Clare County Council

Proposed Inis Cealtra Visitor Experience
Co. Clare

# VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Document Control Sheet

| | | | | |
|---|---|---|---|---|
| **Client** | Clare County Council | | | |
| **Project Title** | Proposed Inis Cealtra Visitor Experience, Co. Clare | | | |
| **Document Title** | EIAR Volume II | | | |
| **Document No.** | 4069 | | | |
| **Document Comprises** | DCS | TOC | Chapters | Appendices |
| | 1 | 1 | 16 | 0 |
| **Prepared by** | MKR | **Checked by** | PG | |

| **Revision** | **Status** | **Issue Date** |
|---|---|---|
| A | ISSUED | 12.12.2024 |

# Volume II - Table of Contents


1. Introduction
2. Development Description
3. Alternatives Considered
4. Population & Human Health
5. Landscape & Visual
6. Material Assets: Traffic &Transport
7. Material Assets: Built Services & Waste
8. Land & Soils
9. Water and Hydrology
10. Biodiversity
11. Noise & Vibration
12. Air Quality and Climate
13. Cultural Heritage: Built Heritage
14. Cultural Heritage: Archaeological Heritage
15. Interactions of the Foregoing
16. Summary of Mitigation Measures

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 1
# INTRODUCTION

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


1 Introduction ..... 1-2
1.1 Purpose ..... 1-2
1.2 The Applicant ..... 1-3
1.3 Reference to Guidelines Relevant to Discipline ..... 1-3
1.4 Brief Project Description ..... 1-3
1.5 The Study Area ..... 1-4
1.5.1 Proposed Development Site ..... 1-4
1.5.2 Site Context ..... 1-6
1.5.3 Land Use Zoning Objective ..... 1-7
1.6 Requirement for EIAR ..... 1-9
1.7 Purpose of Environmental Impact Assessment ..... 1-12
1.8 Content of Environmental Impact Assessment Report ..... 1-13
1.9 Competency ..... 1-14
1.9.1 Author Information and Competency ..... 1-14
1.10 Format and Structure of the EIAR ..... 1-14
1.11 Scoping ..... 1-15
1.12 Scope of Cumulative Effects ..... 1-16
1.13 Impact Assessment Methodology ..... 1-19
1.14 Consultation ..... 1-21


# Table of Figures


Figure 1-1 Site Location (MHP Edit) ..... 1-4
Figure 1-2 Proposed Development Site Boundary & Surrounding Context (MHP Edit) ..... 1-5
Figure 1-3 Extract of Mountshannon Zoning Plan (Source: CCDP 2023-2029, Vol. 3C) ..... 1-8


# Table of Tables


Table 1.1 Site Areas ..... 1-5
Table 1.2 EIAR Chapters and Contributors ..... 1-15
Table 1.3 Impact Rating Terminology ..... 1-19

# 1 Introduction

## 1.1 Purpose

This Environmental Impact Assessment Report (EIAR) sets out the results of the environmental assessments which have been completed for the proposed development to inform the planning consent process.

The assessment has been completed as a statutory environment assessment. The environmental impact assessment process has been completed in line with Directive 2014/52/EU, based on the guidance presented in the Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA 2022).

EIA is a process for anticipating the effects on the environment caused by a development. The document produced as a result is termed the EIAR. Article 1(2)(g) of the 2014 Directive (2014/52/EU) states that:

> *"Environment impact assessment" means a process consisting of:*
>
> *(i) The preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2).*
>
> *(ii) The carrying out of consultations as referred to in Article 6 and, where relevant, Article 7.*
>
> *(iii) The examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7.*
>
> *(iv) The reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and*
>
> *(v) The integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a."*

The EIAR is a presentation of the potential environmental impacts of the proposed development with a focus on significant impacts.

Chapter 1 introduces the project and describes the scope and methodology of the EIA process. Information regarding stakeholder consultation is outlined and details of the environmental assessment team are provided.

## 1.2 The Applicant

This EIAR has been prepared on behalf of Clare County Council (*Comhairle Contae an Chláir*), the local authority for the administrative area of County Clare. The Council is responsible for leading the social, economic, physical, and rural development of the County.

## 1.3 Reference to Guidelines Relevant to Discipline

This chapter has been prepared having regard to the following guidelines:

- Guidelines on the Information to be Contained in Environmental Impact Statements (Environmental Protection Agency (EPA, May 2022).
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003).
- EU Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (EU, 2017).
- EU Environmental Impact Assessment of Projects: Guidance on Scoping (EU, 2017).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (OPR, 2018).

## 1.4 Brief Project Description

A detailed description of the proposed development is contained within Chapter 2 of this EIAR and the Planning Statement that accompanies the application. The statutory notice should also be referenced. Following is a summary description of the development.

The Inis Cealtra Visitor Experience is to be developed on Inis Cealtra (Holy Island) and on the mainland, in two principal locations within Mountshannon Village. The project is comprised of different elements as set out below.

**Inis Cealtra Island**

- Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island.
- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp.
- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.
- Provision of three staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

**Mainland – Mountshannon**

- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, together with coach parking and bicycle parking facilities.

- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building incorporating a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.
- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.

## 1.5 The Study Area

### 1.5.1 Proposed Development Site

The proposed development site comprises lands measuring approximately 20.3 hectares located at Inis Cealtra (Holy Island) in Lough Derg, and at two locations in Mountshannon Village, in the Townland of Mountshannon. The two sites in Mountshannon Village include: (1) lands within the curtilage of the 'Old Rectory' (a Protected Structure, RPS No. 464) and extending south to encompass a section of Harbour Road (L-4034) and Mountshannon Harbour car park, and (2) lands to the north of Aistear Park on the north side of Main Street (R352).

In general, the study areas are defined individually for each environmental topic, according to guidance and the geographic scope of the potential impacts or of the information required to assess those impacts. Details are provided by each discipline as part of the description of baseline conditions of the site.

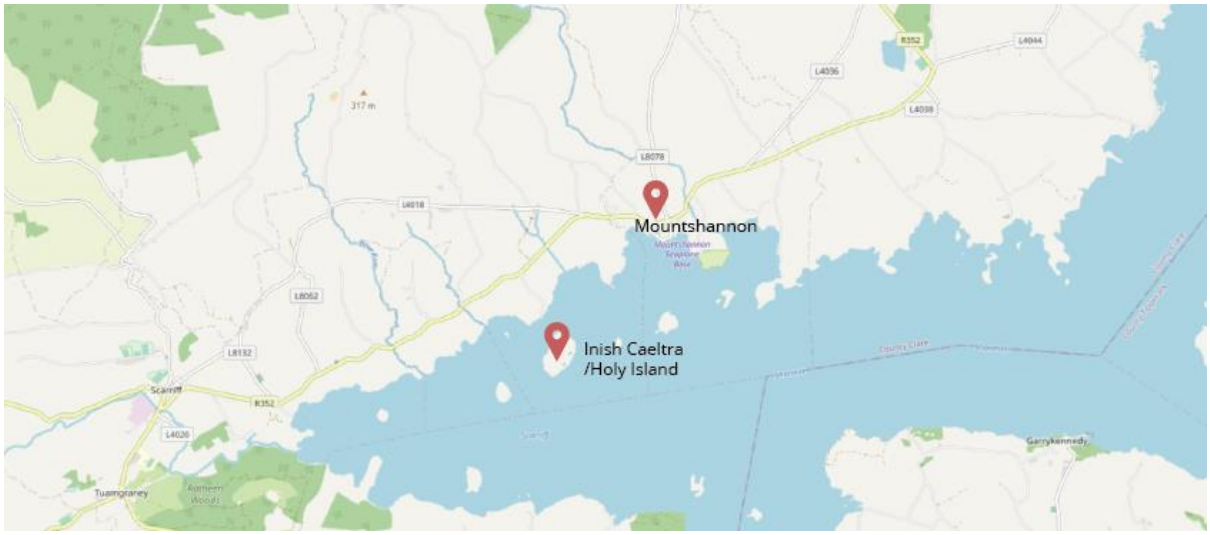



**Figure 1-1 Site Location (MHP Edit)**

The site area associated with the different project elements is as follows:

**Table 1.1 Site Areas**

| Project Component | Location | Area |
|---|---|---|
| New floating access jetty, 3 staff and welfare facility pods, mown grass pedestrian paths. | Inis Cealtra (Holy Island) | c. 18.1 hectares |
| Village Car Park | Mountshannon | 8,685 sq.m |
| Visitor Centre, reconfiguration of the harbour car park and public realm enhancements. | Mountshannon | 13,163 sq.m |

**Figure 1-2 Proposed Development Site Boundary & Surrounding Context (MHP Edit)**

Lough Derg, the third largest lake on the island of Ireland and the second largest in the Republic (130 sq. km) is one of the most scenic lakes in Ireland, set against the Slieve Bernagh Mountains to the west in Co. Clare and the Arra Mountains to the east in Co. Tipperary. It is within this scenic context that Inis Cealtra is located.

Inis Cealtra, also known as Holy Island, is an island off the western shore of Lough Derg located approximately 300 m from the mainland and about 2km southwest of Mountshannon village, only accessible via boat.

The island is uninhabited and was once a monastic settlement. On its eastern shore is an important group of ecclesiastic monuments comprising the following churches or ecclesiastic buildings: St Caimin's, St Michael's, St Brigid's, St Mary's, Tempall na bhFear nGonta, a shrine (known as the Confessional) and substantial remains of a round tower. A stone monument known as the Bargaining Stone, a Penetential Station, lies near the Lady Well. There are numerous bullaun stones, mounds of stones and earth associated with pilgrim patterns, earthworks and a children's burial ground or 'cillin'. There are 189 individual sites or stone features identified on the island and entered on the Record of Monuments and Places.

Inis Cealtra is owned by Clare County Council, which acquired the island in 2015. The Office of Public Works owns and manages the island's monuments, allowing access to them under management structures run by Clare County Council.

Within Mountshannon on the mainland, the Village Car Park site is located to the north of Aistear Park, on the northern side of Main Street (the Regional Road R352) which connects Ennis to Portumna and runs to the west of Lough Derg**.** It is a greenfield site, lined by trees and hedgerows along much of its boundaries, with an old field bank composed of stone and earth extending north through the central part of the site.

The 'Old Rectory' Site, also in Mountshannon Village, encompasses the Old Rectory building, a protected structure (RPS No. 464), outbuildings to the north-east of the building, as well as surrounding open space and a landscaped garden. The site is relatively flat with a slight slope towards the north. The site is bound to the north and east by residential development, Mountshannon Court and Ard na hAbhainn. A public park of approx.1.8 hectares (4.5 acres), Aistear Park, lies to the immediate west.

Mountshannon Harbour provides a range of tourist and recreational activities, including harbour flights over Lough Derg, tours of Holy Island from the pier, opportunities to see White Tailed Eagles from the Bird Hide and a blue flag beach for swimming. It is occupied by an existing car park with 46 parking spaces and the adjoining marina area and related facilities.

### 1.5.2 Site Context

Lough Derg is the largest lake of the River Shannon with c. 40 km long and lies within three counties: Tipperary, Galway and Clare. Waterways activity is the core attraction of the Lough Derg environs attracting many people to the area. The lake is a designated Special Protection Area (SPA) under the EU Birds Directive (2009/147/EC) of special conservation interest for wetland and waterbirds and a Proposed Natural Habitat (pNHA) due to its significance for wildlife and habitats.

Inis Cealtra (Holy Island) is one of the most famous monastic sites from the ecclesiastical period in Ireland. The uninhabited island is located at the mouth of Scarriff Bay on Lough Derg c. 2km from Mountshannon. The monastery was founded by St. Caiman in the sixth-seventh century and represents a special feature on the identity of the inland settlements, in special Mountshannon,

Scarriff, Tuamgraney and Whitegate. Holy Island attractions include a round tower, monastic cell, ruins of six churches, high crosses, holly well and unique graveyard. The island is accessible via boat or paddle. The burial site is still in use for the local community, and tourists are attracted to the history and walking trails in the island.

Mountshannon is identified as a Tier 1 Large Village in the Clare County Development Plan (CCDP) 2023 – 2029. The wider area surrounding the project sites is a mosaic of greenfield sites, single dwellings, multi-residential developments, and commercial developments which make up the village of Mountshannon. Aistear Park sits between the Main Street and the harbour. It features a maze, a children's playground, outdoor exercise machines, seating and picnic area, together with an outdoor library called the 'Wee Library'. A tourist information office operates in the centre of the park during the summer months.

### 1.5.3 Land Use Zoning Objective

The Clare County Development Plan (CCDP) 2023-2029 designates Inis Cealtra for tourism development, identifying the island as a major opportunity to grow the tourism industry and encourage visitors to East Clare. The plan promotes Inis Cealtra as a tourism destination and supports the sustainable expansion of tourist facilities on the island, as set out in policy objective CDP9.27:

> *It is an objective of Clare County Council:*
>
> *a) To identify the tourism function of the county's islands and address the functional, planning and environmental impacts of additional visitors in order to facilitate increased access to the islands in a sensitive and appropriate manner;*
>
> *...., and*
>
> *e) To promote the sustainable tourism development and management of Inis Cealtra (Holy Island) as part of the overall Visitor Management and Sustainable Tourism Development Plan.*

In addition, the settlement plan for Mountshannon in Volume 3c of the CCDP 2023-2029 contains objectives which promote tourism development on Inis Cealtra as follows:

> *To encourage a sustainable tourism industry based on the amenities of Lough Derg and Inis Cealtra (Holy Island) and the White Tailed Eagle* (General Objective)
>
> *...*
>
> *To work with relevant stakeholders to support the implementation of the Visitor Management and Sustainable Tourism Development Plan for Inis Cealtra (Holy Island),including the development of a visitor centre in the village (and associated facilities)* (Tourism Objective)

Inis Cealtra is located outside the settlement boundary and is not zoned in the CCDP 2023-2029. Notwithstanding, the island is designated for the development of tourist facilities, reflected in the explicit policy support for sustainable tourism development, indicating that the principle of tourism development is acceptable on the subject lands, subject to the range of normal planning and environmental considerations.

Two land use zoning designations apply to the new Village Car Park site. The southern portion of the site is zoned Mixed Use. This zoning designation is described in the CCDP 2023-2029 as follows:

> *The use of land for 'mixed use' developments shall include the use of land for a range of uses, making provision, where appropriate, for primary and secondary uses e.g. commercial/retail development as the primary use with residential development as a secondary use. Secondary uses will be considered by the local authority having regard to the particular character of the given area.*
>
> *On lands that have been zoned 'mixed-use' in or near town or village centres, a diverse range of day and evening uses is encouraged and an over-concentration of any one use will not normally be permitted*.

The northern part of the lands is zoned Utilities (UT1) in the CCDP 2023-2029, with the following zoning objective:

> *UT1 is land zoned as utilities and would facilitate the provision of a car park/bus park to serve the Inis Cealtra Visitor Experience. Access should be provided for in a location which minimises the flow of traffic through/along the Main Street of the village. Any such development and areas of car parking must ensure pedestrian permeability and connectivity with the village core and the Inis Cealtra Visitor Centre.*

The zoning matrix in the development plan confirms that a car park is acceptable in principle on lands zoned Mixed Use, and the UT1 zoning designation aims to facilitate a car park to serve the Inis Cealtra Visitor Experience. The development of a car park at this site is therefore permitted in principle.

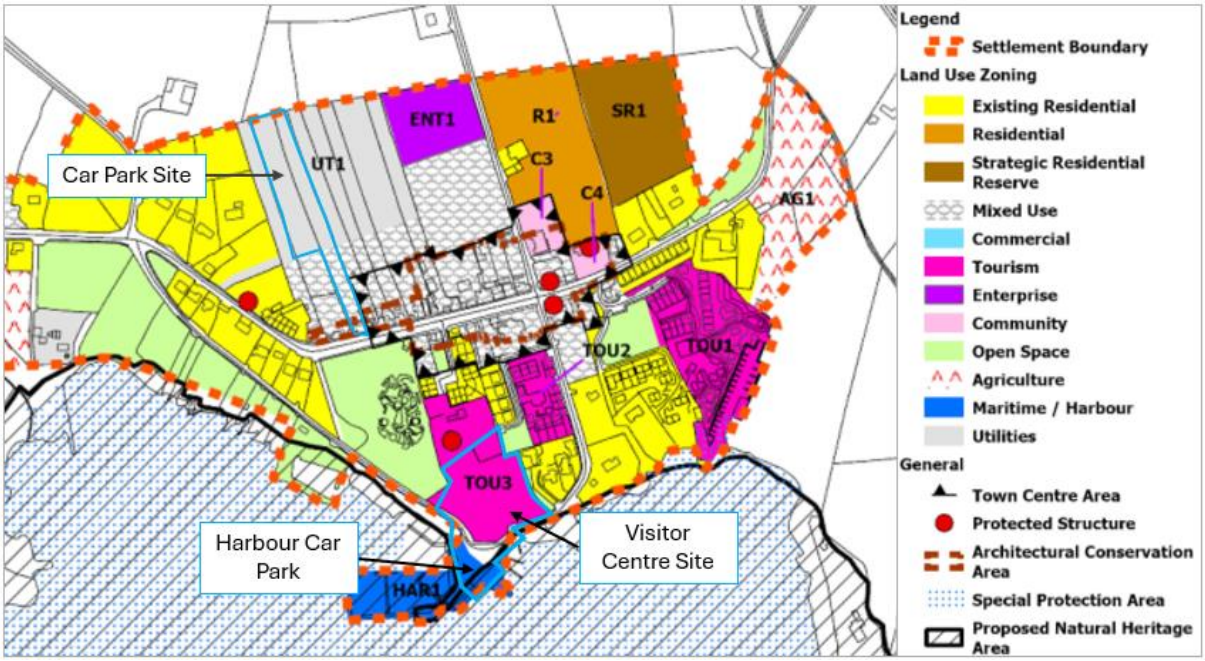



**Figure 1-3 Extract of Mountshannon Zoning Plan (Source: CCDP 2023-2029, Vol. 3C)**

The new Visitor Centre is proposed to be situated within the 'Old Rectory' site which is zoned for Tourism in accordance with the CCDP 2023-2029. The Tourism zoning objective is stated as:

> *Land zoned for tourism development shall be used for a range of structures and activities which are primarily designed to facilitate tourism development and where uses are mainly directed at servicing tourists/holiday makers and visiting members of the public.*

It is considered the Visitor Centre incorporating a series of areas for interpretation, exhibition, and education, together with supporting spaces and ancillary café, falls within the use class of Tourism Complex which is shown as acceptable in principle in the CCDP zoning matrix.

Mountshannon Harbour including the car park area is zoned Maritime/Harbour (HAR1) in the CCDP 2023-2029, with the following zoning objective:

> *HAR1 incorporates the existing marina area and associated facilities and adjoining carpark area. Development compatible with the existing use of the lands and associated lakeshore for marina/harbour/recreational uses will be favourably considered in this area subject to appropriate design and environmental criteria.*

The land use zoning matrix identifies a car park as an Open for Consideration use in this zone. The proposed reconfiguration of the car parking spaces and circulation area, together with public realm enhancements, is therefore acceptable in principle, being directly compatible with the existing use of the lands and adjoining maritime uses.

This proposed tourism-led development is consistent with the specific land use zoning objectives for the subject lands and tourism-related objectives in the development plan which encourage sustainable tourism development and management of Inis Cealtra. The principle of the proposed development is therefore considered acceptable, both at Inis Cealtra (Holy Island) and on the mainland in Mountshannon.

## 1.6 Requirement for EIAR

Environmental Impact Assessment (EIA) requirements derive from EU Directives. Council Directive 2014/52/EU amended Directive 2011/92/EU and is transposed into Irish Law by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

Proposed development which falls within one of the categories of development specified in Schedule 5 of the Planning and Development Regulations 2001, as amended, which equals or exceeds, a limit, quantity, or threshold prescribed for that class of development must be accompanied by an EIAR.

This EIAR has been prepared in accordance with the aforementioned legislative provisions and the following guidelines, among others, as specified in the various specialist EIAR chapters:

- Department of Housing, Planning and Local Government (DHPLG) (2018). Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.
- DHPLG (2017). Circular letter PL 1/2017 – Advice on Administrative Provisions in Advance of Transposition.

- European Commission (EC) (1999). Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.
- EC (2013). Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment.
- EC (2017). Environmental Impact Assessment of Projects. Guidance on Scoping.
- EC (2017). Environmental Impact Assessment of Projects. Guidance on the preparation of Environmental Impact Assessment Report.
- EPA (2015). Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements.
- EPA (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports.

The Planning and Development Regulations 2001, as amended (hereafter referred to as the Regulations) identify:

- the development classes which should be subject to mandatory EIA (Part 1 of Schedule 5);
- the classes of development which should be subject to EIA where they exceed a certain threshold of scale (Part 2 of Schedule 5);
- the classes of development which should be subject to EIA (Part 2 of Schedule 5) where the planning authority or the Board determines that they would be likely to have significant effects on the environment due to the characteristics of the proposed development, the location of the site, or the characteristics of the potential impacts (Part 2, Schedule 7).

The proposed development does not fall within the development classes set out in Part 1 of Schedule 5 of the Regulations.

It is considered the proposed development falls within the category of 'Theme parks' as set out in Class 12 (e) within Part 2 of Schedule 5 of the Regulations, being a 'Tourism and Leisure' project, which provides that a mandatory EIA must be carried out for projects including,

> *"12. Tourism and Leisure*
>
> *(e)* ***Theme parks*** *occupying an area greater than 5 hectares."*

The development class 'theme parks' has been transposed from Annex II (12(e) of the EIA Directive without defining or describing this development type. However, recognising the broad scope and purpose of the EIA Directive, EC Guidance[1] regarding the interpretation of this project type states:

> *(i) The theme or objective of the park is not defined by the EIA Directive.* ***Parks falling within this project category could be developed, for example, for recreational, educational or informative purposes.*** *However, it should be noted that the project category 'theme park'*

[1] European Commission: Directorate-General for Environment, *Interpretation of definitions of project categories of annex I and II of the EIA Directive*, Publications Office of the European Union, 2024, **https://data.europa.eu/doi/10.2779/678985**

*is listed in Annex II (12) under the heading 'Tourism and leisure'. For instance, a park that has a specific theme or attraction or several attractions, like an amusement park, should be considered a theme park. Areas planned for a leisure attraction based on or related to a particular subject should also be covered by this project category. For example, water parks and zoos79 should be considered to fall under this project category.*

The Inis Cealtra Visitor Experience is a tourism project which is being developed for recreational and educational or informative purposes. Therefore, having considered the characteristics of the proposed development, the broad purpose of the EIA Directive and its overall objective, which is to ensure the protection of the environment and quality of life, together with the relevant guidance, it was determined that the threshold relating to theme parks should be applied.

The proposed development site measures approximately 20.3 hectares, which is in excess of the 5 hectares set aside for theme parks and, therefore, triggers the threshold for a mandatory EIA.

Notwithstanding that 'Tourism and Leisure' was determined to be the applicable project category for the Inis Cealtra Visitor Experience, the project category 'Infrastructure projects' in Part 2 of Schedule 5 may also be of relevance.

*10. Infrastructure projects* – [Part b]

*(i) Construction of more than 500 dwellings*

*(ii) Construction of a car-park providing more than 400 spaces, other than a car-park provided as part of, and incidental to the primary purpose of, a development.*

*(iii) Construction of a shopping centre with a gross floor space exceeding 10,000 square metres.*

(iv) ***Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.*** (emp. added)

*(In this paragraph, "business district" means a district within a city or town in which the predominant land use is retail or commercial use.)*

The project does not involve development for residential purposes, a car park with more than 400 spaces, or a shopping centre. However, it could potentially be classed as 'Urban development' given the individual project elements which include, *inter alia*, a visitor centre, village car park, harbour car park and public realm works. Furthermore, despite its wider rural setting, Mountshannon is a built-up area designated as a Tier 1 Large Village in the CCDP.

In contrast, the balance of the application lands on Inis Cealtra are unzoned and effectively undeveloped. Development on the island (albeit limited) is proposed as part of a wider project with supporting infrastructure in Mountshannon that may be described as 'Urban development'. For this reason, and again having regard to the broad scope and purpose of the EIA Directive, the category 'Urban development' may be considered relevant to this project even though the island lands are not 'urban' in character.

In considering the thresholds that would apply, it is noted Inis Cealtra makes up most of the lands within the application site boundary. The island is not a 'business district', nor could the lands be considered a 'built-up area', so the 20-hectare threshold that applies to lands 'elsewhere' may be

deemed applicable. Alternatively, a more conservative threshold of 10 hectares could be applied having regard to the extent of works associated with the project that are proposed within the 'built-up area' of Mountshannon.

Irrespective of which threshold is applied, if it is accepted that the proposed development falls within the scope of 'Urban development', the application area measures 20.3 hectares in area, requiring mandatory EIA.

In conclusion, the project triggers the requirement for mandatory EIA based on the area thresholds because,

It is a '*Tourism and Leisure project'* and the proposed development falls within the development type 'theme park', subject to a threshold of 5 hectares;

or,

It is an '*Infrastructure project'* classed as 'Urban development', subject to a threshold of 10 hectares or 20 hectares depending on the site characteristics.

In all cases, the project requires an EIAR to accompany the planning application for permission.

## 1.7 Purpose of Environmental Impact Assessment

The objective of the Directive (Directive 2011/92/EU), as amended by Directive 2014/52/EU, is to ensure a high level of protection of the environment and human health, through the establishment of minimum requirements for environmental impact assessment (EIA), before development consent being given, of public and private developments that are likely to have significant effects on the environment.

The 2014 Directive, for the first time, provides a definition of EIA and this is now defined by section 171A of the Planning and Development Act, 2000 (as inserted by Regulation 16 of the 2018 Regulations).

It is defined as a process consisting of:

a) the preparation of an EIAR by the developer;

b) the carrying out of consultations with the public, prescribed bodies (and, where relevant, any affected Member States);

c) the examination by the competent authority of the EIAR, any supplementary information provided, where necessary, by the developer and relevant information received through the consultation process;

d) the reasoned conclusion of the competent authority on the significant effects of the project on the environment; and

e) the integration of the competent authority's reasoned conclusion into any development consent decision.

The definition of EIA thus provides for a clear distinction between the process of environmental impact assessment to be carried out by the competent authority and the preparation by the developer of an EIAR.

Section 2 of the 2000 Act has been amended to define an EIAR as "*a report of the effects, if any, which proposed development, if carried out, would have on the environment and shall include the information specified in Annex IV of the Environmental Impact Assessment Directive*".

## 1.8 Content of Environmental Impact Assessment Report

The EIAR entails a systematic analysis and assessment of the potential environmental effects of a proposed development on its receiving environment. Article 3(1) of the amended Directive prescribes a range of environmental topics that must be addressed in the EIAR, as follows:

> *The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:*
>
> *(a) population and human health;*
>
> *(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
>
> *(c) land, soil, water, air and climate;*
>
> *(d) material assets, cultural heritage and the landscape;*
>
> *(e) the interaction between the factors referred to in points (a) to (d).*

In accordance with Article 5 (1) of the amended Directive, the information to be provided in the EIAR shall include at least:

> *(a) a description of the project comprising information on the site, design, size and other relevant features of the project;*
>
> *(b) a description of the likely significant effects of the project on the environment;*
>
> *(c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*
>
> *(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;*
>
> *(e) a non-technical summary of the information referred to in points (a) to (d); and*
>
> *(f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.*

This EIAR has been prepared based on the requirements in Article 5 (1), as set out above. As is required by Annex IV of the 2014 Directive, this EIAR addresses matters including proposed demolition works,

risks to human health, major accidents/disasters, biodiversity, climate change and cumulative effects with other existing and/or approved projects.

## 1.9 Competency

It is a requirement that the EIAR must be prepared by competent experts. For the preparation of this EIAR, the Applicant engaged McCutcheon Halley Chartered Planning Consultants to direct and coordinate the preparation of the EIAR and a team of qualified specialists were engaged to prepare individual chapters, the consultant firms and lead authors are listed in **Table 1.2**. Details of competency, qualifications, and experience of the lead author of each discipline is outlined in the individual chapters.

Various environmental specialists were commissioned to complete the specialist chapters of the EIAR, as required by Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment:

> *"Experts involved in the preparation of [EIARs] should be qualified and competent. Sufficient expertise, in the relevant field of the project concerned, is required for the purpose of its examination by the competent authorities in order to ensure that the information provided by the developer is complete and of a high level of quality".*

### 1.9.1 Author Information and Competency

This chapter was prepared by Martina Keenan Rivero of McCutcheon Halley Chartered Planning Consultants.

Martina holds a BSc (Hons) in Spatial Planning from Technological University Dublin and an Advanced Diploma in Planning and Environmental Law from Kings Inns. She has 10 years of professional experience, working in NSW, Australia with a Local Authority and as a planning and environmental consultant in Ireland. Martina has prepared AA screening reports, Environmental Impact Assessment screening reports and coordinated and contributed to Environmental Impact Assessment Reports for a range of development projects.

## 1.10 Format and Structure of the EIAR

This EIAR is prepared according to the 'Grouped Format Structure' as described in the Guidelines on information to be contained in Environmental Impact Statements (EPA, 2022). This means that each topic is considered as a separate section. The advantages of using this format are that it is easy to investigate a single topic and it facilitates easy cross-reference to specialist studies.

The EIAR is subdivided into 3 no. volumes as follows:

- **Volume I** Non-Technical Summary;
- **Volume II** Environmental Impact Assessment Report; and
- **Volume III** Appendices to Environmental Impact Assessment Report.

**Volume II** is presented as 16 no. chapters, as outlined in **Table 1.2.**

**Table 1.2 EIAR Chapters and Contributors**

| Chapter | Aspect | Consultant | Lead Author |
|---|---|---|---|
| 1 | Introduction | McCutcheon Halley Planning Consultants | Martina Keenan Rivero |
| 2 | Development Description | McCutcheon Halley Planning Consultants | Martina Keenan Rivero |
| 3 | Alternatives Considered | McCutcheon Halley Planning Consultants | Martina Keenan Rivero |
| 4 | Population & Human Health | McCutcheon Halley Planning Consultants | Martina Keenan Rivero |
| 5 | Landscape & Visual | Mitchell + Associates | Feargus McGarvey |
| 6 | Material Assets: Traffic & Transport | Malachy Walsh & Partners | Seamus Quigley |
| 7 | Material Assets: Built Services & Waste | Malachy Walsh & Partners | Aileen O'Connor |
| 8 | Land & Soils | Malachy Walsh & Partners | Sally Kelly |
| 9 | Water & Hydrology | Malachy Walsh & Partners | Claire Boylan |
| 10 | Biodiversity | Malachy Walsh & Partners | Salona Reddy |
| 11 | Noise & Vibration | Malachy Walsh & Partners | Kieran Barry |
| 12 | Air Quality & Climate | Malachy Walsh & Partners | Claire Boylan |
| 13 | Cultural Heritage – Built Heritage | Archaeological Projects Ltd | Claire Walsh |
| 14 | Cultural Heritage – Archaeological Heritage | Archaeological Projects Ltd | Claire Walsh |
| 15 | Interactions of the Foregoing | McCutcheon Halley Planning Consultants | Martina Keenan Rivero |
| 16 | Summary of Mitigation Measures | McCutcheon Halley Planning Consultants | Martina Keenan Rivero |

In addition, contributors have had regard to other relevant discipline-specific guidelines, these are noted in individual chapters of the EIAR.

## 1.11 Scoping

Scoping is the process of identifying the information to be contained in an EIAR and the methodology to be used in gathering and assessing that information. The scope of this EIAR is informed by the requirements of Directive 2014/52/EU and the transposing Regulations, together with the Guidelines set out above. Applicants are not required to seek a formal scoping opinion.

The scope of individual assessments is informed by discipline specific guidelines and, where this is the case, they are referenced in each chapter.

Scoping requires consideration of the nature and likely scale of the potential environmental impacts likely to arise from a proposed development or project. It is an iterative process that is ongoing

throughout the development of the EIAR. The following topics, which include those stipulated in the amended Directive, have been scoped in for this assessment.

- Population and human health
- Landscape and visual
- Traffic and transportation
- Built Services
- Waste
- Land & Soils
- Water & Hydrology
- Biodiversity
- Noise and vibration
- Air quality
- Climate
- Cultural heritage, archaeology and built heritage;
- Interactions between the above-listed topics.

## 1.12 Scope of Cumulative Effects

Directive 2014/52/EU substituted a new Annex IV into Directive 2011/92/EU. Annex IV of the EIA Directive is to be read in conjunction with article 5(1) and sets out the information to be included in an EIAR. Annex IV was transposed into national law via article 97 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (the "2018 Regulations") which substituted a new Schedule 6 into the Planning and Development Regulations 2000, as amended.

The Directive requires that the EIAR describes the cumulation of effects with other existing and/or approved projects.

Cumulative effects may arise from:

*"- The interaction between the various impacts within a single project;*

*- The interaction between all the differing existing and / or approved projects in the same areas as the proposed project."* [2]

In August 2018, the Department of Housing, Planning and Local Government issued Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment. The Guidelines summarise "cumulative effects" in the following way at page 40;

> *Effects are not to be considered in isolation but cumulatively i.e., when they are added to other effects. A single effect on its own may not be significant in terms of impact on the environment but, when considered together with other effects, may have a significant impact on the environment. Also, a single effect which may, on its own, have a significant effect, may have a reduced and insignificant impact when combined with other effects.*

[2] Department of Housing, Planning and Local Government, "Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment" (August 2018), page 40.

Paragraph 2(e)(i)(V) of Schedule 6 (paragraph 5(e) of Annex IV) provides as follows;

> *the cumulation of effects with other* ***existing or approved developments, or both****, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.* (emphasis added)

Accordingly, each chapter of this EIAR assesses the cumulative effect of permitted developments in combination with the proposed development. A list of projects considered in the cumulative assessment is included in **Appendix 1.1**.

Individually, each specialist consultant has reviewed under construction, permitted, and or under consideration development in the local area, and using their expertise they have identified projects relevant to their discipline that may interact to produce a cumulative effect. The detail of the identified projects and plans is set out within each specialist chapter of this EIAR.

While the Directive does not require a cumulative assessment of future proposals where a planning application has not been lodged, recognising the broad scope and purpose of the EIA Directive, regard is had to the judgement of *Fitzpatrick v An Bord Pleanála* [2019] IESC 23, henceforth referred to as the 'Apple Case'.

The Supreme Court in the Apple Case held that:

1) An EIA must contain an assessment of the cumulative effects of future developments that form an "integral part" of the development applied for (i.e., where there is a "functional or legal interdependence" between the development applied for and the envisaged future development).

Cumulative effects are not limited to projects, and it is necessary to also consider relevant Plans. According to the Environment Protection Agency (2020), in Ireland, key cumulative effects – where environmental receptors are at, or near, their thresholds or their capacity to assimilate more change – include climate change; water management, including flood risk management; air quality; and biodiversity, including peatlands and wetlands. For the purpose of this EIAR, the following Plans have been considered in relation to potential cumulative effects:

- **Project Ireland 2040** - comprises the National Planning Framework (NPF), which sets the overarching spatial strategy that will shape the future growth and development of Ireland to the year 2040, along with the National Development Plan (NDP), which sets out the ten year investment strategy. As a strategic development framework, Project Ireland 2040 sets the long-term context for our country's physical development and associated progress in social, economic and environmental terms, in a national and European context. The NPF sets the context for the Regional Spatial Economic Strategies (RSES) through 10 National Strategic Outcomes (NSO's) including Strengthened Rural Economies and Communities, and Enhanced Amenities and Heritage

- **Regional Spatial and Economic Strategy (RSES) for the Southern Region** - the RSES provides a long-term, strategic development framework for the future physical, economic and social

development of the Southern Region. The RSES primarily aims to support the delivery of the programme for change set out in Project Ireland 2040 and recognises the strategic role played by all areas, urban and rural, in achieving the set regional and national targets and objectives.

- **Clare County Development Plan 2023-2029** - sets out an overall strategy for the proper planning and sustainable development of the functional area of Clare County Council. The Plan has a key role in protecting the environment, heritage, and amenities of the county and in mitigating against the impacts of climate change. It includes policies and objectives for all of the aspects included in this EIAR. Accordingly, each chapter of the EIAR has been prepared having regard to the cumulative effects of the proposed development together with the Development Plan policies and objectives.

- **Inis Cealtra Visitor Management and Sustainable Tourism Development Plan** - provides a series of recommendations and objectives intended to inform the future visitor management and tourism development of Inis Cealtra. The over-arching aims are to strike a balance between attracting increased visitors to Inis Cealtra while protecting the natural and built heritage of the island, the unique ambience and character of the island and maximising socio-economic benefits in the area from increased visitor numbers to support a sustainable rural economy.

- **The Climate Action Plan 2024** - climate change is the ultimate cumulative effect, nationally and internationally. The Climate Action Plan provides a roadmap of actions which will ultimately lead Ireland to meeting its national climate objective of pursuing and achieving, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy. It aligns with the legally binding economy-wide carbon budgets and sectoral emissions ceilings that were agreed by Government in July 2022.

- **National Biodiversity Action Plan 2023-2030** - The Plan sets out actions for a "Whole-of-Government, Whole-of Society" approach to the governance and conservation of biodiversity. It has been developed to align with EU and International Biodiversity strategies and policies, as well as National plans and policies focussed on environmental protection and climate action that influence biodiversity.

- **Heritage Ireland 2030** - is Ireland's national heritage plan. It presents an overarching framework for the protection of Ireland's heritage, supported by an Action Plan with over 150 actions aimed at implementing the plan's vision and objectives. Heritage Ireland 2030 encompasses all aspects of heritage, building critical connections between natural heritage and biodiversity, and between built and archaeological heritage, both tangible and intangible. The framework embraces the concept of cultural heritage and recognises the importance of heritage for its intrinsic value, for economic development, tourism and innovation and the role it plays in individual and societal well-being.

- **EU Habitats Directive** - provides the legislative framework for the protection of habitats and species across Europe through the establishment of a network of designated conservation areas known as the Natura 2000 network. The Natura 2000 network includes sites designated as Special Areas of Conservation (SACs), under the EU Habitats Directive and Special Protection Areas (SPAs) designated under the EU Birds Directive.

- **EU Birds Directive** - requires that important concentrations of migratory waterfowl and internationally important wetlands be protected in the same way as Annex 1 and Annex II habitats and species under the Habitats Directive.

- **Standards in the EU Air Quality Directive and 'daughter' directives** - establish the levels of air pollutants that have no significant impacts on human health or the environment.

In addition, each of the specialist chapters (4-14) considers the cumulative effects of projects and plans relevant to the zone of influence and discipline-specific factors.

## 1.13 Impact Assessment Methodology

Each chapter of this EIAR assesses the direct, indirect, cumulative, and residual impact of the proposed development for both the construction and operational stage of the proposed development.

The impact assessment methodology is detailed in respect of the various environmental topics in the respective chapters herein. The assessment of impacts is based on the source-pathway-receptor model, which dictates that, for an environmental impact to occur, there must be a source, a receptor which is sensitive to the effect in question, and a pathway by which the effect can reach the receptor. Unless otherwise stated, the criteria for effect/impact characterisation are as per the EPA guidelines (as set out in Table 1.3). The significance of an impact is determined through a comparison of the character of the predicted effect to the sensitivity of the environment/receptor in question.

**Table 1.3 Impact Rating Terminology**

| **Quality of Effect** | |
|---|---|
| **Positive** | A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of and ecosystem, or by removing nuisances or improving amenities. |
| **Neutral** | No effects of effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error. |
| **Negative/Adverse Effects** | A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance). |
| **Significance of Effect** | |
| **Imperceptible** | An effect capable of measurement but without significant consequences. |
| **Not Significant** | An effect which causes noticeable changes in the character of the environment but without significant consequences |
| **Slight Effects** | An effect which causes noticeable changes in the character of the environment without affecting its sensitivities. |

| | |
|---|---|
| **Moderate Effects** | An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. |
| **Significant Effects** | An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment. |
| **Very Significant** | An effect which, by its character, magnitude, duration, or intensity significantly alters most of a sensitive aspect of the environment. |
| **Profound Effects** | An effect which obliterates sensitive characteristics. |
| **Extent and Context of Effects** | |
| **Extent** | Describe the size of the area, the number of sites, and the proportion of a population affected by an effect. |
| **Context** | Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?). |
| **Probability of Effects** | |
| **Likely** | The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented. |
| **Unlikely** | The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented. |
| **Duration of Effects** | |
| **Momentary Effects** | Seconds to minutes |
| **Brief Effects** | Less than 1 day |
| **Temporary Effects** | Less than 1 year |
| **Short-term Effects** | 1-7 years |
| **Medium-term Effects** | 7-15 years |
| **Long-term Effects** | 15-60 years |
| **Permanent Effects** | Over 60 years |
| **Reversible Effects** | Effects that can be undone, for example through remediation or restoration. |
| **Frequency of Effects** | Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually). |
| **Types of Effects** | |
| **Indirect Effects** | Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway. |
| **Cumulative Effects** | The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects. |
| **'Do-nothing Effects'** | The environment as it would be in the future should the subject project not be carried out. |
| **'Worst Case' Effects** | The effects arising from a project in the case where mitigation measures substantially fail. |
| **Indeterminable Effects** | When the full consequences of a change in the environment cannot be described. |
| **Irreversible Effects** | When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost. |
| **Residual Effects** | The degree of environmental change that will occur after the proposed mitigation measures have taken effect. |
| **Synergistic Effects** | Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of SOx and NOx to produce smog). |

## 1.14 Consultation

The application documents for this proposed development, including the EIAR and other supporting information, are available at Have Your Say on the Clare County Council website.

Additionally, prior to lodging this application, the required information has been issued for the Department of Housing, Planning, and Local Government's EIA Portal. This tool informs the public in a timely manner of applications accompanied by an EIAR.

During the preparation of the application, Clare County Council and its representatives consulted with a number of statutory authorities and stakeholders having an interest in this project, including:

- The **Office of Public Works** (OPW) with responsibility for the conservation and presentation of National Monuments on the island.
- The **National Monuments Service** (NMS) in relation to the protection of the island's archaeological heritage.
- **Waterways Ireland** (WWI) as the navigation authority for Lough Derg and the Shannon, provided technical expertise as required.
- **National Parks and Wildlife Service** (NPWS) with a key role in the protection of Ireland's biodiversity, working to secure the conservation of ecosystems, flora and fauna in Ireland.
- **Uisce Eireann,** Ireland's national regulated water utility is responsible for the delivery of water and wastewater services in Ireland.
- **Fáilte Ireland** as the National Tourism Development Authority seeks to support the long-term sustainable growth in the economic, social, cultural and environmental contribution of tourism to Ireland.

In addition, a public meeting was held in Mountshannon in July 2023 to inform members of the local community about the project, including the emerging development design and anticipated timeframe for preparation and submission of the application to An Bord Pleanála.

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 2
# DEVELOPMENT DESCRIPTION

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


2 Development Description ..... 2-3
2.1 Introduction ..... 2-3
2.2 Expertise and Qualifications ..... 2-3
2.3 Development Objectives ..... 2-3
2.4 Proposed Development ..... 2-4
2.4.1 Development Overview ..... 2-4
2.4.2 Inis Cealtra Island ..... 2-5
2.4.3 Village Car Park ..... 2-13
2.4.4 Visitor Centre ..... 2-17
2.4.5 Mountshannon Harbour Car Park & Public Realm ..... 2-25
2.4.6 Operating Hours ..... 2-26
2.4.7 Staffing ..... 2-26
2.4.8 Visitor Numbers ..... 2-27
2.4.9 Management Structures ..... 2-29
2.5 Demolition and Construction Phase ..... 2-30
2.5.1 Phasing ..... 2-30
2.5.2 Programme ..... 2-31
2.5.3 Construction Hours ..... 2-32
2.5.4 Construction Personnel ..... 2-32
2.5.5 Construction Traffic ..... 2-33
2.5.6 Construction Waste ..... 2-35
2.5.7 Earthworks ..... 2-35
2.6 Health and Safety ..... 2-36
2.6.1 Construction Phase ..... 2-36
2.7 Monitoring ..... 2-37
2.7.1 Community Liaison ..... 2-37
2.7.2 Integrated Pest Management ..... 2-37
2.7.3 Environmental ..... 2-37
2.8 Commissioning ..... 2-37
2.9 Decommissioning ..... 2-38

# Table of Figures

Figure 2-1 Existing Visitor Shelter to be Demolished....2-6
Figure 2-2 Existing Navigation Channels to be Used by Boats Travelling Between Mountshannon and Inis Cealtra....2-7
Figure 2-3 Island Landscape Masterplan showing Proposed Network of Paths....2-9
Figure 2-4 Partial Site Layout showing Pod Locations in North-West of Island....2-10
Figure 2-5 Contextual Elevation of Proposed Weather Shelter and Staff Pod from south....2-11
Figure 2-6 Indicative Image of Proposed Dry Toilet System....2-12
Figure 2-7 Extract from Demolition Plan showing extent of central wall/mound to be removed hatched in yellow (Left) and Photo showing composition of part of the wall/mound (Right)....2-13
Figure 2-8 Photo of existing wall and gate at frontage of Village Car Park Site (Top) and Extract from Demolition Plan showing extent of existing wall and gate to be removed (Bottom)....2-14
Figure 2-9 Google street view of existing wall along the south-west boundary of the Old Rectory site at its frontage to Harbour Road (Top) and Extract of Demolition Plan showing the location in the south part of the Old Rectory site where sections of the wall are proposed to be removed (Bottom)....2-17
Figure 2-10 Extract from Proposed Site Plan for Visitor Centre....2-19
Figure 2-11 Extract of Proposed Ground Floor Plan....2-20
Figure 2-12 Extract of Proposed First Floor Plan....2-21
Figure 2-13 Front Elevation of Visitor Centre....2-22

# Table of Tables

Table 2-1 Inis Cealtra Visitor Experience Staff Modelling....2-26
Table 2-2 Phase 1 Visitor Number Modelling....2-28
Table 2-3 Phase 2 Visitor Number Modelling....2-28
Table 2-4 Phases of Development....2-31

# 2 Development Description

## 2.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) sets out details of the proposed development, including details regarding the construction and operational phases of the project. The chapter was prepared in conjunction with the relevant members of the Design Team, and it should be read in conjunction with the submitted drawings together with supporting reports.

## 2.2 Expertise and Qualifications

This chapter was prepared by Martina Keenan Rivero of McCutcheon Halley Chartered Planning Consultants. Martina holds a BSc (Hons) in Spatial Planning from Technological University Dublin and an Advanced Diploma in Planning and Environmental Law from Kings Inns. She has 10 years of professional experience, working in NSW, Australia with a Local Authority and as a planning and environmental consultant in Ireland. Martina has prepared AA screening reports, Environmental Impact Assessment screening reports and coordinated and contributed to Environmental Impact Assessment Reports for a range of development projects. Relevant project experience includes large housing developments, mixed-use schemes, industrial and commercial projects.

Martina was involved in the coordination and preparation of EIARs to accompany planning applications for the following projects that received permission:

- Southwest Gate – A mixed-use scheme across 13 blocks comprising 1,123 residential units with supporting amenities, retail units, office accommodation, a primary healthcare centre, gym, cultural centre, childcare facility, hotel and a series of public open spaces.
- Primark Distribution Centre – Construction of a Distribution Centre incorporating office floor space and ancillary buildings with a cumulative gross floor area of approx. 64,550 sq.m and associated site works.
- Oscar Traynor Road – Construction of 853 residential units (social, affordable and cost rental homes), together with a creche, retail unit/café, community facilities and a new public park.

## 2.3 Development Objectives

The overarching vision for Inis Cealtra, articulated in the Inis Cealtra Visitor Management and Sustainable Tourism Development Plan (2017) is as follows:

> *Inis Cealtra will be protected for future generations through exemplary conservation management and interventions and through a balanced and sustainable management approach to providing access for visitors and the local community. The visitor experience, enjoyment and respect for the island`s living and built cultural heritage and that of the greater area will be expanded, and the long-term, socio-economic benefits to both the local community and the wider region will be increased.*

Directly informed by this vision, the objectives of this project, the Inis Cealtra Visitor Experience, are:

a) To conserve Inis Cealtra (Holy Island) as a significant historical, ecclesiastical, archaeological and cultural site, and
b) Expand its attractiveness as a sustainable tourism destination, and in so doing, address population decline and rural deprivation by providing social and economic benefits derived from tourism for East Clare and the wider Mid-West Region.

Clare County Council (the applicant) seeks to deliver a high-quality, motivating and immersive visitor experience that is fit for purpose, including a Visitor Centre and support services in Mountshannon with appropriate infrastructure; facilities on Inis Cealtra; safeguard monuments on Inis Cealtra island and provide improved accessibility taking the sensitivities of the island into account and provide an economic boost to the local community and its environs.

