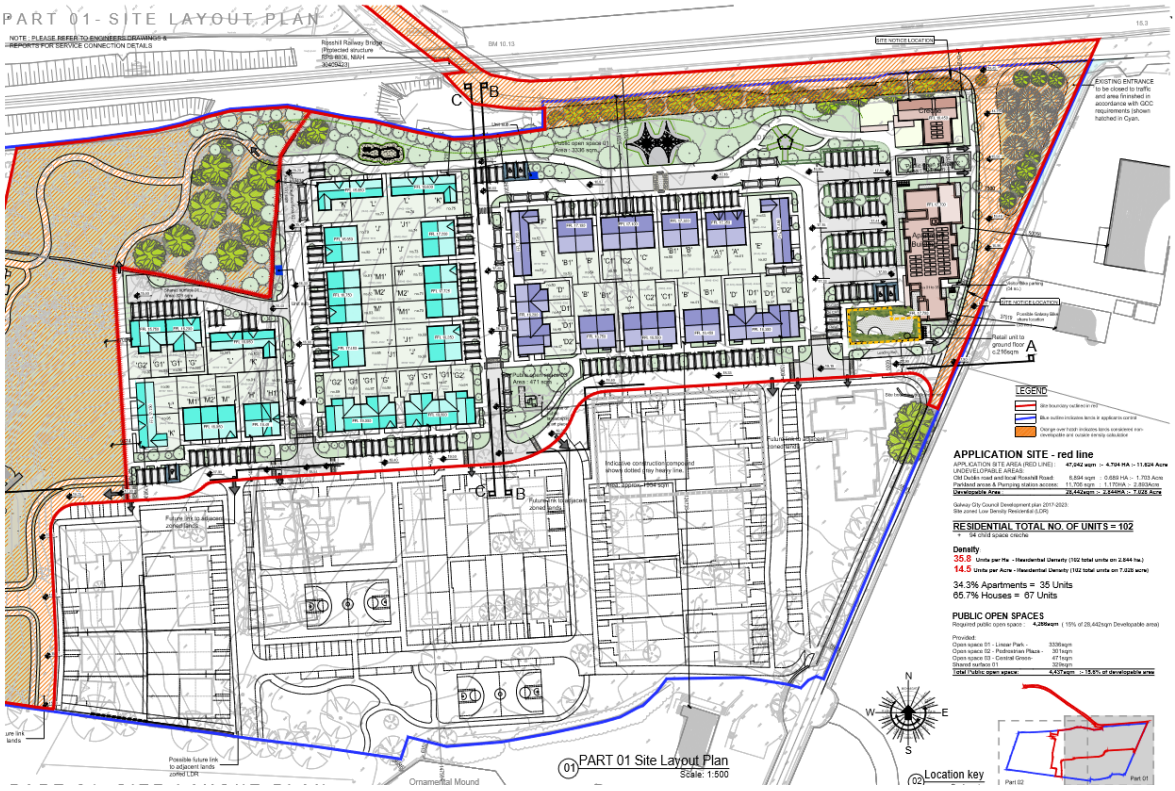
CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN

Housing development on lands to the south of Old Dublin Road

ABP-309391-19

May 2021

Prepared by Patrick Kearney, MSc. EHSM MIEI CMIOSH



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Please note that this document is an outline which is intended to set a clear path and philosophy for Alber Developments Ltd in drawing up their own final strategy for Construction and Demolition Waste Management Plan.

CONTENTS **PAGE**

1. Introduction. 3
2. Background to construction waste & demolition management. 3
3. National, regional and legislation requirements. 4
4. Project description. 5
5. Demolition waste produced. 5
6. Construction phase waste. 6
7. Categories of construction waste generated. 6
8. Anticipated hazardous waste. 7
9. Estimated waste generated. 7
10. Proposed waste management operation. 9
11. Documentation. 10
12. Roles and training for waste management and site operatives. 10
13. Record keeping. 10
14. Estimated costs of waste management. 11
15. Waste audit procedure. 12
16. Consultation with relevant bodies. 12
17. Table1 & Table1A. 13
18. Extent of site with compound & waste segregation area. 14

1. INTRODUCTION.

Please note that this document is intended to set a clear path and philosophy for Alber Developments Ltd for Construction and Demolition Waste Management Plan (C&D WMP) Housing development consisting of 102 units – 67houses & 35 apartments to the south of old Dublin Road and west of Rosshill Road, Co. Galway.