The project is aimed at delivering a high-quality visitor attraction that will raise the profile of the tourism offering in County Clare and complement the existing tourist facilities in Clare and neighbouring counties. The project will both contribute to and benefit from Lough Derg Blueway, a significant brand that has been developed by Waterways Ireland and three neighbouring counties (Clare, Tipperary and Galway), as well as Fáilte Ireland's Hidden Heartlands brand.

## 2.4 Proposed Development

### 2.4.1 Development Overview

The Inis Cealtra Visitor Experience is to be developed on Inis Cealtra (Holy Island) and on the mainland, in two principal locations within Mountshannon Village. The project is comprised of different elements as set out below.

**Inis Cealtra Island**

- Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island.
- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp.
- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.
- Provision of three staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

**Mainland – Mountshannon**

- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, together with coach parking and bicycle parking facilities.
- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building incorporating a series of spaces for interpretation, exhibition and

education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.

- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.

Following is a more detailed description of the constituent parts of the project.

### 2.4.2 Inis Cealtra Island

#### 2.4.2.1 Demolition Works

To facilitate the development, it is proposed to demolish the existing concrete shelter adjacent to the existing pier at the north-west of the island, see **Figure 2-1**. This building was likely used as a shelter by visitors and/or the former livestock farmer on the island.

The structure is simple in its construction, being of mass concrete walls and floor with a flat roof and a single window and door. The principal dimensions of the structure are 4.830m width, 3.244m length and 2.57m height. It has a gross floor area (GFA) of 16 sq.m.

The existing shelter will be dismantled from the top down using hand tools to break the existing concrete and timber into sections that can be manually handled. Dismantling will start with the removal of the roof, followed by the removal of the window and door, taking down of the walls, breaking out of the floor slab and removal of foundations (if any). The material will be sorted into waste for disposal/ recycling and then removed off the island by boat where it will be disposed of by a licensed waste contractor.

**Figure 2-1 Existing Visitor Shelter to be Demolished**

#### 2.4.2.2 Mooring Point

It is proposed to construct a new floating access jetty at the location of the existing concrete landing point to the north-west of the island. The existing jetty extends only a short distance into the lake, meaning the depth of water around it is relatively shallow, limiting the size of boats which can land there to very small vessels. Works to the existing jetty and provision of a new floating jetty, which extends into deeper water will allow for safer and more convenient passage between the mainland and the island, and this will become the principal point of arrival for visitors to the island.

The new L-shaped jetty extends out into the lake approximately 53m and is designed as a breakwater jetty that breaks most of a wave's crest and provides a safer mooring on the inner jetty area. The structure is made up of four principal parts: a floating breakwater jetty, a stone and concrete causeway, a steel access ramp connecting the two and a canoe launch jetty with access ramp. The floating jetty is 4m wide and is held in position using 4 no. 800 mm diameter steel piles.

The causeway, which is constructed over the existing concrete jetty (which will remain in place) on the shore of the island, comprises a concrete anchor platform, held in place by 4 no. 203mm H- piles, around which stone gabions are placed, built up to provide a 3m wide level surface which will be paved with stone.

A 1.5m wide steel access ramp will be fitted between the two, fixed to the causeway at one end and resting on the jetty at the other. This will allow the ramp to move up and down with the rise and fall of the lake level.

Boats travelling from Mountshannon Harbour to Inis Cealtra, landing at the new jetty will travel via established navigational channels as shown in the image below.

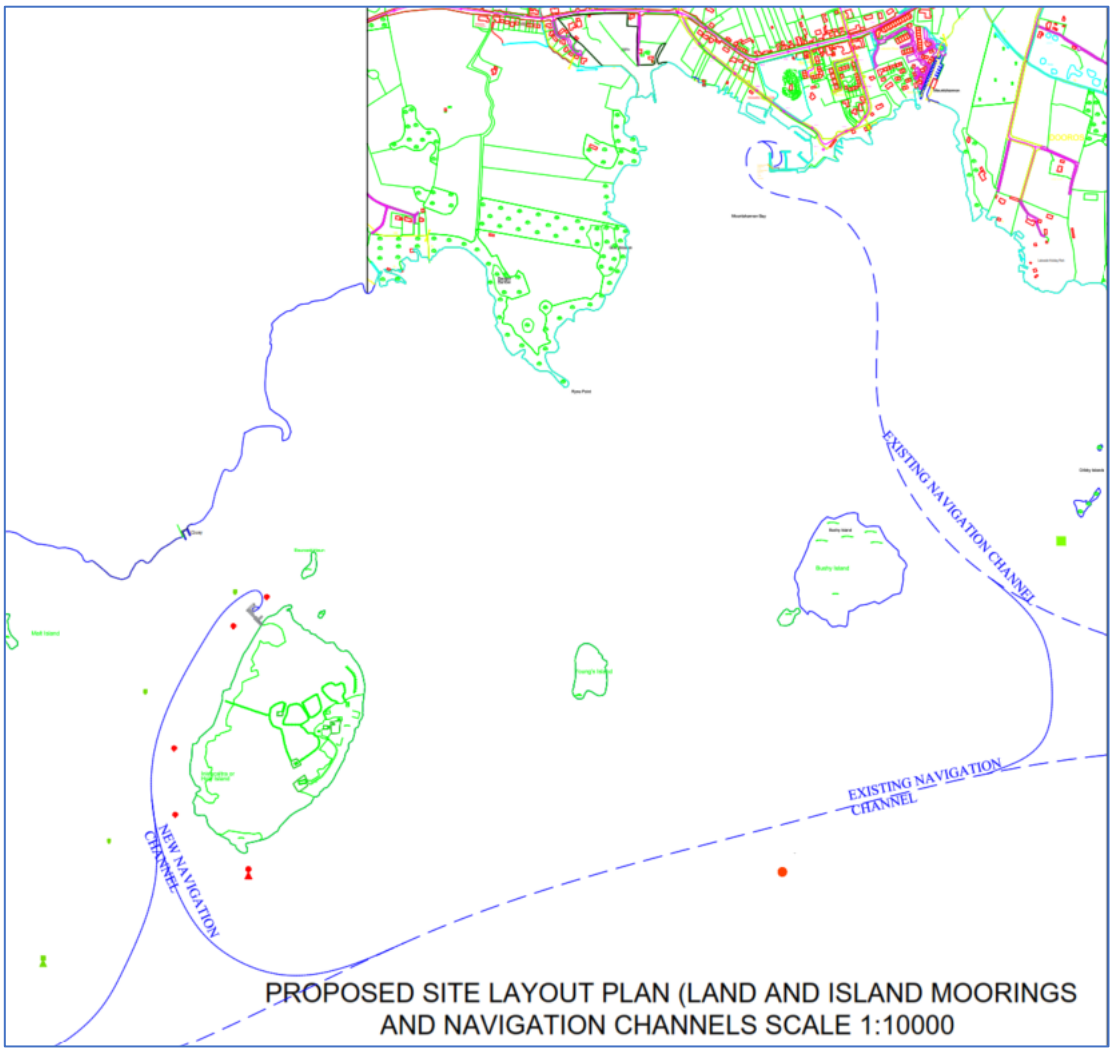



**Figure 2-2 Existing Navigation Channels to be Used by Boats Travelling Between Mountshannon and Inis Cealtra**

### 2.4.2.3 New Pedestrian Paths

A series of 2m wide mown grass pathways is proposed to allow visitors to explore the island, its archaeological features and natural beauty, see **Figure 2-3**.

The design of the paths is in line with the principles of minimal intervention to archaeological and natural heritage, and seeks to find a balance between accessibility, wayfinding, readability of the landscape and protection of archaeology and nature.

The layout and location of the paths is defined by the following:

- Existing path locations and access to main monuments (Path 1, Path 8).
- Accessibility and location of monuments - paths 11 and 12 are proposed to take visitors to Lady Well and the Bargaining Stone in a less direct but gentler sloping route.
- A series of additional paths are proposed to make a looped walk around the island with the option of a smaller loop (Path 3) or a bigger loop walk around the whole island to enjoy the natural beauty of the island as well as its cultural heritage, leading through grasslands and woodlands and back to the mooring point (Path 2). The provision of a short connection between the two options (Path 4) allows for a wider variety of loop options.
- Another path (Path 6) is proposed alongside the ecclesiastical enclosure as a way to experience the site's now hidden history (the enclosure is not visible above the ground).

The path of least intervention has been chosen for the proposal - the paths are all proposed as mown paths to existing ground levels for minimum visual impact and to avoid impact on the archaeology underground.

In order to avoid erosion, several measures are proposed:

- Several path options are proposed to spread the footfall. These may be phased in different seasons as the intensity of use is observed.

- The existing stone base to path 1 is proposed to be repaired where necessary. Path 1 is expected to be the most heavily used as it leads from the mooring point directly to the Round Tower.

- Where heavy footfall is expected, a layer of crushed aggregate is proposed with topsoil spread on top to allow for grass to develop. This will allow for sufficient air and moisture for grass to develop even with heavier footfall and only expose the aggregate in extreme situations rather than eroded topsoil. No plastics, geotextile or edging is being proposed.

- Where the footfall is expected to be the heaviest, 1m on either side of the path is proposed to be mown in addition to the 2m width in the main season to allow visitors to spread over a wider width of the path. A 6-week mowing regime is proposed in the summer for the additional strips.

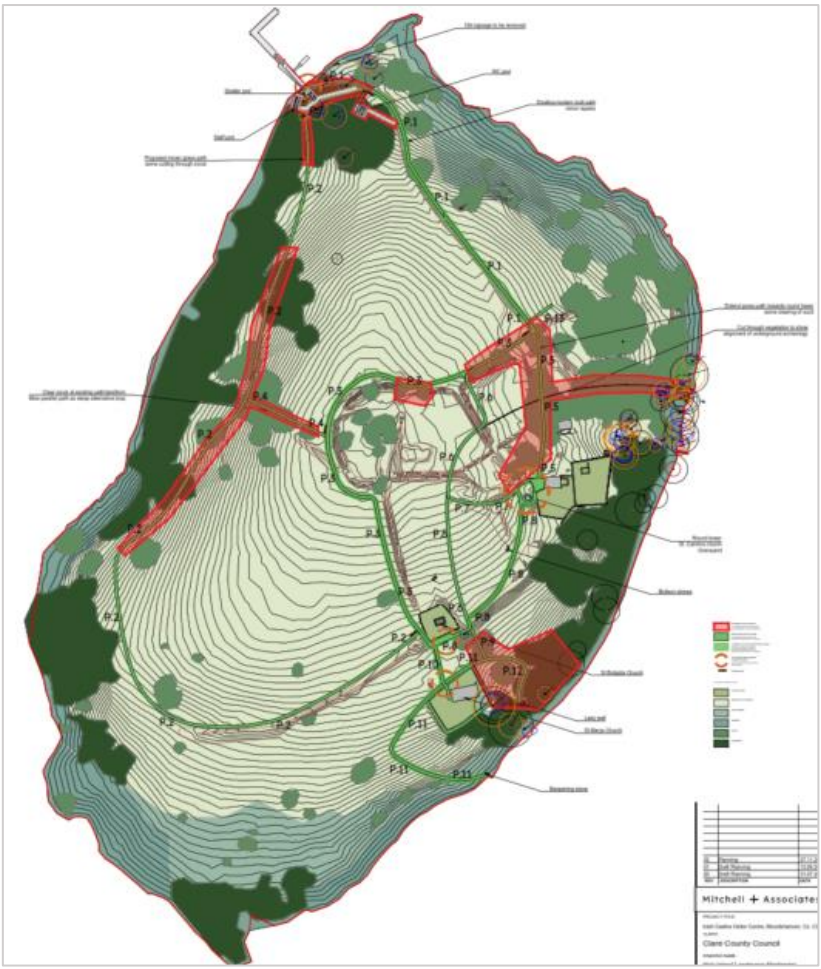



**Figure 2-3 Island Landscape Masterplan showing Proposed Network of Paths**

### 2.4.2.4 Island Pods

Three new staff and public welfare facility 'pods' are proposed on the island to meet the minimum needs of staff and visitors by providing a weather shelter, WCs and a rest room for island staff.

Photovoltaic (PV) panels will be installed on all roofs to power essential equipment, including lighting and a small pump in the WC's.

The proposed pods will be timber framed structures sitting on metal piles. The structure will be infilled with timber and clad with timber on their walls and roofs.

The pods are lightweight, freestanding, timber pavilions, raised on timber legs so that their contact with the ground will be minimal, reducing the risk of disturbing sensitive archaeology. While each pod serves a distinct function, they share a similar architecture and method of construction.

The pods will have new timber walkways to provide level access into them and these too will be of timber construction resting on mini- pile foundations. All pod and walkway components will be assembled on the island to minimise the impact of their construction and are designed to be dismantled and removed if required, with little trace left on the landscape.

The pod locations have been carefully considered to minimise their visual impact on the island and provide facilities that are geographically convenient for visitors and staff. In all cases, they are to be

built in the shelter of existing woodland or scrub. The predominant use of timber in their construction means that they will sit comfortably within the woodland and scrub landscapes where they are to be placed and remain visually unobtrusive.

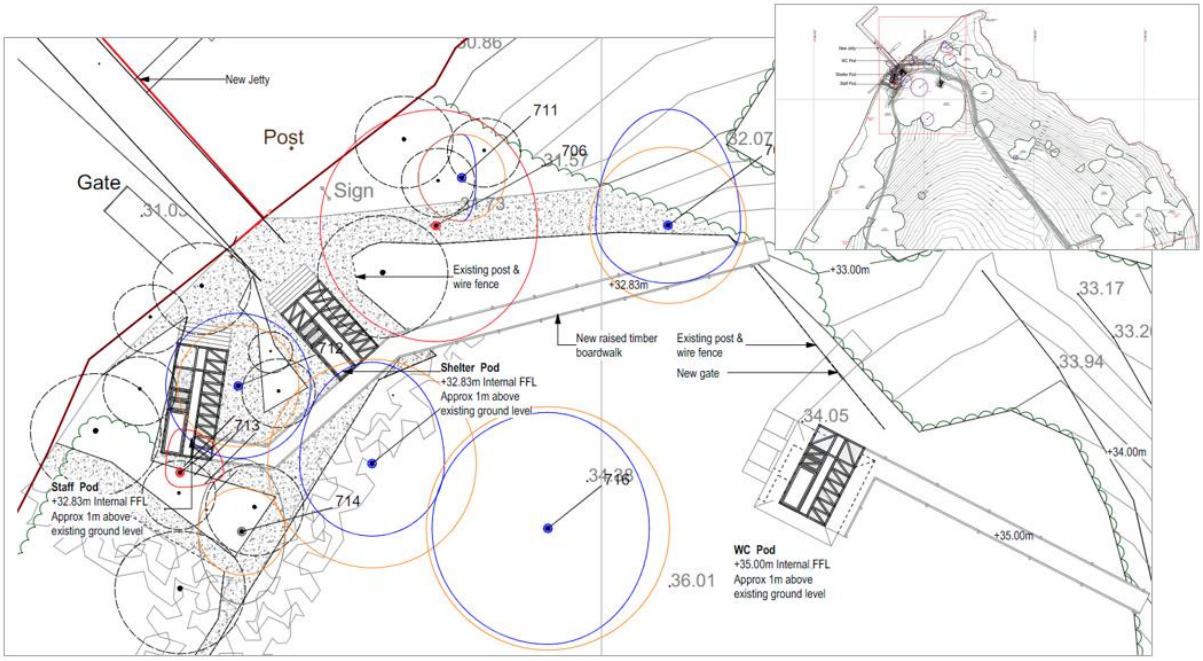



**Figure 2-4 Partial Site Layout showing Pod Locations in North-West of Island**

The proposed pods are as follows:

The **Weather Shelter** (20 sq.m GFA) will be located close to the new jetty in an area previously occupied by a small built refuge. The location is optimal from the point of view that it is close to the new jetty, so it will provide shelter for people while waiting for the boat. The pod height will range from 5.4m to 6.3m and will contain space for visitors to shelter during adverse weather conditions, with an approx. capacity for 30 no. persons seated. A new timber walkway (approx. 42m in length), which connects the shelter and staff pods, will be provided to give level access into them. The walkway will be at the finished floor level of the pods and will run level to the east, connecting back in with the existing higher ground level at its starting point.

The **Staff Pod** (25 sq.m GFA) will range from 5.4m to 6.3m in height. It will provide shelter and rest for the island guides and ushers who will be on Inis Cealtra daily. The accommodation comprises a single space containing a tea station, a break area with seating, lockers, and first aid equipment.

The **WC Pod** (15 sq.m GFA) will range from 5.25m to 6.25m in height. It will contain 2 no. dry WCs and requires no foul drainage or water supply. Given the relative complexity of removing waste off the island but recognising the need for such facilities, WCs will be for 'emergency' use only with the aim of ensuring that their use and disposal are appropriately managed. Sanitation gels will be used for hand hygiene. Like the shelter and staff pod, the WC pod will have a new timber walkway (approx. 27m in length) to give level access into it. The walkway will at the finished floor level of the pod and will run level to the southeast, connecting back in with the existing higher ground level at its starting point.

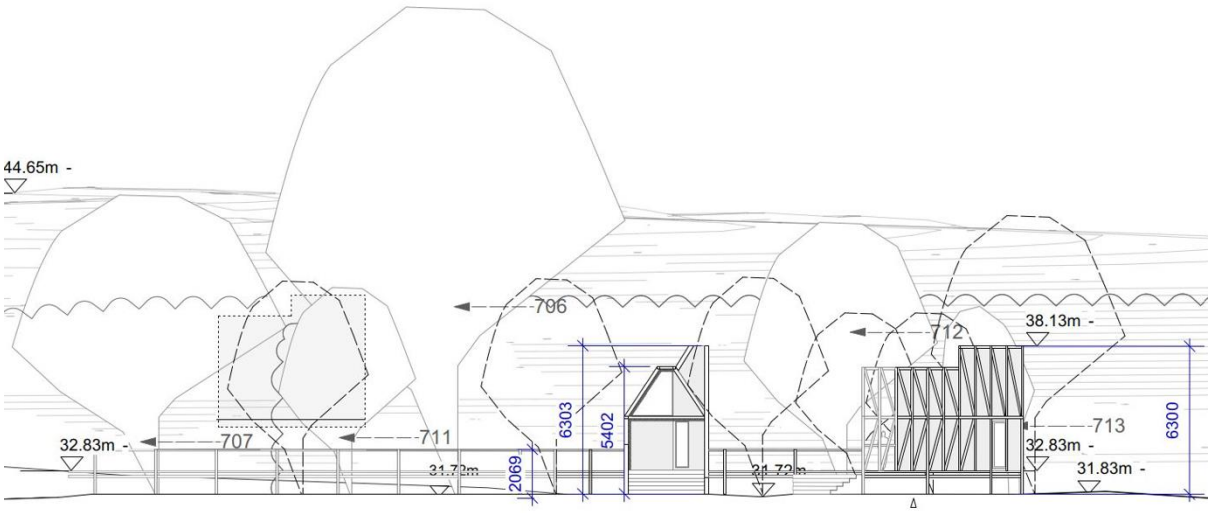



**Figure 2-5 Contextual Elevation of Proposed Weather Shelter and Staff Pod from south**

### 2.4.2.5 Landscape Management

A **Landscape and Conservation Management Plan** for Inis Cealtra has been prepared on behalf of Clare County Council and is appended to the Landscape Design Report. Its purpose is to ensure the vegetated island landscape is appropriately maintained and diversified in a manner that respects the setting for the monuments and protects habitats. It is a living document that will require annual review with stakeholders.

The island is currently grazed by sheep from early summer to winter. This management maintains a landscape of meadow down to the marshy foreshore and, to a lesser extent, the encroaching scrub. There are pockets of woodland that offer shelter to the sheep and add to the diversity of habitats on the island. Areas around the 5 churches and round tower are enclosed, and currently managed as regularly mown grass.

The landscape strategy for the island is to maintain a grazing regime, and to limit the requirement for mowing to any areas that need to be protected from sheep. By grazing the landscape with sheep, limited generally from May to October, this will limit any risk of damage to the monuments, whilst generating a species rich meadow. Scrub and woodland development will be monitored, and managed through the grazing regime, with some possible interventions required to encourage or restrict growth as required.

### 2.4.2.6 Water & Drainage

A full description is contained in the **Civil Utilities Planning Report** that accompanies this application under separate cover and it should be read in conjunction with this section.

#### 2.4.2.6.1 Storm Water

Stormwater generated on the island will be managed at its source by dispersing the runoff through the natural vegetation of Inis Cealtra and the use of permeable materials to maximise the use of SUDS

measures where reasonably practicable. There are no plans to implement an underground sewer system.

#### 2.4.2.6.2 Wastewater

A dry toilet system will be implemented to overcome the logistical challenges of removing solids and liquids. Deposited waste will be separated into liquid and solid form. This waste will then be stored in a holding container as part of the dry toilet set-up.

A contractor will be appointed to manage the maintenance of the foul system and waste removal from the island. The designated maintenance contractor will ensure that the waste is delivered to the appropriate Uisce Éireann treatment facility, where it will be processed in accordance with Uisce Éireann standards. Uisce Éireann has advised that the effluent collected will likely be taken by an authorised and licenced tankard wastewater haulier to Bunlicky Wastewater Treatment Plant (WWTP) in Limerick City.

**Figure 2-6 Indicative Image of Proposed Dry Toilet System**

#### 2.4.2.6.3 Water Supply

Being an island, it is not feasible to establish a direct water supply connection to the existing Uisce Éireann network to serve Inis Cealtra due to its inherent constraints. In this instance, it is proposed to serve the island with a bottled potable water supply that will meet the needs of the staff on the island and the medical needs of visitors, if the need arises. Regular boat trips will be scheduled to transport sufficient potable water to meet the needs of staff and visitors. This method of water delivery will be carefully managed to maintain consistent availability and uphold health and safety standards.

### 2.4.3 Village Car Park

#### 2.4.3.1 Demolition

To facilitate the construction of the Village Car Park, it is proposed to remove two sections of an existing mound/wall with a total combined length of approx. 155m. This includes one section measuring c. 151.4m in length extending north through the central part of the site. A shorter section of 3.6m in length in the south of the site adjacent to the western boundary is also proposed to be removed. The wall is an old field bank composed of stone and earth, however, much of the soil is now eroded off the bank (refer to the Figure below).

**Figure 2-7 Extract from Demolition Plan showing extent of central wall/mound to be removed hatched in yellow (Left) and Photo showing composition of part of the wall/mound (Right)**

The existing gate and a 7.8m section of the existing masonry wall along the site's frontage at the southern boundary will also be removed, as shown in the following Figure.

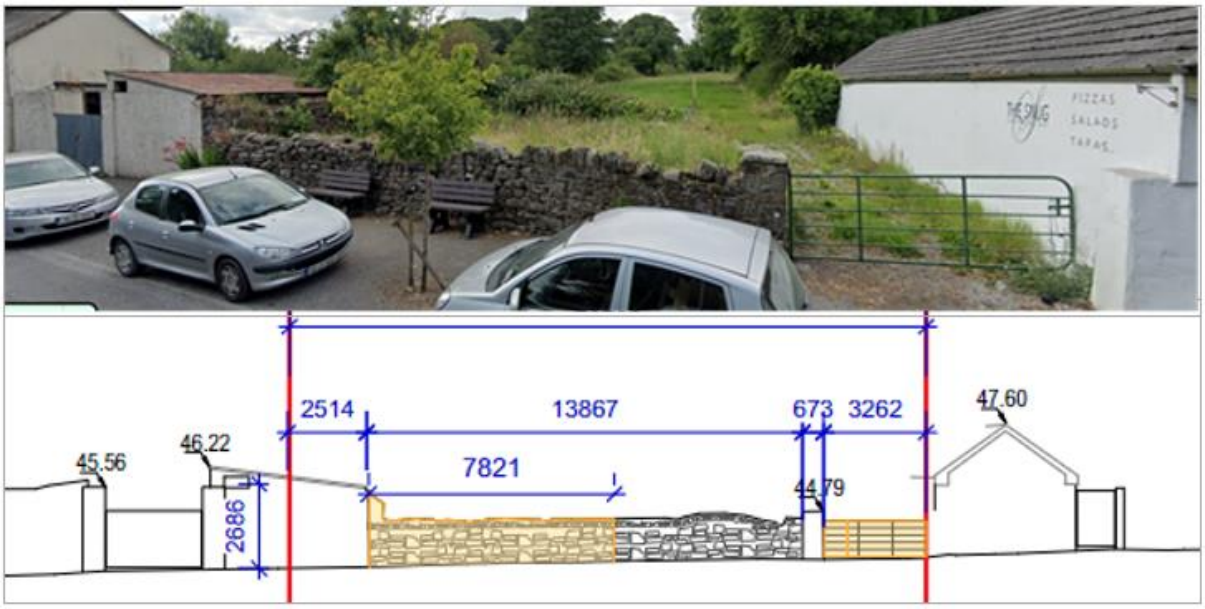



**Figure 2-8 Photo of existing wall and gate at frontage of Village Car Park Site (Top) and Extract from Demolition Plan showing extent of existing wall and gate to be removed (Bottom)**

### 2.4.3.2 Access, Parking & Circulation

A new public car park is proposed for the north side of Main Street in Mountshannon Village.

The car park has been designed to provide 169 total car parking spaces, together with coach and bicycle parking facilities, as follows:

- 6 coach parking spaces
- 11 accessible car parking spaces
- 105 car parking spaces
- 53 overflow car parking spaces on reinforced grass to the northern part of the site
- 40 secure bicycle parking spaces

There will be 34 EV charging points, being 20% of the car parking spaces, of which 2 are universally accessible. Ducting will also be provided to allow for 18 additional EV parking spaces (to include accessible).

The car park has been designed to accommodate sufficient parking for the projected visitor numbers, taking into account that the full capacity will not be required year-round, so it is split between permanent and overflow parking.

A two-way system is proposed at the southern portion of the site. Buses will be able to circulate the site without the need for reversing. An area has been designed to allow for buses to traverse through the car park in the event that all the available spaces are occupied. The layout has been developed to minimize the extent of hard paving required on the site. The temporary car parking is proposed to cater for overflow parking at the height of the tourist season which is envisaged to be during the summer months.

Traffic calming measures such as speedbumps will be installed at appropriate intervals to reduce the speed of motor traffic using the Village car park. This will assist with reducing speeds and increase driver awareness within the car park due to the vulnerable road users utilising it. A path is provided in the south of the site to allow pedestrians to traverse from the car park entrance around the site.

The sightlines at the entrance of the car park with the main street have been developed taking cognisance of the traffic calming measures, speed cushions, pedestrian crossings, carriageway narrowing etc., which have been installed on the Main Road in Mountshannon which is understood to reduce the design speed to 30km/hr.

The car park has been designed to create a place is densely planted and has a variety of surface materials so that it feels like a soft-edged, rural space which is suited to its surroundings. The site is surrounded by an existing natural boundary of mature trees and hedgerows, the majority of which will be retained, and additional trees and planting will be introduced to the site and placed between the parking areas.

Surface finishes will be varied throughout the area, ranging from tarmac on the carriageway, to compacted gravel in the parking bays and pedestrian paths, to reinforced grass in the overflow parking area.

Sheffield cycle stands will be positioned within the car park, close to the site entrance on either side of the accessway, ensuring secure bicycle parking is available to serve the development.

#### 2.4.3.3 Drainage

Full details of the proposed drainage strategy are contained in the **Civil Utilities Planning Report** that accompanies this application under separate cover which should be read in conjunction with this section.

##### 2.4.3.3.1 Storm Water

The storm water management system has been designed using the following criteria:

- Pipes are designed to reach self-cleansing velocity in the one in 2-year event
- Sewers not surcharging in the 2-year event
- Sewers not flooding in the 100-year event with 20% Climate Change
- Class 1 Bypass Petrol Interceptors
- Sub-surface attenuation systems designed for storage of a 1 in 100-year storm plus 20% Climate Change factor
- The sites/elements are designed to attenuate the greenfield runoff rate for the 1-year, 30-year and 100-year return periods respectively. This is in compliance with Appendix E of the Greater Dublin Strategic Drainage Strategy. The aim of this is to mimic the existing hydrological regime existing on the site so to minimize the impact of the development. An emergency overflow will also be provided in the event of a blockage occurring at the hydrobrake.

The proposed Village car park storm drainage management regime will be served by both hard and soft engineering solutions. It is proposed to integrate a traditional stormwater sewer system with a combination of SuDS measures to manage the stormwater runoff generated by the proposed site. The

site has been split into multiple sub-catchments within the main catchment of the overall car park development. Surface water runoff from these sub-catchments will be captured via a combination of stormwater gullies and filter drains. The SuDS features such as filter drains have been designed and integrated within the car park development while taking cognisance of the four main pillars of SuDs which are water quantity, water quality, amenity and biodiversity.

The storm water management system will tie into a combined public sewer that is located on the R352 which runs east-west at the entrance to the Village Car Park. Discharge from the site will be limited to Greenfield runoff rates.

It is proposed that reinforced Grasscrete paving will be utilised in the overflow car parking section of the car park. This system allows for infiltration of the rainfall in this area into the ground. Any overflow that would occur would be catered for by the proposed access road to car park area which has been sloped towards the east of the site where a dry swale has been positioned to allow surface runoff to infiltrate into the ground naturally.

#### 2.4.3.3.2 Water Supply

There is no proposal to install a water supply connection to the Village car park.

#### 2.4.3.3.3 Wastewater

There is no requirement for a foul sewer system within the Village car park. Visitors will have access to toilet facilities within the Inis Cealtra Visitor Centre, and the island of Inis Cealtra.

### 2.4.3.4 Public Lighting

LED Lanterns mounted on 6m Columns shall be installed in the car park. Each lantern shall be controlled via an individual photocell, with the overall lighting scheme controlled via an astronomical time clock which will allow the lights to be switched off when the car park is not in use. Cognisant of the rural location, the light fittings proposed all provide downward light output only to ensure that there is no adverse light pollution in the surrounding environs. The lanterns specified are designed to operate at 3000K to minimise any unfavourable effects on the local wildlife and natural environment. The car park lighting shall be designed in accordance with CIBSE guidelines and IS EN 12464-2 for parking areas to a minimum lux level of 10 lux for medium-traffic areas.

### 2.4.3.5 Services

The existing overhead ESB lines traversing the village car park site will be undergrounded. MWP will liaise with ESB Networks at detailed design stage to agree the route of the underground cable and the location of any mini pillars that may be required to facilitate the undergrounding of the overhead cable.

Power and data ducting and cabling shall also be provided to entry and exit access control barriers in the Village Carpark as well as a ticket machine.

### 2.4.4 Visitor Centre

#### 2.4.4.1 Demolition

There is an existing stone wall situated along the frontage of the 'Old Rectory' site at Harbour Road. Two sections of the wall are proposed to be removed to facilitate access from the ground level of the new Visitor Centre building to the harbour, as well as to provide a strong visual connection between the Visitor Centre and Lough Derg.

In the south-west, the section to be removed measures c. 23m in length and has a height of approx. 0.87m. The other section, in the south of the site, is c. 22m in length and approx. 1.0m high. The Figure below provides an image of the existing wall and shows the location of the two sections to be removed.

**Figure 2-9 Google street view of existing wall along the south-west boundary of the Old Rectory site at its frontage to Harbour Road (Top) and Extract of Demolition Plan showing the location in the south part of the Old Rectory site where sections of the wall are proposed to be removed (Bottom)**

#### 2.4.4.2 Siting and Design of Building

A part-one-storey, part-two-storey Visitor Centre with a gross floor area (GFA) of 1,594 sq.m and a maximum height of 7.8m above ground level is proposed to be constructed in the southern part of the Old Rectory site, fronting Harbour Road. The building has been oriented to face Mountshannon Harbour and Lough Derg, and establish a strong visual link with Inis Cealtra. The design draws inspiration from early monastic circular fortified settlements in composition, form, and materiality.

The Visitor Centre (building and public realm) occupies a circular area partially set back into the sloped landscape of the Old Rectory site, to mediate the significant change of level in the site and to minimise its visual impact.

The ground floor level of the Visitor Centre is at +32.83m OD, which is above the 1:100 year flood level and will tie in with the existing harbour and harbour car park level (approx. +32.00m OD). This will allow an easy connection for visitors between the visitor centre, the new public realm space to the front of it and the harbour.

The existing Rectory site slopes up relatively steeply from south to north, rising from approximately +32.00m OD at its southern boundary to +40.00m OD at the rectory building itself. This level change has been exploited by setting the ground floor of the Visitor Centre, which houses the majority of its accommodation back into the site so that the external ground level rises around the building as it moves from south to north. This means that the external ground level is level with the internal ground floor of the visitor centre along its front elevation to the south, while the external ground level is level with the roof terrace level along its northern boundary. This allows the building to read as a single-storey building with 'pop- ups' at first floor from the harbour side, while from the elevated level of the rectory, only the first-floor pop- ups will be visible. This strategy helps to reduce the massing of the building when seen from the elevated position of the rectory helping to retain the strong visual connection between the rectory and the lake below.

This siting strategy also means that a direct pedestrian connection can be made from the northern side of the rectory site, where the majority of visitors will approach the building via a route through Aistear Park from the new car park to the north of Mountshannon main street. This connection is made via a new path which leads from the entrance point to the rectory site from Aistear Park at the northern boundary, down to the roof terrace level of the building, over this terrace and down to the lower harbour level via (a) the new grand external staircase, (b) a new externally- accessible lift inside the building and (c) a new gently sloped route.

**Figure 2-10 Extract from Proposed Site Plan for Visitor Centre**

### 2.4.4.3 Building Form

The circular form of the plan of the building draws inspiration from pre- Chrisitan passage tombs such as Newgrange, Knowth and Dowth and early Christian monastic settlements such as Kells and the monastic settlement on Inis Cealtra itself. A retaining wall surrounds the building for the entirety of its curved, north-eastern edge, holding back the ground as it rises behind. The building occupies the north-eastern semi-circle, while the south-western semicircle is an open public realm space that links to the harbour from where visitors can go to the island.

The plan of the building is largely split into two sections- the Inis Cealtra Visitor Experience (Visitor Centre) and associated spaces to the east of the external grand stair and the café and back of house (BOH) support spaces to the west of the stairs, though both sides are connected via the external circulation route that circumnavigates the northern boundary of the building.

At ground floor (1,426sq.m GFA), the section of the visitor centre to the east of the stairs has six principal spaces comprising the Entrance Foyer/ Ticketing, Informal Interpretation, Inis Cealtra Experience Zones and AV Experience/Embarkation/ Island Briefing/ Pilgrim Change. These spaces have been arranged so that visitors can move through each of them in a clear, sequential route that follows the interpretation narrative. Support and BOH spaces are arranged between these principal spaces, some accessible to the public and others to staff only.

The ground floor café and BOH spaces to the west of the stairs contain the main café dining room and servery space, the café support spaces such as kitchen and WCs and the general building support spaces such as staff areas and plant and maintenance areas.

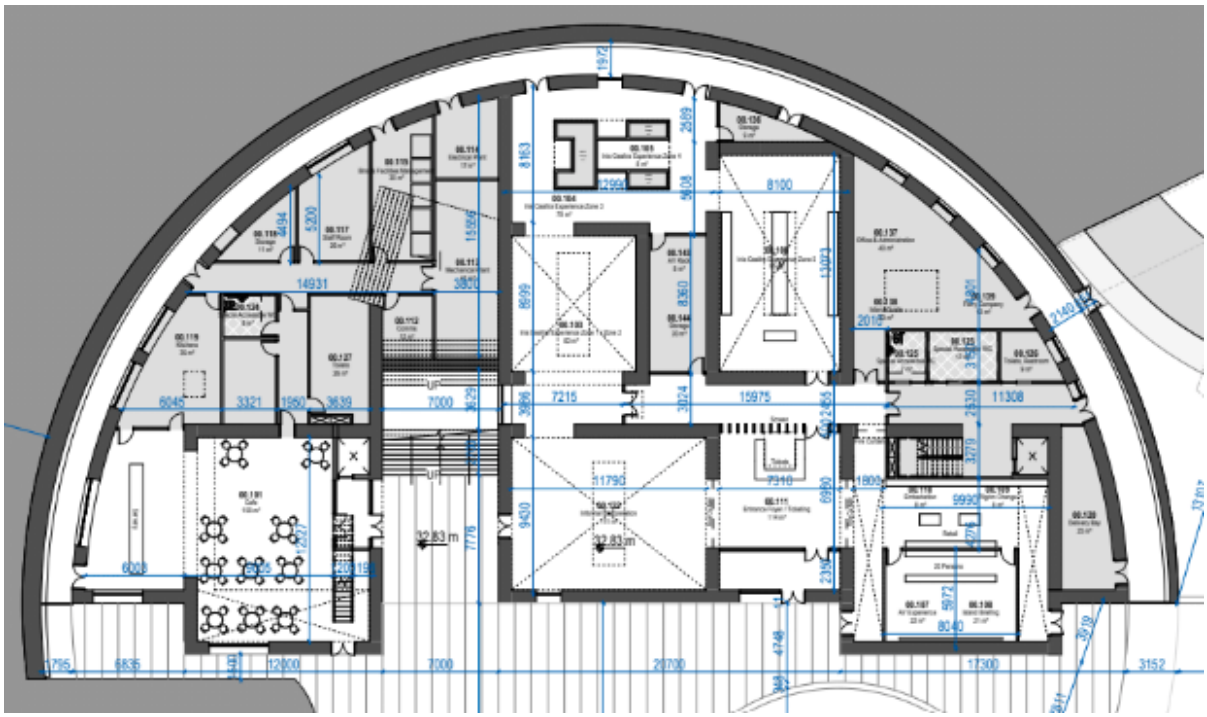


**Figure 2-11 Extract of Proposed Ground Floor Plan**

At first floor level, the internal accommodation (168sq.m GFA) is housed in two of the five pop- ups that form a series of independent volumes rising above the lower roof level. The one over the café provides a mezzanine space that can be used by the café or separately for functions and the other houses research spaces. The mezzanine level of the café has direct access to the roof terrace externally.

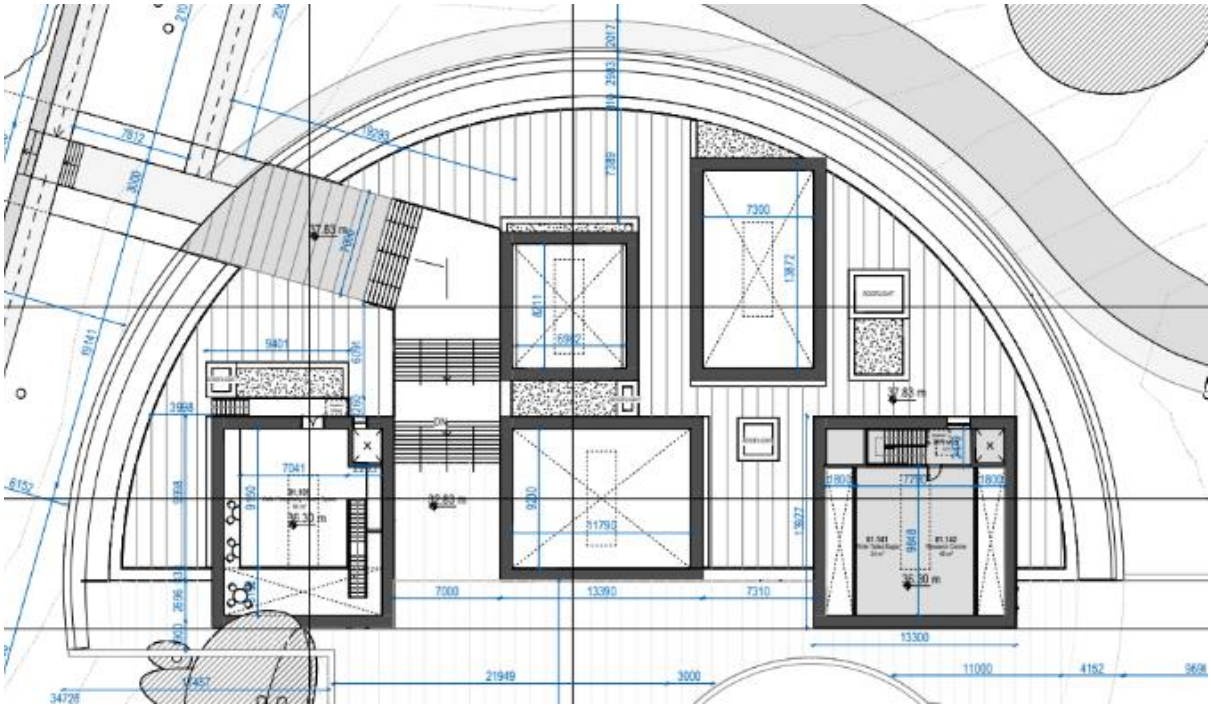


**Figure 2-12 Extract of Proposed First Floor Plan**

The lower roof of the building will be a publicly accessible terrace that will be level with the external ground level to the north of the building and can be accessed at this point. Visitors can move around this terrace, between the two-storey volumes which pop up from the floor below and out to its south-western edge, where they will have elevated views back out over the water towards Inis Cealtra.

#### 2.4.4.4 Building Uses and Facilities

The proposed Visitor Centre will include a series of spaces and facilities to serve visitors, staff and members of the community, as detailed below.

- Entrance foyer and ticketing area.
- Interpretation, exhibition, and education spaces, including audiovisual, exhibition and education rooms. They are intended to cater to tourists (domestic and international), school groups, special interest groups, and corporate groups.
- Flexible café/event space located on the building's western side and accommodating a ground floor dining room and servery space with additional seating at an upper mezzanine level, which can be used with the café or independently for functions.
- Visitor facilities including retail area, waiting spaces, island briefing and preparation areas and management facility.
- Research Centre and facilities for the support of the white-tailed sea eagle project.
- Office and Administration area.
- Back-of-house facilities include plant rooms, kitchen, delivery bay, bins, facilities management, comms room and storage.
- Circulation area including two stair/lift cores.

### 2.4.4.5 Materials & Elevational Treatment

The facades of the building will be faced in local stone which will help to give it a sense of weight and to bed the building down in its site. Though clad in traditional material, it will be used in a contemporary way through its precise cutting & laying and use of large openings to mark it out as something new and to avoid pastiche. The principal southwest façade contains a small number of large, carefully chosen openings that frame selected views from within and give a view of the internal life of the building from without. These larger openings will be interspersed with smaller openings for windows and recesses which will be planted to animate the façade.

This material treatment will continue at first floor level to the upper volumes which will share the same stone facing. The accessible roof terrace of the building will be an intensive green roof meaning that it can be planted with substantial vegetation that will give the sense of moving through a lush landscape held between stone volumes. Similarly, the upper roofs over the first floor pop-ups will be planted with sedum so that the view from the upper level of the Rectory will be down to the vegetation of the visitor centre roofs and stone of its walls, embedding it in the landscape. The pedestrian routes on the roof terrace will be stone and they will bring visitors out to its south-western extremity where they can take in views of the lake and Inis Cealtra.

This use of stone will continue inside the building, with the principal, double- height vaulted spaces finished in the same material internally to give a sense of moving through and between hefty volumes. These vaulted spaces will contain rooflights that will bring light in from above that will change with the passing of the day and the year.

**Figure 2-13 Front Elevation of Visitor Centre**

### 2.4.4.6 Landscape

The area to the front of the new building, in front of its main façade has been designed as a semi-circular plaza. The generosity of the space will provide a comfortable place for people while they wait to board a boat, to gather after they have returned from the island, or to sit out and enjoy something from the café. The area will be paved in natural stone, with its geometry continuing the curved form of the building to complete the circle.

Care has been taken to retain many of the existing mature trees that form part of the southern boundary of the rectory site, and these will remain in place in new concrete retaining structures.

Two mounded large planted areas are proposed to the plaza to maintain part of the existing trees on the sides, while trees right in front of the centre of building are removed to allow for a generous access as well as open the view towards the island.

The roof terrace of the visitor centre is accessible both from the centre itself as well as from the rectory by a winding gently sloping compacted gravel path. A visual access is proposed between the Rectory building and the new visitor centre with a wide mown reinforced grass strip for pedestrian use and a step connecting the rectory formal garden with the gently sloping grass mown terrace and grass steps connecting the grass terrace to the little compacted gravel arrival plaza to the visitor centre roof terrace. This axis is further framed by both existing and proposed tree planting.

Where the public realm intersects with the existing road, it will be a shared space with cars, with its slightly raised level helping to control their speed and make it safe for pedestrians.

#### 2.4.4.7 Access

A full description of the proposed access arrangements is contained in the **Architectural Design Statement** and **Civil Utilities Planning Report** that accompanies this application under separate cover and should be read in conjunction with this section.

Pedestrian access arrangements between the proposed new car park and the Visitor Centre site have been carefully considered. A pedestrian route has been facilitated through Aistear Park to the west of the Old Rectory site under the permitted Part 8 development (Reg. Ref. 238001), ensuring visitors will be able to access the Visitor Centre through an opening in the boundary. The new Visitor Centre will allow for pedestrian access directly to the shared space being created in the Harbour Car Park.

Cyclist and vehicular access will be through the existing vehicular entrance on Harbour Road which will be maintained. The existing access track serving the site will be realigned as part of the proposed development to accommodate the Visitor Centre. This revised internal road layout of the Visitor Centre site has been subjected to a swept path analysis of a bin lorry and a fire engine.

Sheffield stands providing 32 secure bicycle parking spaces will be installed in front of the Visitor Centre to serve staff and visitors. This bicycle parking is additional to the 20 bicycle parking spaces provided further north within 'the Old Rectory' site to serve the new Interpretive Centre (permitted under Reg. Ref. 238001) and the 40 bicycle parking spaces within the new Village car park at Main Street which forms part of this project.

#### 2.4.4.8 Public Lighting

Given the rural location of the Visitor Centre, the design philosophy is to provide sufficient lighting to guide people at the entrance and along either the driveway or the pathway to the property and to provide enough lighting to allow safe access and egress from the building. The light fittings proposed all provide downward light output only to ensure that there is no adverse light pollution on the surrounding environs. All the lanterns specified are designed to operate at 3000K to minimise any unfavourable effects on the local wildlife and natural environment.

Lighting shall be in compliance with Clare County Council's Public Lighting Policy.

#### 2.4.4.9 Drainage

##### 2.4.4.9.1 Storm Water

The storm water management system has been designed using the following criteria:

- Pipes are designed to reach self-cleansing velocity in the one in 2-year event
- Sewers not surcharging in the 2-year event
- Sewers not flooding in the 100-year event with 20% Climate Change
- Class 1 Bypass Petrol Interceptors
- Sub-surface attenuation systems designed for storage of a 1 in 100-year storm plus 20% Climate Change factor
- The sites/elements are designed to attenuate the greenfield runoff rate for the 1-year, 30-year and 100-year return periods respectively. This is in compliance with Appendix E of the Greater Dublin
- Strategic Drainage Strategy. The aim of this is to mimic the existing hydrological regime existing on the site so to minimize the impact of the development. An emergency overflow will be provided also in the event of blockage occurring at the hydrobrake.

There is an existing storm water system on the site attenuating the discharge from the Old Rectory. The proposed system is to attenuate flows that are being generated from the impermeable surfaces within the Visitor Centre development. This will utilise a separate attenuation system with a hydrobrake downstream restricting flows to the greenfield runoff rate.

The proposed drainage network will incorporate sumps within manholes for silt removal and a bypass petrol interceptor prior to discharge.

##### 2.4.4.9.2 Wastewater

The site is currently served by a wastewater/foul system that was installed as part of the redevelopment of the Old Rectory building which includes a treatment unit. This treatment unit reduces the biological load from the effluent prior to discharging into the public sewer on Harbour Road.

It is proposed that the foul water generated within the Visitor Centre will be treated by the existing on-site treatment unit prior to discharge by an existing connection to the foul sewer in Harbour Road. Uisce Éireann have confirmed that this connection is feasible. The Confirmation of Feasibility is included at Appendix A of the Civil Utilities Planning Report.

##### 2.4.4.9.3 Water Supply

An existing 150mm diameter water main is located on Harbour Road, south of the proposed Visitor Centre. A 100mm diameter pipe will connect to this main via a T-junction that is installed at the site entrance. The T-junction is split into two branches: the western branch will be reserved for connecting to the Visitor Centre, pending planning approval, and the eastern branch will serve the Old Rectory. The existing network is shown in the Confirmation of Feasibility shown in Appendix A of the Civil Utilities Planning Report where Uisce Éireann confirmed feasibility for this new connection.

#### 2.4.4.10 Sustainability

It is proposed to utilise a sustainable heating system by use of Air Source Heat Pumps (ASHPs) to deliver the building's heating and hot water requirements. The utilisation of ASHPs shall reduce the building's carbon emission rates with a heating control system in place to allow for zonal heating control and timeclock settings. LED lighting with PIR controls shall also be utilised as a further energy reduction measure.

#### 2.4.4.11 Services

##### 2.4.4.11.1 Electrical Supply

There is an existing ESB substation located on the Rectory site. As part of the works associated with the new Interpretive Centre in the Old Rectory building, a new ESB mini pillar has been installed inside the main entrance gate, and a three-phase electrical supply to the proposed Visitor Centre will be fed from this mini pillar.

##### 2.4.4.11.2 Telecommunications

The existing Eir network enters the Rectory site from Mountshannon Court to the north. As part of the works to the Old Rectory building to facilitate a new Interpretive Centre, a spare communications duct was installed from the Eir chamber in Mountshannon Court to the main entrance gate. A new duct will tee off from this existing duct to provide a broadband connection to the Visitor Centre.

### 2.4.5 Mountshannon Harbour Car Park & Public Realm

The existing car park at Mountshannon Harbour provides 46 no. parking spaces, inclusive of 2 no. accessible spaces. The parking area will be reconfigured to accommodate 49 car parking spaces in total, including 46 standard spaces and 3 accessible spaces. Additional amenities, including a seating area, bin store and new tree planting will also be provided. New paving and finishes will be provided throughout. The area of the car park will remain the same as the existing car park at 2,647 sq.m, following the works.

Reconfiguring this area will improve circulation around the harbour and create a shared space. This shared space has been designed to allow vulnerable road users to traverse between the Visitor Centre and Mountshannon Harbour. Traffic calming features will be implemented to reduce the risk to vulnerable road users. The speed limit in this area will be reduced to accommodate the development.

The reconfigured harbour car park has been subjected to a swept path analysis of a jeep and boat trailer. This is to verify that the difficulty of vehicles accessing the slip way to launch boats has not been negatively impacted by the proposed reconfiguration.

The intent for the harbour car park stormwater disposal is not to change the hydraulic regime that currently exists on site. The existing outfalls will be maintained. The addition of green areas will assist with reducing the rate of runoff from this area.

There is no requirement for either a water connection to serve the area or wastewater/foul system to be installed at this location.

The harbour lighting shall be designed to IS EN 12464-2.

### 2.4.6 Operating Hours

#### 2.4.6.1 Visitor Centre

The Visitor Centre will operate seasonally, from March to September. On opening, operating hours will be seven days a week as follows:

- March to June - 9:00am until 5:00pm
- July to September - 9:00am until 6:00pm

Outside of these times, the Visitor Centre may open for groups, school tours or private bookings, according to demand. The season may expand to meet future demand in years ahead.

#### 2.4.6.2 Village Car Park

The car park will be operational at all times, with a barrier system implemented to control traffic, maintain security, and enhance operational efficiency.

#### 2.4.6.3 Inis Cealtra Walking Trails & Tours

The island tours will operate seasonally, from March to September. Operating hours will be seven days a week as follows:

- March to June - 9:00am until 5:00pm
- July to September - 9:00am until 6:00pm

In the event, that the Visitor Centre operates outside these designated hours to accommodate additional demand, no additional boat tours will be offered.

### 2.4.7 Staffing

The **Visitor Management Plan** that accompanies this application under separate cover provide details regarding the anticipated staffing model and should be referred to in conjunction with this section.

The Inis Cealtra Visitor Experience will employ core operational staff, as well as flexible, seasonal staff, inclusive of seasonal tour guides who will work on the island. The Visitor Centre café will be operated by lease. The anticipated staffing resources required to meet the seasonal needs of the Inis Cealtra Visitor Experience are set out in the Table below.

**Table 2-1 Inis Cealtra Visitor Experience Staff Modelling**

| No. Days | Closed | Low | Shoulder | Peak |
|---|---|---|---|---|
| | **120** | **92** | **91** | **62** |
| **Visitor Centre** | | | | |
| Visitor Centre Manager | 1 | 1 | 1 | 1 |
| Duty Manager | 1 | 1 | 1 | 1 |
| Bookings/Admin | 1.5 | 1.5 | 1.5 | 1.5 |
| Shop/Tickets | 0 | 1.5 | 2 | 3 |
| Galleries | | 0 | 1.5 | 2 |

| No. Days | Closed | Low | Shoulder | Peak |
|---|---|---|---|---|
| | **120** | **92** | **91** | **62** |
| Break Cover | 0 | 0.5 | 1 | 1 |
| Café (leased) | 1 | 1.5 | 2.3 | 3.7 |
| **Total staff on site daily** | **4.5** | **8.5** | **10.8** | **14.2** |
| **Twilight Tours** | | | | |
| Twilight Tour | 0 | 0 | 3 | 3 |
| Break Cover | 0 | 0 | 0 | 0 |
| **Total Staff on Twilight Tours** | 0 | 0 | . | 3 |
| **Island Tours** | | | | |
| Staff per tour | 0 | 1 | 2 | 2 |
| Break Cover | 0 | 0.3 | 0.3 | 0.3 |
| **Total Staff on Island Daily** | **0** | **1.3** | **2.3** | **2.3** |

### 2.4.8 Visitor Numbers

The **Visitor Management Plan** that accompanies this application under separate cover provide details regarding the anticipated staffing model and should be referred to in conjunction with this section.

The projected visitor numbers provided below include a breakdown for Phase 1 and Phase 2 of the project. Anticipated visitor numbers to the Interpretive Centre at the Old Rectory, due to become operational in 2025, are included in the modelling, given the proposed visitor management strategy provides for a combined ticketing system.

Visitor number growth is modelled to Year 5 of Phase 1 operations, when visitor numbers are projected to plateau until the project enters Phase 2.

The maximum daily capacity on the Inis Cealtra Island will be 400 persons, with no more than 100 people permitted on the island at any one time.

#### 2.4.8.1 Phase 1 Visitor Numbers

Phase 1 visitor modelling comprises visitors to the Interpretive Centre at the Old Rectory combined with visitors opting for the boat and guided island tour at Inis Cealtra. Visitor number growth is modelled to Year 5 of Phase 1 operations, when visitor numbers are projected to plateau until the project enters Phase 2.

**Table 2-2 Phase 1 Visitor Number Modelling**

| | % of weighting | Year 1 | | Year 2-3 | | Year 4-5 | |
|---|---|---|---|---|---|---|---|
| | | All visitors | *Boat Tour* | All visitors | *Boat Tour* | All visitors | *Boat Tour* |
| Jan | - | - | - | - | - | - | - |
| Feb | - | - | - | - | - | - | - |
| Mar | 7 | 2,800 | *1,680* | 3,850 | *2,310* | 5,250 | *3,150* |
| Apr | 7 | 2,800 | *1,680* | 3,850 | *2,310* | 5,250 | *3,150* |
| May | 10 | 4,000 | *2,400* | 5,500 | *3,300* | 7,500 | *4,500* |
| Jun | 15 | 6,000 | *3,600* | 8,250 | *4,950* | 11,250 | *6,750* |
| Jul | 20 | 8,000 | *4,800* | 11,000 | *6,600* | 15,000 | *9,000* |
| Aug | 20 | 8,000 | *4,800* | 11,000 | *6,600* | 15,000 | *9,000* |
| Sep | 13 | 5,200 | *3,120* | 7,150 | *4,290* | 9,750 | *5,850* |
| Oct | 8 | 3,200 | *1,920* | 4,400 | *2,640* | 6,000 | *3,600* |
| Nov | - | - | - | - | - | - | - |
| Dec | - | - | - | - | - | - | - |
| **Annual** | | **40,000** | ***24,000*** | **55,000** | ***33,000*** | **75,000** | ***45,000*** |

### 2.4.8.2 Phase 2 Visitor Numbers

Visitor modelling for the second phase in this project incorporates the new Visitor Centre that will augment the visitor offering at the Old Rectory, building on the Phase 1 projections. The new Visitor Centre will increase the capacity and scale of appeal to accommodate greater visitor numbers.

**Table 2-3 Phase 2 Visitor Number Modelling**

| | % of weighting | Year 1-2 | | Year 3 | | Year 4-5 | | Year 15 | |
|---|---|---|---|---|---|---|---|---|---|
| | | All visitors | *Boat Tour* | All visitors | *Boat Tour* | All visitors | *Boat Tour* | All visitors | *Boat Tour* |
| Jan | - | - | - | - | - | - | - | - | - |
| Feb | - | - | - | - | - | - | - | - | - |
| Mar | 7 | 1,400 | *840* | 2,100 | *1,260* | 2,800 | *1,680* | *3,763* | *2,258* |
| Apr | 7 | 1,400 | *840* | 2,100 | *1,260* | 2,800 | *1,680* | *3,763* | *2,258* |
| May | 10 | 2,000 | *1,200* | 3,000 | *1,800* | 4,000 | *2,400* | *5,376* | *3,225* |
| Jun | 15 | 3,000 | *1,800* | 4,500 | *2,700* | 6,000 | *3,600* | *8,064* | *4,838* |
| Jul | 20 | 4,000 | *2,400* | 6,000 | *3,600* | 8,000 | *4,800* | *10,751* | *6,451* |
| Aug | 20 | 4,000 | *2,400* | 6,000 | *3,600* | 8,000 | *4,800* | *10,751* | *6,451* |
| Sep | 13 | 2,600 | *1,560* | 3,900 | *2,340* | 5,200 | *3,120* | *6,988* | *4,193* |
| Oct | 8 | 1,600 | *960* | 2,400 | *1,440* | 3,200 | *1,920* | *4,301* | *2,580* |
| Nov | - | - | - | - | - | - | - | - | - |
| Dec | - | - | - | - | - | - | - | - | - |
| **Annual** | | **20,000** | ***12,000*** | **30,000** | ***18,000*** | **40,000** | ***24,000*** | ***53,757*** | ***32,254*** |

#### 2.4.8.3 Island Tours & Boat Service

An estimated 60% of visitors will take a boat trip to the island for a guided tour. The boat service will be tendered by Clare County Council, and the successful tender will operate 25-seater boats.

The island guided tour will last approximately 45 minutes, allowing for some self-exploration for visitors. Visitors are likely to remain on the island for one hour but will be requested to stay no longer than two hours.

The boat service will scale over time to reflect visitor demands, Phase 1 comprises the Old Rectory Interpretive Centre combined with an optional boat and guided island tour at Inis Cealtra. It is expected that Phase 2 will generate sufficient demand for a number of boat tour operators to operate the service.

The proposed Phase 1 visitors' boat between Mountshannon Harbour and Inis Cealtra Island will be seasonal, ranging from two round trip daily boat services during low season to eight round trip daily boat services during high season. The expected high season eight daily round trip sailings is of the same order as the existing summer tourist season.

The proposed Phase 2 visitors' boat service to/from Inis Cealtra Island from/to Mountshannon Harbour will be seasonal, ranging from six round trip daily boat services during low season to 14 round trip daily boat services during high season. The expected high season 14 daily round trip boat sailings would be six additional to the existing summer tourist season - there are typically eight existing round boat trips daily between Mountshannon Harbour and Inis Cealtra.

### 2.4.9 Management Structures

Clare County Council, via Clare Tourism DAC, will manage and operate the Inis Cealtra Visitor Experience, inclusive of the Visitor Centre, new car park facilities off Main Street, and the welfare facilities on Inis Cealtra. The café in the Visitor Centre's will be operated by lease.

Visitors will walk from the Main Street car parking facilities to the visitor centre through Aistear Park, which is owned and managed by Mountshannon Community Council.

Currently, the Minister for Housing, Local Government and Heritage is responsible for the protection of the archaeological remains on Inis Cealtra. The local authority also has responsibility for municipal burial grounds located on the island. The Office of Public Works (OPW) is responsible for the management of the national monuments on Inis Cealtra. The National Monuments Service (NMS) is responsible for the conservation and recording of the site. National Parks & Wildlife Service (NPWS) has a role in management and environmental conservation on Inis Cealtra, given the area's SAC and SPA designations. Waterways Ireland has responsibility for the management, development and promotion of Lough Derg and the Shannon Navigation, including Mountshannon Harbour and the jetty on Inis Cealtra. There will be no change to the role of the statutory bodies responsible for the national monuments and conservation measures on Inis Cealtra, nor the role of Waterways Ireland.

Primary access to Inis Cealtra will be via guided boat tours operated by licenced boat operators. Licences will be awarded by tender by Clare County Council on a 3-year basis. Subject to demand,

licences will be awarded to a single or multiple operators. A concessionary rate will be available to existing boat hire companies such as the 5 boats from Lakeside Holiday Park in Mountshannon.

Members of the local community and members of Lough Derg Anglers will be able to land for free with a permit-style approach.

Guided tours on the island will be operated by Clare Tourism DAC, staffed by Inis Cealtra Visitor Experience. Their role will also include monitoring and surveying of visitor impacts.

Key stakeholders involved in the management of Inis Cealtra will form a representative group, the Inis Cealtra Management Group, to have oversight both in terms of the strategic management of the island and the operational management of the island. This group, led by Clare County Council, will include OPW, NMS, Waterways Ireland and Department of Housing, Local Government and Heritage.

Inis Cealtra Community Forum will be established to represent the voice of the local community in the management of Inis Cealtra and the delivery of the new visitor experience. Its role will be to facilitate local community input and linkages as the project develops, ensuring the socio-economic benefits of this project are reflected across East Clare. It will also serve as a liaison with Clare County Council in managing local access to Inis Cealtra.

## 2.5 Demolition and Construction Phase

This application is accompanied by a **Construction & Environmental Management Plan** (CEMP) and should be read in conjunction with this chapter. The CEMP provides a comprehensive description of the construction phase and outlines the commitments and mitigation measures to be implemented during the construction phase of the proposed development.

All of the mitigation measures proposed within the EIAR and other supporting documents are deemed adopted for the purpose of the CEMP.

The appointed contractor will be provided with the CEMP and will be required to comply with the provisions contained in it.

### 2.5.1 Phasing

The current indicative phasing strategy suggests that the project will be split over 2 phases. These phases are based upon the information available at this time and for the avoidance of doubt, it is not proposed or intended that the applicant / contractor(s) is bound by these proposals which may change depending on the timing and circumstances pertaining at the time of construction.

For EIA purposes, Phase 1 is assessed with current baseline. Phase 2 is assessed with Phase 1 included as part of the baseline.

**Table 2-4 Phases of Development**

| Phase | Project Element / Proposed Works | Duration of Works | Anticipated Completion |
|---|---|---|---|
| 1 | (a) Works at Inis Cealtra Island, including:<br>• Mooring point<br>• Demolition of existing visitor shelter<br>• Network of pedestrian pathways<br>• Welfare Pods<br>(b) New Car Park in Mountshannon Village | 12 months | Q1 of 2028 |
| 2 | (a) Visitor Centre, Mountshannon<br>(b) Reconfiguration of Mountshannon Harbour car park | 18 months<br>6 months | Q3 of 2042 |

### 2.5.2 Programme

The principal stages associated with the construction works are set out below.

**PHASE 1**

Inis Cealtra Island

- Pre-commencement activities including site investigation work and pre-construction surveys
- Pre-construction activities including demolition of the existing shelter on the island
- Site Clearance Works
- Construction of temporary site construction compound
- Construction of new floating access jetty and walkway located at Northwest of the island where the existing mooring point is located
- Construction of 3 no. new staff and public welfare facility 'pods' on the island
- Construction of new pedestrian paths on the island
- Complete site works, tidy up site, landscaping, restoration
- Demobilise site compound facilities

Village Car Park

- Pre-commencement activities including site investigation work and pre-construction surveys
- Pre-Construction Activities
- Site Clearance Works
- Construction of temporary site construction compound
- Construction of a new public car park on a site to the north of Mountshannon main street with all associated ancillary site works
- Complete site works, tidy up site, landscaping, restoration
- Demobilise site compound facilities

**PHASE 2**

### Harbour Car Park Reconfiguration

- Pre-commencement activities including site investigation work and pre-construction surveys
- Pre-Construction Activities
- Site Clearance Works
- Construction of temporary site construction compound
- Reconfiguration of the existing Mountshannon harbour car park, located to the south of the proposed visitor centre with all associated ancillary site works
- Complete site works, tidy up site, landscaping, restoration
- Demobilise site compound facilities

### Visitor Centre

- Pre-commencement activities including site investigation work and pre-construction surveys
- Site preparation and pre-construction activities
- Environmental measures
- Construction of temporary site construction compound
- Construction traffic routes
- Site construction drainage system
- Construction of proposed visitor centre to the southern part of the Old Rectory site
- Complete site works, tidy up site, landscaping, restoration
- Demobilise site compound facilities

## 2.5.3 Construction Hours

Construction is proposed to take place within the following hours:

- 08:00 to 19:00 Monday to Friday inclusive, and
- 08:00 to 13:00 Saturdays.

There will be no work on Sundays and bank holidays.

Deviation from these times will only be in exceptional circumstances where prior written approval has been received from the planning authority.

## 2.5.4 Construction Personnel

### 2.5.4.1 Inis Cealtra Island

It is expected that the construction works on the island elements of the works (construction of jetty/ demolition of existing shelter/ construction of pods & paths) will require approximately 25 personnel including during the peak construction phase, to include site contractors, engineers, materials delivery personnel, environmental personnel, health and safety personnel.

#### 2.5.4.2 Village Car Park

It is expected that the construction works on the Village Car Park will require approximately 20 personnel including during the peak construction phase, to include site contractors, engineers, materials delivery personnel, environmental personnel, health and safety personnel.

#### 2.5.4.3 Harbour Car Park Reconfiguration & Visitor Centre

It is expected that the construction works on the Harbour Car Park and Visitor Centre elements of the works require approximately 50 personnel including during the peak construction phase, to include site contractors, engineers, materials delivery personnel, environmental personnel, health and safety personnel.

### 2.5.5 Construction Traffic

A preliminary **Construction Traffic Management Plan (CTMP)** has been prepared and is included in Chapter 6 Traffic Transport of this EIAR.

A more detailed **Traffic Management Plan** will be completed prior to the works commencing and this will be agreed between the Contractor and Clare County Council to ensure that traffic is managed during the works safely and with least impact.

#### 2.5.5.1 Inis Cealtra Island

Access to the island will be by boat. The first phase of the works on the island will be to modify the existing concrete slipway to the northwest of the island and to construct the new floating jetty. Upon completion of these works, the new floating jetty will provide access to the island for personnel/ materials via boat/ barge to facilitate works associated with the paths and welfare pods.

The proposed Phase 1 construction works at Inis Cealtra Island would generate up to eight round boat trips daily between Mountshannon Harbour and Inis Cealtra Island.

#### 2.5.5.2 Village Car Park

The Proposed Development is located within the town of Mountshannon. Access to the site is by means of the existing entrance onto the R352.

Construction traffic will include:

- HGVs importing construction materials, including concrete, road build-up materials, building materials, drainage/ducting materials, structural steel, cabling, site boundary fencing, etc.
- HGVs exporting waste/spoil/demolition materials
- HGVs delivering plant/cranes and fuel
- Traffic associated with on-site construction personnel

Construction access for the new Village Car Park works at Mountshannon will be via a single site access on Main Street, at the approximate location of the existing site gated access.

A temporary construction compound will be provided within the new Village Car Park site for the Village Car Park works.

#### 2.5.5.3 Phase 1 Construction Traffic Volumes

The removal of materials off-site would generate up to 25 daily truck movements, both inbound and outbound, during the initial period of the proposed Phase 1 construction. The removal of earthworks volumes will be during off-peak traffic periods and outside local schools' start and finish times.

Peak construction delivery and heavy vehicle volumes would generate a peak total of up to 35 daily vehicles, both to and from site, for the Phase 1 construction works, including up to 25 daily delivery vehicles generated by the Village Car Park works and up to 10 daily delivery vehicles generated by the Island works.

Peak construction deliveries will not coincide with the phased removal of earthworks and demolition volumes to a licensed recycling facility.

During Phase 1 construction, peak construction staff vehicles would generate 30 daily inbound vehicles and 30 daily outbound vehicles. All construction parking will be located within the temporary construction compound. This will prevent construction staff parking in public on-street locations and at the public Harbour Car Park.

#### 2.5.5.4 Visitor Centre and Mountshannon Harbour Car Park Reconfiguration

The proposed Visitor Centre and harbour car park are located within the town of Mountshannon and will comprise Phase 2 works. The site is located in close proximity to the R352 which joins the townlands of Ennis and Portumna.

Construction traffic will include:

- HGVs importing construction materials, including concrete, road build-up materials, building materials, drainage/ducting materials, structural steel, cabling, site boundary fencing, etc.
- HGVs exporting waste/spoil/demolition materials
- HGVs delivering plant/cranes and fuel
- Traffic associated with on-site construction personnel

Construction access for the reconfiguration of Mountshannon Harbour Car Park and the new Visitor Centre will be via the L4034 Harbour Road and the R352.

A temporary construction compound will be provided at the new Visitor Centre site for the Visitor Centre construction works. A temporary construction compound will be provided at the Harbour Car Park site for the Harbour Car Park works.

All construction parking will be located within the temporary construction compounds for the Phase 2 construction works. During low season, temporary construction staff car parking will also be provided at the Phase 1 construction Village Car Park.

#### 2.5.5.5 Phase 2 Construction Traffic Volumes

There will be no significant demolition volumes generated by the Phase 2 construction works for removal off site to a licensed recycling facility.

The removal off-site of excavated earthworks materials would generate up to 20 trucks, both inbound and outbound, during the initial phase of the proposed Phase 2 construction. The removal of

earthworks volumes will be during off-peak traffic periods and outside local schools' start and finish times.

Peak construction delivery and heavy vehicle volumes would generate a peak total of up to 30 daily vehicles, both to and from site, for the Phase 2 construction works, including up to 20 daily delivery vehicles generated by the Visitor Centre works and up to 10 daily delivery vehicles generated by the Harbour Car Park works.

Peak construction deliveries will not coincide with the phased removal of earthworks and demolition volumes to a licensed recycling facility.

### 2.5.6 Construction Waste

All excavated material will be brought to a licenced waste facility for final disposal. All potential waste shall be appropriately sampled and tested for waste assessment using the HazWaste OnlineTM Tool and Waste Acceptance Criteria (WAC) criteria. The assessment of potential soil waste would occur in situ, in advance of excavation during the initial site investigation and take account of the waste acceptance criteria for soil recovery facilities and/or waste landfills. All soil sampling, waste classification and reporting will be conducted by a suitably qualified person.

This waste classification assessment will form part of a Site-specific Soils Management Plan. Soil proposed to be re-used for landscape and fill purposes should be assessed in advance to determine the suitability for re-use with reference to the proposed site end-use.

The main contractor working on site during the works will be responsible for the collection, control and disposal of all waste generated by the works. Construction phase waste may consist of hardcore, stone, concrete, steel reinforcement, ducting, shuttering timber, food waste from the canteen and unused oil, diesel and building materials. This waste will be collected at the end of the construction phase and taken off site to be reused, recycled, and disposed of in accordance with best practice procedures at an approved facility. Municipal waste from the on-site facilities will be collected on a regular basis by approved contractors and disposed of in an authorised facility in accordance with best practices. Plastic waste will be taken for recycling by an approved contractor(s) and disposed of or recycled at an approved facility.

### 2.5.7 Earthworks

#### 2.5.7.1 Inis Cealtra Island

No excavation works are proposed to take place on Inis Cealtra island in connection with the new paths and construction of the welfare pods.

To facilitate the new floating access jetty at Inis Cealtra Island, the lake bed (2m3) will need to be excavated on the south end of the main breakwater jetty. The excavator will be positioned on a pontoon raft and will remove the material and place it on a skip on the pontoon raft to be removed off-site. A silt curtain will be placed around the excavation area when removing material.

#### 2.5.7.2 Village Car Park

Approximately 3,200m3 of topsoil will be excavated, carefully segregated and transported to an agreed temporary deposition point. This material would then be removed from the site with a minor amount may be kept on site in a temporary storage area for later use in landscaping.

Bulk excavation of a volume of 4,200m3 approximately will then occur to the required sub-formation levels using excavators and dumpers. This material may be temporarily stockpiled on the site prior to being removed from the site.

All excavated material will be brought to a licence waste facility for final disposal. All potential waste shall be appropriately sampled and tested for waste assessment using the HazWasteOnlineTM Tool and Waste Acceptance Criteria (WAC) criteria. The assessment of potential soil waste would occur in situ, in advance of excavation during the initial site investigation and take account of the waste acceptance criteria for soil recovery facilities and/or waste landfills. All soil sampling, waste classification and reporting will be conducted by a suitably qualified person.

#### 2.5.7.3 Mountshannon Harbour Reconfiguration and Visitor Centre

Approximately 1,600m3 of topsoil will be excavated, carefully segregated and transported to an agreed temporary deposition point. This material would then be removed from the site with a minor amount may be kept on site in a temporary storage area for later use in landscaping.

Bulk excavation of approximately 6,200m3 under the proposed building and font courtyard and 1000m3 for the realigned access track and other external areas will then occur to the required sub formation levels using excavators and dumpers. This material may be temporarily stockpiled on the site prior to being removed from the site.

All excavated material will be brought to a licence waste facility for final disposal. All potential waste shall be appropriately sampled and tested for waste assessment using the HazWasteOnlineTM Tool and Waste Acceptance Criteria (WAC) criteria. The assessment of potential soil waste would occur in situ, in advance of excavation during the initial site investigation and take account of the waste acceptance criteria for soil recovery facilities and/or waste landfills. All soil sampling, waste classification and reporting will be conducted by a suitably qualified person.

## 2.6 Health and Safety

### 2.6.1 Construction Phase

The appointed contractor and Project Supervisor Construction Stage (PSCS) will be responsible for managing all aspects of health and safety pertaining to the construction works in line with the requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013, and other relevant Irish and EU safety legislation at all times.

## 2.7 Monitoring

### 2.7.1 Community Liaison

The appointed Main Contractor will be required to follow best practice as outlined in 'The Code of Considerate Practice'. This is an initiative set up by the construction industry in 1997. It is designed to encourage best practice, beyond statutory requirements, focusing on the community, the environment and the workforce. The Considerate Constructors Scheme experience in Ireland has been that early positive and proactive engagement with businesses and residents impacted by construction is the best approach.

### 2.7.2 Integrated Pest Management

The Main Contractor will take all necessary steps to ensure that pests - rodents, birds, insects and plants are controlled at all times.

Control measures will be undertaken prior to commencement of any works on the site. Poison where used, will comply with any relevant Health and Safety requirements and to eliminate any danger to children, household pets and other wildlife. Old and disused service pipes and voids will be removed or filled to avoid the potential for pests to infest the site.

### 2.7.3 Environmental

The monitoring proposed in Chapters 4 to 14 of this EIAR will be carried out during the demolition and construction phases. This monitoring is integrated to ensure that there will be no likely significant impact during development of the site.

A bespoke site Construction Environmental Management Plan (CEMP) will be prepared by the appointed contractor prior to work commencing on site. The main purpose of a CEMP is to provide a mechanism for implementation of the various mitigation and monitoring measures which are described in the EIAR. The CEMP demonstrates the applicant's commitment to implementing the proposed development in such a way as to avoid or minimise the potential environmental effects arising from construction activities. All personnel will be required to understand and implement the requirements of the plan.

Aspects that will be addressed within the CEMP will include but not limited to, waste and materials management; noise and vibration; dust and air quality; traffic and vehicle management; pollution incident control; and protection of vegetation and fauna. A summary of the mitigation measures to be incorporated into the CEMP is provided in Chapter 16 of the EIAR.

## 2.8 Commissioning

The testing and commissioning of services (drainage, watermain, gas, electricity) will be completed in accordance with relevant codes of practice as set out in **Chapter 7** of the EIAR.

## 2.9 Decommissioning

The design life of the scheme is greater than 60 years. Thus, for the EIA process, the development is considered permanent, and a decommissioning phase is not considered in this report.

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 3
# ALTERNATIVES CONSIDERED

## VOLUME II
### ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


3 Alternatives Considered ..... 3-3
3.1 Introduction ..... 3-3
3.2 Expertise and Qualifications ..... 3-4
3.3 Consideration of Alternatives ..... 3-4
3.3.1 'Do Nothing' Alternative ..... 3-4
3.3.2 Alternative Locations ..... 3-6
3.3.3 Alternative Uses ..... 3-13
3.3.4 Alternative Layouts and Design ..... 3-14
3.3.5 Alternative Processes ..... 3-23
3.4 Difficulties Encountered ..... 3-25
3.5 Proposed Preferred Alternative ..... 3-25

# Table of Figures

Figure 3-1 Potential Visitor Centre Sites in Mountshannon (Source: Figure 12, Inis Cealtra VMSTDP) .....3-7

Figure 3-2 Two potential landing point locations (Source: ADCO Dwg dated 16.06.21, Title: Figure 2 Proposed development boundaries (Options 1 and 2) and associated ADCO Survey Areas superimposed upon satellite imagery of Inis Cealtra.) .....3-10

Figure 3-3 Photos of Marsh along the northern fringe (left) and eastern boundary (right) of Inis Cealtra (Source: Appendix 10.4, Habitat Survey prepared by Delichon Ecology) .....3-11

Figure 3-4 Option 3 Landing Point Concept Design .....3-11

Figure 3-5 Previously considered island layout showing alternative design approach to pods .....3-14

Figure 3-6 Revised Island Layout with four pods .....3-16

Figure 3-7 Two previously considered island layout plans showing alternative design options for the pedestrian paths. .....3-18

Figure 3-8 Currently proposed island layout showing simplified design for the network of pedestrian paths .....3-18

Figure 3-9 Path Type - Timber Boardwalk .....3-20

Figure 3-10 Path Type - Gravel Path .....3-20

Figure 3-11 Path Type - Mown Grass .....3-21

Figure 3-12 Previously proposed island plan showing alternate combination of path types .....3-22

# Table of Tables

Table 3-1 Do Nothing Description of Effects .....3-5

Table 3-2 Site selection for Visitor Centre (Source: Table 3.2, Inis Cealtra VMSTDP) .....3-8

Table 3-3 Revisions to Size of Pods .....3-15

Table 3-4 Summary of Alternative Options Considered for Island Toilet Facilities .....3-23

# 3 Alternatives Considered

## 3.1 Introduction

The requirement to consider alternatives within an Environmental Impact Assessment Report (EIAR) is set out in Annex IV (2) of the EIA Directive (2014/52/EU) and in Schedule 6 of Planning and Development Regulations 2001 (as inserted by article 97 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 which state (at paragraph 1(d));

> *"A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment".*

The requirement is elaborated on in paragraph 2(b), which makes clear that reasonable alternatives may include project design proposals, location, size and scale, which are relevant to the proposed development and its specific characteristics. The Regulations require that an indication of the main reasons for selecting the preferred option, including a comparison of the environmental effects, be presented in the EIAR.

The Environmental Protection Agency Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2022 states:

> *The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required.*

The Guidelines also state that the range of alternatives considered may include the 'do-nothing' alternative.

Notwithstanding the above, pursuant to Section 3.4.1 of the 2022 EPA Guidelines, the consideration of alternatives also needs to be cognisant of the fact that:

> *...in some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant 'alternative location'…*

The Guidelines are also instructive in stating:

> *Analysis of high-level or sectoral strategic alternatives cannot reasonably be expected within a project level EIAR… It should be borne in mind that the amended Directive refers to 'reasonable alternatives… which are relevant to the proposed project and its specific characteristics.*

This section of the EIAR provides an outline of the main alternatives examined throughout the design and consultation process. It provides an indication of the main reasons for selecting the chosen option,

including a comparison of the environmental effects. The type of alternatives depends on the nature of the project proposed and the characteristics of the receiving environment. The assessment of alternatives is considered under the following headings:

i. 'Do Nothing' Alternative
ii. Alternative Locations
iii. Alternative Uses
iv. Alternative Layouts & Design
v. Alternative Processes

## 3.2 Expertise and Qualifications

This chapter was prepared by Martina Keenan Rivero of McCutcheon Halley Chartered Planning Consultants. Martina holds a BSc (Hons) in Spatial Planning from Technological University Dublin and an Advanced Diploma in Planning and Environmental Law from Kings Inns. She has 10 years of professional experience, working in NSW, Australia with a Local Authority and as a planning and environmental consultant in Ireland. Martina has prepared AA screening reports, Environmental Impact Assessment screening reports and coordinated and contributed to Environmental Impact Assessment Reports for a range of development projects. Relevant project experience includes large housing developments, mixed-use schemes, industrial and commercial projects.

Martina was involved in the coordination and preparation of EIARs to accompany planning applications for the following projects that received permission:

- Southwest Gate – A mixed-use scheme across 13 blocks comprising 1,123 residential units with supporting amenities, retail units, office accommodation, a primary healthcare centre, gym, cultural centre, childcare facility, hotel and a series of public open spaces.
- Primark Distribution Centre – Construction of a Distribution Centre incorporating office floor space and ancillary buildings with a cumulative gross floor area of approx. 64,550 sq.m and associated site works.
- Oscar Traynor Road – Construction of 853 residential units (social, affordable and cost rental homes), together with a creche, retail unit/café, community facilities and a new public park.

## 3.3 Consideration of Alternatives

### 3.3.1 'Do Nothing' Alternative

The 'Do-nothing' alternative is a general description of the evolution of the key environmental factors of the site and environs if the proposed project did not proceed. Each Chapter of this EIAR includes a description of the 'Do Nothing' alternative and should be referenced in conjunction with this Chapter.

Under this alternative scenario, the impacts of the proposed development would not arise; the operational and construction phases would not generate additional traffic movements on the mainland and the lake, there would be no additional noise impact on local residents and fauna, and

excavation of topsoil and subsoil on the mainland during construction of the new Village Car Park and the Visitor Centre would not take place.

Under the 'Do Nothing' scenario, the permitted Interpretive Centre at the 'Old Rectory' site would proceed (permitted under Part 8 Ref. 238001), due for completion in early 2025. However, due to its more modest scale and in the absence of enhanced visitor facilities on the island and mainland, opportunities to grow visitor numbers (and revenue) would remain limited.

The impact of the 'Do Nothing' alternative would be a missed opportunity to raise the profile of County Clare's tourism offering and support its growth as a sustainable tourism destination. The associated long-term socio-economic benefits to the local community and the wider region would not be realised.

Implementing the 'Do Nothing' scenario would undermine the objective of conservation management on Inis Cealtra, which is a key driver of the project aimed at conserving the island as a significant historical, ecclesiastical, archaeological and cultural site.

In the absence of the Inis Cealtra Visitor Experience, members of the community and tourists alike would be deprived of the recreational and educational opportunities the project will deliver.

The following Table summarises the effect of the 'Do Nothing' alternative described above. All of the predicted effects are determined likely to occur. It is noted that the duration of effects under this scenario are considered at least short-term (1-7 years), this reflects a reasonable timeframe for a further application for development to come forward on the site, in the absence of this subject proposal.

**Table 3-1 Do Nothing Description of Effects**

| Aspect | Quality of Effect | Significance | Context | Duration |
|---|---|---|---|---|
| **Population & Human Health** | Negative | Moderate | County | Short-term |
| **Landscape & Visual** | Neutral | N/A | Local | Short-term |
| **Material Assets: Traffic & Transport** | Positive | Slight | Local | Short-term |
| **Material Assets: Built Services & Waste** | Neutral | N/A | Local | Short-term |
| **Land & Soils** | Positive | Moderate | Local | Short-term |
| **Water & Hydrology** | Neutral | N/A | Local | Short-term |
| **Biodiversity** | Neutral | N/A | Local | Short-term |
| **Noise & Vibration** | Positive | Moderate | Local | Short-term |
| **Air Quality & Climate** | Neutral | N/A | Local | Short-term |
| **Cultural Heritage: Built Heritage** | Negative | Significant | Local | Short-term |
| **Cultural Heritage: Archaeology** | Negative | Significant | Local | Short-term |

In conclusion, the 'Do-Nothing' scenario is an inappropriate alternative as it is counter to strategic planning objectives that seek to address rural deprivation, revitalise rural villages and towns, and provide for enhanced conservation management of our rich cultural heritage resource. With the mitigation measures proposed in this EIAR and having regard to the findings that no significant effects

on the environment are expected with such measures in place, the comparative environmental effects are not considered sufficient to rule out the proposed development.

### 3.3.2 Alternative Locations

As the proposed development evolved, a number of alternative scenarios in relation to the location of the proposed visitor centre, mooring point at Inis Cealtra, and the village car park were considered.

#### 3.3.2.1 Visitor Centre

As set out in the *Inis Cealtra Visitor Management and Sustainable Tourism Development Plan* (Inis Cealtra VMSTDP) it was decided at an early stage, that a visitor centre was needed to serve the needs of visitors seeking to learn more about the island.

During preparation of the plan, a number of different alternative scenarios were considered, including in relation to the visitor centre location. The alternatives were assessed against the Strategic Environmental Objectives (SEOs) developed for the Strategic Environmental Assessment (SEA). Four potential alternative location, Knockaphort, Scariff, Tuamgraney and Mountshannon on the mainland were assessed against selected overarching objectives in relation to increasing numbers of visitors to the town, minimising wastewater and traffic impacts and reducing impacts on the natural environment.

Mountshannon emerged early on as the preferred location for the visitor centre due to the environmental sensitivities of the island, as detailed in the SEA Statement:

> *Given the density of archaeological resources both above and below ground, the potential for underwater archaeology, the landscape setting of the island in addition to ecological considerations, physical interventions on the island must be very carefully considered and in line with the approach to the study, such interventions must be minimal. This is in line with international best practices and is reflected in the most fundamental key objective of the plan, as stated in Section 1.2.2 Plan Key Objectives. Therefore, consideration of a visitor centre on the island was excluded at an early stage of the plan preparation process, with potential sites on the mainland considered.*
>
> *Mountshannon Village, close to harbour is the preferred location, as it uses the existing village and facilitates potential movement through the Aistear Park. It would facilitate access from the main street of Mountshannon and could bring spin off benefits to the village itself.*

Rating and ranking of the four shortlisted locations resulted in the identification of Mountshannon Village as the most suitable location for the new Visitor Centre. Mountshannon scored well due to its extensive community links with Inis Cealtra and direct views of the island. It also had the benefit of having a number of underused landholdings adjacent to the lake.

A site selection process involving 12 sites was then carried out, comprising lands in public, community and private ownership, shown in Figure 3.1. All had some view of Inis Cealtra and were adjacent to possible embarkation points on the lakeshore.

1. Northwest stretch of southern boundary (lower road) of Aistear Park
2. Middle of southern boundary (lower road) of Aistear Park

3. Public open space to lake side of lower road (southeast of sailing club)
4. Boundary between Aistear Park and the Rectory (along lower road)
5. Southern part of rectory site
6. Car park for marina/harbour area
7. Lake edge park/swimming area near car park
8. North-eastern promontory point to lake shore
9. Vacant site to main street (with boundary onto Aistear Park)
10. Current Aistear centre – assuming the potential for extending upwards
11. Off-shore, south of harbour wall on/over/floating upon the lake.
12. The Rectory (building and adjacent areas)

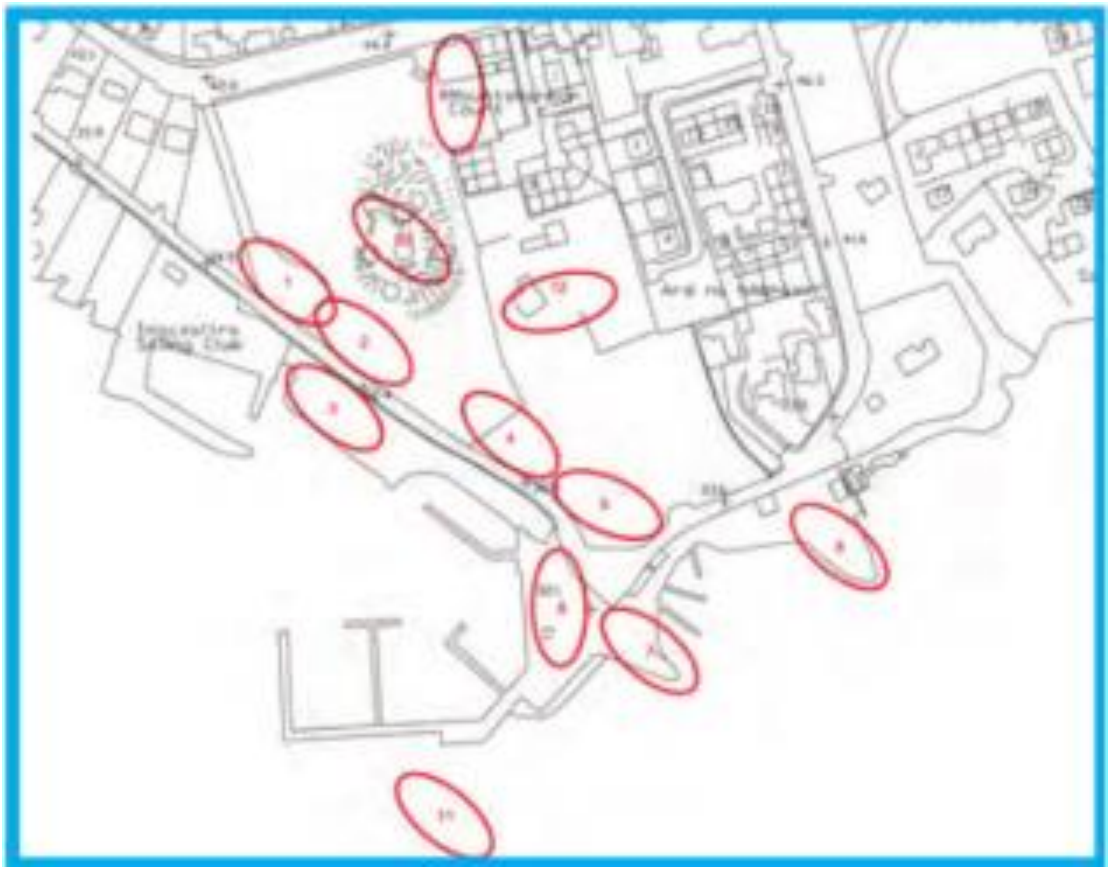


**Figure 3-1 Potential Visitor Centre Sites in Mountshannon (Source: Figure 12, Inis Cealtra VMSTDP)**

The 12 potential sites were rated according to the criteria set out below:

- Location on (or connectable to) main street;
- View of Inis Cealtra;
- Access to, or adjacent to, the lake edge for embarkation;
- Adequate size of the site to accommodate the visitor centre;
- Potential to gain planning permission and/or pose no significant potential environmental impacts or be at flood risk; and
- Strong community connection of the Aistear Park.

The sites were also screened for Appropriate Assessment, Strategic Environmental Assessment and Flood Risk Assessment, the results of which fed into the rating assessment.

The rating exercise ranked Sites 1 and 2, located along the south-west boundary of Aistear Park the highest, each scoring well across the range of categories. Site 5 which is the location of the proposed Visitor Centre in the southern part of the Old Rectory site, was ranked sixth.

As Table 3.2 shows, there was only a slight difference in the scores associated with potential environmental impacts and flood risk, with Site 5 scoring 5 points and Sites 1 and 2 scoring 7 points.

**Table 3-2 Site selection for Visitor Centre (Source: Table 3.2, Inis Cealtra VMSTDP)**

| Site No Criteria | On (or connectable to) main street | View of the island | Access or adjacency to lake edge for embarkation | Adequate size | PP potential and Env / Flood risk | Community connection (Aistear) | Composite score |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 7 | 7 | 7 | 7 | 8 | 41 |
| 2 | 5 | 8 | 7 | 7 | 7 | 8 | 42 |
| 3 | 3 | 7 | 9 | 8 | 4 | 6 | 37 |
| 4 | 4 | 7 | 7 | 7 | 5 | 7 | 37 |
| 5 | 1 | 8 | 7 | 9 | 5 | 6 | 36 |
| 6 | 1 | 8 | 9 | 6 | 4 | 6 | 34 |
| 7 | 1 | 7 | 9 | 7 | 4 | 6 | 34 |
| 8 | 1 | 7 | 9 | 7 | 4 | 6 | 34 |
| 9 | 9 | 2 | 1 | 6 | 8 | 7 | 33 |
| 10 | 7 | 7* | 3 | 3 | 6 | 9 | 35 |
| 11 | 0 | 8 | 9 | 3 | 0 | 4 | 24 |
| 12 | 4 | 6 | 6 | 10** | 6 | 7 | 39 |

As set out in the Inis Cealtra VMSTDP, a number of the sites assessed were close in score to the preferred option, Site 2 in Aistear Park, and were therefore considered appropriate alternatives for the development of a visitor centre should the preferred site prove unfeasible.

Ultimately, it was not viable to proceed with the preferred site(s) in Aistear Park. However, the subject site is deemed to perform comparably with the highest-ranking sites in its score for environmental impacts and flood risk. It also benefits from good views of the island, accessibility to the harbour and adequate size.

The suitability of this site for the proposed development has been anticipated in the Clare County Development Plan (CCDP) 2023-2029 which itself was subject to Strategic Environment Assessment (SEA) and the consideration of alternatives for this site and area. Regarding its zoning Tourism (TOU3) in the CCDP, the SEA Report (Volume 10b(i)) confirms that further development to facilitate tourism expansion, is not inconsistent with the Strategic Environmental Objectives (SEOs) against which the provisions of the Plan were evaluated, as set out below:

> ***TOU3 allows for further tourism expansion within the village and does not reflect negatively on the SEOs for the County Development Plan at this location***. *The visitor experience at TOU 3 will include a visitor centre within the village of Mountshannon which makes use of the previously vacant Rectory building a protected structure, which looks out to the Marina and*

*Lough Derg. The visitor centre will introduce Inis Cealtra to a wider audience, with the opportunity to also visit the island by boat. This will provide a major new tourist attraction in the village which complements and enhances the visitor offering of Irelands Hidden Heartlands. It will further raise the profile of East Clare as an attractive visitor destination and it also will complement the success of the Lough Derg Blueway.* (emphasis added)

The construction of a visitor centre at the site has been determined to be acceptable in principle with regard to the environmental parameters considered in the SEA. The site and proposed development present an opportunity to strengthen the tourism offering in East Clare and support implementation of the Inis Cealtra VMSTDP.

#### 3.3.2.2 Island Mooring Point

Due to the condition of the pier at the existing landing point, it was decided early on that an upgraded or new pier would need to be constructed at a location that allows both safe passage to and safe landing and embarkation on/from the island.

During preparation of the application, several alternative locations were considered. Initially, it was intended to construct a new structure on the northern shore of the island, in line with the recommendation of the Inis Cealtra VMSTDP (Appendix 2), which identified this as the preferred location due to its safer meteorological conditions and viable depth (subject to further studies).

Baseline environmental surveys including habitat and species surveys, as well as underwater archaeological surveys, were progressed to inform the developing design.

Aan Underwater Archaeological Impact Assessment was carried out by the Archaeological Diving Company Ltd (ADCO, 2021) along the north shore of the island (see Appendix 14.3 of this EIAR). Two alternative jetty locations were investigated, the location of the existing pier and the potential new location on the northern shore, shown as Option 1 and Option 2 respectively in Figure 3.2.

The archaeological surveys undertaken confirmed the presence of a log boat and a new landing area off the north shore strongly suggesting that this was a preferred landing area in the past. The proposed new landing point on the northern shore (Option 2) was noted as very close to these two exposed archaeological features, and the archaeological potential of the area identified as high.

**Figure 3-2 Two potential landing point locations (Source: ADCO Dwg dated 16.06.21, Title: Figure 2 Proposed development boundaries (Options 1 and 2) and associated ADCO Survey Areas superimposed upon satellite imagery of Inis Cealtra.)**

On foot of the assessment, ADCO's recommendation stated that the "*proposal to upgrade the existing northwest landing is likely to encounter less archaeological risk than to construct a new landing off the north shore. For this reason, it is recommended that consideration be given to upgrading the existing pier*." Further underwater archaeological investigation was also recommended.

Habitat and botanical surveys undertaken by Delichon Ecology identified extensive but narrow fringe areas of marsh habitat (GM1) occurring along the south-eastern, western and northern fringes of the island. The marsh habitats are of the greatest botanical diversity on the island. Where this habitat occurs along the northern and eastern fringes of the island, it is characterised by localised abundances of yellow iris. The marsh habitat was evaluated as corresponding to EU Annex I habitat of County importance / International importance (see Chapter 10 and Appendix 10.4).

**Figure 3-3 Photos of Marsh along the northern fringe (left) and eastern boundary (right) of Inis Cealtra (Source: Appendix 10.4, Habitat Survey prepared by Delichon Ecology)**

Following the habitat survey which confirmed the presence of marsh habitat (EU Annex I habitat) along the northern shoreline, Option 2 was discounted as a viable location due to concerns about the potential significant impacts to ecology.