2. BACKGROUND TO CONSTRUCTION WASTE & DEMOLITION MANAGEMENT.

The purpose of the C&D WMP is to provide information necessary to ensure that the management of waste produced by the site is carried out in accordance with all current legal and industrial standards including:

- Waste Management Act 1996-2011 & associated regulations.
- Litter Act 1997.
- Packaging Regulations 2003.

One Priority of the plan shall be to promote recycling, reuse and recovery of waste and diversion from land fill wherever possible.

Guidance will also be given to ensure appropriate method of transportation of Waste is used to prevent littering or other serious environmental pollution.

In preparation of the C&D WMP, the following publications have been used as references.

Best Practice Guidelines on the preparation of waste management plans for construction and demolition projects, Department of the Environment and local Government 2005.

In tandem with the launch of the National Construction and Demolition waste council, the Department of the Environment, Heritage and Local Government published the 'Guidelines for preparation of waste management plans for construction and demolition projects.

These guidelines cover issues to be addressed at the preplanning stage right through to project completion and these include:

- Predicted Construction and demolition wastes:
- Waste disposal/recycling of C&D wastes at the site:
- List of sequence of operations to be followed:
- Provision of training for waste managers and site crew:
- Details of proposed record keeping system:
- Details of waste audit procedures and plans:
- Details of consultation with relevant stakeholders.

3. NATIONAL, REGIONAL AND LEGISLATION REQUIREMENTS.

At Regional level this development is covered by the Regional waste management plan 2015-21 Connacht Ulster Waste Region for Galway Council.

The primary objective of this plan is to achieve more sustainable waste management practices through increased recycling, use of source separation and use of industry code to regulate collection and treatment of waste.

Current legislation implies that the waste producer is responsible for waste from the time it is generated to point of legal disposal.

Waste contractors must comply with the Waste Management Act 1996 and associated regulations.

A permit to transport waste must be obtained and requires contractor to handle, transport and dispose waste in a manner which ensures no adverse environmental impacts occur as a result of these activities.

Likewise, the facilities receiving waste must hold the appropriate license under Waste Management (Facility Permit & Registration) regulations 2007 or by EPA.

This Permit will include information such as type of waste that can be received along with stored, sorted, recycled and or disposal materials at the site.

4. PROJECT DESCRIPTION.

- 102 No. residential units (Houses & 157 No. apartments), Creche, community space, and all associated site works.
- Associated Landscaping, private & public open space, car parking, bicycle parking, infra-structural works above and below ground, pedestrian access.

5. DEMOLITION WASTE PRODUCED.

As the relevant portion of lands are green field it is not anticipated that there will be any such waste generated from the site. There is one existing derelict farm dwelling associated with this phase of the overall development site (Phase 1).

However, if any previously discarded materials are uncovered it is indented that this waste be segregated and recycled as appropriate in accordance with this plan. Materials will also be subject to a reuse consideration philosophy to reduce waste.

Waste type.	EWC.
Waste Material Non-Hazardous Concrete Bricks Tiles Ceramics.	17 01
Wood, glass and plastic.	17 02
Bituminous mixtures, coal tar and tarred products.	17 03
Metals (including their alloys).	17 04
Soil, stone and dredged spoil.	17 05
Gypsum-based construction material.	17 08
Hazardous Electrical and Electronic Components.	16 02
Batteries.	16 06
Wood Preservative.	03 02
Liquid Fuels.	13 07
Soil and stones containing dangerous substances.	17 05 03
Insulation materials containing asbestos.	17 06 01
Other insulation materials containing of or containing dangerous substances.	17 06 03
Construction materials containing asbestos.	17 06 05

Construction and demolition waste containing mercury.	17 09 01
Construction and demolition waste containing PCBs.	17 09 02
Other construction and demolition Wastes containing dangerous Substances.	17 09 03

6. CONSTRUCTION PHASE WASTE.

This is anticipated to consist of surplus of materials arising from cut-offs of various materials including, concrete blocks, bricks, tiles etc.

Waste from packaging and oversupply of materials is also expected.

The bulk of waste material generated is from the excavation of subsoil to accommodate the construction associated with the apartments portion of the development and to a lesser extent the housing sub-structures and associated civil works for the development. This is expected to be inert material which may be re-used on site subject to suitability in landscape areas to reduce waste volumes.

7. CATAGORIES OF CONSTRUCTION WASTE GENERATED.

In order to provide consistent waste and hazardous waste classifications across the EU the following were published:

- European waste Catalogue
- Hazardous waste list.

These form the basis for national and international waste reporting obligations.

The EPA has also published a more concise guide of these.

The European waste codes (EWC) expected to for typical waste materials expected to be generated for this site are tabulated below as follows:

8. ANTICIPATED HAZARDOUS WASTE.

Fuels used during construction will be classed as hazardous and this will be stored for site machinery etc., in suitable tanks with the draw-off points bunded.