A concept design for the landing point on the north-east of the island (Option 3) was subsequently prepared, located further east of previously considered alternative Option 2, as shown in the Figure below.

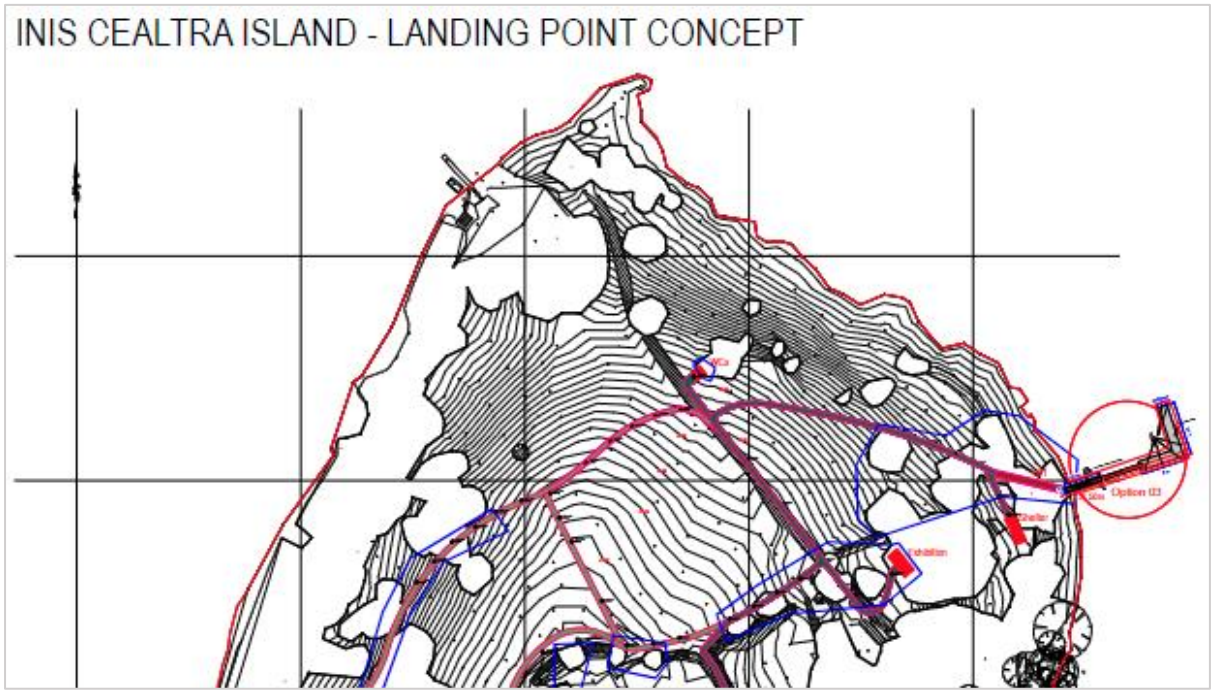



**Figure 3-4 Option 3 Landing Point Concept Design**

The project ecologist confirmed that Option 3 was preferable to Option 2 as a potential location for construction of a new jetty, as it is outside the surveyed Annex I habitat.

To further inform the site selection process, additional underwater archaeological surveys were progressed, including geophysical and dive surveys. The purpose was to assess a number of possible locations for the landing point, including the area where the existing pier is located and the area to the north-east of the island where Option 3 was located. The results are presented in the Underwater Archaeological Impact Assessment (Mizen, September 2024) in Appendix 14.5. Within the report, proposed Option 3 is noted as being within dive survey 'Area 1'. The dive survey confirmed the definite presence of three log boats and another probable log boat in Area 1.

Having regard to the baseline survey results, Option 2 was ultimately discounted as an appropriate location for a new jetty due to the presence of Annex I marsh habitat. Option 3 was not a preferred location given the results of underwater archaeological surveys that confirmed the presence of at least three log boats in the area north-east of the island.

In respect of potential impacts arising from upgrade of the existing island jetty (Option 1, the selected option), the Mizen report states:

> *In general terms, it is anticipated that the proposed construction activities for the improvement of landing facilities at Inis Cealtra will involve some level of excavation/disturbance of lakebed sediments. No evidence of archaeological material was noted on the lakebed in close proximity to the proposed development. The closest definitive underwater cultural heritage site is Logboat 4 some 300m to the east.*

Biodiversity is addressed in Chapter 10 of this EIAR, wherein it is confirmed (section 10.10.1) that the proposed jetty location (Option 1) was selected to avoid/reduce ecological impacts on habitats and species.

Although the selected location was provisionally ruled out in the Inis Cealtra VMSTDP, this was due mainly to the meteorological conditions, water levels and the lakebed depth. However, the plan also acknowledges the possible unknown constraints of what was then the preferred option (Option 2). It recommends that the landing point location revert to the current north-west pier which should be upgraded to make it safe in poor weather if the preferred option cannot be implemented.

The currently proposed location to the north-west of the island (Option 1) represents the most favourable location considered for the landing point. Selection of the preferred jetty location followed a rigorous assessment process based upon comprehensive baseline surveys, taking into account the island's environmental sensitivities. The proposed location avoids/reduces potential impacts to ecologically important habitats and species, and underwater archaeology, representing the option with least potential for adverse impacts on the environment. Potential constraints arising from weather, water levels and lakebed depth at this location have been mitigated by the new jetty design, ensuring that the objective to construct a new landing facility that allows both a safe passage to and safe landing and embarkation on/from the island will be achieved.

### 3.3.3 Alternative Uses

The primary determinant of suitable uses is established by the site's zoning under the operative development plan for the area. The proposed development, Inis Cealtra Visitor Experience, is situated across multiple sites, located at Inis Cealtra and in Mountshannon Village.

#### 3.3.3.1 Inis Cealtra

Inis Cealtra is located outside the settlement boundary and is not zoned in the Clare County Development Plan (CCDP) 2023-2029. Notwithstanding, the island is designated for tourism development, identified as a major opportunity to grow the tourism industry and encourage visitors to East Clare. The plan promotes Inis Cealtra as a tourism destination and supports the sustainable expansion of tourist facilities on the island, set out in policy objective CDP9.27(e):

*It is an objective of Clare County Council:*

*....*

*e) To promote the sustainable tourism development and management of Inis Cealtra (Holy Island) as part of the overall Visitor Management and Sustainable Tourism Development Plan.*

In addition, the settlement plan for Mountshannon in Volume 3c of the CCDP 2023-2029 contains objectives which promote tourism development on Inis Cealtra as follows:

> *To encourage a sustainable tourism industry based on the amenities of Lough Derg and Inis Cealtra (Holy Island) and the White Tailed Eagle* (General Objective)
>
> *...*
>
> *To work with relevant stakeholders to support the implementation of the Visitor Management and Sustainable Tourism Development Plan for Inis Cealtra (Holy Island),including the development of a visitor centre in the village (and associated facilities)* (Tourism Objective)

In the absence of zoning on the island and having regard to CDP9.27 and the settlement plan for Mountshannon, there are no potential alternative land use scenarios for Inis Cealtra that are not related to the provision of tourist facilities and implementation of the Inis Cealtra VMSTDP.

#### 3.3.3.2 Mountshannon Village

The proposed development sites in Mountshannon Village are zoned under the CCDP 2023-2029. In each case, the land use zoning designates the subject lands for the use which is currently proposed.

With the exception of a narrow section which will principally provide for access off Main Street (zoned Mixed Use), the new Village Car Park site is mainly zoned Utilities (UT1), designated in the development plan for the provision of a car park/bus park to serve the Inis Cealtra Visitor Experience.

The site of the proposed new Visitor Centre is zoned Tourism, designated for tourism development that shall be used for a range of structures and activities which are primarily designed to facilitate tourism development and where uses are mainly directed at servicing tourists/holiday makers and visiting members of the public.

Having regard to the land use zoning objectives applicable to the proposed Village Car Park and Visitor Centre, there are limited alternative use scenarios available. It is contended that a different approach to land uses on this site would not be considered a viable alternative and would not be consistent with the planning policy context pertaining to the lands.

### 3.3.4 Alternative Layouts and Design

This section describes alternatives examined during the design phase and explains the key rationale and factors that led to the selection of the proposed alternative. In this section, alternative layouts and alternative designs are considered together.

#### 3.3.4.1 Island Pods

Over the course of the project, the development strategy in respect of the proposed pods on the island evolved in response to environmental sensitivities and stakeholder engagement.

The island layout below includes the formerly proposed landing point to the north-east and an alternate design approach that was considered for the proposed welfare and facilities pods.

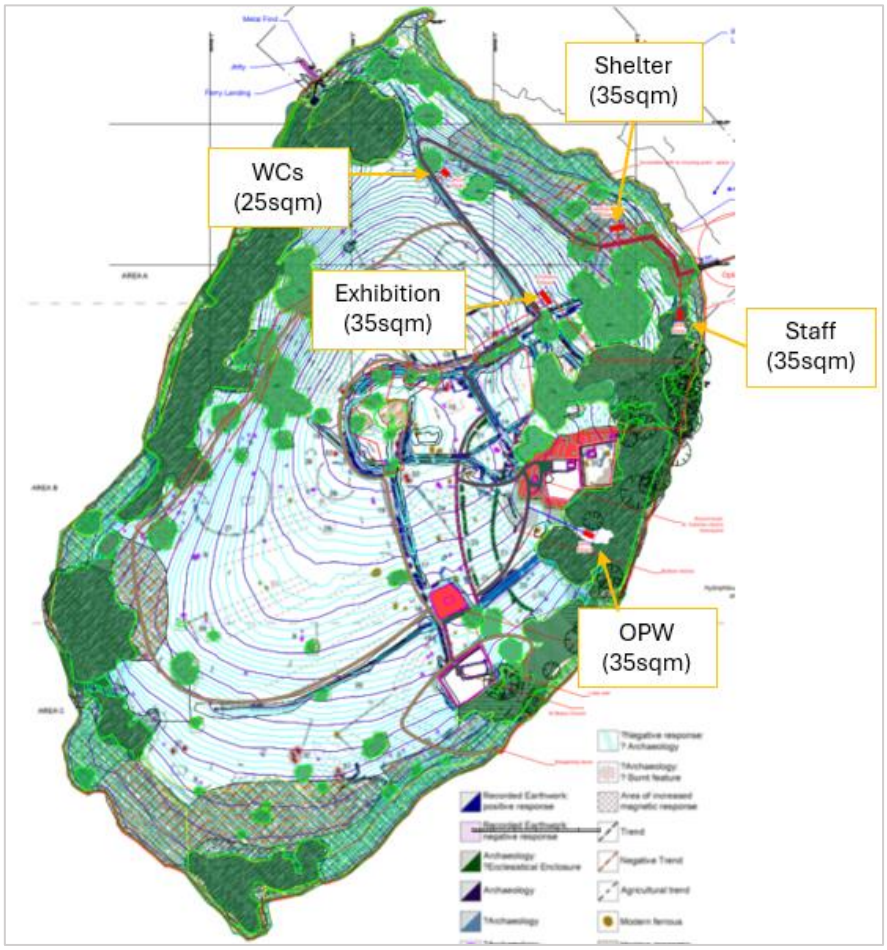



**Figure 3-5 Previously considered island layout showing alternative design approach to pods**

This earlier iteration of the island layout shows alternatives considered in respect of the pods, including the number proposed, their location and size (sq.m). The layout provided for five pods in total, including a landing shelter for visitors close to the proposed jetty location, WC pod in the north, a staff pod for island guides in the east, OPW pod (to replace the existing OPW facilities shed) south of St. Caimins Church graveyard and an exhibition pod north of the main monuments.

This strategy for the new pods was directly informed by the Inis Cealtra VMSTDP which recommends that four new pods be provided, comprising a warden hut, toilet structure, weather shelter and exhibition 'cube'. The plan also includes an objective to remove or relocate the existing OPW shed, being the rationale for inclusion of a replacement OPW pod on the early island layout plan.

While the pod locations were principally driven by the alignment of the paths and proposed mooring point location, consultation with the NMS prompted the design team to further consider the need for and proposed use of the exhibition pod.

Given the overarching aim of minimal intervention on the island, it was subsequently decided that the interpretation element of the project could be adequately served by the new Visitor Centre on the mainland. Omission of the exhibition pod on the island would reduce potential environmental impacts, particularly in respect of damage to archaeology and the visual impact on the site's historic setting.

As the island layout was further progressed, including in response to the selected landing point in the north-west, the route for the proposed network of paths was adjusted accordingly. A revised design approach was adopted, providing for four pods rather than five due to omission of the exhibition pod. In addition, the pods were relocated with three pods (WCs, shelter and staff facilities) clustered in the north-west of the island in close proximity to the existing pier. The location of the OPW pod was also changed, positioned close to the intersection of proposed paths P1, P3 and P5. The rationale for the proposed location of the OPW pod was ease of access around the monuments for staff, allowing for more comfortable movement of machinery/lawn mowers etc during management and maintenance activities on the island.

In tandem with this revised layout, the design of the pods was advanced, and a more modest scale adopted in the case of three pods, evidenced by their reduced footprint. In response to input from the OPW, the size of their replacement pod increased. The size of the proposed pods changed as follows:

**Table 3-3 Revisions to Size of Pods**

| Proposed Use | Previously Proposed Area | Revised Area |
|---|---|---|
| Shelter | 35sq.m | 23sq.m |
| Island Staff | 35sq.m | 23sq.m |
| WCs | 25sq.m | 16sq.m |
| OPW | 35sq.m | 59sq.m |
| Exhibition | 35sq.m | - |
| Combined Footprint | 165sq.m | 121sq.m |

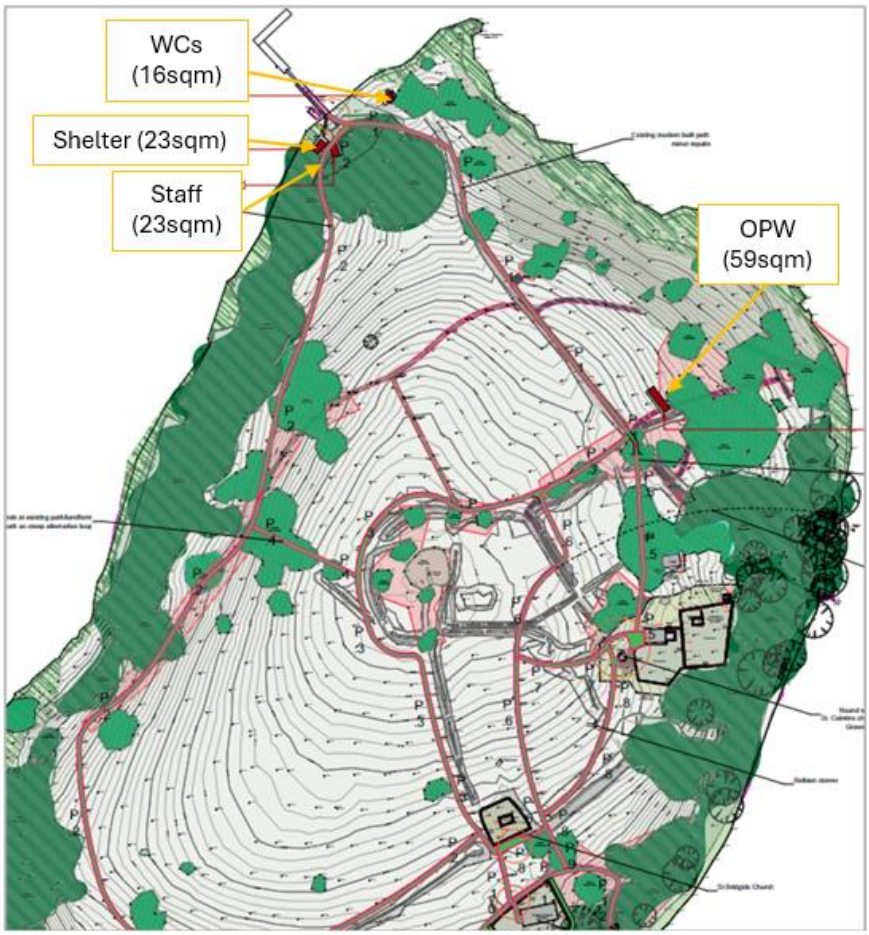



**Figure 3-6 Revised Island Layout with four pods**

Since preparation of the revised layout discussed above, further consultation with the OPW led to a decision not to proceed with the replacement OPW pod for operational reasons.

In addition, input from the project arborist led to a further and final change to the location of the proposed WC pod in order to avoid adverse impacts to existing trees in that area.

Minor amendments to the pod dimensions are also seen in the selected alternative which is now proposed. The change to pod sizes is marginal, reflecting a carefully considered response to site conditions in the final design scenario.

The various layout and design iterations considered throughout the development design process were directly informed by the emerging baseline information and stakeholder engagement. With three pods now proposed, reduced from five and then four, coupled with reductions in the pod sizes during design development, the selected alternative represents the option of least intervention. Collectively, the three pods will have an area of 60sq.m, down from 165sq.m and 121sq.m in previous alternatives.

Given the inherent natural beauty of Inis Cealtra derived from its landscape character and cultural heritage, the reduced scale of the proposed pods in quantum and area, provides for the least intrusive option in term of visual impacts. Potential visual impacts will be further mitigated by the location of the pods within areas of existing woodland.

The final positions selected for the proposed shelter and staff pods is an area occupied by the existing concrete shelter in the north-west of the island. Construction of this concrete structure ('known as the Fisherman's Hut), with attendant fencing and cattle crush, has resulted in a considerable degree of disturbance in this area.

With the reduced number of pods proposed and overall decrease in size (combined sq.m), the selected design will significantly lessen their effective footprint. Compared with the previously considered alternative layouts and design, the current proposal ensures that potential impacts to the island's archaeology and ecology are avoided/reduced.

Having regard to the above, the selected layout and design perform best in respect of the environmental factors underpinning the site's sensitivities when compared with the alternatives considered.

#### 3.3.4.2 Island Paths

New facilities inclusive of paths for visitor circulation were identified as necessary in the Inis Cealtra VMSTDP. The plan identifies the requirement for a pathway to and around the monuments to ensure controlled access, as well as looped pathways around the island to facilitate access and visitor flow.

If not planned with due consideration for the layout of the archaeological monuments and potential impact caused by footfall, there is potential for the new paths to cause damage to archaeological material and negatively impact on the island's historic and aesthetic setting.

The route selection process was therefore informed by the aim of ensuring the visitor experience is safe and of a high standard, while simultaneously providing for protection of the island's heritage and areas of ecological sensitivity.

During the design development, the aim of minimal intervention was an important influencing factor. A series of alternative walking routes were considered, evolving in response to island layout changes including revised landing point and pod locations.

Shown in the Figure below are two previously considered options for the network of pedestrian paths. Although aspects of these previously considered routes are maintained in the current layout, both would result in a greater level of intervention in the north and east of the island. These former route options are more extensive than is currently proposed, incorporating a cluster of short, interconnected paths in the vicinity of the monuments which are mainly located in the eastern part of the island.

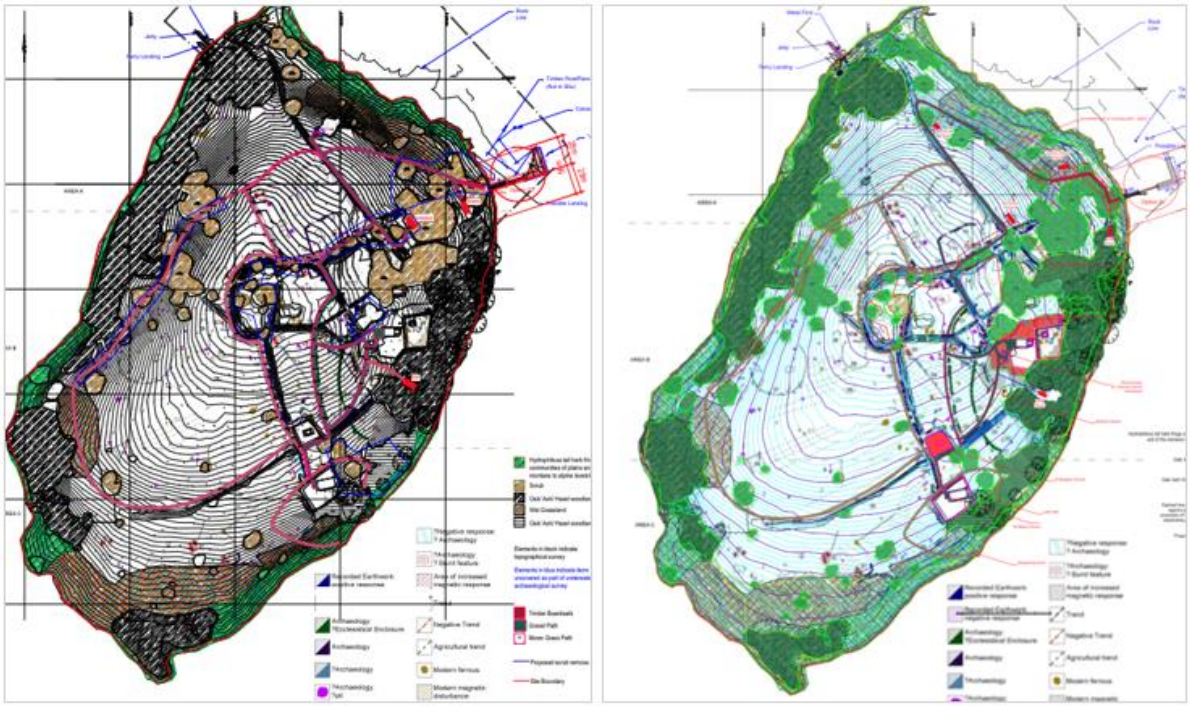


**Figure 3-7 Two previously considered island layout plans showing alternative design options for the pedestrian paths.**

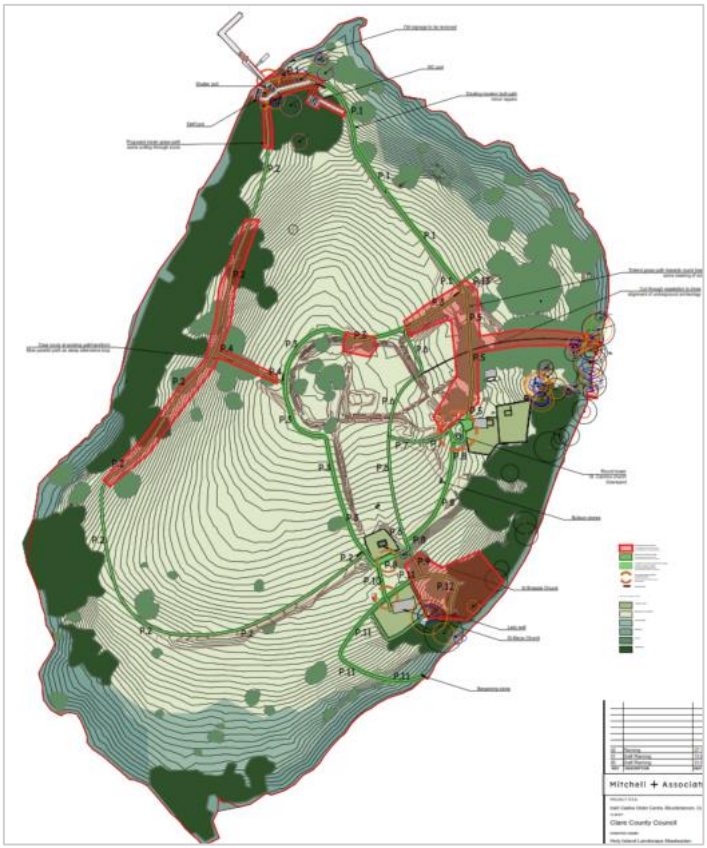


**Figure 3-8 Currently proposed island layout showing simplified design for the network of pedestrian paths**

As can be seen on the current island layout over page, a scaled-back simplified approach to the route of the paths has been adopted. The current proposal is preferable to the previously considered alternatives as it will avoid/reduce potential adverse impacts on the island's cultural heritage, including the subsurface archaeology and built heritage.

The proposed network of paths on the island has also been selected to avoid more ecologically sensitive habitats and will be located in Improved Agricultural Grassland (GA1) and Amenity Grassland (GA2) habitat.

At a consultation meeting with the NMS in July of this year, the network of proposed paths was discussed, and the design team were requested to consider the need for the full extent of the paths and the possibility of adopting a phased approach to their implementing, allowing for monitoring to inform the best long-term approach.

The NMS also requested that an accessibility audit be undertaken to evaluate the proposal with reference to the the 2011 guidance document '*Access: Improving The Accessibility Of Historic Buildings And Places'* (published by the Department of Arts, Heritage and the Gaeltacht with the support of the National Disability Authority).

The comments of the NMS were taken on board, however, it was decided not to alter the route or extent of the proposed paths as these have been selected to align with the Inis Cealtra VMSTDP (Objective 10 refers). It was also determined unnecessary to introduce a phased strategy to provision of the paths. On balance, it was considered that these recommendations to limit the extent of the paths would be relatively minor interventions that may undermine the benefit of the currently proposed network which enables visitors to take alternative routes, thereby spreading the intensity of use.

To avoid erosion on the grass tracks and monuments where heavy footfall is expected, the decision was taken to introduce an additional 1m mown strip either side of the 2m wide paths. Recommended measures in the Visitor Management Plan (VMP) will further mitigate against trail degradation. Ongoing monitoring by island guides will be undertaken to ensure potential visitor impacts are appropriately managed. If required, paths may be diverted or closed to avoid erosion and trail degradation.

As recommended by the NMS, an Accessibility Audit of the proposal was carried out and the results are detailed in the Accessibility Audit on Inis Cealtra prepared by Evolve Technologies which accompanies this application. The assessment acknowledges the unique challenges presented by the island's natural terrain, concluding as follows:

> *Finaly, this audit underscores that several accessibility issues on Holy Island are unavoidable due to the nature and sensitivity of the site, as well as the design objective of minimizing intervention to preserve its historical, cultural, and natural integrity. The overarching goal of the project is to improve accessibility in ways that respect the island's archaeological significance and environment, resulting in certain design limitations where modifications could disrupt the island's character*.

Notwithstanding, accessibility and inclusion is a priority of Clare County Council and this is reflected in the Site Management Objectives within the VMP. The measures recommend that access be reviewed regularly, and the 'Inis Cealtra Visitor Experience will work towards providing enhanced accessibility on the island for visitors with limited mobility on an ongoing basis, within the natural limitations of the island and its terrain'.

The selected alternative to proceed with the currently proposed network of paths is therefore considered the preferred option with respect to environmental outcomes and the design approach is complemented by a range of additional mitigation measures. Implementation of the recommended monitoring and visitor management systems at operational stage, will allow for protection of the site's cultural heritage and ecology.

#### 3.3.4.3 Island Path Type

The proposed path type was selected following consideration of an alternative scenario involving a combination of types including:

- Timber Boardwalks
- Gravel Paths
- Mown Grass Paths

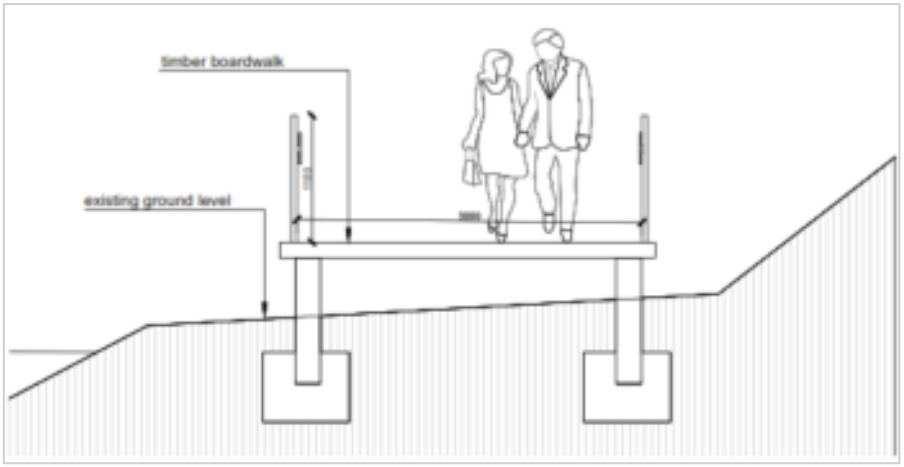



**Figure 3-9 Path Type - Timber Boardwalk**

**Figure 3-10 Path Type - Gravel Path**

**Figure 3-11 Path Type - Mown Grass**

The earlier design iteration included a combination of the three path types, as shown in the Figure below. A raised timber boardwalk was proposed in the north-east of the island (indicated in red). The boardwalk would extend from the previously proposed landing point location to connect with a gravel path that extended north-west initially, before making a 'U-turn' to lead visitors back toward the main monuments in the east of the island. Mown grass was proposed for the paths likely to be less used, mainly in the south and western part of the island.

In respect of their construction, the timber boardwalk would need footings and the design intent was to use the largest span possible to minimise potential impacts to ecology. The gravel paths would be constructed by removing 50mm topsoil and placing of 100mm of gravel which would then be seeded over to allow grass to grow.

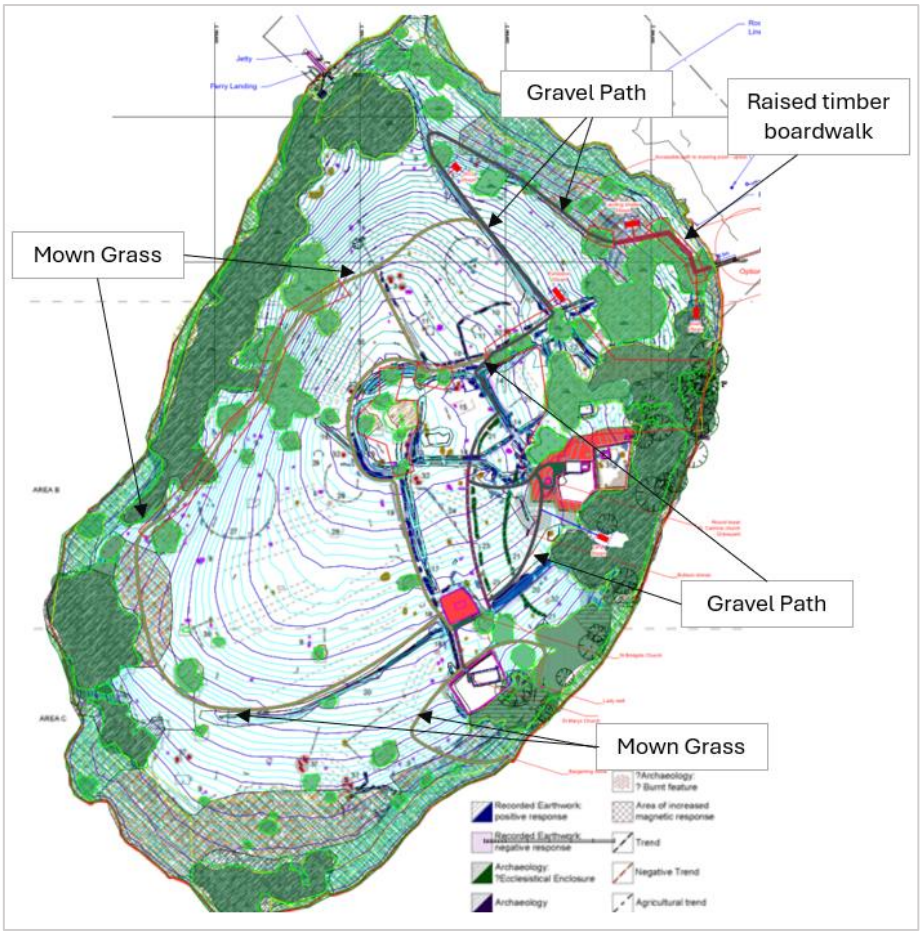



**Figure 3-12 Previously proposed island plan showing alternate combination of path types**

Following consultation with stakeholders and revisions to the proposed island layout that included a simplified network of paths, an alternate approach to the path types was selected. While it is still intended to utilise a combination of path types, the current strategy favours mown grass as the main path type. All island paths are proposed as 2m wide grass mown paths, with an additional 1m mown strip on either side to allow visitor footfall to be distributed over a wider area at path locations that are expected to be more intensively used.

In limited areas where heavy footfall is expected such as Path 1 that will lead visitors from the landing point direct to the Round Tower, a layer of crushed aggregate is proposed with topsoil spread on top to allow for grass to develop. This will allow for sufficient air and moisture to allow grass to develop even with heavier footfall and only expose the aggregate in extreme situations rather than eroded topsoil.

A similar approach will be used at the highest intensity key points - at the mooring point, at St Caimin's church and round tower, at St Bridgid's church and St Mary's church. These areas have been excavated in the past and therefore it is not anticipated that any subsurface archaeology would be disturbed.

The pods will have new timber walkways to provide for level access into them. As timber walkways have greater potential to disturb subsurface archaeology, their use will be confined to the proposed pod locations in the north-west.

It is considered the selected alternative to path type will reduce potential environmental impacts. The approach has been refined and consistent with the design philosophy of minimal intervention, greater reliance on mown paths ensures minimum visual impact to the special landscape character, built heritage and natural beauty of the island. Expansion of the mown grass path type over gravel paths and timber boardwalk also reduces potential impacts on underground archaeological features.

### 3.3.5 Alternative Processes

#### 3.3.5.1 Island Toilet facilities

From an early stage of the design development, careful consideration was given to alternative options including alternative processes for the toilet facilities on Inis Cealtra. Being an island, there are no foul drainage or water services available.

Although some consideration was given initially to the option of not providing toilet facilities on the island, this approach was determined to present a separate set of challenges. The option of proceeding with no WCs would potentially detract from the experience of some visitors due to the discomfort that would arise in the absence of facilities. This option would also increase the likelihood that people would use bushes or shrubs for toilets, not considered sustainable in light of the proposed increase to visitor numbers the project will generate, potentially giving rise to nuisance and nutrient run off to Lough Derg.

Having decided it was preferable to provide toilet facilities on the island, consideration was given to a range of alternative processes. A summary of the options considered highlighting potential concerns with each is presented in the Table below.

**Table 3-4 Summary of Alternative Options Considered for Island Toilet Facilities**

| Option | Type | Potential Concerns |
|---|---|---|
| A | Onsite WWTP | • Suppliers for the conventional WWTP system advised that they require a constant source of power supply to guarantee the proper functioning of their systems.<br>• To ensure constant power supply, a renewable source of power with battery storage would be required or a supply obtained by overhead line or Horizontal Directional Drilling under Lough Derg. These could be cost prohibitive and would give rise to potential environmental impacts and concerns regarding archaeology. |
| B | Reed bed system | • Requires a septic tank for primary treatment thus resulting in excavation on the island.<br>• The reedbed option could lead to a substantial area (4500m$^2$ approximately if the WC is to serve visitors) of the island being covered especially if visitors are to be permitted to use the WC. This could have implications on the visual impact of the project.<br>• Note that these systems would have a higher level of maintenance regime than traditional WC systems.<br>• Containment measures are required to prevent the public entering due to risk of drowning. |

| Option | Type | Potential Concerns |
|---|---|---|
| C | Pumping station | • Horizontal Directional Drilling (HDD) under the lake to bring power to the island and use a pumping station with the HDD bores to transport the waste back to the mainland. This option could be cost prohibitive and raises environmental concerns. Also, the underground drilling may not be permitted on archaeological grounds.<br>• Higher risk of odour nuisance than other options.<br>• Note that these systems would have a higher level of maintenance regime than the traditional WC systems.<br>• Interface with additional landowners along the rising main route. |
| D | Dry Toilets | • Note that these systems would have a higher level of maintenance regime than the traditional WC systems.<br>• Some options require excavation, so may present archaeological concerns. |
| E | Micro Anaerobic Digesters | • Power supply is required. Similar to Option A<br>• Increased level of maintenance<br>• Higher odour potential |

Having considered the range of available alternative processes, including their associated constraints and potential for environmental impacts, Options A, C and E were ruled out early on. In each case, the cost was expected to be prohibitive. Importantly, given the environmental sensitivities of the island and the protected status of Lough Derg as a designated SPA, these three options were determined to be unviable from an environmental perspective. Due to the scale of works that would likely be required to implement these options and/or their specific operational requirements, it was considered that the potential for adverse environmental effects arising from these options was likely, ranging from significant to profound was likely.

Potential adverse effects associated with these three options were considered likely across a range of environmental factors, including landscape and visual, water quality, built services, land and soils, biodiversity, noise and vibration and cultural heritage.

Option B was subsequently discounted due to the significant area it would occupy which would have potential adverse impacts on the island's landscape and aesthetic character, and the excavation that would be required to install a septic tank, with potential to negatively impact archaeology.

Option D, dry toilets, emerged as the preferred alternative. Manufacturer details confirmed that a dry toilet system is available which can be installed completely above ground level, thereby avoiding any need for excavation and reducing potential risks to land and soils and water quality .

Cognisant of the island's sensitivities, the selected option of a dry toilet system combined with the decision to provide toilet facilities for limited use for staff and emergencies, was determined to be the most advantageous in terms of potential environmental impacts.

## 3.4 Difficulties Encountered

There were no difficulties encountered in the preparation of this assessment for the proposed development.

## 3.5 Proposed Preferred Alternative

On the basis of the foregoing, it is considered that all reasonable alternatives to the project are considered, and no alternatives have been overlooked which would significantly reduce or further minimise environmental effects.

The multidisciplinary design team and EIAR team have placed respecting the existing environment at the centre of the design development process, driven by the underlying design philosophy of minimal intervention on the island while simultaneously seeking to create a series of high quality tourist facilities that meets visitor's needs.

This chapter demonstrates that the proposed preferred alternative performs better than other alternatives considered. The preferred alternative protects and enhances biodiversity locally, mitigates the visual impact of the proposed development on the island's unique natural heritage, landscape character and protected monuments, protects subsurface archaeology and avoids adverse impacts to land and soils and water quality.

The preferred alternative presents an opportunity to expand County Clare's tourism offering and support its growth as a sustainable tourism destination, ensuring long-term socio-economic benefits to the local community and the wider region would be realised.

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 4
# POPULATION & HUMAN HEALTH

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


4 Population & Human Health ..... 4-3
4.1 Introduction ..... 4-3
4.2 Expertise and Qualifications ..... 4-3
4.3 Project Description ..... 4-4
4.4 Methodology ..... 4-5
4.4.1 Site Visit ..... 4-5
4.4.2 Relevant Legislation and Guidance ..... 4-5
4.4.3 Consultation ..... 4-5
4.5 Difficulties Encountered ..... 4-6
4.6 Baseline Environment ..... 4-6
4.6.1 Proposed Development Site ..... 4-6
4.6.2 Site Context ..... 4-9
4.6.3 Land Use Zoning ..... 4-10
4.6.4 Existing Land Use and Surrounding Environment ..... 4-11
4.6.5 Movement and Access ..... 4-12
4.6.6 Study Area ..... 4-13
4.6.7 Sensitive Receptors ..... 4-21
4.6.8 Human Health ..... 4-21
4.7 Do Nothing Scenario ..... 4-21
4.8 Potential Significant Effects ..... 4-22
4.8.1 Demolition & Construction Phase ..... 4-22
4.8.2 Operational Phase ..... 4-25
4.8.3 Cumulative Impacts ..... 4-27
4.8.4 Summary ..... 4-28
4.9 Mitigation Measures ..... 4-30
4.9.1 Incorporated Design ..... 4-30
4.9.2 Demolition & Construction Phase ..... 4-30
4.9.3 Operational Phase ..... 4-31
4.10 Residual Impact Assessment ..... 4-32
4.11 Interactions ..... 4-32
4.12 Monitoring ..... 4-33
4.13 Worst Case Scenario ..... 4-33
4.14 Conclusion ..... 4-34
4.15 References ..... 4-34

# Table of Figures

Figure 4-1 Site Location and Context ..... 4-7
Figure 4-2 Aerial photo of Inis Cealtra viewed from the north ..... 4-8
Figure 4-3 Aerial image of Mountshannon and the surrounding landscape viewed from the south-west ..... 4-9
Figure 4-4 Extract of Mountshannon Zoning Plan (Source: CCDP 2023-2029, Vol. 3C) ..... 4-10
Figure 4-5 Surrounding network of towns and villages with links to Mountshannon and Inis Cealtra. 4-12
Figure 4-6 Zone of Influence (Source: Volume 2: SEA Environmental Report, Inis Cealtra Visitor Management and Sustainable Tourism Development Plan) ..... 4-14
Figure 4-7 Electoral Divisions in the Study Area (Source: CSO) ..... 4-14
Figure 4-9 Study Area Deprivation Infographics Dashboard (Source: Pobal) ..... 4-17
Figure 4-10 Co. Clare Deprivation Infographics Dashboard (Source: Pobal) ..... 4-18
Figure 4-11 Activities of Overseas Tourists (Source: Failte Ireland) ..... 4-21

# Table of Tables

Table 4.1 Site Locations & Area ..... 4-6
Table 4.2 Population 2006 - 2022 with % Change (Source: CSO) ..... 4-15
Table 4.3 Age Profile of Study Area and County (Source: CSO, 2022) ..... 4-16
Table 4.4 Housing by Type in 2016 and 2022 (Source: CSO ..... 4-16
Table 4.5 Principal Economic Status of Persons 15 years and over in Study Area (Source: CSO, 2022) 4-18
Table 4.6 Persons at work by industry in Study Area (Source: CSO 2022) ..... 4-19
Table 4.7 Breakdown of Visitor Numbers 2014-2018 (Source: Failte Ireland) ..... 4-19
Table 4.8 Breakdown of Overseas Tourist Accommodation Nights (Source: Failte Ireland) ..... 4-20
Table 4.9 Summary of Demolition and Construction Phase Likely Significant Effects in the absence of mitigation ..... 4-28
Table 4.10 Summary of Operational Phase Likely Significant Effects in the absence of mitigation .. 4-29

# 4 Population & Human Health

## 4.1 Introduction

According to the European Commission's Environmental Impact Assessment of Projects: Guidance on the Preparation of the Environmental Impact Assessment Report (2017), human health is; *"a very broad factor that would be highly project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population."*

The Environmental Protection Agency (EPA) Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2022) advise that "*in an EIAR, the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in this EIAR e.g. under the environmental factors of air, water, soil etc.*"

This chapter addresses the likely significant environmental impacts of the proposed development on population and human health. It is noted that other chapters of the EIAR also deal with likely significant environmental effects on population and human health arising from traffic and transportation, air quality and climate, noise and vibration, landscape and visual, material assets: utilities and the risk of major accidents and/or disasters and those chapters should be referenced in conjunction with this chapter of the EIAR.

## 4.2 Expertise and Qualifications

This chapter was prepared by Martina Keenan Rivero of McCutcheon Halley Chartered Planning Consultants. Martina holds a BSc (Hons) in Spatial Planning from Technological University Dublin and an Advanced Diploma in Planning and Environmental Law from Kings Inns. She has 10 years of professional experience, working in NSW, Australia with a Local Authority and as a planning and environmental consultant in Ireland. Martina has prepared AA screening reports, Environmental Impact Assessment screening reports and coordinated and contributed to Environmental Impact Assessment Reports for a range of development projects. Relevant project experience includes large housing developments, mixed-use schemes, industrial and commercial projects.

Martina was involved in the coordination and preparation of EIARs for the following projects that received permission:

- Southwest Gate – A mixed-use scheme across 13 blocks comprising 1,123 residential units with supporting amenities, retail units, office accommodation, a primary healthcare centre, gym, cultural centre, childcare facility, hotel and a series of public open spaces.

- Primark Distribution Centre – Construction of a Distribution Centre incorporating office floor space and ancillary buildings with a cumulative gross floor area of approx. 64,550 sq.m and associated site works.
- Oscar Traynor Road – Construction of 853 residential units (social, affordable and cost rental homes), together with a creche, retail unit/café, community facilities and a new public park.

## 4.3 Project Description

A detailed description of the proposed development is contained within Chapter 2 of this EIAR and the Planning Statement that accompanies the application. The statutory notice should also be referenced. Following is a summary description of the development.

The Inis Cealtra Visitor Experience is to be developed on Inis Cealtra (Holy Island) and on the mainland, in two principal locations within Mountshannon Village. The project is comprised of different elements as set out below.

**Inis Cealtra Island**

- Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island.
- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp.
- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.
- Provision of three staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

**Mainland – Mountshannon**

- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, together with coach parking and bicycle parking facilities.
- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building incorporating a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.
- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.

## 4.4 Methodology

### 4.4.1 Site Visit

To inform this assessment, the application area was visited on several occasions between 2021 and 2024. The purpose of the site visits was to identify the characteristics of the subject lands and their surrounds, both in Mountshannon and Inis Cealtra. Ordnance Survey maps and aerial photography were also examined to assist in this process.

### 4.4.2 Relevant Legislation and Guidance

This chapter has been prepared having regard to the legislation and guidance outlined in Chapter 1 of this EIAR. The impact assessment section follows the terminology (where applicable) used in the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2022), as set out in **Chapter 1** of this EIAR.

Publications and other data sources consulted include:

- National Planning Framework, Ireland 2040 – Our Plan (Government of Ireland, 2018);
- Regional Spatial and Economic Strategy for the Southern Region (2020);
- Clare County Development Plan 2023-2029;
- County Clare Tourism Strategy 2030;
- Inis Cealtra Visitor Management and Sustainable Tourism Development Plan (2017);
- Lough Derg Visitor Experience Development Plan 2020-2024;
- Fáilte Ireland website: www.failteireland.ie/;
- Central Statistics Office (CSO) website: www.cso.ie;
- Pobal website: https://maps.pobal.ie/;
- Environmental Protection Agency (EPA): https://gis.epa.ie/EPAMaps/
- Health and Safety Authority website https://hsa.ie;

### 4.4.3 Consultation

During preparation of the application, Clare County Council and its representatives consulted with a number of statutory authorities and other stakeholders having an interest in this project, including:-

- The **Office of Public Works** (OPW) with responsibility for the conservation and presentation of National Monuments on the island.
- The **National Monuments Service** (NMS) in relation to the protection of the island's archaeological heritage.
- **Waterways Ireland** (WWI) as the navigation authority for Lough Derg and the Shannon, provided technical expertise as required.
- **National Parks and Wildlife Service** (NPWS) with a key role in the protection of Ireland's biodiversity, working to secure the conservation of ecosystems, flora and fauna in Ireland.
- **Uisce Eireann,** Ireland's national regulated water utility is responsible for the delivery of water and wastewater services in Ireland.

- **Fáilte Ireland** as the National Tourism Development Authority seeks to support the long-term sustainable growth in the economic, social, cultural and environmental contribution of tourism to Ireland.

In addition, a meeting was held in Mountshannon in July 2023 to inform members of the local community about the project, including the emerging development design and anticipated timeframe for preparation and submission of the application to An Bord Pleanála.

## 4.5 Difficulties Encountered

There were no significant difficulties encountered in compiling the information contained in this chapter.

## 4.6 Baseline Environment

### 4.6.1 Proposed Development Site

The proposed development site comprises lands measuring approximately 20.3 hectares located at Inis Cealtra (Holy Island) in Lough Derg, and at two locations in Mountshannon Village, in the Townland of Mountshannon. The two sites in Mountshannon Village include: (1) lands within the curtilage of the 'Old Rectory' (a Protected Structure, RPS No. 464) and extending south to encompass a section of Harbour Road (L-4034) and Mountshannon Harbour car park, and (2) lands to the north of Aistear Park on the north side of Main Street (R352).

A breakdown of the individual areas associated with the different project elements is provided in the Table below.

**Table 4.1 Site Locations & Area**

| Project Component | Location | Area |
|---|---|---|
| New floating access jetty, 3 staff and welfare facility pods, mown grass pedestrian paths. | Inis Cealtra (Holy Island) | c. 18.1 hectares |
| Village Car Park | Mountshannon | 8,685 sq.m |
| Visitor Centre, reconfiguration of the harbour car park and public realm enhancements. | Mountshannon | 13,163 sq.m |

Figure 4.1 following is an aerial image showing the proposed development locations, at Inis Cealtra and Mountshannon Village, together with the surrounding context.

**Figure 4-1 Site Location and Context**

Inis Cealtra, also known as Holy Island, is an island off the western shore of Lough Derg. Located approximately 300 m from the mainland and about 2km south-east of Mountshannon village, it is only accessible via boat.

The island is uninhabited and was once a monastic settlement. On its eastern shore is an important group of ecclesiastic monuments comprising the following churches or ecclesiastic buildings: St Caimin's, St Michael's, St Brigid's, St Mary's, Tempall na bhFear nGonta, a shrine (known as the Confessional) and substantial remains of a round tower. A stone monument known as the Bargaining Stone, a Penetential Station, lies near the Lady Well. There are numerous bullaun stones, mounds of stones and earth associated with pilgrim patterns, earthworks and a children's burial ground or 'cillin'. There are 189 individual sites or stone features identified on the island and entered on the Record of Monuments and Places.

**Figure 4-2 Aerial photo of Inis Cealtra viewed from the north**

The Landscape Character Assessment of County Clare (2004), characterises the island as follows:

> *Inis Cealtra is one of the most important early historic ecclesiastical sites in the country.*
>
> *...Large earthwork enclosures on the island are thought to represent later mediaeval pilgrimage activities near the site (ibid). Pilgrimage activities on Inis Cealtra were particularly active from the seventeenth to mid-twentieth century at Whit Weekend. The unusual bargaining stone remains a location where marriage vows are renewed and the island continues to be used as a burial ground. This provides a continuous link to the ritual use of this island in this part of the county.*

Inis Cealtra is owned by Clare County Council, which acquired the island in 2015. The Office of Public Works owns and manages the island's monuments, allowing access to them under management structures run by Clare County Council.

Within Mountshannon , the Village Car Park site is located to the north of Aistear Park, on the northern side of Main Street (the Regional Road R352) which connects Ennis to Portumna and runs to the west of Lough Derg**.** It is a greenfield site, lined by trees and hedgerows along much of its boundaries, with an old field bank composed of stone and earth extending north through the central part of the site.

The 'Old Rectory' Site, also in Mountshannon Village, encompasses the Old Rectory building, a protected structure (RPS No. 464), outbuildings to the north-east of the building, as well as surrounding open space and a landscaped garden. The site is relatively flat with a slight slope towards the north. The site is bound to the north and east by residential development, Mountshannon Court and Ard na hAbhainn. A public park of approx.1.8 hectares (4.5 acres), Aistear Park, lies to the immediate west.

Mountshannon Harbour provides a range of tourist and recreational activities, including harbour flights over Lough Derg, tours of Holy Island from the pier, opportunities to see White Tailed Eagles

from the Bird Hide and a blue flag beach for swimming. It is occupied by an existing car park with 46 parking spaces and the adjoining marina area and related facilities.

### 4.6.2 Site Context

Lough Derg is the largest lake of the River Shannon with c. 40 km long and lies within three counties: Tipperary, Galway and Clare. Waterways activity is the core attraction of the Lough Derg environs attracting many people to the area. The lake is a designated Special Protection Area (SPA) under the EU Birds Directive (2009/147/EC) of special conservation interest for wetland and waterbirds and a Proposed Natural Habitat (pNHA) due to its significance for wildlife and habitats.

Inis Cealtra (Holy Island) is one of the most famous monastic sites from the ecclesiastical period in Ireland. The uninhabited island is located at the mouth of Scarriff Bay on Lough Derg c. 2km from Mountshannon. The monastery was founded by St. Caiman in the sixth-seventh century and represents a special feature on the identity of the inland settlements, in special Mountshannon, Scarriff, Tuamgraney and Whitegate. Holy Island attractions include a round tower, monastic cell, ruins of six churches, high crosses, holly well and unique graveyard. The island is accessible via boat or paddle. The burial site is still in use for the local community, and tourists are attracted to the history and walking trails in the island.

The village is home to Ireland's White-tailed eagles and a popular destination for Shannon cruisers. It is an attractive scenic village close to the marina and provides visitors with a view of Lough Derg and its islands. The Eagles nest near Mountshannon attracting bird watchers from all over Ireland.

**Figure 4-3 Aerial image of Mountshannon and the surrounding landscape viewed from the south-west**

### 4.6.3 Land Use Zoning

Chapter 1 of this EIAR and the Planning Statement that accompanies this application demonstrate that the constituent parts of the proposed development that make up the Inis Cealtra Visitor Experience, are consistent with the applicable land use policies and objectives for the subject lands.

Inis Cealtra is located outside the settlement boundary and is not zoned in the CCDP 2023-2029. However, the development plan promotes Inis Cealtra as a tourism destination and supports the sustainable expansion of tourist facilities on the island through a range of policies including policy objective CDP9.27:

> *It is an objective of Clare County Council:*
>
> *a) To identify the tourism function of the county's islands and address the functional, planning and environmental impacts of additional visitors in order to facilitate increased access to the islands in a sensitive and appropriate manner;*
>
> *...., and*
>
> *e) To promote the sustainable tourism development and management of Inis Cealtra (Holy Island) as part of the overall Visitor Management and Sustainable Tourism Development Plan.*

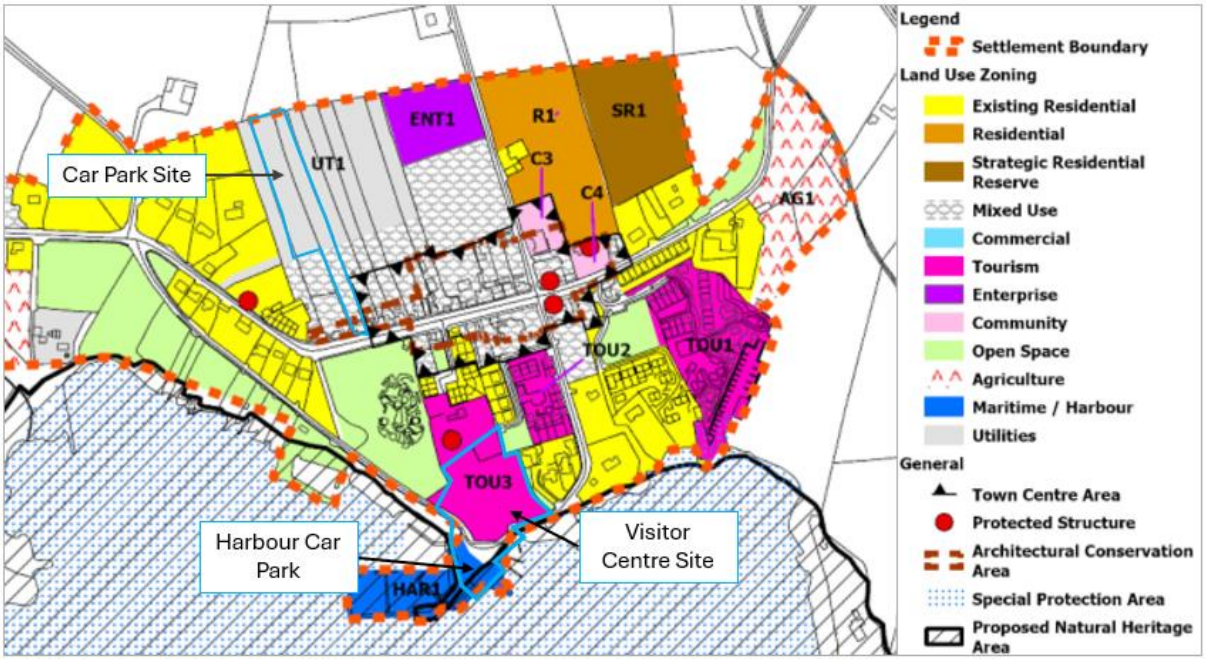



**Figure 4-4 Extract of Mountshannon Zoning Plan (Source: CCDP 2023-2029, Vol. 3C)**

In the settlement of Mountshannon, the constituent parts of the proposed development including the visitor centre, car park and harbour works are permitted in principle within the Clare County Development Plan land use zoning matrix.

The Inis Cealtra Visitor Experience is consistent with the relevant land use objectives and policies in the development plan which encourage sustainable tourism development and management of Inis Cealtra together with the associated supporting facilities on the mainland.

### 4.6.4 Existing Land Use and Surrounding Environment

Mountshannon and Inis Cealtra

The area surrounding the project sites is a mosaic of greenfield sites, single dwellings, multi-residential developments, and commercial developments that make up the village of Mountshannon. Aistear Park sits between the Main Street and the harbour. It features a maze, a children's playground, outdoor exercise machines, seating and picnic area, together with an outdoor library called the 'Wee Library'. A tourist information office operates in the centre of the park during the summer months.

The properties lining the main artery (R352) through Mountshannon Village reflect its mixed-use zoning designation with the main street lined by single and two-storey residential and commercial buildings. Located centrally within the village is a bar, restaurant and café, and further to the west there is a petrol station, community childcare centre and St Caimin's Church. Other commercial uses are also present within the village and there is also evidence of some vacancy.

There are a number of newer residential estates south of Main Street. Beyond the urban core, residential properties are more scattered, consistent with their rural setting.

The village is also home to several tourist accommodation sites, including holiday homes, camping facilities, and a B&B.

Aistear Park provides an important pedestrian connection between the village main street and the marina further south.

The island of Inis Cealtra is uninhabited, although it is occupied by a significant number of historic monuments, including its distinctive round tower and several church ruins. The island is still used for burials and also attracts tourists/visitors who mainly travel there by tour boats, although the number of visitors is unknown.

Scarriff/Tuamgraney

Located c. 8km south-west of Mountshannon, Scarriff/Tuamgraney are identified as Service Towns in the settlement hierarchy and provides an important range of services to the community, the surrounding rural area and visitors to the area.

Scarriff offers a range of administrative, service, social and community facilities, whereas Tuamgraney is a historic village with monastic origins, providing a more limited range of retail facilities. The centres of both settlements have been designated as Architectural Conservation Areas (ACA).

Whitegate

Whitegate is a large village c. 5km to the north-east of Mountshannon. The village has a predominantly rural character and offers a range of services to local residents such as shops, post office, a number of local pubs and a national school.

Killaloe/Ballina

Killaloe is the largest town in the Municipal District and a linked settlement with Ballina, Co. Tipperary. Located on the south bank of Lough Derg c. 25km from Mountshannon, Killaloe is considered the 'Gateway to East Clare' in which tourism is a central element of the local economy. Killaloe and Ballina provide essential services to local residents and visitors to the area, along with convenient access from the national motorway network.

**Figure 4-5 Surrounding network of towns and villages with links to Mountshannon and Inis Cealtra**

### 4.6.5 Movement and Access

The main route serving Mountshannon is the regional road, the R352. The R352 leads from Ennis, Co. Clare to Portumna, Co. Galway passing through Tuamgraney, Scarriff, Mountshannon and Whitegate. The road is considered a '*Strategic Regional Route'* between Ennis to Tuamgraney and '*Scenic Route'* from Scarriff to Mountshannon.

Regional road R463 is also a '*Strategic Regional Route'* which runs north-south from the R352 at Tuamgraney, Co. Clare to Limerick, Co. Limerick passing through Killaloe, Co. Clare. The section of the R463 from O'Briensbridge up to Tuamgraney is designated as a '*Scenic Route'.*

Vehicular access from Main Street (R352) in Mountshannon Village to Mountshannon Harbour and the proposed Visitor Centre site (the 'Old Rectory' site) is via the L4034, known locally as 'Harbour Road'.

Pedestrian access from Mountshannon Village to the Old Rectory site and Mountshannon Harbour is available via Harbour Road (L4034). Currently there is a footpath provided on one side of the road linking the R352 to the Harbour and its recreational park along the banks. Áistear Park provides walking paths, which are the most direct route for pedestrians to connect from the village main street to the harbour.

### 4.6.6 Study Area

There are no guidelines which stipulate the zone of influence of the proposed development. Professional judgement is used and the rationale for selecting the study area is to enable assessment of the effects of the proposed development on the receiving environment. For the purpose of this assessment, an understanding of the existing population and socio-economic profile in the local area is needed.

The study area was determined with reference to the sphere of influence identified in Volume 2: Strategic Environmental Assessment (SEA) Environmental Report of the Inis Cealtra Visitor Management and Sustainable Tourism Development Plan, based on the following:

- Acknowledgement of the access links between Mountshannon/Knockphort and Inis Cealtra Visitor management and visitor centre siting around the Mountshannon Area
- Regional Roads of RR463 and R352 provides an accessible boundary and covers a scenic road designation in the Clare CDP.
- The cluster of drowned drumlins of which Inis Cealtra is one and consistency of limestone bedrock between Inis Cealtra and neighbouring islands within this area;
- The landpoints between Aughinish Point near Ogonnolloe (southern point) and Inishparran Point (northern point).

There are four Electoral Divisions (EDs) within the study area, including Mountshannon, Inishcaltra South/Inishcaltra North, Scarriff and Drummaan. Their location and ED boundaries are shown in the Figures over page.

**Figure 4-6 Zone of Influence (Source: Volume 2: SEA Environmental Report, Inis Cealtra Visitor Management and Sustainable Tourism Development Plan)**

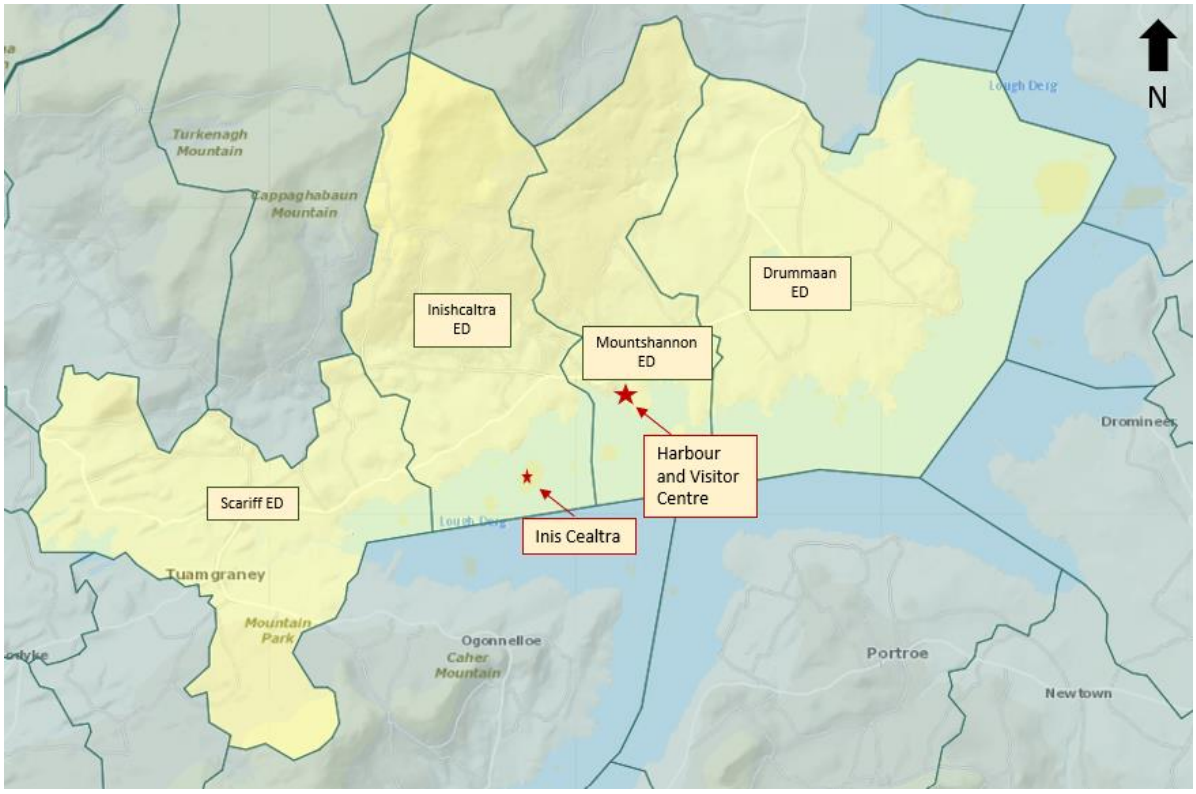



**Figure 4-7 Electoral Divisions in the Study Area (Source: CSO)**

#### 4.6.6.1 Population

According to Census 2022, the population of Mountshannon ED is 463 persons and the total population of the study area is 2,913.

**Table 4.2 Population 2006 - 2022 with % Change (Source: CSO)**

| Area | Pop. 2006 | Pop. 2011 | Change 2006-2011 | Pop. 2016 | Change 2011-2016 | Pop. 2022 | Change 2016-2022 | Change 2006-2022 |
|---|---|---|---|---|---|---|---|---|
| Mountshannon | 332 | 362 | +30 (+9.0%) | 422 | +60 (+16.6%) | 463 | +41 (+9.7) | +131 (+39.5%) |
| Inishcaltra South/Inishcaltra North | 337 | 314 | -23 (-6.8%) | 317 | +3 (+0.9%) | 374 | +57 +(18.0%) | +37 (+11.0%) |
| Drummaan | 578 | 585 | +7 (+1.2%) | 605 | +20 (3.4%) | 651 | +46 (+7.6%) | +73 (+12.6%) |
| Scarriff | 1,296 | 1,361 | +65 (+5%) | 1,278 | -83 (-6.1%) | 1,425 | +147 (+11.5%) | +129 (+9.6%) |
| **Study Area Total** | 2,543 | 2,622 | +79 (+3.1%) | 2,622 | 0 (0%) | 2,913 | +291 (+11.1%) | +370 (+14.5%) |
| **County Clare** | 110,950 | 117,196 | +6,246 (+5.6%) | 118,817 | +1,621 (+1.4%) | 127,937 | +9,121 (+7.7%) | +16,987 (+15.3%) |
| **Ireland** | 4,239,848 | 4,588,252 | +348,404 (+8.2%) | 4,761,865 | +173,613 (+3.8%) | 5,149,139 | +387,274 (+8.1%) | +909,291 (+21.4%) |

Scarriff ED with a population of 1,425 has the highest population within the sphere of influence, consistent with its status of Service Town in the County settlement hierarchy, designated due to its role as an important service centre and driver of growth for the surrounding hinterland.

As demonstrated by the census data in Table 4.2, during the period 2006 to 2022, the percentage increase in population within the study area (14.5%) was slightly below that of the County (15.3%), and did not keep pace with national population growth (21.4%) over the period. However, during the intercensal period 2016-2022, population increase in the study area (11.1%) exceeded that recorded in the County (7.7%) and the State (8.1%).

The age profile of the population within the study area is an important parameter as it provides a good insight into the potential labour force, amenities and other facilities and future housing demand (see Table 4.3).

**Table 4.3 Age Profile of Study Area and County (Source: CSO, 2022)**

| Age Cohort | Study Area | | Co. Clare | |
|---|---|---|---|---|
| | Population | Percentage | Population | Percentage |
| 0-4 years | 105 | 3.6% | 7183 | 5.6% |
| 5-9 years | 162 | 5.6% | 8415 | 6.6% |
| 10-14 years | 237 | 8.1% | 9400 | 7.3% |
| 15-19 years | 204 | 7.0% | 8922 | 7.0% |
| 20-24 years | 143 | 4.9% | 6958 | 5.4% |
| 25-29 years | 98 | 3.4% | 5992 | 4.7% |
| 30-34 years | 122 | 4.2% | 6663 | 5.2% |
| 35-39 years | 175 | 6.0% | 8412 | 6.6% |
| 40-44 years | 222 | 7.6% | 9670 | 7.6% |
| 45-49 years | 220 | 7.6% | 9466 | 7.4% |
| 50-54 years | 227 | 7.8% | 9214 | 7.2% |
| 55-59 years | 209 | 7.2% | 8454 | 6.6% |
| 60-64 years | 200 | 6.9% | 7532 | 5.9% |
| 65-69 years | 182 | 6.2% | 6627 | 5.2% |
| 70-74 years | 150 | 5.1% | 5851 | 4.6% |
| 75-79 years | 116 | 4.0% | 4414 | 3.5% |
| 80-84 years | 72 | 2.5% | 2573 | 2.0% |
| 85+ years | 69 | 2.4% | 2192 | 1.7% |
| **Total** | **2,913** | **100.0%** | **127938** | **100.0%** |

When compared with the data for the County, the Study Area population is evidently older. The proportion of younger persons within the Study Area is consistently lower than the County for all age cohorts from 0-4 to 35-39 years (inclusive), at which point the Study Area has a higher proportion in the older age categories in every cohort from 45+ years.

#### 4.6.6.2 Housing

The Table below shows Census data related to housing by type for 2016 and 2022. This dataset includes the total number of permanent dwellings, of which a proportion are holiday homes.

**Table 4.4 Housing by Type in 2016 and 2022 (Source: CSO**

| Electoral Division | Total Dwellings (2016) | Holiday Homes (2016) | Total Dwellings (2022) | Holiday Homes (2022) | Change Holiday Homes (No.) | Change Holiday Homes (%) |
|---|---|---|---|---|---|---|
| Mountshannon | 298 | 95 | 308 | 71 | -24 | - 8.8% |
| Drummann | 312 | 40 | 326 | 40 | 0 | - 0.5% |
| Inishcaltra South/Inishcaltra North | 147 | 11 | 164 | 6 | -5 | - 3.8% |
| Scarriff | 623 | 15 | 638 | 8 | -7 | - 1.1% |
| **Study Area Total** | **1,380** | **161** | **1,436** | **125** | **-36** | **- 3.0%** |

In all Electoral Divisions within the Study Area, holiday homes as a proportion of total dwelling numbers fell during the intercensal period. While the drop was 3.0% across the Study Area as a whole, the change was most notable in the Mountshannon ED, with a reduction of 8.8%.

The data shows that the actual number of holiday homes fell by 36 in the Study Area despite an increase of 56 in total dwelling numbers. The fall in the number of holiday homes may be attributable in large part to the constrained housing market and affordability pressures arising from a sustained undersupply of housing in recent years.

#### 4.6.6.3 Deprivation Index

The Pobal HP Deprivation Index[1] is a national database that measures in relative terms, the geographic distribution of disadvantage and affluence in Ireland. The index is calculated by modelling data relating to three domains: demographic vitality, social class composition and labour market situation[2].

Demographic and socioeconomic data from Census 2022 enables a snapshot of the relative affluence or disadvantage within the Study Area to be produced, shown in the Infographic below.

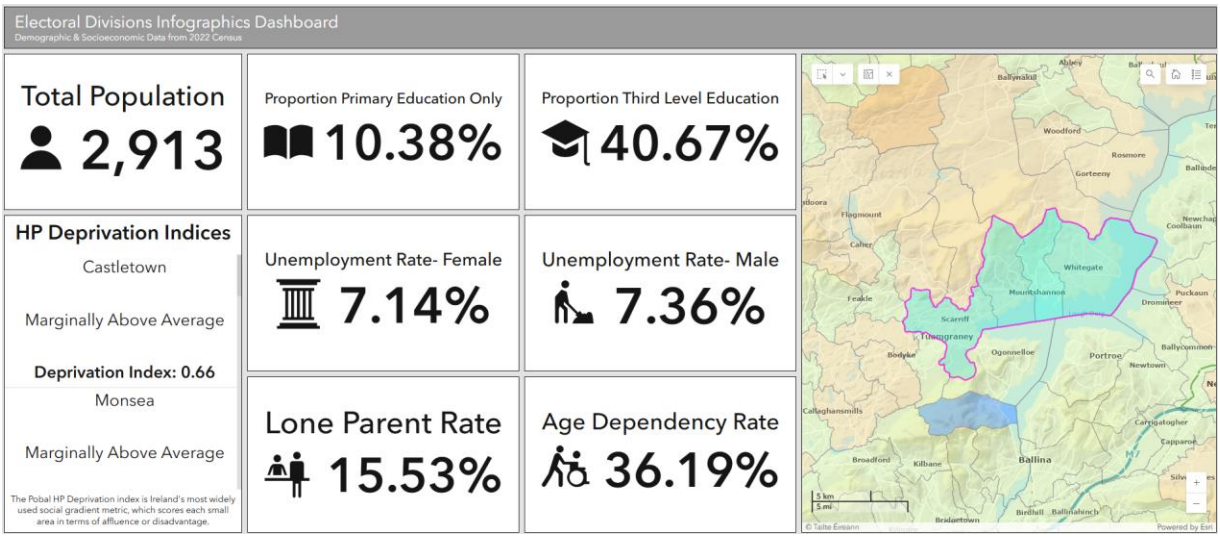



**Figure 4-8 Study Area Deprivation Infographics Dashboard (Source: Pobal)**

When the Study Area is compared with the County (see Figure 4.10 following), the results show the Deprivation Index is marginally above average for both catchments.

[1] The index gives each geographic unit a score of between 50 and -50, following a normalised distribution curve where circa 70% of the population live in areas with scores between 10 and -10. Each band of 10 represents one standard deviation from the mean.

[2] The domains are made up of ten data points from the Census, including educational attainment, unemployment rates, occupational status and the proportion of lone parents in a given Small Area.

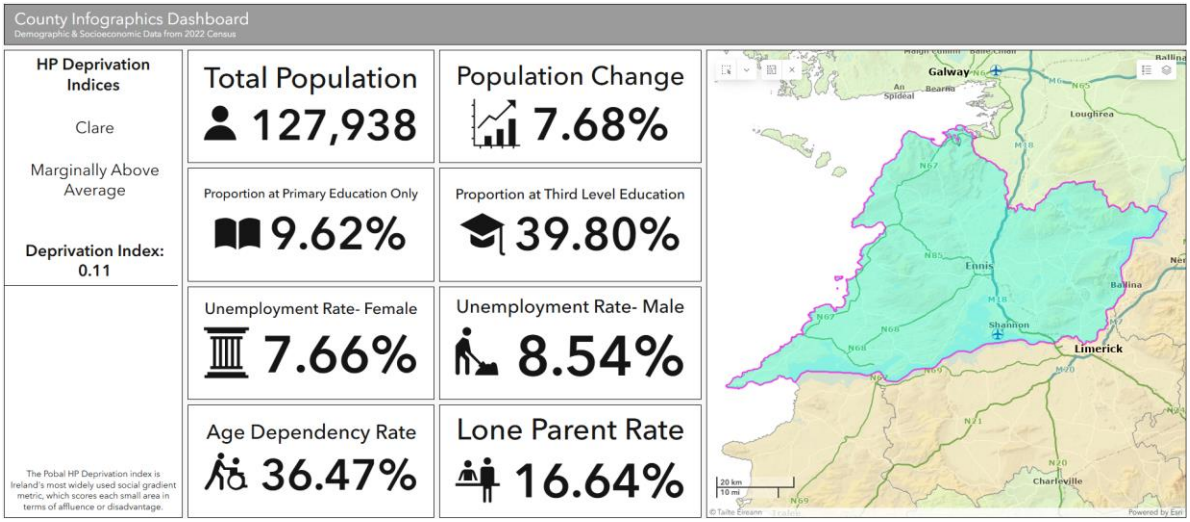



**Figure 4-9 Co. Clare Deprivation Infographics Dashboard (Source: Pobal)**

#### 4.6.6.4 Employment

The majority of the population within the study area is within the working age cohort (15-64 years), being 62.5% of the total population. Table 4.5 below shows that the principal economic status of the population in the Study Area is broadly in line with the County and State average.

The proportion of persons at work and studying in the Study Area is marginally-slightly below County and State figures, corresponding with the older age profile of the Study Area population. This, in turn, is reflected in the higher percentage of retired persons in the Study Area.

**Table 4.5 Principal Economic Status of Persons 15 years and over in Study Area (Source: CSO, 2022)**

| Economic Status | Study Area | % | Co. Clare | % | State | % |
|---|---|---|---|---|---|---|
| At work | 1268 | 52.6% | 56144 | 54.5% | 2,320,297 | 56% |
| Looking for first regular job | 18 | 0.7% | 813 | 0.8% | 34,526 | 1% |
| Short term unemployed | 0 | 1.9% | 1669 | 1.6% | 176,276 | 4% |
| Long term unemployed | 63 | 2.6% | 2485 | 2.4% | | |
| Student | 247 | 10.3% | 11726 | 11.4% | 459,275 | 11% |
| Looking after home/family | 127 | 5.3% | 6565 | 6.4% | 272,318 | 7% |
| Retired | 516 | 21.4% | 18317 | 17.8% | 657,790 | 16% |
| Unable to work due to permanent sickness or disability | 109 | 4.5% | 4462 | 4.3% | 189,308 | 5% |
| Other | 15 | 0.6% | 759 | 0.7% | 27,062 | 1% |
| Total | 2409 | 100.0% | 102940 | 100.0% | 4,136,852 | 100% |

A breakdown of CSO data for persons at work by industry is provided in the Table below. The largest proportion of persons at work are employed in 'Professional services' in the Study Area (22.5%), followed by 'Commerce and trade' (16.2%) and 'Manufacturing industries' (14.3%).

**Table 4.6 Persons at work by industry in Study Area (Source: CSO 2022)**

| Industry | Study Area | % |
|---|---|---|
| Agriculture, forestry and fishing | 89 | 7.0% |
| Building and construction | 100 | 7.9% |
| Manufacturing industries | 181 | 14.3% |
| Commerce and trade | 205 | 16.2% |
| Transport and communications | 62 | 4.9% |
| Public administration | 56 | 4.4% |
| Professional services | 285 | 22.5% |
| Other | 290 | 22.9% |
| Total | 1268 | 100.0% |

#### 4.6.6.5 Tourism

The available CSO data provides labour force statistics and sectoral breakdowns. However, County and ED -specific insights into tourism employment are not available.

Research undertaken for the County Clare Tourism Strategy published in 2020, indicates that within the County, the tourist industry generated €244 million in 2018 and supported approximately 6,600 tourism jobs.

Research conducted by Failte Ireland for *Key Tourism Facts 2018*[3] (pre- Covid 19 pandemic) shows a sustained increase in visitor numbers in the years 2014 to 2018, as detailed in Table 4.7 below.

**Table 4.7 Breakdown of Visitor Numbers 2014-2018 (Source: Failte Ireland)**

| Tourist Numbers (000s) | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| Britain | 3007 | 3346 | 3632 | 3445 | 3480 |
| Mainland Europe | 2490 | 2880 | 3102 | 3256 | 3512 |
| North America | 1146 | 1294 | 1477 | 1715 | 1963 |
| Rest of World | 462 | 516 | 531 | 607 | 654 |
| Northern Ireland | 1708 | 1492 | 1358 | 1315 | 1338 |
| **Total Out of State** | **8813** | **9528** | **10100** | **10338** | **10947** |
| **Domestic** | **8991** | **9125** | **9359** | **9626** | **10919** |

[3] https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/Key-Tourism-Facts-2018.pdf?ext=.pdf

As evidenced by the latest figures published by Failte Ireland in *Key Tourism Facts 2023*[4], overseas visitor numbers remain below Covid-19 levels. The most recent research provides the following snapshot of the Irish tourism industry:

- In 2023, 7,911,000 overseas tourists[5] visited Ireland.
- Most overseas tourists were from Britain (2,604,000), followed by European visitors (2,260,000).
- A similar number of out-of-state visitors travelled from Northern Ireland (1,347,000) and North America (1,340,000).
- Domestic trips totalled 14,309,000.
- The main reason overseas tourists visited Ireland was to 'holiday' (40.9%), followed by 'Visit friends/relatives' (37.0%).

For overseas tourists, the research shows that as a percentage of accommodation nights in 2023, the largest proportion were spent with friends/relatives (28%), followed closely by hotels (23%). Refer to Table 4.8 below for a more detailed breakdown by visitor origin and accommodation type.

**Table 4.8 Breakdown of Overseas Tourist Accommodation Nights (Source: Failte Ireland)**

| Accommodation Nights % | Total | Britain | Mainland Europe | North America | Rest of World |
|---|---|---|---|---|---|
| Hotels | 23% | 25% | 18% | 39% | 7% |
| Guesthouses/B&Bs | 7% | 5% | 7% | 11% | 2% |
| Rented accommodation | 15% | 7% | 14% | 12% | 35% |
| Caravan, camping, campervan, motorhome | 2% | 3% | 3% | * | * |
| Holiday home (no payment) | 8% | 13% | 5% | 10% | 6% |
| Hostels | 2% | 1% | 2% | 2% | 3% |
| Friends/relatives | 28% | 45% | 26% | 16% | 29% |
| Other | 16% | 3% | 25% | 10% | 18% |

Failte Ireland also provides insights into the type of activities that overseas tourists engaged in during their visit based on traveller surveys, showing that hiking/cross-country walking accounted for the greatest proportion by far.

[4] https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/FI_Key-Tourism-Facts-2023_v1-October-1.pdf?ext=.pdf

[5] Includes visitors from Northern Ireland.

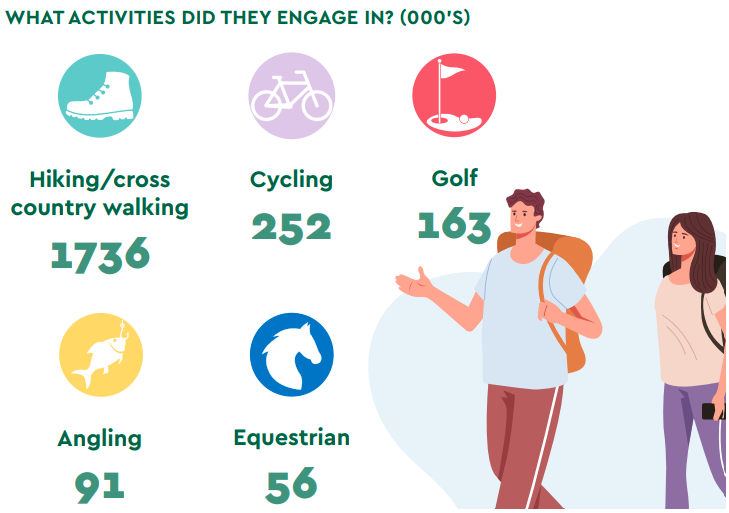



**Figure 4-10 Activities of Overseas Tourists (Source: Failte Ireland)**

### 4.6.7 Sensitive Receptors

The EPA Advice Notes (2015) identify receptors as neighbouring landowners, local communities and other parties which are likely to be directly affected by the project.

For the purpose of this Chapter, the primary sensitive receptors likely to be impacted by the development have been identified as follows:

I. Existing Residential;
II. Existing Commercial;
III. Social, community and leisure users; and
IV. Users of the public road network surrounding the site.

### 4.6.8 Human Health

The consideration of potential impacts on human health is examined separately in Chapters 5 – 12 of this EIAR. Where relevant, each of these chapters identifies the sensitive receptors of greatest interest to their respective topics and in the case of Air Quality, Noise and Traffic, this includes the populations living in residential locations in close proximity to construction or operational activities.

## 4.7 Do Nothing Scenario

Under a 'Do Nothing' scenario, it is likely that visitor numbers, including both domestic and international tourists, will continue to increase in line with pre-pandemic tourism trends.

The associated upgrading and improvement of visitor facilities, infrastructure and services, including the island jetty upgrade, welfare pods on the island, car and bicycle parking facilities and public realm improvements necessary to support the increased tourist numbers and ensure a high-quality visitor experience, would not be available.

Local residents and community members would also miss out on the associated benefits of upgraded infrastructure and facilities that would be delivered by the project. In particular, residential amenities

may deteriorate with increased visitor numbers to the area and limited capacity of existing services to accommodate demand.

Construction of the permitted Interpretive Centre at the Old Rectory site is almost complete and will become operational in Q1, 2025. In the absence of the proposed development, the Interpretive Centre would reach its capacity to facilitate projected visitor numbers in Year 15, thereby inhibiting future tourist activity within Mountshannon and its associated economic benefits. In the intervening period, the Interpretive Centre would continue to attract visitors to the area, many of whom would likely visit Inis Cealtra via one of the existing boat services. However, in the absence of the island jetty upgrade and appropriate welfare facilities on the island, the experience of tourists may be impacted negatively with resultant effects on the local economy.

The absence of adequate car parking in Mountshannon to facilitate increased visitor numbers to the village may lead to potential safety issues for pedestrians and motorists, particularly during the peak summer holiday period.

In the medium term, Clare Tourism would likely progress a comparable tourism-related development associated with the Inis Cealtra Visitor Experience, in line with the Development Plan objectives for the area, aimed at growing sustainable tourism opportunities in the region to support rural communities, diversify the employment base, and improve visitor management practices at sensitive locations.

## 4.8 Potential Significant Effects

This section describes the environmental effects that are likely to arise during the construction and operation of the proposed development. **Section 4.9** sets out the mitigation measures required to alleviate identified effects.

Potential impacts are considered in line with the EPA Guidelines (2022) under the following headings:

- Land Use
- Population
- Employment & Economy
- Residential & Visitor Amenity
- Health

Specific effects with respect to matters such as air quality, noise, traffic, visual impact etc. are dealt with in the respective assessments in this EIAR.

### 4.8.1 Demolition & Construction Phase

The potential impacts of the proposal during the demolition and construction phase of the development are outlined below.

#### 4.8.1.1 Land Use

On the island, there will be no change to land use as a result of the construction and operational stages of the proposed development.

On the mainland, there will be a change of land use at the site of the new village car park which is currently greenfield. However, the site is zoned to accommodate the proposed use which has been anticipated in the development plan.

There will be no severance of land, loss of rights of way or amenities as a result of the proposed development. The proposed development aligns with the National Planning Framework[6] (NPF) policy objective (NPO 26), which supports appropriately designed development in rural towns that will contribute to their regeneration and renewal, and policy objective (NPO 34), which seeks to facilitate sustainable tourism development. The impact is likely and will have a permanent significant positive effect that will achieve local and wider county, regional and national objectives.

The impact associated with the upgrade during the Construction Phase shall be **minor**, **neutral**, **local**, and **short-term**.

It is not anticipated that there will be an impact on settlement patterns as a result of the construction phase of the proposal. It is anticipated that the projected construction staff (40 personnel during Phase 1 and 50 personnel in Phase 2), will not generate a temporary increase in population locally and thus settlement patterns during this period, as employees will travel to the site from their existing place of residence. The likely impact on settlement patterns is thus **neutral**.

#### 4.8.1.2 Population

It is estimated that Phase 1 construction works will take approximately 12 months to complete, and there will be 40 people employed during the peak of construction activity. In Phase 2, the duration of construction work is estimated to be 18 months, with 50 people employed during peak construction.

It is not anticipated that this will generate a temporary increase in population locally during this period as employees will travel to the site from their existing place of residence.

No significant impact on population is identified as a result of construction and the likely impact on the population is thus **neutral**.

#### 4.8.1.3 Employment & Economy

A key characteristic of the proposed development in terms of its potential economic impact relates to its capital value. The construction phase will provide a boost for the local construction sector in terms of employment generation and capital spend on materials and construction labour costs. It is expected that during peak activities (40-50 people will be working directly on construction), there will be a capital spend on materials and construction labour costs. The construction phase will also generate additional spending in the local economy (such as local shops/cafes) as a consequence of the presence of construction staff.

The construction staff will comprise managerial, technical, skilled and unskilled workers. As far as practicable local labour will be employed.

In addition to direct employment on-site, there will be off-site employment and economic activity associated with the supply of construction materials and the provision of services such as professional

[6] *Updated Revised National Planning Framework*, published November 2024.

firms supplying financial, architectural, engineering, legal and other professional services to the project.

The overall predicted impacts associated with the construction phase on the working population and local economy are **likely** and will have a **positive, short-term, moderate** effect.

#### 4.8.1.4 Residential & Visitor Amenity

Inis Cealtra is uninhabited and therefore, in the absence of mitigation, the anticipated likely effects on the amenities of residents and visitors will mainly be confined to disruptions in Mountshannon Village as a result of increased construction traffic movements on the local road network, noise, dust and visual impacts arising from plant and construction activities (e.g. cranes, hoarding etc) necessary to complete the development.

The construction phases will result in some loss of amenities, disruption and inconvenience to the local community, particularly the residential receptors in Mountshannon closest to the new village car park site on Main Street and the Old Rectory site at Harbour Road.

During construction, visitor access to the island will be restricted, however, burials will be allowed to take place and will be managed by the Clare County Council Burials Unit.

The level of disturbance and impacts are predicted to be commensurate with the normal disturbance associated with the construction industry, where a site is efficiently and properly managed having regard to neighbouring activities.

The proposed phasing strategy will ensure that construction activities associated with Phase 1 and Phase 2 do not overlap, avoiding the potential impacts on residential amenities that would arise from concurrent construction activities at several locations in the village and on the island.

In the absence of mitigation, the anticipated impact on residential amenity would be **local** and of **temporary to short-term** duration with a **moderate** significance.

#### 4.8.1.5 Human Health & Safety

During the demolition and construction phase, risks to health and safety will arise from construction activities, including the operation of plant and machinery. A construction-related accident could pose a potential health and safety risk to construction workers or visitors to the individual sites (island and mainland). Construction safety will therefore be closely controlled by the Contractor and include implementation of construction safety arrangements.

Access protocols will be implemented to prevent unauthorised access so that the sites cannot be freely accessed by members of the public for the duration of the works.

Potential effects on human health arising during the construction phase of the project relate generally to quality of life including air quality, climate, noise, water and hydrology, waste, potential disruption of services and the risk of major accidents/disasters.

On this basis, the risk of health and safety-related accidents is **unlikely** during the demolition and construction phases of the proposed development, and no significant impacts on population and

human health are identified. With best-practice health and safety procedures in place, construction activities will have a **negligible**, **neutral**, **short-term** impact on health and safety.

Measures to address such human health considerations will be mitigated through the implementation of a Contractor's Construction and Environmental Management Plan (CEMP) and will be subject to Regulations and the relevant Health and Safety codes.

This EIAR also deals with the potential effects on human health during the construction phase, including the more specific topics of air, traffic, water, and noise.

### 4.8.2 Operational Phase

The potential impacts of the proposal during the operational phase of the development are outlined below.

#### 4.8.2.1 Land Use

On the island, there will be no change to land use as a result of the construction and operational stages of the proposed development. The project will deliver new staff and public welfare facility 'pods' of high-quality design on Inis Cealtra, together with enhanced access arrangements associated with the upgraded jetty and mown paths, all carefully designed and located having regard to the environmental sensitivities of the island.

In Mountshannon, the proposed development will deliver a new Visitor Centre of high-quality architectural design, in tandem with a comprehensive landscape strategy and public realm improvements. The new Visitor centre will include a range of uses and facilities providing for interpretation, exhibition and education, flexible café/event space and a research centre for the white-tailed sea eagle project.

There will be a change of land use at the new car park site on Main Street which is currently greenfield. However, this area of land is not in use as an amenity by the local community. When operational, the new car park will improve traffic flows and remove visual clutter in the village caused by cars parking in the carriageway.

The proposed development will contribute to the consolidation and growth of established tourist and commercial uses such as shops, cafes/restaurants and holiday accommodation in Mountshannon and the wider area, consistent with the NPF policy objectives which support appropriately designed development in rural towns that will contribute to their regeneration and renewal.

It is anticipated that the proposed development will result in a **likely significant positive impact** with a **permanent** duration.

#### 4.8.2.2 Population

The study area is a predominantly rural area, with a large number of employment opportunities centred around agriculture and agriculture-related activities, with occasional manufacturing and tourism jobs. Due to this lack of diversity in the employment base, it is likely that younger generations will continue to migrate towards urban areas. According to CSO data, the migration of younger generations to urban areas is on the increase, and this may be evidenced locally by the lower age

profile of the Study Area population compared with the County. However, more people are choosing to move to rural locations for a number of reasons, particularly post-pandemic, as remote working arrangements have become more prevalent. It is therefore considered that natural population levels in the Study Area will remain stable in the future.

The proposed development is expected to generate 19 new jobs in peak periods. It is not anticipated that this will generate any marked increase in population locally, as it is envisaged that employees will likely travel to the site from their existing place of residence. The likely impact on the population is thus neutral.

The demographic trends of the study area are provided in Section 4.6.6 above. The proposed development will provide a positive long-term impact in terms of providing additional employment.

#### 4.8.2.3 Employment & Economy

The proposed development will support sustainable economic growth in the Study Area, in line with the Southern Regional Assembly Regional Spatial and Economic Strategy (RSES), which recognises the benefits of the tourism sector to the region and promotes sustainable tourism developments (RPO 53 refers).

The proposed development will provide for up to 19 new jobs directly connected with operation of the Inis Cealtra Visitor Experience, increasing the available employment opportunities for the local and regional population.

The proposed development will increase tourist and visitor activity in Mountshannon and on the island, contributing to greater demand for tourism services (e.g. sightseeing and recreational opportunities) and businesses such as shops, cafes/restaurants and holiday accommodation, thereby supporting additional employment opportunities in the Study Area.

The overall effect on employment locally is **slight - moderately positive** and **permanent**.

#### 4.8.2.4 Residential & Visitor Amenity

Visual, traffic, noise and dust effects are considered in Chapters 5, 6, 11 and 12 respectively. These chapters conclude that there will be no significant effects on residential amenities or community facilities attributed to the operational phase.

Local residents and members of the community may experience some impacts to amenity as a result of increased visitor numbers to Mountshannon and the island. However, the visitor projections contained in the Visitor Management Plan show that the increase will be incremental, distributed over two distinct phases spanning 2028 (Phase 1, Year 1) through to 2046 (Phase 2, Year 5).

Access to Inis Cealtra will be controlled to ensure effective management of the island's archaeological and built heritage, and sensitive ecological receptors. In the absence of mitigation, this may adversely impact members of the local community who currently enjoy unrestricted access to the island.

Local residents and visitors will benefit from the enhanced infrastructure and facilities that are to be delivered by the project, including the upgraded island jetty, welfare pods on the island, new village car park and harbour reconfiguration and public realm improvements.

The proposed development will likely increase knowledge and appreciation of the natural and cultural heritage value of Inis Cealtra, Lough Derg and the surrounding landscape, contributing to resident and visitor wellbeing.

Overall, the anticipated impact on residential and visitor amenity will be **long-term, slight** and **positive** both **locally** and **nationally**.

#### 4.8.2.5 Health & safety

Health and Safety activities for commercial operations are guided by national Health and Safety legislation.

For the new Visitor Centre, risk of accidents / unplanned events is addressed through the Building Regulations (Fire Safety) and is therefore addressed through primary mitigation in the design process. Residual risks of fire and road traffic accidents will be managed by emergency services as per their standard procedures.

Measures to address such human health considerations will be subject to Regulations and the relevant Health and Safety codes.

The potential for effects on human health during the operational phase is also dealt with in this EIAR under the more specific topics by which they might be caused including air, traffic, water and noise.

### 4.8.3 Cumulative Impacts

Potential cumulative impacts may arise from the proposed development when combined with other existing and/or approved projects. In accordance with the European Commission Guidance on the preparation of the Environmental Impact Assessment Report (2017) and EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2022).

Plans with the potential to cause cumulative effects are identified in Chapter 1 of this EIAR and in the individual specialist chapters. In addition, a review of relevant, recent planning applications was conducted in order to identify sites with the potential for cumulative impacts. Planned and approved projects with the potential for cumulative impacts have been identified in Appendix 1.1 Projects Considered in Cumulative Assessment.

The *Inis Cealtra Visitor Management and Sustainable Tourism Development Plan* (2017) provides a framework for the successful delivery of the Inis Cealtra Visitor Experience, aiming to support increased visitor numbers, while safeguarding the island's natural and built heritage. A key driver of the Plan is to address population decline and rural deprivation by expanding the appeal of Inis Cealtra as a sustainable tourism destination.

The *Lough Derg Visitor Experience Development Plan 2020-2024* provides a strategy for cross-agency cooperation and coordinated investment in the Lough Derg area to strengthen its position as a destination in the Shannon region through 'Ireland's Hidden Heartlands'. The core focus of the Plan is Lough Derg itself; the waters, islands, lakeshore and lakeside settlements, with the aim of creating a connected network of visitor experiences.

The *County Clare Tourism Strategy 2030* aims to differentiate Clare in the tourism marketplace and raise its profile as a leading tourist destination. It provides a strategy to guide and stimulate investment and development in tourism and maximise the potential of tourism to deliver a net economic benefit to communities without negatively impacting the County's natural, social, cultural and environmental assets.

Implementation of these Plans in combination with the proposed Inis Cealtra Visitor Experience will strengthen the tourism offering in the region and increase its attractiveness to visitors in the highly competitive tourism market. The associated increase in tourist numbers and visitor activity will create additional demand for goods and services that support the tourism sector, benefitting the rural economy and supporting jobs growth. Local communities will benefit from the revenue generated by increased tourism and the boost in visitor activity which will contribute to revitalisation and renewal in the region's rural settlements. The cumulative effect is **likely**, **positive** and **significant** with a **long-term** duration.

There are several developments in the vicinity of the study area comprising residential, recreational and commercial/tourist schemes. These are generally small in scale and not anticipated to give rise to significant cumulative effects.

There is an extant permission for an Interpretive Centre in the Old Rectory, Mountshannon. It is expected to become operational in early 2025 and the cumulative effects of its operation, in tandem with the Inis Cealtra Visitor Experience, have been considered. The visitor number projections for this project, detailed in the Visitor Management Plan, take account of visitor projections associated with the operation of the Interpretive Centre.

Larger developments require a construction management plan to mitigate the effects of the construction phase. Subject to adherence to measures contained in the individual plans, the cumulative effect is **likely**, **short term** and **not significant**.