Where this is the case it is not expected that there will be any fuel wastage.

Waste mixtures contain dangerous substances classified as hazardous waste. This will not be used as fill on the site and only disposed of in licensed hazardous waste facility.

9. ESTIMATED WASTE GENERATED.

Taken from the Irish EPA figures below is the breakdown of Construction and demolition waste type expected to be generated from a typical site such as this, per m^2.

Waste Materials generated on a typical Irish construction site:

Waste Types	**%**
Soil & Stones.	83
Concrete, Bricks, tiles, plastics etc.	13
Asphalt, tar/tar products.	1
Metals.	1
Others.	2
Total Waste.	100

The development will include the excavation of approximately 5,000 m^3 of soil/subsoil, associated with the general site clearance and excavation relating to the bulk dig and installation of housing sub-structures and general civil engineering works. It is intended to reuse excavated materials if deemed suitable.

The following table predicts the construction waste which will be generated based on information currently available:

Construction waste quantities:

Waste Types	Quantity
Waste Soil & Stones	8,900 Tonnes
Concrete, Bricks, tiles, plastics	1,300 Tonnes
Asphalt, tar/tar products	1.5 Tonnes
Metals	5 Tonnes
Other	12
Total	10,218.5 Tonnes

The following table shows the target values for the management of waste at the site:

Predicted Construction waste targets for the proposed Development:

Waste Type	**Waste**	**Reuse/Recover**		**Recycle**		**Disposal**	
	Tonnes	**%**	**Tonnes**	**%**	**Tonnes**	**%**	**Tonnes**
Soil & Stone	8'900	70	6230			30	2670 (Potential for Land scaping).
Concrete Bricks Plastic	1300			75	975	25	325
Asphalt tar, tar Products	1.5			25	.375	75	1.25
Metals	5			90	4.5	10	.5
Other	12					100	12
TOTAL	**10,218.5**		**6230**		**1354.5**		**3009**

Any contaminated material encountered will be classified and disposed of, to Local Authority Registered / Council landfill sites.

10. PROPOSED WASTE MANAGEMENT OPERATION.

Waste is to be segregated on site to the above table. The site waste storage area will have skips and recycling receptacles for all recyclable wastes.

Collections for these will be as usage required. Non-hazardous recyclable waste will be transferred by suitable means to landfill. Each material for recycling will be segregated into suitable containers which have adequate access for collection vehicles.

Sub-soils/Topsoil.

Given previous green field land use and on-site observations, it is expected to be inert soil and subsoils which will be excavated and reused where possible but if removed from site will be taken to licensed facility.

Permits issued under the Waste Management (collection permits) regulations 2007 allow the contractor to reuse this for landscaping etc. subject to its terms.

Small amount of material excavated if encountered which are deemed hazardous will be stored separately and tested for classification in accordance with Council Decision 2003/33/E, treated if required and disposed of appropriately.

Concrete & concrete blocks and aged stone / rubble.

This clean inert material will be reused where possible by on site crushing as filling material or removed to licensed site.

Plastics / Timber / Scrap Metals / Plaster / Glass.

These highly reusable and /or recyclable materials, if uncontaminated, will be cleaned, segregated and stored in suitable covered skip for collection by licensed contractor.

Every effort will be made in the management of the site to minimize the oversupply of these material.

Hazardous Materials.

Specialist contractor will be employed to carry out environmental clean-up to remove traces of contaminated materials from the site. These should be licensed under Waste Management (Collection Permit regulations 2007). This will be disposed of in a facility licensed under the Waste Management Act 1996 and waste management (Facility Permit) regulations of 2007.

11. DOCUMENTATION.

All waste will be documented prior to leaving site. Records will be kept at the site and at the relevant waste facility.

Movement of waste will be in accordance with relevant guidelines.

Construction and Demolition municipal waste will be separated and stored wherever possible and monitored / inspected by the site foreperson prior to removal to ensure that site protocol for recycling is being adhered to.

12. ROLES AND TRAINING FOR WASTE MANAGEMENT AND SITE OPERATIVES.

Waste Manager.

A dedicated waste manager will be appointed to ensure commitment, efficiency and site protocols upheld during construction stage.

The role of the waste manager will be to record, oversee and manage everyday handling of waste on the site.

Their training will be in setup and maintaining record keeping systems and how to produce an audit to ensure waste management targets are being met.

They shall also be trained in the best methods for segregation and storage of recyclables. They will also be familiar with the suitability of material reuse and know how to implement the Construction Waste & Demolition Management Plan.

Site Crew.

This shall be the responsibility of the nominated waste manager and a training program will be organized, incorporated into typical onsite inductions to give an awareness of waste segregation on the site.

This will outline the types and treatment that should be given to different materials and hazardous materials.

13. RECORD KEEPING.

Records shall be kept for each material leaving the site for all types of use or disposal.

This shall take the following basic outline form:

- Waste taken for reuse off site.
- Waste taken for recycling.
- Waste taken for disposal.
- Reclaimed waste materials brought to site for reuse.

For any movement of waste, a docket shall be signed and recorded by waste manager, detailing type and weight of material and source or destination.

This will be readily comparable with all delivery records to site, so a waste generation percentage for each material can be determined.

Record keeping will allow ease of comparison of figures with targets established for the recovery, reuse and recycling of construction waste. It will also highlight the source of failure in meeting these targets.

14. ESTIMATED COSTS OF WASTE MANAGEMENT.

Waste Management costs have also been changing significantly over the past decade.

However, below we outline the budgeted current cost of landfill and recycling. The total cost of C&D waste management shall be measured and allow for purchase cost of materials, handling cost, storage cost, transport cost, revenue from sale of material and disposal costs etc.

The re-use of materials on site will reduce the transportation and disposal costs for waste being taken to landfill sites.

Where soil/stones cannot the re-used on the site, they may be reused as capping material for landfill sites, or reinstatement of quarries for example. For this purpose, this waste may be taken free of charge thus reducing overall Waste Management Cost.

Re-cycling in Galway region for cardboard and clean plastic could be in the range €140 per tonne for disposal as municipal waste, however a net rebate in the range of €20-€40 could be given if recycled.

Salvageable metals can generally be deposited free of charge a salvage yards thus only incurring cost for transport.

Timber can be recycled as chip board etc. but again the cost of clean segregate waste is cheaper to dispose of compared to mixed waste.

Plasterboard, as is no longer considered inert but can now be recycled also giving a net reduction in disposal costs.

Disposal sites in Galway region and surrounding areas currently charge approximately €140 per Ton. Fees may also be incurred for waste contractor use of compactors, skips etc.

Segregate waste will generally cost less than mixed municipal waste. As noted above, the disposal of waste to landfill can be reduced by consistently re-assessing the re-use, recovery or recycling or waste materials generated.

15. WASTE AUDIT PROCEDURE.

The waste manager shall perform audits at the site during the complete construction phase of the works.

This shall ensure that all records are being maintained for all movements of all materials.

Records shall also be readily available for comparison with the sites targets.

At completion of the Construction phase a final report will be prepared outlining the results of the Waste Management process and the total reuse, recycling and recovery figures for the site.

16. CONSULTATION WITH RELEVANT BODIES.

Local authority will be consulted throughout the Construction phase as deemed appropriate by the site Waste Manager to ensure that all available waste reduction, reuse and recycling options are being explored and utilized and that compliant Waste Management is being carried out at the site.

Specialist companies, wherever required, will be contacted to determine their suitability and each company record reviewed to ensure relevant current collection permits / licenses are held.

Companies will also be contacted to gather information regarding treatment of hazardous materials, if required (although not anticipated for this site), costs of handling and the best methods of transportation for recycling or reuse when hauling off site.

Only an Authorized waste collector with a valid waste collection permit must be used for each waste generated.

List of proposed authorised waste collection permit holders to be employed:

- Walsh Waste & Recycling Deerpark Industrial Estate, Deerpark, Oranmore, Co. Galway H91 RH31
- Permit No. NWCPO-08-03584.
- Galway Metal Company LTD. Carrowmoneash, Oranmore, Co Galway. Ferrous Metal. Non-Ferrous Metal and Mixed Metals. IPA licence P1006-02
- Niall Curran Plant Hire NWCPO 19-12196-01. Drimneen, Moycullen, Co Galway.

Table 1: Details of Waste Generated.

Type of Waste	Tick if applicable to your site.	Estimate of quantities in tonnes.	Name and NWCPO Ref No. of the Waste Collector propose to use. And Name and Permit Ref. No. of Authorised Site(s) receiving waste.
Clean Soil Stone	✓	8,900 Tonnes	
			Permit No. NWCPO-08-03584
Concrete Blocks Tiles	✓	1,300 Tonnes	
			Permit No. NWCPO-08-03584
Hazardous Waste	✓	1.5 Tonnes Gypsum (Bitumen)	Michael McGrath Heavy Haulage LTD
			COR -CE -14-0005-01 O Connell Quarries Ballycar South, Kilmoculla, Ardnacrusha. Co Clare

Authorised Site.