### 4.8.4 Summary

The following Table summarises the identified likely significant effects during the demolition and construction phase of the proposed development before mitigation measures are applied.

**Table 4.9 Summary of Demolition and Construction Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Construction Employees contributing to local economy | Positive | Moderate | Local | Likely | Short-term | Direct |
| Economic opportunities associated with the supply of | Positive | Moderate | Local/National | Likely | Short-term | Direct |

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| construction materials and provision of services | | | | | | |
| Disruption due to increased construction traffic movements on the local road network | Negative | Moderate | Local | Likely | Short-term | Direct |
| Loss of residential amenity arising from noise and visual impacts | Negative | Moderate | Local | Likely | Temporary-Short-term | Direct |
| Construction effects on human health | Negative | Moderate | Local | Likely | Temporary | Direct |

The following Table summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

**Table 4.10 Summary of Operational Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Physical regeneration and renewal due to new high-quality development & increased visitor activity | Positive | Significant | Local | Likely | Permanent | Direct |
| Employees connected with the Visitor Experience contributing to local economy | Positive | Slight | Local | Likely | Permanent | Direct |
| Creation of additional Jobs | Positive | Moderate | Local | Likely | Permanent | Direct |

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| in a rural environment | | | | | | |
| Delivery of a high-quality commercial development | Positive | Significant | Local | Likely | Permanent | Direct |

## 4.9 Mitigation Measures

### 4.9.1 Incorporated Design

The provision of welfare facilities on Inis Cealtra, the design and location of which have been carefully considered to avoid/reduce impacts on a range of environmental receptors, will enhance the comfort of visitors and employees (e.g. guides) on the island, contributing to their amenity and well-being.

The proposed development complies with the Building Regulations which provide for the safety and welfare of people in and about buildings. The Building Regulations cover matters such as structure, fire safety, sound, ventilation, conservation of fuel and energy, and access, all of which safeguard users of the buildings and the health of occupants.

The Inis Cealtra Visitor Experience will be as accessible as possible, recognising the island's inherent limitations. For those elements of the project in Mountshannon, the design incorporates the principles of universal design and the requirements of Part M of the Building Regulations so that the development will be readily accessible to all, regardless of age, ability or disability.

At the new Visitor Centre, the integration of energy efficient measures will provide for a healthy work environment for employees, less dependence on fossil fuels and associated improved air quality. The inclusion of landscaping elements and a highly accessible layout including segregated pedestrian walkways will create a high quality environment for future employees and visitors, and together with the enhancements of the public realm and overall layout design, will improve the setting of the wider village.

### 4.9.2 Demolition & Construction Phase

The following mitigation measures are recommended:

- **Construction and Environmental Management Plan (CEMP)**: The appointed contractor(s) will update the Outline CEMP submitted with the application prior to the commencement of development.
  - The CEMP will comply with all appropriate legal and best practice guidance for construction sites.

- The purpose of a CEMP is to provide a mechanism for the implementation of the various mitigation measures which are described in this EIAR and to incorporate relevant conditions attached to a grant of permission. The CEMP requires that these measures will be checked and maintained to ensure adequate environmental protection. The CEMP also requires that records will be kept and reviewed as required to by the project team and that the records will be available on site for review by the planning authority.
- All construction personnel will be required to understand and implement the requirements of the Contractor's CEMP and shall be required to comply with all legal requirements and best practice guidance for construction sites.
- All construction phase mitigation and monitoring measures included in the Summary of Mitigation and Monitoring Measures in Chapter 16 of this EIAR will be included in the CEMP and adhered to.

- **Community Liaison Officer**: The contractor will appoint a liaison officer to ensure that any issues from the local community are dealt with promptly and efficiently during construction. These details will be included in the contractor's CEMP.
- **Construction Working Hours:** will generally be limited to the hours 08:00 – 19:00 Monday to Friday and 08:00 – 13:00 on Saturday. If works are required outside of these hours, in exceptional circumstances, the planning authority will be notified in advance.
- Project supervisors for the construction phase (PSCS) will be appointed in accordance with the Health, Safety and Welfare at Work (Construction Regulations) 2013, and a Preliminary Health and Safety Plan will be formulated during the detailed design stage which will address health and safety issues from the design stages, through to the completion of the construction phase.
- A Resource Waste Management Plan (RWMP) will be prepared and implemented by the Contractor, as necessary.

### 4.9.3 Operational Phase

A Visitor Management Plan (VMP) has been prepared and submitted under separate cover. It sets out the envisaged structure and responsibilities for the management of the proposed development during operation.

Clare County Council, via Clare Tourism DAC, will manage and operate the Inis Cealtra Visitor Experience, inclusive of the Visitor Centre, new car park facilities off Main Street, and the welfare facilities on Inis Cealtra. Boat tour operators will be licenced, awarded by tender by Clare County Council on a 3-year basis. The café in the Visitor Centre will be operated by lease.

The measures in the VMP include establishment of the Inis Cealtra Management Group, to have oversight both in terms of the strategic management of the island and the operational management of the island. This group, led by Clare County Council, will include the Office of Public Works (OPW), National monuments Service (NMS), Waterways Ireland (WWI) and Department of Housing, Local Government and Heritage.

The Inis Cealtra Community Forum will be established to represent the local community in the management of the island and visitor experience, including local access provision.

The VMP details a comprehensive suite of measures that will be implemented during operation, to ensure effective site management and visitor access management. Local access protocols will be adopted as follows:

- Members of the local community and members of Lough Derg Anglers will be able to land for free with a permit-style approach. A register of those with a local connection and members of the Anglers will be retained by Clare County Council.
- A discounted permit system will be available to established local tourism businesses for island access, managed by Clare County Council.
- Access will remain to St Mary's and St Caiman's burial grounds and pre-existing plots for burial purposes. Access for visitors will be restricted during burials.

To ensure the ongoing safety of visitors and employees on the island, a risk assessment and safety plan will be developed annually for Inis Cealtra.

For the purpose of this assessment, all measures set out in the Visitor Management Plan are adopted and shall be implemented in full, except as otherwise required by a condition of planning permission.

## 4.10 Residual Impact Assessment

It is anticipated that the proposed development will realise **significant positive** overall economic benefits for the local community and the wider local area.

Strict adherence to the mitigation measures recommended in this EIAR will ensure that there will be no negative residual impacts or effects on Population and Human Health from the construction and operation of the proposed scheme. Indeed, the delivery of this high-quality tourism development will realise a likely **significant positive** effect of **permanent** duration for the local area.

## 4.11 Interactions

Interactions are dealt with in Chapter 15 of this EIAR.

During the construction phase, all environmental factors have the potential to interact with population and human health. The following are the key areas of interaction:

- **Landscape and Visual -** Construction processes, plant and hoarding used during the construction phase may give rise to visual impacts.
- **Material Assets – Traffic & Transport:** Increased construction traffic movements on the local road network during the construction phase may give rise to noise, dust, and road safety impacts.
- **Material Assets – Built Services:** Excavation during the construction phase may give rise to risks to human health as a result of any excavation work in areas where built services exist through coming into contact with live electricity lines or damaging watermains.
- **Noise and Vibration:** There is potential for effects on human health associated with noise during the construction phase which may impact upon amenity.

- **Air Quality:** There is potential for impact on human health from dust associated with construction activities and thus impacting air quality.

The potential impacts on human health arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

During the operational phase, the following are the key areas of interaction with population and human health:

- **Landscape & Visual:** The landscaping proposals will impact on the quality of the public realm, which could impact on people's health and well-being.
- **Material Assets: Traffic and Transport:** Traffic flows toward the site have the potential to create safety risks for pedestrians and cyclists**.**
- **Air Quality:** There is potential for impact on human health from a deterioration in air quality associated with emissions from vehicles.

The potential significant impacts on human health arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

## 4.12 Monitoring

Measures to avoid negative impacts on Population and Human Health are largely integrated into the design and layout of the proposed development. Compliance with the design and layout will be a condition of any permitted development.

No specific monitoring is proposed in relation to this section. Monitoring of standard construction mitigation measures as outlined in this EIAR will be undertaken by the appointed contractor.

For the purpose of this assessment, all monitoring measures set out in the Visitor Management Plan are adopted and shall be implemented in full, except as otherwise required by a condition of planning permission.

## 4.13 Worst Case Scenario

The worst-case scenario on population and human health is considered to be the risk of an accident during the construction phase. According to the Health and Safety Authority[7] , in 2023 there were 11 fatal accidents recorded equivalent to 26% of the total fatal work-related incidents. In 2022, 7 fatal accidents occurred in construction equivalent to approx. 25% of the total fatal work-related incidents. This represents an increase from the number recorded the year previous.

[7] Available via: https://www.hsa.ie/eng/topics/statistics/annual_review_of_workplace_injury_illness_and_fatality_statistics/annual-review-of-workplace-injuries-illnesses-and-fatalities-2021-2022.pdf; and https://www.hsa.ie/eng/news_events_media/news/press_releases_2024/health_and_safety_authority_reports_43_work-related_fatalities_in_2023.html

The HSA has undertaken a range of activities in regulation, education, accreditation and enforcement to reduce incidents on construction sites. The appointed contractor is required to comply with all relevant Health and Safety legislation and the risk of a fatality is deemed unlikely.

This worst-case scenario is considered **unlikely**, and the significance of the effect is **indeterminable**.

## 4.14 Conclusion

This chapter has reviewed and analysed the potential and the predicted impacts of the proposed development with regards to Population and Human Health. These impacts have been considered for both the construction and operational phases of the proposed development. The cumulative impact of the proposed development and surrounding developments have also been considered.

Provided all mitigation measures as set out in this chapter are implemented, there are no significant adverse effects with respect to socio-economic factors, land use, or the amenity value potential of the area predicted.

Issues which may cause risks and hazards during the construction and operational phase of the development are given due consideration. All necessary mitigation measures will be put in place to ensure the health and safety of all site personnel and neighbouring properties. All other environmental aspects relating to the human environment which could have an adverse effect on the local population such as soils, traffic, noise, water and ecology have been addressed in the relevant chapters of this EIAR.

## 4.15 References


- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022)
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August 2018)
- National Planning Framework, Ireland 2040 – Our Plan (Government of Ireland, 2018);
- Regional Spatial and Economic Strategy for the Southern Region (2020);
- Clare County Development Plan 2023-2029;
- County Clare Tourism Strategy 2030;
- Inis Cealtra Visitor Management and Sustainable Tourism Development Plan (2017);
- Lough Derg Visitor Experience Development Plan 2020-2024;
- Fáilte Ireland website: www.failteireland.ie/;
- Central Statistics Office (CSO) website: www.cso.ie;
- Pobal website: https://maps.pobal.ie/;
- Environmental Protection Agency (EPA): https://gis.epa.ie/EPAMaps/
- Health and Safety Authority website https://hsa.ie;

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 5
# LANDSCAPE & VISUAL

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


5 Landscape and Visual ..... 5-4
5.1 Introduction ..... 5-4
5.2 Expertise & Qualifications ..... 5-4
5.3 Proposed Development ..... 5-4
5.3.1 Aspects Relevant to this Assessment ..... 5-5
5.4 Methodology ..... 5-5
5.4.1 LVIA methodology ..... 5-5
5.4.2 Methodology for Assessment of Landscape Effects ..... 5-6
5.4.3 Landscape Sensitivity ..... 5-6
5.4.4 Magnitude of Landscape Change ..... 5-7
5.4.5 Significance of Landscape Effects ..... 5-8
5.4.6 Methodology for Assessment of Visual Effects ..... 5-10
5.4.7 Visual Sensitivity ..... 5-10
5.4.8 Magnitude of Change to the View/Visual Amenity ..... 5-11
5.4.9 Significance of Visual Effects ..... 5-12
5.4.10 Quality of Landscape and Visual Effects ..... 5-12
5.4.11 Duration of Landscape and Visual Effects ..... 5-13
5.4.12 The Use of Photomontages and selection of viewpoints ..... 5-13
5.4.13 Relevant Legislation & Guidance ..... 5-13
5.4.14 Site Surveys/Investigations ..... 5-14
5.4.15 Consultation ..... 5-14
5.4.16 Landscape and Visual Impact Assessment Criteria ..... 5-14
5.5 Difficulties Encountered ..... 5-14
5.6 Baseline Environment ..... 5-15
5.6.1 Landscape Character ..... 5-15
5.6.2 Landscape Context ..... 5-25
5.6.3 Views & Prospects ..... 5-28
5.7 The 'Do Nothing' Scenario ..... 5-29
5.8 Potential Significant Effects ..... 5-29
5.8.1 Demolition Phase ..... 5-30
5.8.2 Construction Phase ..... 5-30
5.8.3 Operational Phase ..... 5-30
5.8.4 Cumulative Effects ..... 5-32
5.8.5 Summary ..... 5-34
5.9 Mitigation ..... 5-35

5.9.1 Incorporated Design Mitigation ..... 5-35
5.9.2 Demolition Phase Mitigation ..... 5-36
5.9.3 Construction Phase Mitigation ..... 5-36
5.9.4 Operational Phase Mitigation ..... 5-37
5.10 Residual Impact Assessment ..... 5-37
5.10.1 Demolition and Construction Phase ..... 5-37
5.10.2 Operational Phase ..... 5-38
5.10.3 Assessment of views ..... 5-40
5.10.4 Summary of Post-mitigation Effects ..... 5-56
5.10.5 Cumulative Residual Effects ..... 5-57
5.11 Risk of Major Accidents or Disasters ..... 5-58
5.12 Worst Case Scenario ..... 5-58
5.13 Interactions ..... 5-58
5.14 Monitoring ..... 5-58
5.15 Summary of Mitigation and Monitoring ..... 5-58
5.16 Conclusion ..... 5-60
5.17 References and Sources ..... 5-60

# Table of Figures

Figure 5-1 'Chart showing typical classifications of the significance of impacts' (Source: Figure 3.5 of the DRAFT 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' - EPA, 2017*)* ..... 5-9
Figure 5-2 Satelite imagery of islands on the northern side of Lough Derg, including Inis Cealtra. (Source: Google) ..... 5-16
Figure 5-3 Landscape Character Areas of County Clare from the Clare CDP 2023-2029 & Env Sources Management 2003 ..... 5-16
Figure 5-4 Extract showing area 13 in the Landscape Character Areas of County Tipperary from the Tipperary CDP 2022-2028. ..... 5-17
Figure 5-5 Mountshannon main street looking westwards ..... 5-18
Figure 5-6 WC facilities at Mountshannon Harbour. ..... 5-19
Figure 5-7 Lakeside park at Mountshannon harbour ..... 5-19
Figure 5-8 View of Mountshannon from the lake – note the Rectory is the red brick building centre left in the image. ..... 5-20
Figure 5-9 View of Mountshannon main st looking eastwards. ..... 5-20
Figure 5-10 View of Mountshannon harbour ..... 5-21

Figure 5-11 View of Mountshannon harbour from one of the jetties ..... 5-21
Figure 5-12 View of Inis Cealtra (centre right) from Mountshannon harbour in poor weather ..... 5-22
Figure 5-13 View of Inis Cealtra shoreline and islands looking eastwards ..... 5-22
Figure 5-14 View of meadow, path and monuments on Inis Cealtra ..... 5-23
Figure 5-15 View of sheep grazing around scrub on Inis Cealtra ..... 5-23
Figure 5-16 View of the southern shore of Lough Derg from Inis Cealtra ..... 5-24
Figure 5-17 View of Inis Cealtra from the southern shore of Lower Lough Derg ..... 5-24
Figure 5-18 View of Inis Cealtra from the southern shore of Lower Lough Derg (Co Tipperary) ..... 5-25
Figure 5-19 Areas of Special Control Map from the Clare CDP 2023-2029 ..... 5-26
Figure 5-20 Landscape Designations map from the Clare CDP 2023-2029 (Note the scenic routes and heritage landscape designations in the environs of Lough Derg to the east) ..... 5-27
Figure 5-21 Extract of mapping of protected structures in the Clare CDP 2023-2029 ..... 5-27
Figure 5-22 Mountshannon Town Plan Clare CDP 2023-2029 (note the tourism and harbour designations) ..... 5-28
Figure 5-23 Extract from the Views and Prospects Mapping (V1-C11) of the Tipperary CDP 2022-2028 ..... 5-29

## Table of Tables

Table 5.1 Categories of Landscape Sensitivity ..... 5-6
Table 5.2 Categories of Magnitude of Landscape Change ..... 5-7
Table 5.3 Guide to Classification of Significance of Landscape and Visual Effects ..... 5-8
Table 5.4 Impact Significance Classifications ..... 5-9
Table 5.5 Categories of Viewpoint Sensitivity ..... 5-11
Table 5.6 Categories of Magnitude of Visual Change ..... 5-12
Table 5.7 Summary of Demolition Phase and Construction Phase Likely Significant Effects in the absence of mitigation ..... 5-34
Table 5.8 Summary of Operational Phase Likely Significant Effects in the absence of mitigation ..... 5-34
Table 5.9 Summary of Demolition and Construction Phase Effects Post Mitigation ..... 5-56
Table 5.10 Summary of Operational Phase Effects Post Mitigation ..... 5-56
Table 5.11 Summary of Demolition and Construction Phase Mitigation and Monitoring ..... 5-59
Table 5.12 Summary of Operational Phase Mitigation and Monitoring ..... 5-59

# 5 Landscape and Visual

## 5.1 Introduction

Mitchell + Associates have been engaged to prepare a Landscape and Visual Impact Assessment (LVIA) for a proposed tourism development, the 'Inis Cealtra Visitor Experience', at Inis Cealtra (Holy Island) in Lough Derg and Mountshannon Village, Co. Clare. Mitchell + Associates were also appointed as the Landscape Architect for the proposed development.

This chapter should be read with reference to the photomontages produced by Digital Dimensions which accompany this application under separate cover. It should also be read in conjunction with the Architectural Design Statement prepared by McCullough Mulvin Architects that also accompanies the planning application.

## 5.2 Expertise & Qualifications

The assessment has been carried out by Feargus McGarvey BA(Hons) Dip LA Greenwich University, Associate Director with Mitchell + Associates, Landscape Architects. Feargus is a full member and former president of the Irish Landscape Institute, the professional body for landscape architects in Ireland. He has over 34 years' experience in working as a Landscape Architect. He has written and collaborated on many Landscape and Visual Impact Assessments (LVIAs) and Visual Impact Assessments (VIAs) in both an urban and rural context, including Dundrum Town Centre LVIA, Donaghcumper Cellbridge Town Centre LVIA, Wonderful Barn Leixlip LVIA, Dun Laoghaire Harbour Cruise Berth Marina LVIA, Hermitage Clinic, Liffey Valley VIA, Office Development Dawson Street/ Nassau Street Dublin LVIA, Merrion Road Office Development VIA, Marry's Pig Farm Boyne Valley LVIA, Rathgar (Rathdown Motors) Residential Development VIA, Chivers Coolock LVIA, Project Liver (Naas Rd) LVIA, Southwest Gate (aka Nissan Naas Rd) LVIA, Kilgobbin Stepaside LVIA, City North, Stamullen LVIA and Project Opera, Limerick.

## 5.3 Proposed Development

A detailed description of the proposed development is contained within Chapter 2 of this EIAR and the Planning Statement that accompanies the application. The statutory notice should also be referenced. Following is a summary description of the development.

The Inis Cealtra Visitor Experience is to be developed on Inis Cealtra (Holy Island) and on the mainland, in two principal locations within Mountshannon Village. The project is comprised of different elements as set out below.

**Inis Cealtra Island**

- Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island.

- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp.
- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.
- Provision of three staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

**Mainland – Mountshannon**

- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, together with coach parking and bicycle parking facilities.
- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building incorporating a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.
- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.

Please refer to the planning documents and drawings, including the Architectural Design Statement, and the Landscape Design Statement. Supplementary information is available in the Inis Cealtra Landscape and Conservation Management Plan appended to the Landscape Design Statement.

### 5.3.1 Aspects Relevant to this Assessment

Key aspects that are relevant to this assessment are the potential effects on the landscape and visual character of the village of Mountshannon, Lough Derg and Inis Cealtra. This includes the visual effects of the proposals to and from those locations, and beyond. Notable aspects are; the proposed Visitor Centre, its function, scale, massing and finishes; the proposed car park, its uses, generation of footfall, and its presence on the main street of Mountshannon; and the proposed jetty, pods and paths on Inis Cealtra.

## 5.4 Methodology

### 5.4.1 LVIA methodology

The LVIA will describe the impact of the proposed development on the landscape character and visual amenity of the site and on the contiguous landscape and its environs. It will describe the landscape character of the subject site and its hinterland, together with the visibility of the site from key viewpoints in the locality. It will include descriptions of the receiving environment (baseline), an outline of the methodology utilised to assess the impacts, descriptions of the potential impacts of the development and of the resultant potential effects. Mitigation measures introduced to ameliorate or offset impacts will be outlined and the resultant predicted (residual) impacts will be assessed.

### 5.4.2 Methodology for Assessment of Landscape Effects

The assessment of potential landscape effects involves (a) classifying the sensitivity of the receiving environment (i.e., the nature of the receptor), and (b) identifying and classifying the magnitude of landscape change (i.e., the nature of the effect), which would result from the proposed development. These factors are combined to arrive at a classification of significance of the landscape effects.

### 5.4.3 Landscape Sensitivity

The sensitivity of the landscape is a function of its land use, patterns and scale, visual enclosure, the distribution of visual receptors, and the value placed on the landscape. The nature and scale of the development in question is also taken into account, as are any trends of change, and relevant policy. Five categories are used to classify sensitivity (refer to Table 5.1, below).

**Table 5.1 Categories of Landscape Sensitivity**

| Sensitivity | Description |
|---|---|
| Very High | Areas where the landscape exhibits very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The landscape character is such that its capacity to accommodate change is very low. These attributes are recognised in policy or designations as being of national or international value and the principal management objective for the area is protection of the existing character from change. |
| High | Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics. The landscape character is such that it has limited/low capacity to accommodate change. These attributes are recognised in policy or designations as being of national, regional or county value and the principal management objective for the area is the conservation of existing character. |
| Medium | Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong, or has evidence of alteration, degradation or erosion of elements and characteristics. The landscape character is such that there is some capacity for change. These areas may be recognised in policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change. |
| Low | Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character is such that it has capacity for change; where development would make no significant change or would make a positive change. Such landscapes are generally unrecognised in policy and the principal management objective may be to facilitate change through development, repair, restoration or enhancement. |

| Sensitivity | Description |
|---|---|
| Negligible | Areas where the landscape exhibits negative character, with no valued elements, features or characteristics. The character is such that its capacity to accommodate change is high; where development would make no significant change or would make a positive change. Such landscapes include derelict industrial lands, as well as sites or areas that are designated for a particular type of development. The principal management objective for the area is to facilitate change in the landscape through development, repair or restoration. |

### 5.4.4 Magnitude of Landscape Change

The magnitude of change is a factor of the scale, extent and degree of change imposed on the landscape by the proposed development, with reference to its key elements, features and characteristics (also known as 'landscape receptors'). Landscape receptors include individual aspects of the landscape, e.g., landform/topography, vegetation, and the density, mix, pattern and scale of building typologies, which may be directly changed by the development. The surrounding landscape character areas are also receptors whose character may be altered by these changes. Five categories are used to classify magnitude of change (refer to Table 5.2, below).

**Table 5.2 Categories of Magnitude of Landscape Change**

| Magnitude of Change | Description |
|---|---|
| Very High | Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the landscape, and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the landscape. |
| High | Change that is moderate to large in extent, resulting in major alteration to key elements, features or characteristics of the landscape, and/or introduction of large elements considered uncharacteristic in the context. Such development results in change to the character of the landscape. |
| Medium | Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the character of the landscape. |
| Low | Change that is moderate or limited in scale, resulting in minor alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the character of the landscape. |
| Negligible | Change that is limited in scale, resulting in no alteration to key elements features or characteristics of the landscape, and/or introduction of elements that are characteristic of the context. Such development results in no change to the landscape character. |

### 5.4.5 Significance of Landscape Effects

To classify the significance of effects the magnitude of change is measured against the sensitivity of the landscape using Table 3 as a guide. The significance classification matrix is derived from the EPA's Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2017 (specifically Figure 3.5 of the Guidelines – see Figure 5.3 below). In addition to this guidance the assessor uses professional judgement informed by their expertise, experience and common sense to arrive at a classification of significance that is reasonable and justifiable.

There are seven classifications of significance, namely: (1) imperceptible, (2) not significant, (3) slight, (4) moderate, (5) significant, (6) very significant, (7) profound.

**Table 5.3 Guide to Classification of Significance of Landscape and Visual Effects**

| | | **Sensitivity of the Landscape/View** | | | | |
|---|---|---|---|---|---|---|
| | | **Very High** | **High** | **Medium** | **Low** | **Negligible** |
| **Magnitude of Change to the Landscape/View** | **Very High** | *Profound* | *Profound to Very Significant* | *Very Significant to Significant* | *Moderate* | *Slight* |
| | **High** | *Profound to Very Significant* | *Very Significant* | *Significant* | *Moderate to Slight* | *Slight to Not Significant* |
| | **Medium** | *Very Significant to Significant* | *Significant* | *Moderate* | *Slight* | *Not Significant* |
| | **Low** | *Moderate* | *Moderate to Slight* | *Slight* | *Not significant* | *Imperceptible* |
| | **Negligible** | *Slight* | *Slight to Not Significant* | *Not significant* | *Imperceptible* | *Imperceptible* |

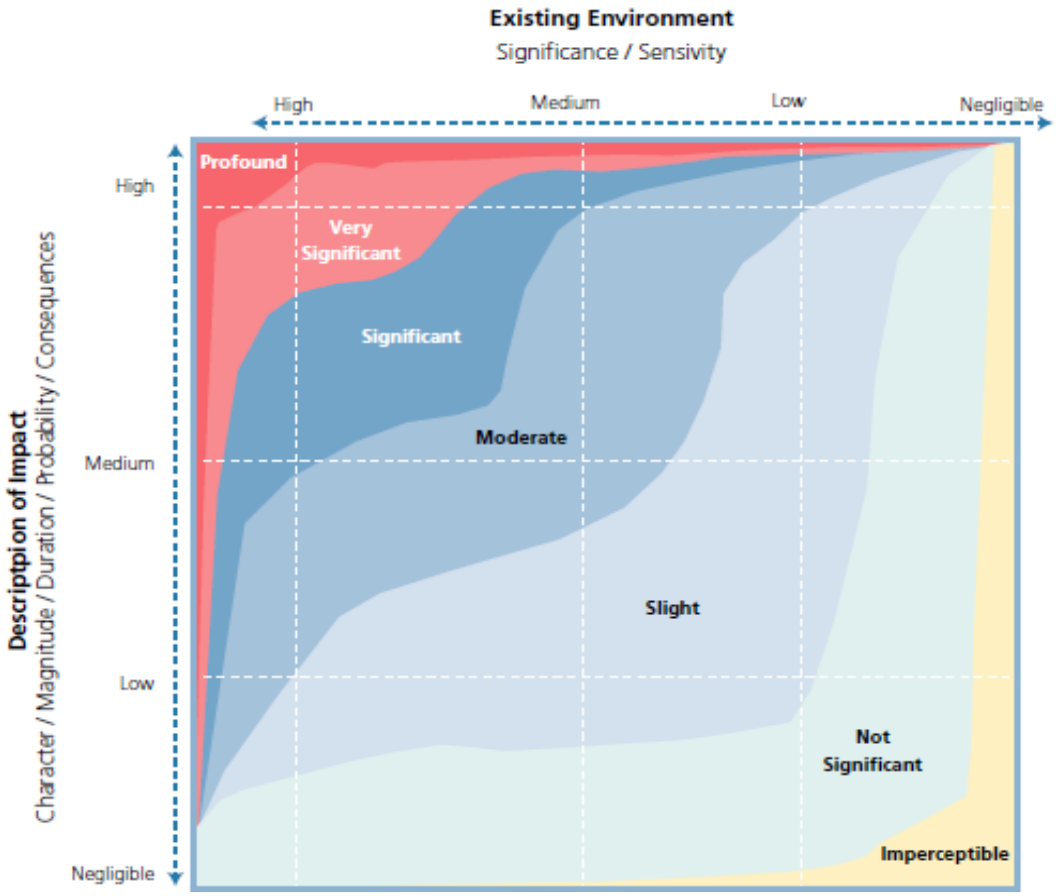



**Figure 5-1 'Chart showing typical classifications of the significance of impacts' (Source: Figure 3.5 of the DRAFT 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' - EPA, 2017*)***

The impact significance classifications used within the LVIA are taken from the EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports 2022 (Table 3.4), which define the classifications as follows:

**Table 5.4 Impact Significance Classifications**

| Significance | Description |
|---|---|
| Imperceptible | An effect capable of measurement but without significant consequences. |
| Not significant | An effect which causes noticeable changes in the character of the environment but without significant consequences. |
| Slight | An effect which causes noticeable changes in the character of the environment without affecting its sensitivities. |

| Significance | Description |
|---|---|
| Moderate | An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. |
| Significant | An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment. |
| Very Significant | An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment. |
| Profound | An effect which obliterates sensitive characteristics. |

The descriptions of the Significance of Effects contained within Table 3.4 of the EPA Guidelines are generalised definitions. They may be amended specifically for the purposes of the Landscape and Visual Impact Assessment. In that respect, it is noted that the standard descriptions, and the chart do nota allow for an assessment of a view where there is no visibility of the proposed scheme, and in an area of very high sensitivity. This is noted in the assessment of views.

### 5.4.6 Methodology for Assessment of Visual Effects

Assessment of visual effects involves identifying a number of key viewpoints in the site's receiving environment which overall, are representative of the existing visual environment, and for each viewpoint: (a) classifying the visual sensitivity of the viewpoint/visual receptor (i.e., the nature of the receptor), and (b) classifying the magnitude of change imposed on the view by the proposed development (i.e., the nature of the effect). These factors are combined to arrive at a classification of significance of the effects on each viewpoint.

### 5.4.7 Visual Sensitivity

Viewpoint/visual receptor sensitivity is a function of two main considerations:

1) Susceptibility of the visual receptor to change. This depends on the occupation or activity of the people experiencing the view, and the extent to which their attention is focussed on the views or visual amenity they experience at that location.

   Visual receptors most susceptible to change include for example, residents at home, people engaged in outdoor recreation focused on the landscape (e.g., trail users), and visitors to heritage or other attractions and places of community congregation where the setting contributes to the experience. Visual receptors less sensitive to change include for example, travellers on road, rail, and other transport routes (unless on recognised scenic routes), people engaged in outdoor recreation or sports where the surrounding landscape does not influence the experience, and people in their place of work or shopping where the setting does not influence their experience.

2) Value attached to the view. This depends to a large extent on the subjective opinion of the visual receptor but also on factors such as policy and designations (e.g., scenic routes, protected views), or the view or setting being associated with a heritage asset, visitor attraction or having some other cultural status.

Five categories are used to classify a viewpoint/visual receptor's sensitivity (refer to Table 5.5, below):

**Table 5.5 Categories of Viewpoint Sensitivity**

| Sensitivity | Description |
|---|---|
| Very High | Iconic viewpoints (views towards or from a landscape feature or area) that are recognised in policy or otherwise designated as being of national value. The composition, character and quality of the view are such that its capacity for change is very low. The principal management objective for the view is its protection from change. |
| High | Viewpoints that are recognised in policy or otherwise designated as being of value, or viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features focused on the landscape). The composition, character and quality of the view may be such that its capacity for accommodating change may or may not be low. The principal management objective for the view is its protection from change that reduces visual amenity. |
| Medium | Views that may not have features or characteristics that are of particular value, but have no major detracting elements, and which thus provide some visual amenity. These views may have capacity for appropriate change and the principal management objective is to facilitate change to the composition that does not detract from visual amenity, or which enhances it. |
| Low | Views that have no valued feature or characteristic, and where the composition and character are such that there is capacity for change. This category also includes views experienced by people involved in activities with no particular focus on the landscape. For such views the principal management objective is to facilitate change that does not detract from visual amenity or enhances it. |
| Negligible | Views that have no valued feature or characteristic, or in which the composition may be unsightly (e.g., in derelict landscapes). For such views the principal management objective is to facilitate change that repair, restores, or enhances visual amenity. |

### 5.4.8 Magnitude of Change to the View/Visual Amenity

Classification of the magnitude of change takes into account the size or scale of the intrusion of development into the view (relative to the other elements and features in the composition, i.e., its relative visual dominance), the degree to which it contrasts or integrates with the other elements and the general character of the view, and the way in which the change will be experienced (e.g., in full

view, partial or peripheral view, or in glimpses). It also takes into account the geographical extent of the change, as well as the duration and reversibility of the visual effects.

Five categories are used to classify magnitude of change to a view (refer to Table 5.6, below):

**Table 5.6 Categories of Magnitude of Visual Change**

| Magnitude of Change | Description |
|---|---|
| Very High | Full or extensive intrusion of the development in the view, or partial intrusion that obstructs valued features or characteristics, or introduction of elements that are completely out of character in the context, to the extent that the development becomes dominant in the composition and defines the character of the view and the visual amenity. |
| High | Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity. |
| Medium | Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity. |
| Low | Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity. |
| Negligible | Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity. |

### 5.4.9 Significance of Visual Effects

As for landscape effects, to classify the significance of visual effects, the magnitude of change to the view is measured against the sensitivity of the viewpoint, using the Guide for Classification of Significance of Landscape and Visual Effects as set out in Table 5.3 (above) and as described in Table 5.4: Impact Significance Classifications (above), as may be amended specifically for this Landscape and Visual Impact Assessment.

### 5.4.10 Quality of Landscape and Visual Effects

The quality of effects can be assessed as 'positive' or 'negative' depending on whether the change is considered to improve or reduce the quality of the landscape character or visual environment. The quality of impact may also be assessed as 'neutral' if the quality of the environment is unaffected. The

assessment of quality needs to consider and weigh-up a range of issues and potentially conflicting standpoints. The nature of the proposed change, its context, appropriateness, quality of design and the sensitivities of the viewers are all important considerations for this aspect of assessment.

### 5.4.11 Duration of Landscape and Visual Effects

The duration of effects is a third aspect of assessment to be considered. Effects may range from temporary to permanent. In this case, the proposed development has a design life probably exceeding 60 years and so effects are likely to be long term to permanent. The temporary/short term effects during the construction of the proposed development are also considered in the assessment.

### 5.4.12 The Use of Photomontages and selection of viewpoints

The primary method adopted for the assessment of visual effects relies largely on a comparative visual technique, whereby accurate photomontages, incorporating the proposed development are compared to the existing corresponding baseline photograph so that an assessment of effects can be made. These 'before' and 'after' images are prepared for each of the selected viewpoints.

The selection of viewpoints will be carried out in accordance with the 'Guidelines for Landscape and Visual Impact Assessment', prepared by the Landscape Institute and the Institute of Environmental Assessment, published by Routledge, 3rd Edition 2013. The guidance on viewpoint selection and baseline photography requires that the proposed development is considered in context and that photomontages used to illustrate the proposed development include sufficient landscape context for proper assessment.

The photomontages are prepared by experienced specialists, to a specific detailed methodology to ensure accuracy. The methodology adopted will be in accordance with the Landscape Institute's Technical Guidance Note 06/19 (17 September 2019) 'Visual Representation of Development Proposals' and will be described by the specialist in the A3 document of photomontages to be submitted.

The initial photomontages prepared are also used to assess the preliminary design and to inform the design team of any advisable amendments – this is an iterative process and offers an opportunity for the design team to adjust the design or for the location of viewpoints to be adjusted if appropriate.

### 5.4.13 Relevant Legislation & Guidance

The methodology for assessment of the landscape and visual effects is informed by the following key guidance documents:

- 'Guidelines for Landscape and Visual Impact Assessment', prepared by the Landscape Institute and the Institute of Environmental Assessment, published by Routledge, 3rd Edition 2013.
- Visual Representation of Development Proposals Technical Guidance Note 06/19 published by the Landscape Institute on 17th September 2019.
- Environmental Protection Agency (EPA) (May 2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.

Additional documents referred to in the preparation of this chapter are set out below:

- Clare County Development Plan 2023-2029
- Tipperary County Development Plan 2022 -2028
- Inis Cealtra Visitor Management and Sustainable Tourism Development Plan 2017
- Landscape Character Assessment of County Clare 2004
- The National Landscape Strategy for Ireland 2015-2025
- Inis Cealtra The Holy Island Exhibition
- Tourism Masterplan for the Shannon 2020-2030
- European Landscape Convention 2002.

### 5.4.14 Site Surveys/Investigations

An initial evaluation was undertaken as a desk study of the subject site and its immediate environs in relation to its local and broader significance using the information gathered from the site visits, studying aerial photography, historic and Ordnance Survey mapping. The study included a review of relevant guidance, policies and objectives particular through two iterations over the course of the study of the Clare and Tipperary County Development Plans. A further exercise was undertaken to determine the locations of potential views that will inform the assessment. Subsequently, the area was visited with the initial findings in order to gain a further understanding of the environs. Multiple visits to Mountshannon and Inis Cealtra were undertaken throughout the course of this assessment from April 2021 to September 2024, including a broader reconnaissance of the shoreline of Lough Derg in counties Clare and Tipperary.

### 5.4.15 Consultation

Sufficient guidance was available in Clare and Tipperary CDP's and relevant guidance documents for the completion of this report.

### 5.4.16 Landscape and Visual Impact Assessment Criteria

The assessment criteria is based on the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (May 2022) and 'Guidelines for Landscape and Visual Impact Assessment', prepared by the Landscape Institute and the Institute of Environmental Assessment, published by Routledge, 3rd Edition 2013, and Visual Representation of Development Proposals Technical Guidance Note 06/19 published by the Landscape Institute on 17th September 2019.

## 5.5 Difficulties Encountered

No difficulties were encountered in the course of the assessment.

## 5.6 Baseline Environment

### 5.6.1 Landscape Character

The study comprises three sites, two of which are in the village of Mountshannon on the shores of Lough Derg, and Inis Cealtra, or Holy Island, which is approximately 1.75km to the southwest of the village. Both are in the tourism area know as the 'Hidden Heartlands', which indicates that the area is somewhat underexplored in terms of tourism. Lough Derg is part of the Shannon river system, and is designated as an Special Protection Area (SPA) for its ecological importance.

Mountshannon has the status of 'Large Village', the core of which is designated as an Architectural Conservation Area described in the CPD as follows:

'…It consists of a single wide street, linked to the harbour, with solid, stone-gabled two storey houses on each side. Many of these date from the late 18th century and still retain their traditional character. The buildings of the 18th and 19th centuries in Mountshannon are constructed of local sandstone, giving the village a cosy, welcoming appearance…' It has a population of 209 (2022 census) but an overconcentration of holiday homes leading to an objective in the CPD (CPD5.4b&c) not to permit the building of new holiday homes in the village, and to support and facilitate the conversion of existing ones to permanent residences.

Inis Cealtra is a drumlin- - or dome shaped island close to the Lough Derg shoreline that is known as a setting for its ecclesiastical heritage, most visibly the round tower and church of St Caimín. It's qualities are summarised succinctly in the Inis Cealtra Visitor Management and Sustainable Tourism Plan (2017):

*'The island is cherished for its spiritual ambience, tranquillity, beauty, ecclesiastical heritage, natural heritage, folklore and cultural traditions as well as its historical links to Brian Boru and the Vikings. It is recognised as significant in the context of Ireland's early medieval churches and, along with Clonmacnoise, Durrow, Glendalough, Monasterboice and Kells, has been included since 2010 on the UNESCO1 World Heritage Tentative List. The island is part of an area of international biodiversity importance as it is situated within a Special Protection Area, as designated under the European Bird Directive.'*

The sites sit within the 'Lough Derg Basin' Area 7 of the County Clare Landscape Character Assessment (2004), and have a backdrop of Slieve Aughty Uplands (Area 5) to the north and Slieve Bernagh Uplands (Area 8) to the south. Across the lough to the south, the landscape that meets the shoreline in County Tipperary is defined the Arra Mountain - Lower Lough Derg Area 13.

The shoreline landscape of undulating farmland with field patterns defined by hedgerows and woodland, and intermittent houses is backed by the rising hills beyond, of the Arra Mountain in Tipperary and Slieve Bernagh in Clare to the south and Slieve Aughty uplands to the north.

Inis Cealtra is the largest of several islands sitting close to the Clare shoreline running distinctively in a north easterly to south westerly alignment, These are Inisparren (connected to the mainland), a cluster of small islands known as the Cribby Islands, Bushy Island, Young's Island, Inis Cealtra (Holy Island), Red Island and Rabbit Island. The islands are for the most part covered in scrub and woodland,

and so Inis Cealtra is distinct in being a large grassland dome of 20 hectares fringed with woodland and scrub, with its distinctive unfinished round tower, and ecclesiastical stone ruins.

**Figure 5-2 Satelite imagery of islands on the northern side of Lough Derg, including Inis Cealtra. (Source: Google)**

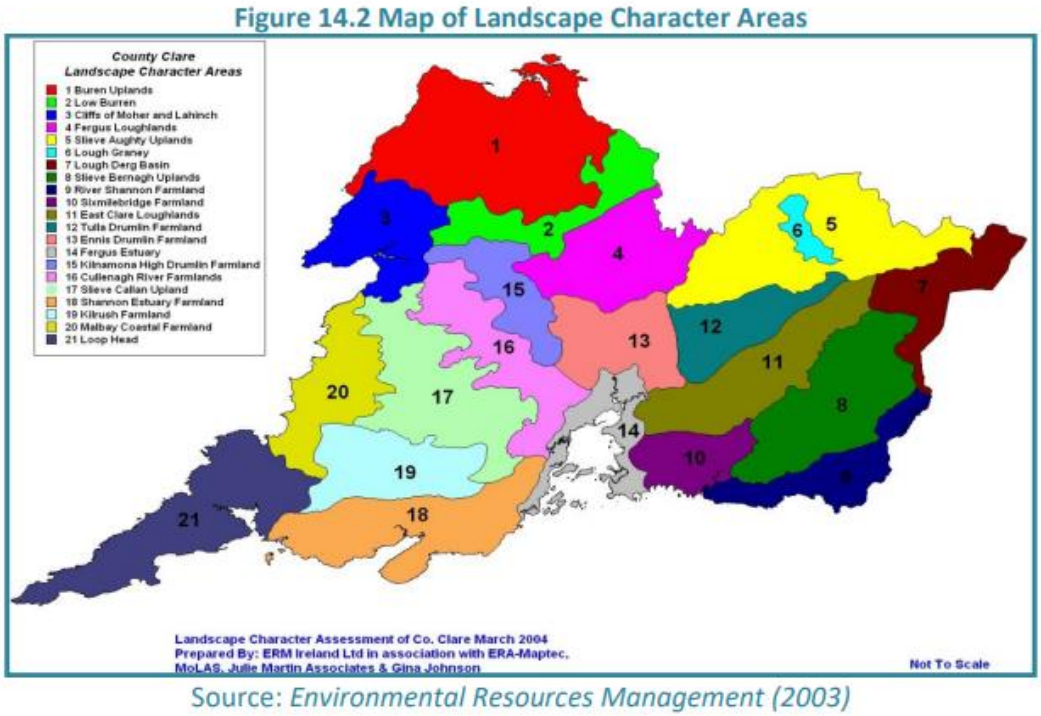



**Figure 5-3 Landscape Character Areas of County Clare from the Clare CDP 2023-2029 & Env Sources Management 2003**

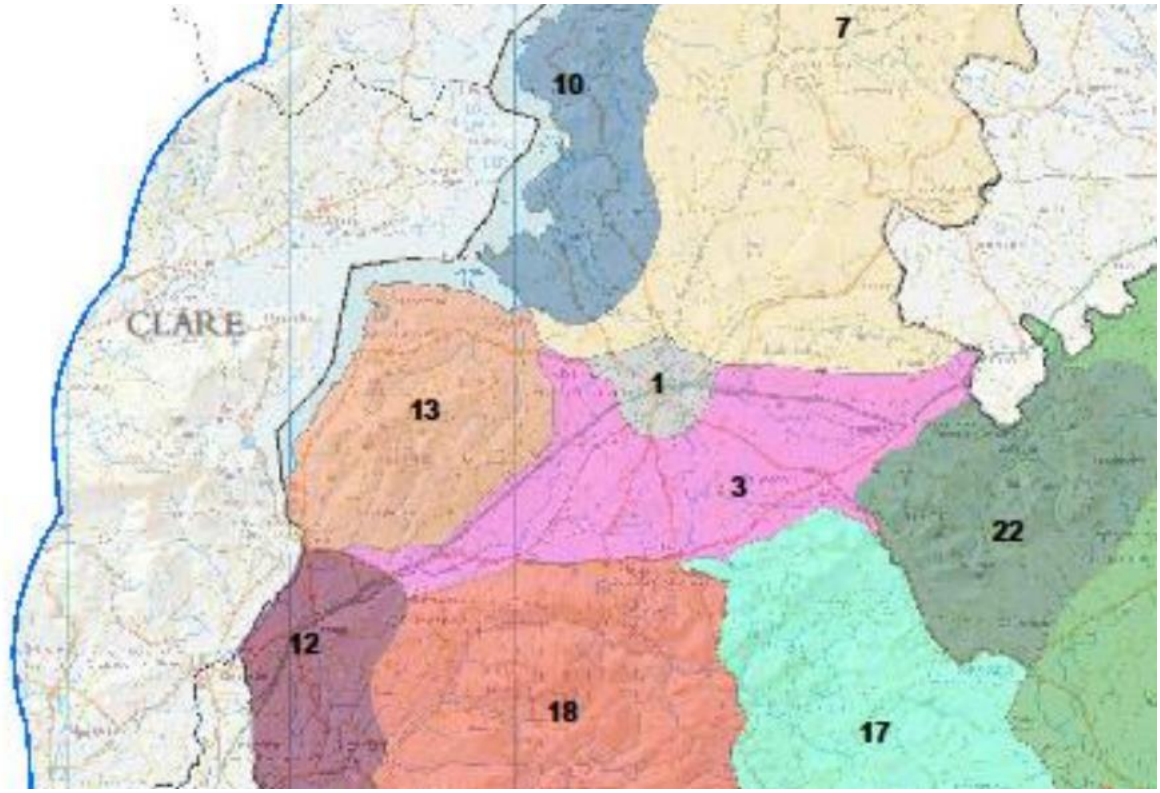



**Figure 5-4 Extract showing area 13 in the Landscape Character Areas of County Tipperary from the Tipperary CDP 2022-2028.**

The broad main street of Mountshannon is lined with single and two storey buildings, with a mix of commercial and residential uses. The core of the urban structure appears to be at the crossroads at the highest point in the village, defined by a strong building line, terraced houses and stone garden walls. The southern side of the side of the street becomes greener alongside the elegant stone gateway and boundary of the Aistear Park offering glimpses to the boats at Inis Cealtra Sailing Club, , across Lough Derg and towards Inis Cealtra.

The northern side of the main street is punctuated groupings of trees, and by glimpses in to back yards, paddocks and agricultural buildings. The village is busy in the tourist season, and at school commute times, and there appears to be little footfall outside of those times.

A recent upgrade of the street has formalised kerblines and car parking bays along parts of the street. It has used simple macadam and pre cast concrete finishes which give a utilitarian quality to the civic space.

Aistear Park is a multifunctional public open space developed by the community in 2001, and representative of the strong community spirit of the village which has won numerous Tidy Towns awards, including a national award. The park links the main street to the shoreline and the sheltered south facing harbour. It is also utilitarian in character, with access for boats and trailers, it is predominantly a car park and mooring point with views across to Tipperary and Inis Cealtra. Green open space in the area has been developed with pathways, seating and artwork, and places to bathe.

When viewed from Lough Derg, the village of Mountshannon is set within wooded slopes which mitigates much of the visual effects of more recent residential development. In general the pale colours of the painted facades are complemented by warmer tones in ochre sandstone that is found in some of the older buildings and boundaries, such as the Church of Ireland and former RIC Barracks, as well as the newer residential properties. The latter are occasionally painted red, which is possibly a nod to the distinctive and unusual red brick of the former Rectory. The buildings on the main street are a mix of single and two story buildings, usually rendered and painted, although the former hotel appears to have been stripped of its render to reveal sandstone and brick facades.

**Images of Mountshannon**

**Figure 5-5 Mountshannon main street looking westwards**

**Figure 5-6 WC facilities at Mountshannon Harbour.**

**Figure 5-7 Lakeside park at Mountshannon harbour**

**Figure 5-8 View of Mountshannon from the lake – note the Rectory is the red brick building centre left in the image.**

**Figure 5-9 View of Mountshannon main st looking eastwards.**

**Figure 5-10 View of Mountshannon harbour**

**Figure 5-11 View of Mountshannon harbour from one of the jetties**

**Images of Inis Cealtra**

**Figure 5-12 View of Inis Cealtra (centre right) from Mountshannon harbour in poor weather**

**Figure 5-13 View of Inis Cealtra shoreline and islands looking eastwards**

**Figure 5-14 View of meadow, path and monuments on Inis Cealtra**

**Figure 5-15 View of sheep grazing around scrub on Inis Cealtra**

**Images of Lower Lough Derg**

**Figure 5-16 View of the southern shore of Lough Derg from Inis Cealtra**

**Figure 5-17 View of Inis Cealtra from the southern shore of Lower Lough Derg**

**Figure 5-18 View of Inis Cealtra from the southern shore of Lower Lough Derg (Co Tipperary)**

### 5.6.2 Landscape Context

The sites of the proposed Visitor Centre and car park sit within the Mountshannon settlement boundary and the designated Heritage Landscape of the Clare CDP 2023-2029 as seen in the extract of the mapping of Areas of Special Control in Figure 5.19 below. Inis Cealtra and other islands are included in this designation, which is reinforced by the identification of scenic routes along the R352 from Mountshannon heading towards Scarriff and Tuamgraney. The scenic route designation continues in a loop to the soth of Lough Derg, along the R463 to Ogonnelloe. The shorelines around Lough Derg are therefore environmentally, culturally, and visually sensitive. The designation is described as follows in the CDP 2023-2029:

*iii. Heritage Landscapes – areas where natural and cultural heritage are given priority and where development is not precluded but happens more slowly and carefully.*

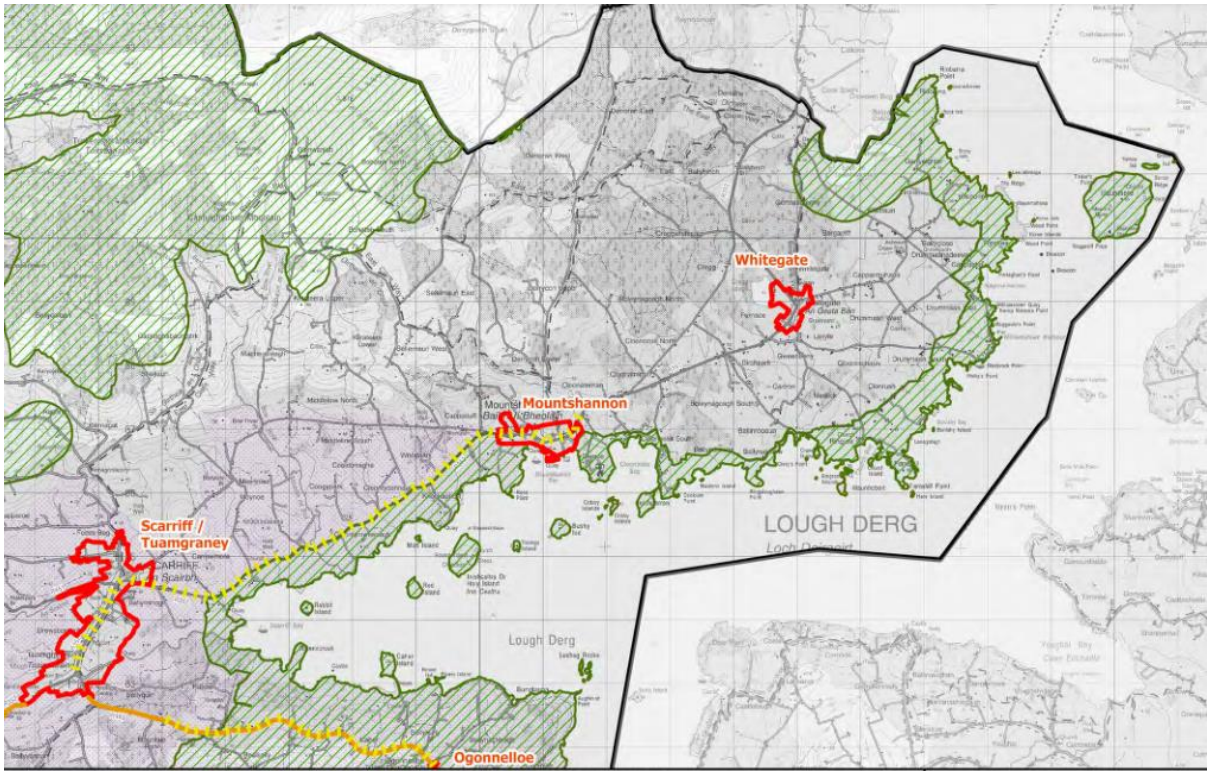



**Figure 5-19 Areas of Special Control Map from the Clare CDP 2023-2029**

The mapping of Landscape Designations across the county in Figure 5.20 below shows the context of this heritage designation in combination with scenic views being typical of shoreline (as well as upland) areas.

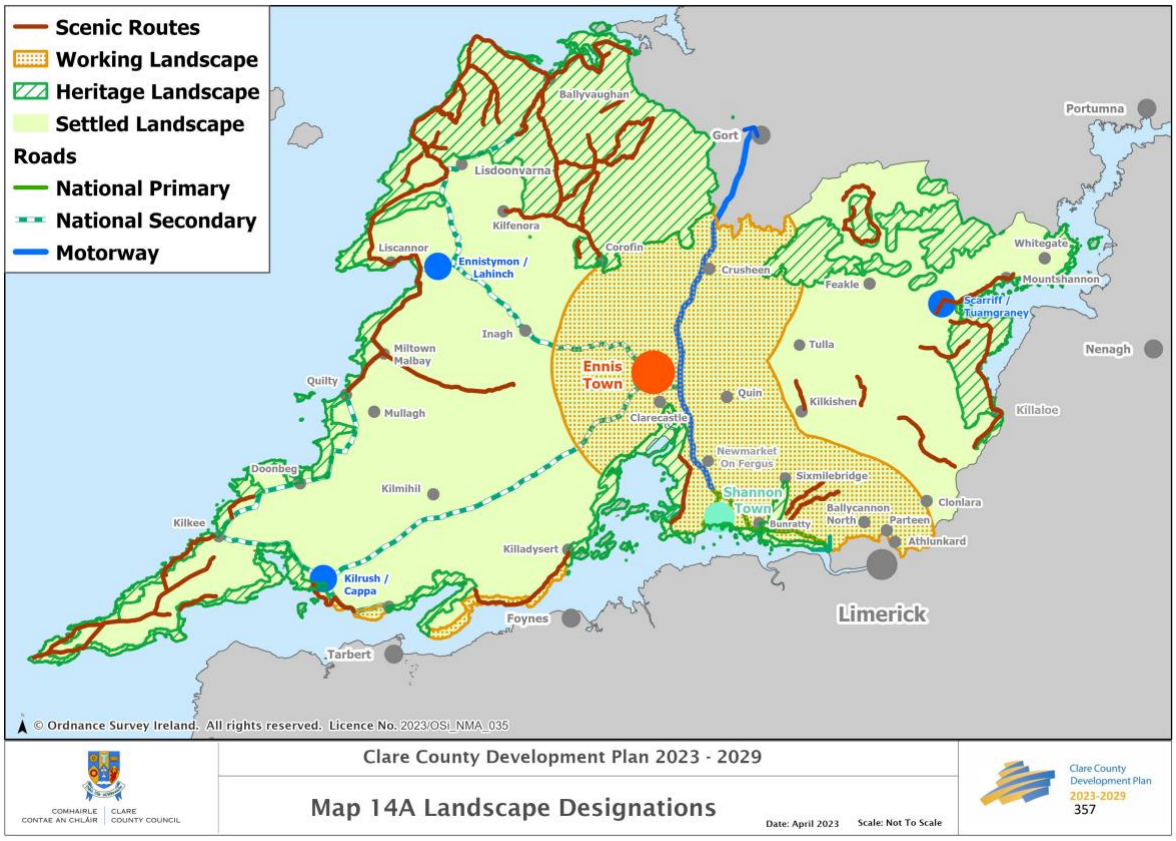



**Figure 5-20 Landscape Designations map from the Clare CDP 2023-2029 (Note the scenic routes and heritage landscape designations in the environs of Lough Derg to the east)**

The Infrastructure, Environment and Flood Risk Zones mapping in the Clare CDP 2023-2029 illustrates the mapping of protected structures and trees for preservation in the environs of Mountshannon. The sylvan approaches and setting to Mountshannon are therefore recognised, however it is of note that the islands themselves do not have this designation.

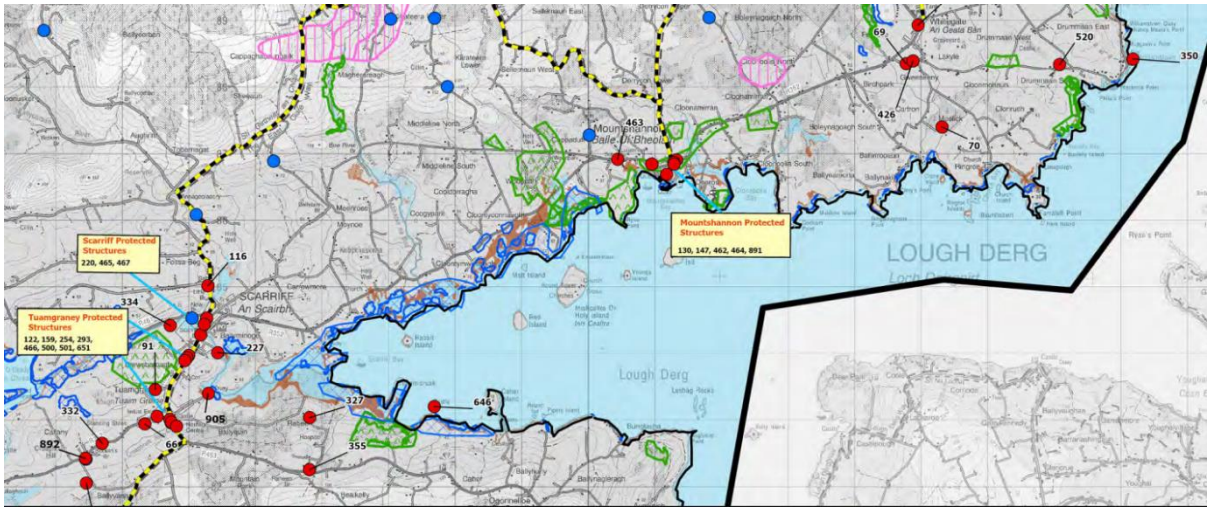



**Figure 5-21 Extract of mapping of protected structures in the Clare CDP 2023-2029**

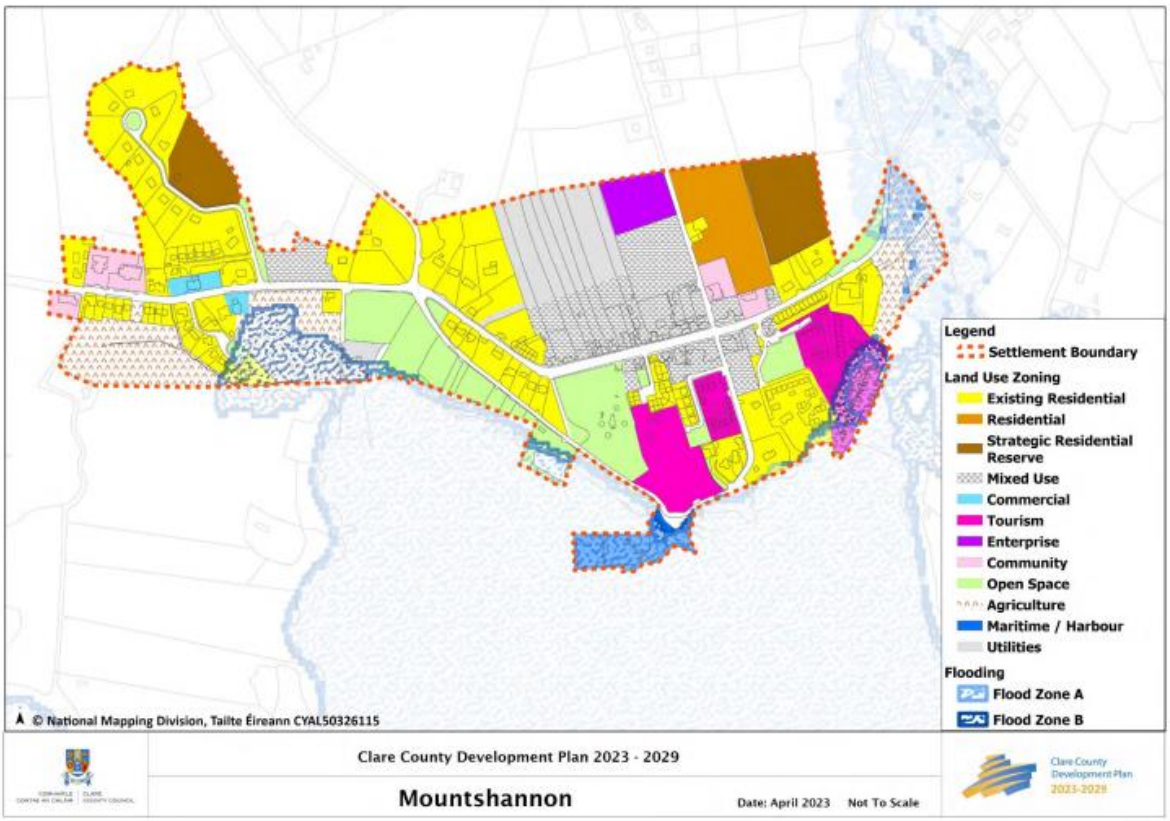



**Figure 5-22 Mountshannon Town Plan Clare CDP 2023-2029 (note the tourism and harbour designations)**

The Mountshannon Town Plan from the Clare CDP 2023-2029 shows a strong direction in the landuse between the main street and the harbour – dominated by the community's initiative Aistear Park – a large green open space that also addresses the main street; and the tourism designation. There is a further open space in the form of a shoreline park that is not shown on the map as it is outside of the settlement boundary, however it compliments the other open spaces and is able to absorb the ancillary amenities of the café and WC. The bottle banks are less well sited, however they do reflect the working quality of the harbour.

### 5.6.3 Views & Prospects

It has been identified earlier that the shoreline and routes around Lough Derg have protected scenic routes in the Clare CDP 2023-2029. The designations continue into County Tipperary, along the R494 as V44 'Views west and sections of the Road to the east of the R494', and along smaller shoreline roads, notably V45 'Views along lakeside roads north of Portroe'.

Across these distances, it can be difficult to identify Inis Cealtra among the other islands and indentations of the shoreline. However, the round tower is a distinct landmark that helps distinguish the island.

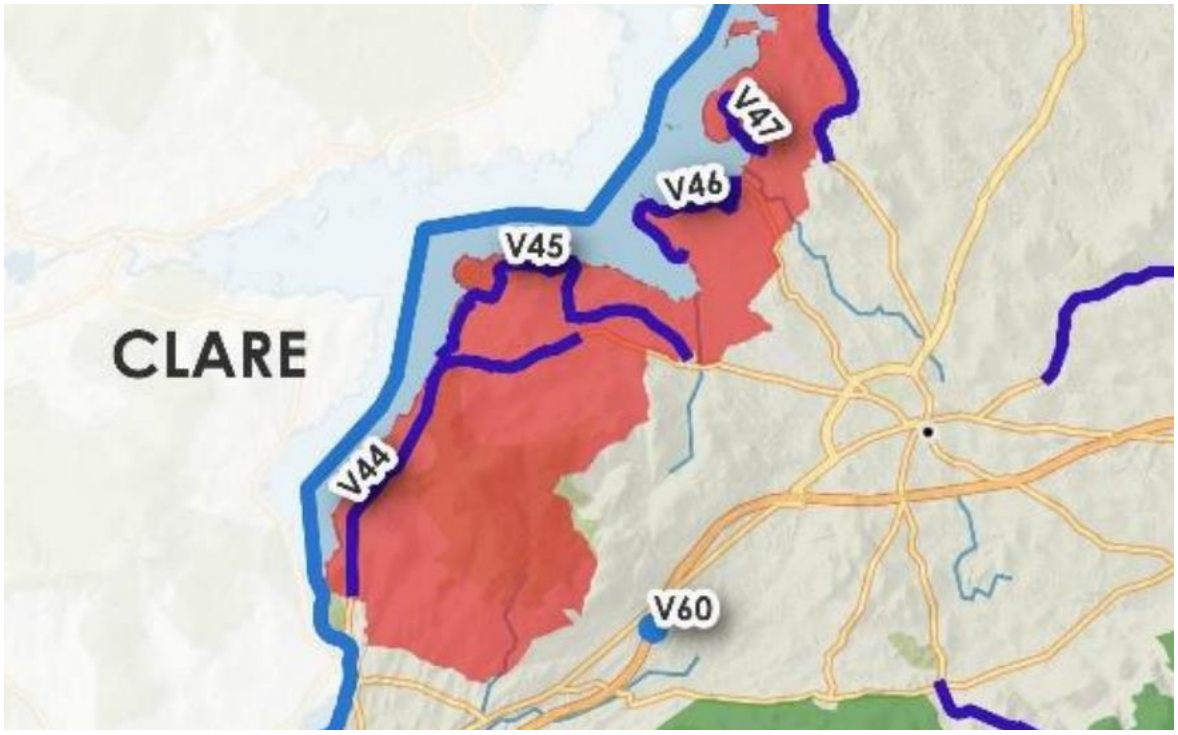



**Figure 5-23 Extract from the Views and Prospects Mapping (V1-C11) of the Tipperary CDP 2022-2028**

## 5.7 The 'Do Nothing' Scenario

In the event that the proposals do not go ahead, it is likely that Inis Cealtra would continue to be managed in a similar way, including landscape management of sheep grazing and mown paths and areas around the monuments, and unregulated access, and that the tourism pressures relating to visitor management at Mountshannon would continue. The anticipated opening of the interpretive centre in the newly developed Rectory, will be reasonably expected to draw more tourists to the area, and the burial of the renowned author Edna O'Brien on the island in 2024 will also draw visitors to pay their respects. The pressures of managing tourists on the island are likely to increase. The informal and ad-hoc nature of visiting the island has its charm for small visitor numbers, however the regions misses out on the benefits to the local economy that managed tourism can bring, and the risks to the monuments will potentially increase with unregulated tourism.

## 5.8 Potential Significant Effects

A proposed development such as this has the potential to impact upon the landscape and visual aspects of the existing environment in a number of ways, at both construction and operational stages. Effects can be short or long term; temporary or permanent. The purpose of this section of the report is to outline and describe the potential effects of such proposed development; upon the visual and landscape aspects of the immediate area, and further afield, where relevant.

### 5.8.1 Demolition Phase

#### 5.8.1.1 Landscape

The effects of the demolition phase are addressed under the construction phase.

#### 5.8.1.2 Visual Impact

The effects of the demolition phase are addressed under the construction phase.

### 5.8.2 Construction Phase

#### 5.8.2.1 Landscape

Potential impacts during the construction phase are related to temporary works across seach of the individual sites (The visitor centre, car park, and island), site activity, and vehicular movement within and around the subject sites. Vehicular movement may increase in the immediate area, and temporary vertical elements such as cranes, scaffolding, site fencing, gates, plant and machinery etc., will be required and put in place. The works will be carried out across three sites; the rectory site and harbour area (for the visitor centre), the car park site and on Inis Cealtra. Most of the construction impacts will be temporary, and may include the following:

- Site preparation works and operations (including tree and vegetation, protected structures and national monuments protection measures as appropriate);
- Site excavations and earthworks;
- Site infrastructure and vehicular access;
- Materials storage, spoil heaps etc;
- Construction traffic, dust and other emissions;
- Temporary fencing/hoardings, site lighting and site buildings (including office accommodation);
- Cranes and scaffolding;

Where trees are to be felled these effects will be permanent, however any proposed new planting will offset such impacts, increasingly so as the proposed development matures.

#### 5.8.2.2 Visual Impact

The visual impact will be short term in nature, confined to the duration of the construction period.

### 5.8.3 Operational Phase

#### 5.8.3.1 Landscape

Refer to the supporting planning drawings and documentation, including the Architectural Design Statement and the Landscape Design Statement. The impacts of the operational phase are best described across the three sites:

**The Village Car Park**

The car park is an insertion into the linear plots to the north of the main street of Mountshannon. As

such, the scale of the car park is hidden beyond the proposed entrance area. The entrance area is characterised by a newly defined street edge, maintaining part of the stone boundary wall, reinstating a green area of tree planting and swale to the front, and cycle parking, beyond which accessible car parking bays lead on to coach bays, parking bays and an overspill grass parking area. The impact to the public street is therefore in the streetscape edge, which is similar to other access gateways to the backlands along the main street, and the likely signage and road markings that control the access and egress. The route to the proposed visitor centre is through Aistear Park. The design intention of this route is to activate the main street and public park, and encourage footfall across businesses in the town.

**Inis Cealtra**

The proposed scheme for the island is primarily the insertion of 3 'pods' (consisting of a public shelter, wc, and staff welfare) at the northern edge of the island, on pile foundations to allow them to minimise their footprints and be placed amongst existing vegetation. The requirement for an improved jetty or landing stage at this location is likely a more impactful development whose engineering aesthetic and likely associated signage is more difficult to mitigate. The proposed mown grass pathways in general follow the existing path network, and introduce a larger loop around the island that will allow the visitor numbers to be distributed and absorbed. Incidental tree trunks are proposed for resting points, enabling greater access. The implementation of the Landscape and Conservation Management Plan, which is an appendix to the Landscape Design Statement will improve the management of vegetation and habitats on the island.

**The Rectory and Harbour**

The proposed development will consist of the insertion of a visitor centre along the southern boundary of the rectory site and associated public realm works in the form of footpaths, and a forecourt and upgrade works to the harbour. This will require two sections of the existing stone boundary wall (45m in total) to be removed, and necessitate the removal of some trees (refer to arborist's report). Whilst this in itself, represents a substantial change to the existing landscape of the harbour area and the rectory, it can also be read as an expected, logical and planned proposal in line with the Sustainable Tourism and Visitor Management Plan (2017).

#### 5.8.3.2 Visual Impact

**The Rectory and Harbour**

In terms of potential visual impacts, whilst the proposed building type, scale, and style appears uncharacteristic within the broader context of Mountshannon, it references earlier architectural forms, and its finishes are characteristic of the local vernacular use of local stone. The building addresses the harbour, whereas other local ancillary buildings do this obliquely, therefore the proposal is 'mending' the urban fabric. There is a clear change of building scale between what is currently there and what is proposed, however it is set back from the existing boundary wall giving a forecourt that addresses the harbour, and is settled into the topography as demonstrated by the rising ground that is the setting for

the former rectory, and the adjacent residential developments which look out over the proposed building. The potential for visual impact, experienced by people visiting, or living in Mountshannon, is therefore reasonably high in the immediate vicinity of the harbour, but diminished when seen in context of the topography and urban structure of the town, and from the lough. The selected viewpoints for the preparation of photomontages takes this into account by taking views from corresponding locations.

**The Car Park**

The visual impact from the public realm will be restricted to the entrance area on the main street. In this regard, there is some precedence in the use of gateways and gaps between buildings to access the gardens, yard and field plots behind the main street.

The design rationale adopted and the architectural and landscape architectural approach to the design of the proposed scheme and the details employed, seek to respond to such issues and to mitigate negative effects on both the broader landscape character and visual amenity of the area

**Inis Cealtra**

The visual impact will be limited to the northern end of the island when seen from the shoreline at Knockaphort, and when approached by boat. The pods can be understood as a positive intervention to welcome visitors to the island, facilitating shelter and guidance, whilst the proposed jetty facilitates safe access.

The selected viewpoints for the preparation of photomontages take into account the views to and from each of the sites as appropriate.

### 5.8.4 Cumulative Effects

Current guidelines suggest that a determination should be made as to whether cumulative effects are likely to occur – these are outlined in the current GLVIA guidelines (3rd edition) as '*additional effects caused by the proposed development when considered in conjunction with other proposed developments of the same or different types*'. Such determination needs to be made in respect of any permitted development of a similar nature which will have a bearing on the assessment of the proposed development - this is subject to the assessor's judgement in the matter. The following is a list of projects local to the proposals.

| **Mountshannon Community Hall, Mountshannon, Co. Clare, V94 F5A0** | |
|---|---|
| **Alterations and demolition works to the existing Community Hall, the construction of a sports hall and Arts centre and ancillary buildings along with all associated site works** | CCC Reg. Ref. 240460<br>Live Application<br>Decision Due 19th November 2024 |

| | |
|---|---|
| **Cloonoolia South, Mountshannon, Co. Clare** | |
| **Erection of a dwelling house and garage, entrance and driveway and install an effluent treatment system and soil polishing filter and all associated site works** | CCC Reg. Ref. 240454<br>Live Application<br>Decision Due 17th November 2024 |
| **Sellernaun West, Mountshannon, Co Clare** | |
| **Living accommodation in converted attic area and associated site works to dwelling.** | CCC Reg. Ref. 24302<br>Decision to Grant 12th October 2024 |
| **Cloonamirran Tld, Mountshannon, Co. Clare, V94D2VF** | |
| **Construction of a stable building and associated site works** | CCC Reg. Ref. 2360438<br>Granted 8th Dec 2023 |
| **Aistear Park, Mountshannon, Co Clare** | |
| **Erect a Pavilion (a roofed open structure) for communal, cultural, education and events and gatherings and all associated site works.** | CCC Reg. Ref. 22123<br>Granted 6th April 2022<br>Appeal ABP Ref. 313431<br>Granted 24th July 2023 |
| **The Old Rectory Mountshannon, Co. Clare, V94 P66V** | |
| **Alterations, modifications and change of use of the existing Old Rectory, Mountshannon (a Protected Structure, RPS No. 464) from Residential to Tourism Interpretive Centre and Café uses, on a site measuring 1.35ha.**<br>**Note: This development is at an advanced stage of construction, with anticipated completion in Q1 2025, before any permission issues for the subject Part X application. Thus, no overlap in construction activity will occur.** | CCC Reg. Ref. 238001<br>Granted 10th July 2023 |
| **Mountshannon, Co Clare** | |
| **Permission was granted for the construction of 11 no. dwelling houses of varying size and design, 1 no. building containing 2 no. apartments, new site entrance, development access roads paths, landscaping, service connections and associated site works & services.** | CCC Reg. Ref. 22269<br>Granted 3rd May 2023 |
| **Public Realm Works Mainstreet Mountshannon, Co Clare** | |
| **Traffic Calming Measures at Main Street Mountshannon**<br>**Note: The construction works for this development are scheduled to commence in mid-January 2025 and should, therefore, be completed prior to the Part X decision. As such, any overlap in construction activity is not foreseen.** | Section 38 Development |

The are no predicted cumulative effects currently related to the proposed development and it is considered that the open roofed structure proposed for Aistear Park is sufficiently small, and in keeping with the functions of the park, to not generate cumulative effects.

### 5.8.5 Summary

The following Table summarises the identified likely significant effects during the demolition and construction phases of the proposed development before mitigation measures are applied.

**Table 5.7 Summary of Demolition Phase and Construction Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Inis Cealtra | | | | | | |
| **Landscape** | negative | high moderate | local | likely | temporary | Residual |
| **Visual** | negative | high moderate | local | likely | temporary | Residual |
| Car Park | | | | | | |
| **Landscape** | negative | moderate | local | likely | temporary | Residual |
| **Visual** | negative | moderate | local | likely | temporary | Residual |
| Visitor Centre/Harbour | | | | | | |
| **Landscape** | negative | moderate | local | likely | temporary to short term | Residual |
| **Visual** | negative | moderate | local | likely | temporary to short term | Residual |
| | | | | | | |

The following Table summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

**Table 5.8 Summary of Operational Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Inis Cealtra** | | | | | | |
| **Landscape** | negative | high/moderate | local | likely | long term | Residual |
| **Visual** | negative | high/moderate | local | likely | long term | Residual |
| **Car Park** | | | | | | |
| **Landscape** | negative | moderate | local | likely | long term | Residual |

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Visual** | negative | moderate | local | likely | long term | Residual |
| **Visitor Centre** | | | | | | |
| **Landscape** | negative | moderate | local | likely | long term | Residual |
| **Visual** | negative | moderate | local | likely | long term | Residual |

## 5.9 Mitigation

### 5.9.1 Incorporated Design Mitigation

The key mitigation measures incorporated in to the design are as follows:

**Inis Cealtra**

- Sensitive siting of pods, boardwalks and jetty.
- Sensitive use of materials
- Quality of architectural language and materials.
- Implementation of path design and management
- Implementation of local and native provenance planting proposals
- Implementation of landscape and conservation management plan

Car Park

- Sensitive insertion into the ownership plot patterns of the village
- Conservation of boundaries and hedgelines
- Reinstatement of stone boundary wall to main street
- Incorporation of civic quality and nature based sustainable drainage at entrance
- Gradation of materials and minimised use of hard surfaces
- Tree retention and replacement
- New planting and habitats.
- Connectivity with the main street and Aistear park
- Coach parking set back away from the main street
- Sensitive lighting design

Visitor Centre

- Sensitive siting into the urban fabric
- Provision of a forecourt as a civic space
- Sensitive use of materials including stone
- Connectivity between main street, Aistear Park and the harbour

- Rationalisation of all services elements and any other potential visual clutter, its incorporation internally within building envelopes (as far as practically possible) and the inclusion of integrated screening at roof level to conceal plant etc, where this is not possible;
- Provision of viewing areas above the harbour level out to Lough Derg and Inis Cealtra
- The provision, maintenance and management of an associated and sensitively considered soft landscape design for the development, which assists in the integration and screening of the buildings within the existing landscape;
- Retaining existing vegetation where possible and introducing appropriate planting to assist in integrating the building over time.
- Tree planting and management
- New planting and habitats.
- Sensitive lighting design

### 5.9.2 Demolition Phase Mitigation

- Provision of standard controls around seasonal and diurnal timing of operations
- Provision of hoarding

### 5.9.3 Construction Phase Mitigation

The building site including a site compound with site offices, site security fencing, scaffolding and temporary works will be visible during the construction phase, from a range of viewpoints around the site. Such elements are generally viewed as temporary and unavoidable features of construction in any setting. The perimeter site hoarding will screen from view much of the construction activity and materials at ground level. Other mitigation measures proposed during this delivery stage of the development, revolve primarily around the implementation of appropriate site management procedures during the construction works – such as the control of lighting, storage of materials, placement of site offices and compounds, control of vehicular access, and effective dust and dirt control measures, etc. Such mitigation will be set out in the Construction Management Plan prepared for the scheme. This will be a working document which will be continually reviewed and amended through the construction phase to ensure effective mitigation throughout.

The Construction Management Plan to be prepared by the appointed contractor, and agreed with the Local Authority prior to the commencement of any construction works, will deal with all issues related to the construction, delivery and management of the scheme during the construction stage and will ultimately include details on the following:

- Daily and weekly working hours;
- Agreed haul routes for incoming materials;
- Licensed hauliers to be used;
- Disposal sites;
- Travel arrangements for construction personnel;
- Appropriate on-site parking arrangements for construction personnel to prevent overspill parking on the local road network;
- Temporary construction entrances to be provided;

- Wheel wash facilities if required;
- Road cleaning and sweeping measures to be put in place if required;
- Temporary construction signage to be put in place and maintained.

The planning application includes an Outline Construction Management Plan, prepared by MWP Consulting Engineers, which outlines a range of construction phase mitigation measures, many of which are relevant to the reduction of the temporary impacts on the landscape and visual environment during the construction phase. This Outline Construction Management Plan forms the basis for the required measures to be included in the appointed Contractor's Construction Management Plan. As such it references construction phase mitigation measures which are relevant to the assessment of Landscape and Visual Impact.

### 5.9.4 Operational Phase Mitigation

- Implementation of appropriate management and maintenance of building forms
- Implementation of the landscape and conservation management and maintenance of each site

## 5.10 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

Duration

The duration of effects is determined by the life of the proposed development, as tempered by any mitigating effect of the maturing designed landscape which is proposed as an integral part of the development. In this case the development may have an expected/design life of up to 60 years or beyond. Effects on both landscape character and visual amenity during the Operational Phase of the proposed development are therefore deemed to be of **long-term or permanent** duration in this instance. Construction Phase effects are generally of much shorter duration and are considered to be temporary on Inis Cealtra, and for the Car Park scheme, and Short Term for the Visitor Centre.

### 5.10.1 Demolition and Construction Phase

#### 5.10.1.1 Landscape & Visual

Initially the erection of site hoarding and tree protection measures will be completed, site access points established, and site accommodation units placed. Early in the construction period, demolitions, surface/topsoil stripping, tree/shrub removal and the required excavations for the construction of building foundations will commence. The erection of cranes and/or scaffolding as appropriate will take place and temporary site lighting will be established. Removal and/or storage of excavated materials from site and the delivery of construction materials will generate increased traffic within, to and from the site. As construction progresses over the construction period, impacts will vary with the on-going business of construction, delivery and storage of materials, the erection of the buildings, etc. Mitigation measures have been proposed to minimise the impact of the construction works on the site environs and generally where this occurs, they are effective in limiting construction phase effects.

The landscape and visual effects of these changes are most likely to be experienced as adverse effects by residents of Mountshannon, those using the Main Street and Harbour area, and visitors to the island, including those participating in any potential ceremonies which may take place on the island during construction works. The pre-fabrication of the pods, and the scale of the intervention on the island will minimise the duration of effects during construction.

Potential landscape effects on Lough Derg or its margins are very likely to be avoided or obviated, primarily by the introduction of and adherence to the provisions of the approved Construction Management Plan for the construction scheme as appropriate. Views towards the sites will be increasingly adversely impacted as the construction work proceeds, however, given the distances involved with the island, and the containment of the sites in Mountshannon, the effect is likely to be moderate to slight.

Generally, landscape and visual effects during the Construction Phase are likely to vary from **high/moderate** on the island given the sensitive nature of the site, and **slight and neutral** to **moderate and negative**, depending on the stage of construction, and the intensity of site activity at the car park and visitor centre sites. The construction impacts will be of **temporary** to **short-term** duration.

### 5.10.2 Operational Phase

#### 5.10.2.1 Landscape

The potential effects described in Potential Significant Effects above should lead to the residual effects described for each site as follows:

**Inis Cealtra**

- Appropriately managed visitor numbers to the island, leading to a balance between the number of visitors, the protection of the monuments, and habitats.
- Appropriately managed landscape and setting for the monuments.

**Car Park**

- Generation of active streetscape as visitors permeate from the car park to the visitor centre
- Improved setting and screening of the development as vegetation matures.

**Visitor Centre**

- Consolidation of urban structure at the harbour
- Provision of civic space
- Generation of a positive sense of place, arrival and departure
- Improved setting of the development as vegetation matures

The landscape sensitivity of the three sites ranges from **very high** for Inis Cealtra and areas associated with Lough Derg, as well as the lough itself, with a broader range in Mountshannon from  to **low to medium and high**, depending on the specific location.

Magnitude of Change

Inis Cealtra

The magnitude of change for Inis Cealtra is considered in the context of the change from the manner in which people visit the island. The intention of the Inis Cealtra Visitor Management and Sustainable Tourism Development Plan 2017 upon which this scheme is based is intended to increase visitor numbers in a balanced manner with the protection of the monuments, habitats and qualities of the island. This means controlling numbers of visitors an the manner in which they arrive – through the arrangements at the proposed visitor centre. It will no longer be appropriate to arrive at the island in an ad-hoc manner. Some may mourn the loss of the ability to visit the island in an uncontrolled way, but the protection of the qualities of the island must be viewed as positive effect. The magnitude of change therefore in this landscape of very high sensitivity is considered **high to medium**. This leads to a landscape effect that is classified from **profound to high**, and **positive.**

Car Park

The magnitude of change for the proposed car park is such that it provides a discrete facility off the main street delivering activity directly in to the village and to Aistear Park towards the Visitor Centre. The change in the management and numbers of visitors to Mountshannon is considered **medium.** Given the sensitivity of the site itself in an urban context, being low, and the proximity of the main street, a medium sensitivity, the effects are **slight to moderate** and **positive**.

Visitor Centre

The magnitude of change at the visitor centre and harbour is related to the visitor management strategy which is intended to increase the number of visitors and the duration of time per visit that they spend in Mountshannon and across the year. The sensitivity of the harbour and Rectory areas are in general **medium**, notwithstanding some poorer qualities around the harbour. The activation of the public realm and the presence of a carefully considered visitor centre means that the magnitude of change is **high.** The resulting effect is therefore **high /moderate** and **positive**

The activation of public spaces and careful management of visitors within the framework of the three integrated sites should lead to a **high to moderate** and **positive** landscape effect.

### 5.10.2.2 Visual Impact

The assessment of visual effects, using comparative 'before' and 'after' photomontages assists in identifying the nature and magnitude of the proposed change on the visual environment. The value placed on these is inevitably influenced by the perceptions of the receptor and what they are engaged in at the time. The visual effects of the proposed development will primarily be felt by residents and visitors in relation to the car park and visitor centre in Mountshannon, and in relation to visitors on Inis Cealtra. Views from a distance tend to occupy smaller portions of the field of view and there are many more competing elements within the view – this creates a diluting effect. It should also be remembered that the visual qualities of a place contribute significantly to its character and these create a large

proportion of one's memory of a place – this is particularly so for say, visitors whose experience is often fleeting.

The photomontages are important in illustrating the effects of the proposed scheme from the more sensitive viewpoints. In this instance, they also serve to support and illustrate an aspect of the assessment of effects on landscape character. It is important to remember that whilst photomontages are a useful tool in illustrating comparative visual impact, they are recognised as having their limitations and potential dangers. The guidelines for their use in assessment clearly advocate their use in the context of a site visit to the viewpoint locations and point out that photomontages alone should not be expected to capture or reflect the complexity underlying the full visual experience (refer to the GLVIA, 3rd Edition).

In general, the changes to the visual environment created by this proposed development will produce noticeable visual effects upon a range of receptors. However, the actual visual penetration into the sites varies from limited to the small harbour of Knockaphort in the case of Inis Cealtra, and to close to the streetscape entrance of the car park. The proposed Visitor Centre address Mountshannon harbour in a deliberate and confident urban design intervention and is therefore has greater visual effect.. The illustrated views are therefore a representative selection of views from around the proposed development sites, which are considered potentially the most sensitive. In accordance with the guidelines they are also selected in order to provide sufficient landscape context to be able to properly assess the nature and scale of the effect.

Because the expected life of the proposed development is up to 60 years or beyond, the duration of predicted visual effects for all views is assessed as **long term or permanent** - as is the case for predicted landscape effects.

### 5.10.3 Assessment of views

A total of 29 viewpoints has been selected for which photomontages (verified views) have been prepared - these are included in the submission documents, within a separate A3 report prepared by Digital Dimensions Ltd. They illustrate the visual effect of the proposed development on the selected views taken from the surrounding landscape. The views deal with the three parts to the proposal covering the proposed visitor centre, proposed Inis Cealtra works, and the proposed car park in Mountshannon. Throughout the course of the project, various views were established to ascertain the visual effects, some in winter and some in summer. In some instances, proposals were adjusted as the proposals developed. The views selected are the most representative of the scheme. The assessment of the visual effects of the proposed development from these viewpoints is provided as follows:

**View 1;**

Existing View and Visual Receptor Sensitivity;

This is a view from the harbour area in Mountshannon looking northwards inland towards the proposed site for the visitor centre. Works are also proposed in the harbour area. The view shows the busy harbour in the foreground with large areas of hardstanding that are required for managing the harbour activities, and variety of boats moored along the piers and jetties. The backdrop is primarily of the trees the harbour, and shoreline, and in the lands rising away from the lough. Various buildings are seen in gaps in the vegetation. The stripped earth of the Rectory site where the Interpretive Centre is currently being built is just visible in the centre background between the tall conifers (Douglas Firs).

Visual receptor sensitivity is considered **low**.

Proposed view and Magnitude of Change;

The proposed view illustrates the proposed visitor centre addressing the harbour. The removal of 3 large Douglas Fir trees is most likely in the course of development and therefore illustrated as being removed in the image. The building's height, form and massing, particularly the middle break in the façade, and punctuation of windows, allows it to address the harbour without being overly assertive. This is assisted in the stone materials and detailing used in the façade. The trees to the left, and in the backdrop remain in place, with new tree planting added between the viewer and the façade. Of note in this view is that the parapet of the building remains below the horizon line formed the existing trees beyond.

Magnitude of change is considered **medium**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate** and **neutral**.

**View 2;**

Existing View and Visual Receptor Sensitivity;

This is a view from the harbour in Mountshannon looking south westwards towards Inis Cealtra. The view is across open water from the harbour edge, with the island in the middle distance. The round tower rises above the tree line, and even the roof of St Caimin's Church is visible at this distance. The backdrop is of the far shore of Lough Derg and the Slieve Bernagh Uplands..

Visual receptor sensitivity is considered **very high** .

Proposed view and Magnitude of Change;

The proposed view illustrates the proposed pods, boardwalks and jetty on the island as a red line outline as it cannot be seen through the vegetation even in this winter view

Magnitude of change is considered **negligible**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **slight.** It cannot be seen.

## View 3

Existing View and Visual Receptor Sensitivity;

This is a view from the harbour area car park in Mountshannon looking northwards towards the proposed site for the visitor centre. Works are also proposed in the car park area. The view shows the expanse of parking area that also facilitates the movement of trailers and boats. To the left is a planted area that gives some relief to the hardstanding. To the right is a blue building that serves as a café during the visitor season. The Rectory site is in the middle ground, where the interpretive centre is currently under construction, as evidenced by the hoarding and fencing and construction activities in the background. The Douglas Firs trees, also seen in View 1 are to the left, and the tree cover, from the foreshore on the right to the rising ground give a framework through which various residential buildings can be glimpsed.

Visual receptor sensitivity is considered **low**.

Proposed view and Magnitude of Change;

The proposed view illustrates the proposed visitor centra addressing the harbour, with a remodelling of the car park area in the foreground. The building is set back from the harbour by the retention of much of the existing stone boundary wall, and new tree planting. The building is also set in to the rising ground behind, and the stone retaining wall that embraces this can be seen to the right of the building, further right, a remodelled gateway is visible in the same stone. The massing and form of the building is broken by a gap in the facade to the left, and the façade is punctuated by window openings. The stone detailing is more visible in this closer image compared to the previous view from the harbour, and the way in which the building addresses the harbour (and the lough) is more evident, strengthening the urban form. The remodelled and larger planter bed is in the foreground, and the expanse of hardstanding in the foreground is illustrative of the need for parking, and trailer and boat movements in the busy harbour

Magnitude of change is considered **high**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate** and **positive**.

## View 4

Existing View and Visual Receptor Sensitivity;

This is a view from the Lough Derg foreshore open space looking towards the harbour and the Rectory lands. The view is verdant with clear-stemmed trees on mown grass, with some more dense foreshore vegetation. A macadam footpath cuts through the space leading towards a barely-visible building which

houses toilets and showers. To the left, the blue cafe building that is also visible in View 2 can be seen. A sculpture of a dragonfly, a bench and a life buoy can also be seen along the path, which are characteristic elements of this open space.

Visual receptor sensitivity is considered **high**.

Proposed view and Magnitude of Change;

The proposed view of the visitor centre is outlined in red beyond the vegetation. It is noted that this is a summer view, however, the proposed building is also partially behind the toilet block. There may be filtered views through the trees towards the proposed building in winter.

Magnitude of change is considered **low.**

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate** and **neutral**.

### View 5

Existing View and Visual Receptor Sensitivity;

This is a view looking westwards towards the harbour area along the Harbour Road. Much of the view is of the foreground of the road and entrance to a small sub-urban type housing estate. However, in the middle distance, trees are visible either side of the road, with a view towards the harbour that includes at this moment in time, the construction hoarding along the boundary of the Rectory development. Of note is the large tree centrally located in the view, which is an oak.

Visual receptor sensitivity is considered **medium**.

Proposed view and Magnitude of Change;

The proposed view illustrates the scheme as a red line beyond existing vegetation and topography. Towards the harbour at the end of the road, some of the modification associated with the forecourt of the proposed development can be glimpsed. Given the topography and density of planting, the proposal will barely be seen in winter.

Magnitude of change is considered **low**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate** and **neutral.**

### View 6

Existing View and Visual Receptor Sensitivity;

This is a view from within the Rectory site where the Interpretive centre is currently under construction.

The view looks southwards across an expanse of grass flanked by trees towards Lough Derg and the Arra Mountain landscape in Tippperary beyond. It is of note that the views from the Rectory do not address Inis Cealtra itself, but look more southerly across the lough.

Visual receptor sensitivity is considered **medium to high**.

Proposed view and Magnitude of Change;

The proposed view shows the insertion of the proposed Vistor Centre in the middle ground. The form and massing of the building and its roof terrace is such that it appears as a series of built forms rather than one unit. The setting is very much intact, with the flanking of trees either side, and the creation of a meadow and lawn. The view of the lough has been maintained due to the careful handling of the heigh and level of the building, and long distance views of the Arra Mountain landscape are still visible.

Magnitude of change is considered **high**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **high** and **positive**.

**View 7**

Existing View and Visual Receptor Sensitivity;

This is a view from the residential housing estate to the east of the Rectory site looking south westwards towards the harbour. The foreground is of a suburban access road and an open grass space and garden boundary walls. To the left is the rear of one of the houses from the neighbouring estate of houses. The verdant middle ground is created by tree cover through which are small glimpses of the lough.

Visual receptor sensitivity is considered **medium**.

Proposed view and Magnitude of Change;

The proposed view illustrates the propose development as red line as it is not visible beyond the trees and topography. However there may be glimpses of the upper parts of the built form in winter through a filter of the trees.

Magnitude of change is considered **low**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate /slight** and **neutral**.

**View 8**

Existing View and Visual Receptor Sensitivity;

This is a view from a car parking bay along Harbour Road looking south eastwards towards the harbour.

The view illustrates the low lying flat grass area towards the lough shore, rising leftwards with groupings of trees, and rising again in the form of an embankment beyond a stone retaining wall on the right. .

Visual receptor sensitivity is considered **medium**.

Proposed view and Magnitude of Change;

The proposed view shows the scheme illustrated with a red line as it is not visible behind the topography of the landscape.

Magnitude of change is considered **negligible**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **slight** and **neutral,** although it is actually **not visible.** .

**View 9**

Existing View and Visual Receptor Sensitivity;

This is a view from the southern side of Lough Derg in Co Clare. This elevated panoramic view looks northwards across the lough where Inis Cealtra, to the middle left of the image at a distance of about 2.7km, is able to be discerned by round tower. The domed form of the island is also visible as a clearing in the wooded shoreline makes the pasture visible. Further away, and to the right is Mountshannon at about 4.5km

Visual receptor sensitivity is considered **high**.

Proposed view and Magnitude of Change;

The proposed view of the scheme of pods and boardwalks and jetty on the island is illustrated as a red line as they are not visible through the topography. The proposed car park and visitor centre at Mountshannon are also illustrated as red lines as they cannot be seen through topography, vegetation and at this distance of approximately 4.5km.

Magnitude of change is considered **negligible**

Visual Effect;

The visual effect of the proposed development in this view is assessed as **slight/not significant** (although it is in fact **imperceptible**)

**View 10**

Existing View and Visual Receptor Sensitivity;

This is a view from the southern side of Lough Derg in Co Tipperary from The Lookout. This elevated

panoramic view looks northwards across the lough where Inis Cealtra, to the middle left of the image at a distance of about 5.5km, is just able to be discerned by round tower in this clear weather. To the right across the lough, Mountshannon is discernable at approx. 6km away.

Visual receptor sensitivity is considered **high**.

Proposed view and Magnitude of Change;

The proposed view of the scheme of pods and boardwalks and jetty on the island is illustrated as a red line as they are not visible through the topography. The proposed car park and visitor centre at Mountshannon are also illustrated as red lines as they cannot be seen through topography, vegetation and at this distance of approximately 6km.

Magnitude of change is considered **negligible**

Visual Effect;

The visual effect of the proposed development in this view is assessed as **slight/not significant** (although it is in fact **imperceptible**)

### View 11

Existing View and Visual Receptor Sensitivity;

This is a view from the open water of Lough Derg looking northeastwards towards Mountshannon. The wooded shoreline of the lough defines its edge in the middle ground, interrupted by marina, boats and buildings that are barely discernable at this distance of approximately 1km.

Visual receptor sensitivity is considered **medium**.

Proposed view and Magnitude of Change;

The proposed visitor centre at Mountshannon is illustrated as red lines as they cannot be easily discerned seen at this distance.