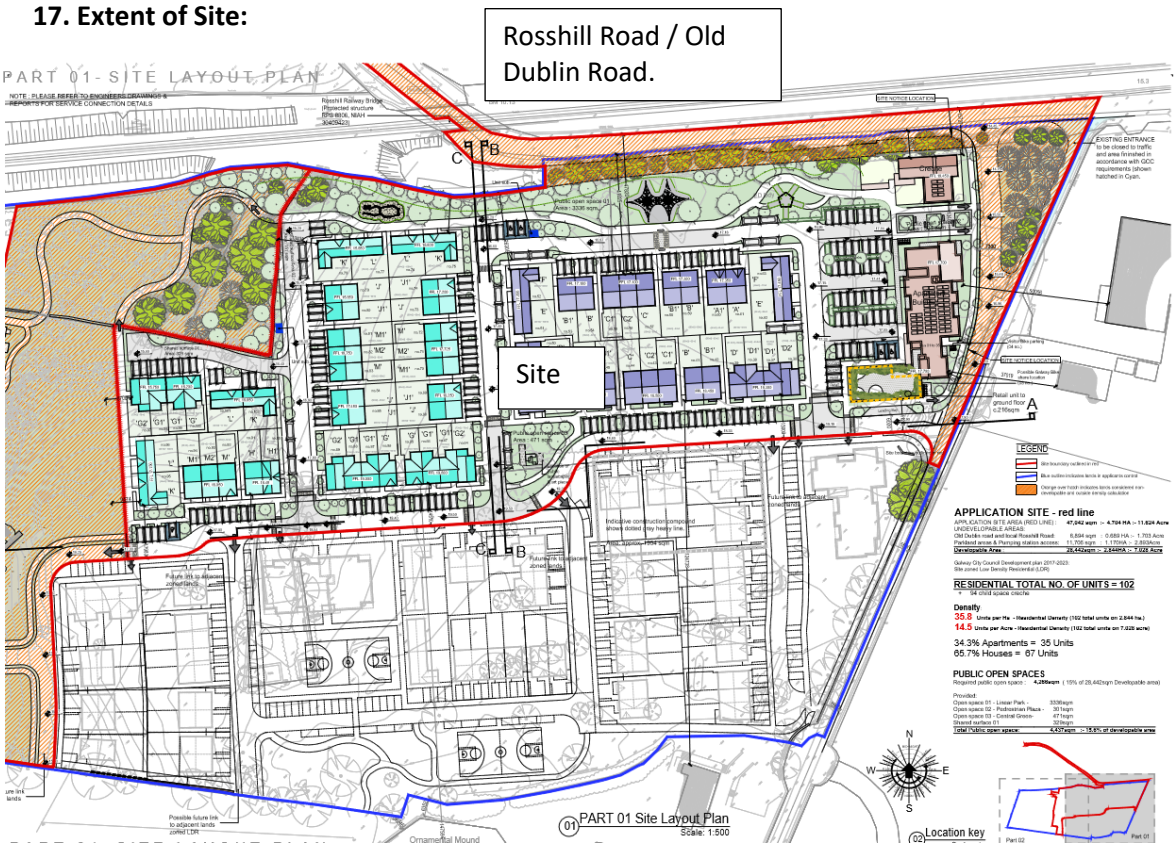
Clean soil and stone is classified as a waste. When transported off site, it must be disposed of at an authorised waste facility. Clean stone and Soil will be used throughout the site for formation of gardens and green areas in phase I and stockpiled for use in phase 2,3 and 4 all surplus materials will be transported to approved facilities.

ii. Hazardous wastes such as Bitumen will be transported by Niall Curran.

Table 1A: Details of Waste Generated continued.

Type of Waste.	**Tick if applicable to your site.**	**Estimate of quantities in tonnes.**	**Name and NWCPO Ref No. of the Waste Collector. propose to use. And Waste Facility**
Wood/green waste	✓	40 Tonne.	*Permit No. NWCPO-08-03584*
Plaster Board	✓	60 Tonne.	*Permit No. NWCPO-08-03584*
Glass	✓	<2.5 Tonne.	*Permit No. NWCPO-08-03584*
Metals, Cables, Aluminium,	✓	2 Tonne.	Galway Metal Company LTD. IPA licence P1006-02
Plastics	✓	20 Tonne	*Permit No. NWCPO-08-03584*
Insulation Material	✓	<0.5 Tonne	*Permit No. NWCPO-08-03584*

17. Extent of Site:



Site Compound and Waste segregation area