Magnitude of change is considered **negligible**

Visual Effect;

The visual effect of the proposed development in this view is assessed as **slight/not significant** (although it is in fact **imperceptible**)

### View 12

Existing View and Visual Receptor Sensitivity;

This is a view taken from a boat on Lough Derg looking northwards towards Mountshannon. The town is visible as buildings break through the wooded shoreline in this winter view. Some buildings are just

distinct enough to see at this distance and in this light; the blue café building by the harbour in the middle of the image, and just above it, the reddish brick of the Rectory building is discernible. There are two other clusters of housing visible - these break through the wooded shoreline and address the lough. The Slieve Aughty uplands form the backdrop to the town.

Visual receptor sensitivity is considered **medium**.

Proposed view and Magnitude of Change;

The proposed view of the visitor centre is not discernible in the view, although it is situated between the blue building on the shoreline and the reddish building above.

Magnitude of change is considered **negligible**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **slight** and **neutral**.

### View 13

Existing View and Visual Receptor Sensitivity;

Similar to view 12, this is a view taken from a boat on Lough Derg looking northwards towards Mountshannon. The town is visible as buildings break through the wooded shoreline in this winter view. Some buildings are just distinct enough to see at this distance and in this light; the blue café building by the harbour in the middle of the image, and just above it, the reddish brick of the Rectory building is discernible. There are two other clusters of housing visible - these break through the wooded shoreline and address the lough. The Slieve Aughty uplands form the backdrop to the town.

Visual receptor sensitivity is considered **medium**.

Proposed view and Magnitude of Change;

The proposed view of the visitor centre is not discernible in the view, although it is situated between the blue building on the shoreline and the reddish building above.

Magnitude of change is considered **negligible**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **slight** and **neutral**.

### View 14

Existing View and Visual Receptor Sensitivity;

This is a view from the small harbour at Knockphort, to the south west of Mountshannon. The view is looking southwards directly towards Inis Cealtra which is approx. 300m across the water. To the left and

right are the concrete piers which jut out into the water, along with a fenced platform for transporting livestock to and from the island. The main focus of this view is the island, with its round tower. The island's shoreline appears wooded, and in this winter view, the domed grass pasture, and St Caimin's church can be barely glimpsed beyond the trees. The distant view is towards the far lough shore of both Clare and Tipperary, with the Arra Mountain landscape rising above the island. .

Visual receptor sensitivity is considered **medium to high**.

Proposed view and Magnitude of Change;

The proposed view of the scheme of pods and boardwalks and jetty is illustrated as a red line as they are not visible through the vegetation even in this winter view.

Magnitude of change is considered **negligible**

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate to slight** (although it is in fact **imperceptible**) and **neutral**,

**View 15**

Existing View and Visual Receptor Sensitivity;

This is a view from the open water of Lough Derg looking westwards towards Inis Cealtra. The island appears domed which is emphasised by the round tower which is centrally located in the image rising above the wooded shoreline. The grass pasture is visible to the left of the image, however even in this winter view, the interior of the island is not otherwise visible. The wooded shoreline at Knockaphort and beyond is visible to the right, with no open water visible at this angle between the island and the shoreline. The hill rising in the distance is scattered with single dwellings and farm buildings that can be discerned among small groves of trees that act as shelterbelts on the exposed slopes. The summit is capped with forestry plantations

Visual receptor sensitivity is considered **very high** .

Proposed view and Magnitude of Change;

The proposed view of the pods and boardwalks and jetty are illustrated as a red line behind vegetation and topography to the right of the image, as they cannot be seen.

Magnitude of change is considered **negligible**

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate/slight** (although it is in actually **imperceptible**) and **neutral**.

**View 16**

Existing View and Visual Receptor Sensitivity;

This is a view, similar to view 15, from the open water of Lough Derg looking westwards towards Inis Cealtra – similar to the view above, however the domed shape of the island is becoming more distinct as there is a gap in the wooded shoreline of the island where the grassland is visible. The distinctive round tower is seen to the left of the image.

Visual receptor sensitivity is considered **very high**.

Proposed view and Magnitude of Change;

The proposed view of the pods and boardwalks and jetty are illustrated as a red line behind vegetation and topography to the right of the image, as they cannot be seen.

Magnitude of change is considered **negligible**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate/slight** (although it is actually **imperceptible)** and **neutral**.

**View 17**

Existing View and Visual Receptor Sensitivity;

This is a view, similar to 15 & 16 from the open water of Lough Derg looking westwards towards Inis Cealtra – similar to the view above, however this angle allows the open water between the island and the shoreline to be seen, and the domed shape of the island is more distinct as there is a gap in the wooded shoreline of the island where the grassland is visible. The distinctive round tower is seen to the left of the image. Beyond that in the distance, the view is looking towards the high ground of the Slieve Bernagh Uplands on the far side of Lough Derg in Co Clare.

Visual receptor sensitivity is considered **very high**.

Proposed view and Magnitude of Change;

The proposed view of the pods and boardwalks and jetty are illustrated as a red line behind vegetation and topography to the right of the image, as they cannot be seen.

Magnitude of change is considered **negligible**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate/slight** (although it is actually **imperceptible)** and **neutral**.

**View 18**

Existing View and Visual Receptor Sensitivity;

This is a view on Inis Cealtra looking north eastwards towards the round tower and St Caimin's church and associated enclosure. The open pasture of the island forms the setting for the view, with trees to the right which form some of the wooded slopes to the shoreline. The plain grey roof of the OPW building can be glimpsed between the round tower and the church. The undulations in the pasture relate to earthworks and enclosures, as well as the natural topography of the island. A mown path is visible leading towards the built monuments.

Visual receptor sensitivity is considered **very high**.

Proposed view and Magnitude of Change;

The proposed view illustrates 2 areas of red lines – these are representative of the proposed car park and visitor centre sites in Mountshannon, which are not visible due to distance and topography. However, the proposed mown grass paths to facilitate visitor movement on the island are illustrated.

Magnitude of change is considered **negligible**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate to slight** (although it is actually **not visible)**.

## View 19

Existing View and Visual Receptor Sensitivity;

This is a view from within the fenced enclosure at St Caimin's church looking northwards. The image is looking directly towards the OPW building which sits within scrub and woodland vegetation beyond the fence line. The single storey building has a riven grey metal roof and a timber slatted façade in three panels, each with a window. The stone wall to the right is the enclosure to the graveyard. In the far left distance, the high ground is the landscape of Slieve Aughty.

Visual receptor sensitivity is considered **medium**.

Proposed view and Magnitude of Change;

The proposed view illustrates the proposed pods and boardwalks and jetty as a red line outline as they cannot be seen due to distance, topography and vegetation. …

Magnitude of change is considered **negligible**

Visual Effect;

The visual effect of the proposed development in this view is assessed as **slight** (although it is actually **imperceptible)** and **neutral**.

## View 20

Existing View and Visual Receptor Sensitivity;

This is a view from around the middle of Inis Cealtra looking north eastwards across the island and over to Mountshannon (to the right) and the Slieve Aughty landscape. The undulating pasture of the island slopes away from the viewer towards the lough, and earthwork enclosures can also be seen to the left and in the middleground. The woodland and scrub of the island's shoreline defines the middleground, with gaps that allow views out across the open water towards the main shoreline, which is also predominantly wooded. The pale line defining the shoreline are buff coloured reeds in this winter view.

Visual receptor sensitivity is considered **very high**.

Proposed view and Magnitude of Change;

Part of the proposed mown footpaths are visible to the right. The proposed view illustrates 3 red lined areas of the proposed development that cannot be seen due to distance and topography. From left to right, these are the pods, boardwalks and jetty, the visitor car park in Mountshannon, and the Visitor Centre in Mountshannon.

Magnitude of change is considered **negligible**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate /slight** (although it is actually **not visible).**

## View 21

Existing View and Visual Receptor Sensitivity;

This is a view, similar to view 20, from around the middle of Inis Cealtra looking north eastwards across the island and over to Mountshannon (to the right) and the Slieve Aughty landscape. The undulating pasture of the island slopes away from the viewer towards the lough, and earthwork enclosures can also be seen to the left and in the middleground. The woodland and scrub of the island's shoreline defines the middleground, with gaps that allow views out across the open water towards the main shoreline, which is also predominantly wooded. The pale line defining the shoreline are buff coloured reeds in this winter view.

Visual receptor sensitivity is considered **very high**.

Proposed view and Magnitude of Change;

Part of the proposed mown footpaths are visible to the right. The proposed view illustrates 3 red lined areas of the proposed development that cannot be seen due to distance and topography. From left to right, these are the pods, boardwalks and jetty, the visitor car park in Mountshannon, and the Visitor Centre in Mountshannon.

Magnitude of change is considered **negligible**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate /slight** (although it is actually **not visible).**

## View 22

Existing View and Visual Receptor Sensitivity;

This is a view from the island looking northwards. This summer view shows the rough pasture and reeds in the foreground and encroaching scrub in the middle distance leading to tree canopies as the ground falls away towards the lough. Glimpses of water can be seen through the vegetation

Visual receptor sensitivity is considered **medium/high** .

Proposed view and Magnitude of Change;

The proposed view illustrates a red line outline of a pod and boardwalks and jetty as they cannot be seen due to topography and scrub vegetation. The proposed mown grass pathway is visible.

Magnitude of change is considered **low**

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate** and **positive**.

## View 23

Existing View and Visual Receptor Sensitivity;

This is a view from the island looking northwards. It is taken from the lower slopes towards the shoreline, at a point where the scrub encroaches on the pasture and the woodland shoreline. The view is along a mown grass path towards open water between the island and Knockaphort.

Visual receptor sensitivity is considered **high**.

Proposed view and Magnitude of Change;

The proposed view shows the proposed mown grass path, and a glimpse of one of the boardwalks connecting with it. The rest of the proposed pods, boardwalks and jetty are shown as a red line outline as they cannot be seen due to scrub vegetation and topography.

Magnitude of change is considered **low**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate to slight** and

**neutral**.

## View 24

Existing View and Visual Receptor Sensitivity;

This is a view taken from the same location as the previous view, but looking southwards towards the interior of the island. The mown grass path leads towards the round tower in the distance, and is flanked on either side by the scrub before it gives way to the open pasture.

Visual receptor sensitivity is considered **very high** .

Proposed view and Magnitude of Change;

The proposed view shows the proposed mown grass path, connecting with the end of a proposed boardwalk to the middle right of the image, emerging from the scrub and wooded vegetation.

Magnitude of change is considered **low**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate** and **neutral**.

## View 25

Existing View and Visual Receptor Sensitivity;

This is a view from the island looking northwards. It is taken from the lower slopes towards the shoreline, at a point along the existing mown pathway towards the scrub and wooded vegetation which obscures views across the lough towards Knockaphort.

Visual receptor sensitivity is considered **high**.

Proposed view and Magnitude of Change;

The proposed view shows the proposed mown grass path, and one of the proposed boardwalks connecting with it on the left side.

Magnitude of change is considered **low**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate to slight** and **neutral**.

## View 26

Existing View and Visual Receptor Sensitivity;

This is a view from the island looking northwards towards the lough and the main shoreline. The view is of pasture, leading on to scrub in the middle distance and woodland leading towards the shoreline. Glimpses of open water and reed beds can be seen between the vegetation, with the landscape of Slieve Aughty rising in the distance. A mown grass path leads northwards

Visual receptor sensitivity is considered **high**.

Proposed view and Magnitude of Change;

The proposed view illustrates a red line outline of the proposed pods and boardwalks as they cannot be seen due to topography and scrub vegetation. This is a summer view, however the scheme will not be visible through dense vegetation in winter.

Magnitude of change is considered **negligible**.

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate/slight** (although it is actually **not visible)**.

## View 27

Existing View and Visual Receptor Sensitivity;

This is a view from the pasture on the island looking southwards towards the round tower and St Caimin's Church. The open meadow has a mown grass path leading towards the monuments which are beyond scrub and woodland vegetation in the middle distance. Sheep are grazing in this summer view, and although the pasture is rough, some embankments are visible in the image.

Visual receptor sensitivity is considered **very high**.

Proposed view and Magnitude of Change;

The proposed view illustrates the proposed mown grass path to facilitate visitors.

Magnitude of change is considered **negligible**

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate/slight** and **positive**.

## View 28

Existing View and Visual Receptor Sensitivity;

This is a view from the main street in Mountshannon looking westwards. As noted earlier in this report, it is designated as a scenic route. There arrangement of buildings to the right an da stone wall to the

right, along with the generous grass margin for mature tress is similar to the previous view. The single storey commercial building to the right leads on to a low stone boundary wall and gate, and outbuilding, and then the street edge commences again with two storey residential buildings. The building colours are pale, with more colour definition in the doors, windows and details.

Visual receptor sensitivity is considered **high**.

Proposed view and Magnitude of Change;

The proposed view illustrates a new access to the proposed car park just beyond the single storey building on the right side of the street. It include a new tree marking the entrance. The view also illustrates a pedestrian crossing that will be implemented separately from this proposal. The view does not illustrate any wayfinding signage, that may be proposed at a later date.

Magnitude of change is considered **low.**

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate** and **neutral**.

**View29**

Existing View and Visual Receptor Sensitivity;

This is a view from the main street of Mountshannon looking eastwards, mirroring the earlier two images, and looking towards the proposed access to the visitor parking area. As noted earlier in this report, it is designated as a scenic route. The two storey building to the left appears to be unused, with a boarded up window at the time the image was taken. To the right, the generous grass margin has mature trees, forming the street corridor.

Visual receptor sensitivity is considered **high**.

Proposed view and Magnitude of Change;

The proposed view illustrates a new access to the proposed car park just before the single storey building on the left side of the street. It include a new tree marking the entrance, and bike parking. The view also illustrates a pedestrian crossing that will be implemented separately from this proposal. The view does not illustrate any wayfinding signage, that may be proposed at a later date.

Magnitude of change is considered **low.**

Visual Effect;

The visual effect of the proposed development in this view is assessed as **moderate** and **neutral**.

### 5.10.4 Summary of Post-mitigation Effects

The following Table summarises the identified likely significant residual effects during the demolition and construction phase of the proposed development following the application of mitigation measures.

**Table 5.9 Summary of Demolition and Construction Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Inis Cealtra** | | | | | | |
| **Landscape** | negative | high/moderate | local | likely | temporary | Residual |
| **Visual** | negative | high/moderate | local | likely | temporary | Residual |
| **Car Park** | | | | | | |
| **Landscape** | negative | moderate | local | likely | temporary | Residual |
| **Visual** | negative | moderate | local | likely | temporary | Residual |
| **Visitor Centre** | | | | | | |
| **Landscape** | negative | moderate | local | likely | short term | Residual |
| **Visual** | negative | moderate | local | likely | short term | Residual |

The following Table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

**Table 5.10 Summary of Operational Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Inis Cealtra** | | | | | | |
| **Landscape** | positive | profound/high | local | likely | long term | Residual |
| **Visual** | neutral to positive | high/moderate | local | likely | long term | Residual |
| **Car Park** | | | | | | |
| **Landscape** | positive | slight/moderate | local | likely | long term | Residual |
| **Visual** | neutral | moderate | local | likely | long term | Residual |
| **Visitor Centre** | | | | | | |
| **Landscape** | positive | High/moderate | local | likely | long term | Residual |
| **Visual** | neutral to positive | moderate | local | likely | long term | Residual |

| Viewpoint | Location | Sensitivity | Magnitude of Change | Operational Stage Significance & Quality | Cumulative Effects |
|---|---|---|---|---|---|
| 1 | Mountshannon | low | medium | moderate and neutral | - |
| 2 | Mountshannon | very high | negligible | slight | - |
| 3 | Mountshannon | low | high | moderate and positive | - |
| 4 | Mountshannon | high | low | moderate and neutral | - |
| 5 | Mountshannon | medium | low | moderate and neutral | - |
| 6 | Mountshannon | medium/high | high | high and positive | - |
| 7 | Mountshannon | medium | low | moderate/slight & neutral | - |
| 8 | Mountshannon | medium | negligible | slight & neutral (not visible) | - |
| 9 | Lough Derg | high | negligible | slight/not significant (imperceptible) | - |
| 10 | Lough Derg | high | negligible | slight/not significant (imperceptible) | - |
| 11 | Lough Derg | medium | negligible | slight/not significant (imperceptible) | - |
| 12 | Lough Derg | medium | negligible | slight and neutral | - |
| 13 | Lough Derg | medium | negligible | slight and neutral | - |
| 14 | Lough Derg | medium/high | negligible | moderate/slight (imperceptible) & neutral | - |
| 15 | Lough Derg | very high | negligible | moderate/slight (imperceptible) & neutral | - |
| 16 | Lough Derg | very high | negligible | moderate/slight (imperceptible) & neutral | - |
| 17 | Lough Derg | very high | negligible | moderate/slight (imperceptible) & neutral | - |
| 18 | Inis Cealtra | very high | negligible | moderate/slight (not visible) | - |
| 19 | Inis Cealtra | medium | negligible | slight (imperceptible) and neutral | - |
| 20 | Inis Cealtra | very high | negligible | moderate/slight (not visible) | - |
| 21 | Inis Cealtra | very high | negligible | moderate/slight (not visible) | - |
| 22 | Inis Cealtra | medium/high | low | moderate & positive | - |
| 23 | Inis Cealtra | high | low | moderate to slight & neutral | - |
| 24 | Inis Cealtra | very high | low | moderate and neutral | - |
| 25 | Inis Cealtra | high | low | moderate/slight and neutral | - |
| 26 | Inis Cealtra | high | negligible | moderate/slight (not visible) | - |
| 27 | Inis Cealtra | very high | negligible | moderate/slight & positive | - |
| 28 | Mountshannon | high | low | moderate & neutral | - |
| 29 | Mountshannon | high | low | moderate & neutral | - |

### 5.10.5 Cumulative Residual Effects

None

## 5.11 Risk of Major Accidents or Disasters

No major accidents or disasters are envisaged that are relevant to the LVIA.

## 5.12 Worst Case Scenario

As for most development construction schemes, the worst-case scenario in terms of landscape and visual impact is where demolition works, vegetation removal and excavation works commence and are substantially completed, but subsequently the scheme is halted before full completion of the buildings, associated infrastructure and new landscape works. In such cases there is substantial adverse impact without the potential benefits promised by the full realisation of the project.

## 5.13 Interactions

Interactions are focussed on the Inis Cealtra, where the balance of ecological and archaeological measures must be maintained with the extent of access.

## 5.14 Monitoring

The landscape and Conservation Management Plan sets out operations relating to the protection and enhancement of the setting, the monuments and habitats on Inis Cealtra. The maintenance and management specifications for the car park and visitor centre are less sensitive but require ongoing attention to maintain the quality of the envisaged scheme.

The retention of existing trees and other planting, where possible and proposed, coupled with the effective use of new planting to screen and/or integrate the built elements of the proposal into the existing landscape, are important and integral aspects of the proposed scheme design. The success of the proposed scheme is somewhat dependent on both operations being properly executed. Where trees are to be retained, effective tree protection measures must be established in advance of construction work commencing and an approved system of monitoring the on-going health and vigour of both the retained existing trees and the proposed new planting will be necessary. The timely planting and the maintenance and management required to successfully establish new planting with the projected rates of growth and general performance required, needs an appropriate effective input from professionals with the necessary expertise to ensure it is effectively delivered. The monitoring of the planting performance and suitably appropriate responses to ensure same will be essential to the success of the development as proposed.

The monitoring of the mown grass paths will be key to avoiding erosion and maintaining a firm path surface. The breadth of the mown areas, at different seasons according to their intensity of use, and the extent of the path network that is mown, will help maintain the surface quality.

## 5.15 Summary of Mitigation and Monitoring

The following Table summarises the Demolition and Construction Phase mitigation and monitoring measures.

**Table 5.11 Summary of Demolition and Construction Phase Mitigation and Monitoring**

| Likely Significant Effect | Mitigation | Monitoring |
|---|---|---|
| Noise | Adherence to Construction Management Plan and Site Management | During construction |
| Visual disturbance | Adherence to Construction Management Plan and Site Management | During construction |
| Visual clutter | Adherence to Construction Management Plan and Site Management | During construction |
| Loss of habitat | Pre commencement survey. Adherence to Construction Management Plan and Site Management. Works carried out during appropriate season | In advance and during construction |
| Damage to monuments/landscape | Adherence to Construction Management Plan and Site Management | During construction |

The following Table summarises the Operational Phase mitigation and monitoring measures.

**Table 5.12 Summary of Operational Phase Mitigation and Monitoring**

| Likely Significant Effect | Mitigation | Monitoring |
|---|---|---|
| **Disturbance of ambience** | Implementation of architectural and landscape design measures, and Landscape and conservation management plan.<br>Appropriate management of visitors | Planning compliance, during construction, and post construction management plan |
| **Visual Clutter and disturbance** | Implementation of architectural and landscape design measures, and Landscape and conservation management plan.<br>Appropriate management of visitors | Planning compliance, during construction, and post construction management plan |
| **Damage to monuments** | Implementation of architectural and landscape design measures, and Landscape and conservation management plan.<br>Appropriate management of visitors | Planning compliance, during construction, and post construction management plan |
| **Damage to habitats** | Implementation of architectural and landscape design measures, and Landscape and conservation management plan.<br>Appropriate management of visitors | Planning compliance, during construction, and post construction management plan |

## 5.16 Conclusion

The complex scheme in a landscape as important as Inis Cealtra and Lough Derg in both archaeological and ecological terms manages through sensitive design and management proposals manages to make a positive contribution to Mountshannon whilst protecting the vulnerable aspects of the scheme. It is entirely subject to the proposals being implemented and managed as proposed, with the ability to adapt to changing conditions as the visitor numbers increase.

## 5.17 References and Sources


1. Guidelines for Landscape and Visual Impact Assessment, prepared by the Landscape Institute and the Institute of Environmental Assessment, published by Routledge , 3rd Edition 2013.
2. 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' - Environmental Protection Agency (EPA), May 2022.
3. Visual Representation of Development Proposals: Technical Guidance Note 06/19, Landscape Institute UK (LI) September 2019.
4. The Clare County Development Plan 2023-2029.
5. The Tipperary County Development Plan 2022 – 2028
6. The Inis Cealtra Sustainable Tourism and Visitor Management Plan

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 6
# MATERIAL ASSETS: TRAFFIC & TRANSPORT

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


6 Material Assets: Traffic & Transport ..... 6-5
6.1 Introduction ..... 6-5
6.2 Expertise and Qualifications ..... 6-5
6.3 Proposed Development ..... 6-5
6.3.1 Aspects Relevant to this Chapter ..... 6-6
6.4 Methodology, Guidance & References ..... 6-6
6.4.1 Site Surveys/Investigations ..... 6-6
6.4.2 Forecasting Methods ..... 6-7
6.5 Difficulties Encountered ..... 6-7
6.6 Baseline Environment ..... 6-7
6.6.1 Site Location ..... 6-7
6.6.2 Transport Accessibility & Infrastructure ..... 6-8
6.6.3 Road Network Infrastructure & Traffic Conditions ..... 6-11
6.6.4 Public Transport & Accessibility ..... 6-12
6.6.5 Current Vehicle Traffic Movements ..... 6-12
6.6.6 Current Boat Traffic Movements ..... 6-14
6.6.7 Current Inis Cealtra Visitor Numbers ..... 6-15
6.7 The 'Do Nothing' Scenario ..... 6-15
6.7.1 Permitted Old Rectory Interpretive Centre ..... 6-17
6.7.2 Permitted Main Street Public Realm and Mobility Plan Works ..... 6-18
6.7.3 Future Background Traffic Volumes ..... 6-18
6.7.4 Main Street Urban Road Link Capacity ..... 6-24
6.7.5 Junction Capacity Analysis ..... 6-24
6.7.6 Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island) ..... 6-26
6.8 Phase 1 Construction Effects ..... 6-26
6.8.1 Construction and Environmental Management Plan (CEMP) ..... 6-26
6.8.2 Proposed Construction Traffic Management Plan (CTMP) ..... 6-26
6.8.3 Link Traffic Volumes ..... 6-28
6.8.4 Main Street Link Volume/Capacity Ratios ..... 6-29
6.8.5 Junction Capacity Analysis ..... 6-30
6.8.6 Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island) ..... 6-30
6.8.7 Mitigation ..... 6-31
6.8.8 Phase 1 Construction Impact Significance and Duration ..... 6-31
6.8.9 Cumulative Phase 1 Construction Impacts ..... 6-31
6.9 Phase 1 Operational Impacts ..... 6-31
6.9.1 Visitor Management Plan (VMP) ..... 6-31

6.9.2 Access ..... 6-31
6.9.3 Parking ..... 6-32
6.9.4 Hours ..... 6-32
6.9.5 Staff ..... 6-32
6.9.6 Visitors ..... 6-33
6.9.7 Vehicle Trips ..... 6-33
6.9.8 Link Traffic Volumes ..... 6-34
6.9.9 Main Street Urban Link Volume/Capacity Ratios ..... 6-35
6.9.10 Junction Traffic Volumes and Capacity Analysis ..... 6-35
6.9.11 Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island) ..... 6-37
6.9.12 Phase 1 Operational Mitigation ..... 6-37
6.9.13 Phase 1 Operational Impact Significance and Duration ..... 6-37
6.9.14 Phase 1 Cumulative Operational Impacts ..... 6-37
6.10 Phase 2 Construction Effects ..... 6-38
6.10.1 Construction and Environmental Management Plan (CEMP) ..... 6-38
6.10.2 Proposed Construction Traffic Management Plan (CTMP) ..... 6-38
6.10.3 Link Traffic Volumes ..... 6-40
6.10.4 Main Street Link Volume/Capacity Ratios ..... 6-41
6.10.5 Junction Capacity Analysis ..... 6-42
6.10.6 Mitigation ..... 6-42
6.10.7 Phase 2 Construction Impact Significance and Duration ..... 6-42
6.10.8 Cumulative Phase 2 Construction Impacts ..... 6-42
6.11 Phase 2 Operational Impacts ..... 6-43
6.11.1 Visitor Management Plan (VMP) ..... 6-43
6.11.2 Access ..... 6-43
6.11.3 Parking ..... 6-43
6.11.4 Hours ..... 6-44
6.11.5 Staff ..... 6-44
6.11.6 Visitors ..... 6-44
6.11.7 Vehicle Trips ..... 6-45
6.11.8 Link Traffic Volumes ..... 6-45
6.11.9 Main Street Urban Link Volume/Capacity Ratios ..... 6-46
6.11.10 Junction Traffic Volumes and Capacity Analysis ..... 6-47
6.11.11 Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island) ..... 6-48
6.11.12 Phase 2 Operational Mitigation ..... 6-48
6.11.13 Phase 2 Operational Impact Significance and Duration ..... 6-49
6.11.14 Phase 2 Cumulative Operational Impacts ..... 6-49

6.12 Risk of Major Accidents or Disasters ..... 6-49
6.13 Interactions ..... 6-49
6.14 Monitoring ..... 6-49
6.15 Summary of Mitigation and Monitoring ..... 6-50
6.16 References ..... 6-50

## Table of Figures

Figure 6.1 Mountshannon and Inis Cealtra Location Map ..... 6-8
Figure 6.2 Inis Cealtra Location Map ..... 6-9
Figure 6.3 Mountshannon Harbour Area Location Map ..... 6-10
Figure 6.4 Mountshannon Location Map ..... 6-11
Figure 6.5 Clare County Development Plan Mountshannon Map ..... 6-17

## Table of Tables

Table 6.1 Existing Weekday and Weekend Peak Hour Link Traffic Volumes ..... 6-13
Table 6.2 Existing Weekday and Weekend Peak Hour Junction Traffic Volumes ..... 6-14
Table 6.3 Predicted Weekday and Weekend Peak Hour Link Traffic Volumes With TII Growth ..... 6-19
Table 6.4 Predicted Weekday and Weekend Peak Hour R352/L4034 Harbour Road/L4032 Junction Traffic Volumes With TII Growth ..... 6-20
Table 6.5 Predicted Weekday and Weekend Peak Hour R352 Main Street/L4034 Harbour Road/L8078 Junction Traffic Volumes With TII Growth ..... 6-22
Table 6.6 Estimated R352 Main Street Urban Road Link Capacity ..... 6-24
Table 6.7 Estimated R352 Main Street Urban Road Link Peak Hour Volume/Capacity Ratios With TII Growth ..... 6-24
Table 6.8 PICADY Junction Capacity Analysis With TII Growth ..... 6-25
Table 6.9 Predicted Peak Phase 1 Construction Vehicles ..... 6-28
Table 6.10 Predicted 2027 Weekday and Weekend Peak Hour Link Traffic Volumes With Peak Phase 1 Construction ..... 6-29
Table 6.11 Predicted R352 Main Street Urban Road Link Peak Hour Volume/Capacity Ratio With Phase 1 Peak Construction ..... 6-30
Table 6.12 Phase 1 Operational Opening Hours ..... 6-32
Table 6.13 Predicted Phase 1 Operational Staff ..... 6-32
Table 6.14 Projected Phase 1 Operational Visitors ..... 6-33
Table 6.15 Predicted Phase 1 Peak Operations High Season Additional Operational Vehicles With Peak Capacity Daily Visitors ..... 6-33
Table 6.16 Predicted 2032 Weekday and Weekend Peak Hour Link Traffic Volumes With Peak Season Phase 1 Operational Development With Peak Capacity Daily Visitors ..... 6-34

Table 6.17 Predicted R352 Main Street Urban Road Link Peak Hour Volume/Capacity Ratio With Peak Season Phase 1 Operational Development With Peak Capacity Daily Visitors ..... 6-35

Table 6.18 Predicted 2032 Weekday and Weekend Peak Hour R352 Main Street/Visitor Car Park Access Junction Traffic Volumes With Peak Season Phase 1 Operations With Peak Capacity Daily Visitors ..... 6-36

Table 6.19 PICADY Junction Capacity Analysis With Peak Season Phase 1 Operations With Peak Capacity Daily Visitors ..... 6-36

Table 6.20 Predicted Peak Phase 2 Construction Vehicles ..... 6-40

Table 6.21 Predicted 2041 Weekday and Weekend Peak Hour Link Traffic Volumes With Peak Phase 2 Construction and Phase 1 High Season Operational Phase With Peak Capacity Visitors ..... 6-41

Table 6.22 Predicted R352 Main Street Urban Road Link Peak Hour Volume/Capacity Ratio With Phase 2 Peak Construction and Phase 1 High Season Operational Phase With Peak Capacity Visitors ..... 6-42

Table 6.23 Phase 2 Operational Opening Hours ..... 6-44

Table 6.24 Predicted Phase 2 Operational Staff ..... 6-44

Table 6.25 Projected Phase 2 Operational Visitors ..... 6-44

Table 6.26 Predicted Phase 2 Peak Operations High Season Additional Operational Vehicles ..... 6-45

Table 6.27 Predicted 2046 Weekday and Weekend Peak Hour Link Traffic Volumes With Phase 2 High Season Operational Development ..... 6-46

Table 6.28 Predicted R352 Main Street Urban Road Link Peak Hour Volume/Capacity Ratio With Peak Phase 2 High Season Operational Development ..... 6-46

Table 6.29 Predicted 2046 Weekday and Weekend Peak Hour R352 Main Street/Visitor Car Park Access Junction Traffic Volumes With Peak Season Phase 2 Operations ..... 6-47

Table 6.30 PICADY Junction Capacity Analysis With Peak Season Phase 2 Operations ..... 6-48

Table 6.31 Summary of Construction Phase Mitigation and Monitoring ..... 6-50

Table 6.32 Summary of Operational Phase Mitigation and Monitoring ..... 6-50

# 6 Material Assets: Traffic & Transport

## 6.1 Introduction

This chapter of the EIAR considers the potential effects on traffic and transport material assets arising from the proposed development. A full description of the proposed development, development lands and all associated project elements is provided in **Chapter 2 'Development Description'** of this **EIAR**.

## 6.2 Expertise and Qualifications

This chapter of the EIAR has been prepared by Seamus Quigley BE CEng MIEI MCIHT of MWP. Seamus Quigley has 34 years' experience in transport planning and traffic engineering projects, including EIS/EIAR traffic and transportation chapters, traffic impact assessments, traffic management studies, mobility management plans, traffic modelling studies, feasibility studies and road safety audits. He is a Chartered Engineer with Engineers Ireland, and also a member of the Chartered Institution of Highways and Transportation. He joined MWP in 2007, having spent over sixteen years with Atkins.

## 6.3 Proposed Development

A detailed description of the proposed development is contained within Chapter 2 of this EIAR and the Planning Statement that accompanies the application. The statutory notice should also be referenced. The following is a summary description of the development.

The Inis Cealtra Visitor Experience is to be developed on Inis Cealtra (Holy Island) and on the mainland, in two principal locations within Mountshannon Village. The project is comprised of different elements as set out below.

**Inis Cealtra Island**

- Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island.
- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp.
- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.
- Provision of three staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

**Mainland – Mountshannon**

- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, together with coach parking and bicycle parking facilities.

- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building incorporating a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.
- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.

### 6.3.1 Aspects Relevant to this Chapter

The aspects of the proposed development that are relevant to this chapter include the roads and street traffic, and boat traffic, generated by the proposed development construction and operational phases, and their traffic impacts on expected future baselines, including traffic capacities.

## 6.4 Methodology, Guidance & References

This chapter has been prepared in the context of the following:

- Clare County Council's Clare County Development Plan 2023-2029;
- The permitted Old Rectory Interpretive Centre, Mountshannon currently under construction;
- The permitted R352 Main Street public realm and mobility plan works for Mountshannon;
- The Transport Infrastructure Ireland (TII) Traffic and Transport Assessment (TTA) Guidelines PE-PDV-02045 May 2014;
- TII's Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections PE-PAG-02017 October 2021;
- The UK Traffic Capacity of Urban Roads TA79/99; and
- The Environmental Protection Agency Guidelines On The Information To Be Contained In Environmental Impact Assessment Reports May 2022 (EPA EIAR Guidelines).

The R352/L034 Harbour Road/L4032 junction, R352 Main Street/L4034 Harbour Road/L8078 junction and proposed R352 Main Street/Village Car Park junction have been analysed using the computer programme PICADY for priority controlled junctions.

### 6.4.1 Site Surveys/Investigations

On-site classified road link and junction traffic counts, for the Inis Cealtra Visitor Experience project, were carried out at Mountshannon from the 22nd to the 28th July 2021 by Irish Traffic Surveys, on behalf of Clare County Council.

Updated on-site peak period classified road link and junction traffic counts were carried out by MWP on the 27th July 2023; together with survey counts of moored and anchored boats, boat arrivals and departures at Mountshannon Harbour; and site inspections and baseline inventories of the existing local traffic and transport environment.

Existing 2023 boat activity levels' data on Lough Derg was provided by Waterways Ireland (WWI), who were consulted for the preparation of this EIAR.

The existing baseline for this traffic and transport material assets chapter was prepared in 2023 and included baseline traffic surveys during the 2023 peak summer tourist and holidays period, when traffic volumes are highest on the local traffic network at Mountshannon. The next appropriate baseline surveys period – summer 2024 – post-dated the scheduled preparation of this chapter.

### 6.4.2 Forecasting Methods

PICADY (Priority Intersection CApacity and DelaY) is a computer programme for calculating estimates of the capacity of major /minor road junctions, where the minor road is controlled by a stop or yield sign. The geometric details of the junction are supplied to the programme, together with details of traffic flows and turning movements. The programme analyses the junction in relation to the various traffic flows and calculates the capacity of each approach. The programme also calculates the average queue length on each approach and the average delay per vehicle. The average queue length may be displayed in graphical form.

PICADY is issued by the UK company, TRL.

## 6.5 Difficulties Encountered

The Road Safety Authority (RSA) are in the process of reviewing their road traffic collision (RTC) data sharing policies and procedures. Record-level RTC data cannot be shared until this review is complete. Accordingly, current RSA collisions data for the proposed development local road network was unavailable for the preparation of this chapter.

Otherwise, there were no limitations and difficulties encountered during the preparation of this Assessment.

## 6.6 Baseline Environment

### 6.6.1 Site Location

The proposed Inis Cealtra Visitor Experience development is located at Mountshannon and Inis Cealtra on the west side of Lough Derg. A location map for Mountshannon and Inis Cealtra is provided in Figure 6-1.

The proposed new mooring point on Inis Cealtra is located on the north of the island, on its Mountshannon side. Proposed new pods and paths are located on Inis Cealtra island. The proposed upgraded mooring at Mountshannon is located at Mountshannon Harbour on the south side of Harbour Road. The proposed Visitor Centre is located at The Old Rectory site located on the north side of Harbour Road. The proposed off-street car park is located on the north side of Main Street. The proposed Mountshannon Harbour car park reconfigured car park and public realm enhancements are located adjacent to Mountshannon Harbour, on the south side of Harbour Road.

**Figure 6.1 Mountshannon and Inis Cealtra Location Map**

### 6.6.2 Transport Accessibility & Infrastructure

Access to Inis Cealtra is provided via Lough Derg at the existing island boat pier facility located on the north west side of the island, as shown in Figure 6-2. A boat slipway and piers are provided on Lough Derg, at the end of the L8070 local cul-de-sac road, located south west of Mountshannon, and circa 0.3 kms from Inis Cealtra pier.

There are no constructed pedestrian footways/facilities on Inis Cealtra Island. All existing pedestrian routes are grass routes.

The boat travel distance between Inis Cealtra pier and Mountshannon Harbour pier is circa 2.0 kms. A boat slipway is provided at the existing harbour wall at Mountshannon Harbour. Mooring facilities for boats are provided at Mountshannon Harbour at its existing harbour piers and pontoons, as shown in Figure 6-3. During the site inspection for this EIAR chapter, boats were also anchored in open water on Lough Derg in the vicinity of the Harbour area.

Private access to Lough Derg and Mountshannon Harbour is also provided at Inis Cealtra Sailing Club, located on the south side of Harbour Road.

**Figure 6.2 Inis Cealtra Location Map**

Private access to Lough Derg is provided at Lakeside Jetty Holiday Homes, located east of Mountshannon Harbour; and at Lakeside Holiday Park on the east side of Mountshannon, as shown in Figure 6-3.

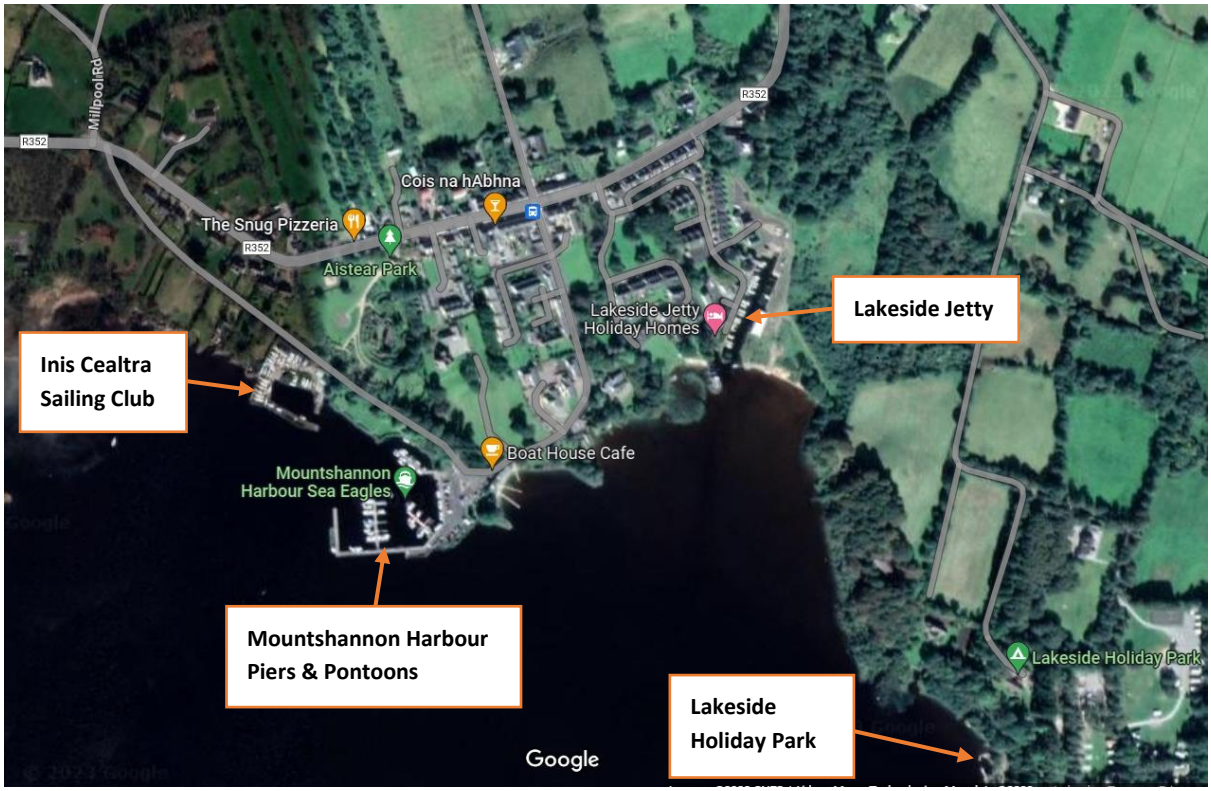



**Figure 6.3 Mountshannon Harbour Area Location Map**

Access to the Old Rectory site is provided via an existing gated access on the north side of Harbour Road, as shown in Figure 6-4.

Gated access to the existing site for the proposed off-street car park is provided on the north side of Main Street.

**Figure 6.4 Mountshannon Location Map**

### 6.6.3 Road Network Infrastructure & Traffic Conditions

The R352 Regional Road extends along Main Street, through Mountshannon, and links with Ennis and the M18 Motorway in the west, and with Portumna and the N65 National Road in the north east. South west of Mountshannon, the R352 links with the R463 at Scarriff, which extends to Killaloe in the south. Bridge crossings on the River Shannon are provided at Portumna and Killaloe.

Access to Mountshannon Harbour is provided by Harbour Road, which is the designated L4034 Local Road. Mountshannon Harbour car park includes 46 defined car parking spaces, including two disabled access spaces.

As shown in Figure 6-4, Harbour Road extends approximately 850 metres from its staggered crossroads junction with the R352/L4032, on the west side of Main Street, to its crossroads junction with the R352/L8078 at the eastern end of Main Street. Harbour Road is one-way, locally, eastbound from its west end junction with the R352/L4032, to immediately west of the Harbour Car Park. Harbour Road is two-way between the Harbour Car Park and its east end junction with the R352/L8078. The one-way eastbound section of Harbour Road has a road carriageway width of 4.7 metres locally at its east end, which reduces to a typical width of 3.0 metres along it substantial one-way extent, with a typical width of 4.5 metres, locally, at its west end, where it forms a Stop controlled junction with the Harbour Car Park area access road. The one-way western section of Harbour Road has a continuous footway of up to 2.2. metres width along its south west side. A footway is also provided, locally, along its north east side at its western end. Pedestrian access to Harbour Road is

provided at Aistear Park. Two recessed perpendicular parking areas are provided on the south west side of Harbour Road, east of the Inis Cealtra Sailing Club access and the Aistear Park pedestrian access.

The two-way section of Harbour Road, between the Harbour Car Park and its east end junction with the R352/L8078, has a typical road carriageway width of 6.0 metres in the vicinity of The Old Rectory access and 6.5 metres, otherwise to south of Main Street. A continuous footway, with intermittent steps, is provided along the north west/west side of the two-way section of Harbour Road, from a location circa 45 metres east of The Old Rectory access. Harbour Road has declining vertical gradients from the R352 to the Harbour Car Park.

Kerbed footway buildouts with 5.9 metres wide carriageways are provided locally on both sides of the L4034 Harbour Road and L8078 at their R352 Main Street junction. Defined uncontrolled crossing locations with dished footways and tactile paving are provided on the L4034 Harbour Road, L8078 and R352 Main Street, west, at the junction, together with protective bollards on the footway buildouts.

The R352 Main Street has a typical road carriageway width of 7.3 metres, with footways and recessed on-street parallel parking along both sides, west of its L4034/L8078 junction, including recessed disabled access parking. A defined uncontrolled pedestrian crossing location with footway buildouts, protective bollards, dished footways and tactile paving, is provided immediately east of the Aistear Park pedestrian access on Main Street.

West of Main Street, the R352 has a typical road carriageway width of 6.0 metres, with a footway along its north east side to immediately east of its L4034 Harbour Road/L4032 junction. A footway is provided locally along the south west side of the R352, from circa 40 metres east of its L4034 Harbour Road/L4032 junction, to the west end of Mountshannon.

Street lighting standards are provided along Main Street, Harbour Road and at the Harbour Car Park.

### 6.6.4 Public Transport & Accessibility

Mountshannon is served by Bus Éireann Route 346 Limerick-Tulla-Scarriff-Whitegate on Saturdays, with Bus Stop locations on Main Street at The Hotel and Keane's Bar, as shown in Figure 6-4.

Mountshannon is served by Transport for Ireland's (TFI) Local Link bus service, including TFI Local Link C1 Scarriff-Tulla-Ennis- Saturday-Weekly and TFI Local Link C2 Scarriff-Killaloe-Scarriff-Monday to Friday. The TFI Local Link bus stop locations are on Main Street, immediately west of its L3034 Harbour Road/L8078 junction, including at The Hotel.

### 6.6.5 Current Vehicle Traffic Movements

On-site classified road link and junction traffic counts, for the Inis Cealtra Visitor Experience project, were carried out at Mountshannon from the 22nd to the 28th July 2021 by Irish Traffic Surveys (ITS), on behalf of Clare County Council. The road link traffic counts were carried out 24 hours/day on the R352 on the immediate west side of its L4034 Harbour Road/L4032 and east of its L3034 Harbour Road/L8078 junction. The junction traffic counts were carried out 12 hours/day, from 7.00 a.m. to 7.00 p.m., at the R352/L4034 Harbour Road/L4032 junction and the R352 Main Street/L4034 Harbour Road/L8078 junction.

The highest weekday and weekend morning and evening peak hour traffic volumes were recorded by ITS on Thursday and Sunday, respectively. The highest weekday morning and evening peak traffic hours were 11.00 a.m. to 12.00 noon and 5.00 p.m. to 6.00 p.m. The highest weekend morning and evening peak traffic hours were 11.00 a.m. to 12.00 noon and 4.00 p.m. to 5.00 p.m.

Updated on-site peak period classified road link and junction traffic counts were carried out by MWP on the 27th July 2023 at the same locations as ITS. The volumes recorded at all locations by MWP were marginally lower than those recorded by ITS. Accordingly, the ITS recorded traffic volumes are considered to represent the existing typical summer tourist season baseline.

The existing weekday and weekend morning peak hour and evening peak hour link traffic volumes on the existing Mountshannon local road network, in the vicinity of the proposed development are provided in Table 6-1, together with the recorded volumes of heavy goods vehicles (HGVs). The equivalent existing junction traffic volumes at the R352/L4034 Harbour Road/L4032 junction and the R352 Main Street/L4034 Harbour Road/L8078 junction are provided in Table 6-2.

**Table 6.1 Existing Weekday and Weekend Peak Hour Link Traffic Volumes**

| Location | Road Link | Weekday Peak Hour Vehicles (HGVs) | | Weekend Peak Hour Vehicles (HGVs) | |
|---|---|---|---|---|---|
| | | Morning | Evening | Morning | Evening |
| R352/L4034 Harbour Road/L4032 Junction | R352 West | 183 (12) | 296 (8) | 258 | 309 |
| | L4032 | 19 | 18 | 10 | 17 |
| | R352 East | 173 (11) | 266 (8) | 231 | 287 |
| | L4034 Harbour Road | 23 (1) | 46 | 42 | 61 |
| R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 155 (12) | 252 (7) | 221 | 317 |
| | L8078 | 10 | 18 | 22 | 20 |
| | R352 East | 147 (11) | 233 (5) | 197 | 272 |
| | L4034 Harbour Road | 44 (1) | 83 | 78 | 139 |

**Table 6.2 Existing Weekday and Weekend Peak Hour Junction Traffic Volumes**

| Junction | Approach | Movement | Weekday Peak Hour Vehicles (HGVs) | | Weekend Peak Hour Vehicles (HGVs) | |
|---|---|---|---|---|---|---|
| | | | Morning | Evening | Morning | Evening |
| R352/L4034 Harbour Road/L4032 Junction | R352 Eastbound | Left to L4032 | 5 | 7 | 3 | 3 |
| | | Straight | 69 (2) | 132 (6) | 94 | 119 |
| | | Right to L4034 | 15 (1) | 35 | 34 | 43 |
| | L4032 | Left | 4 | 3 | 1 | 3 |
| | | Straight | 0 | 0 | 3 | 2 |
| | | Right | 6 | 5 | 1 | 3 |
| | R352 Westbound | Left to L4034 | 8 | 11 | 8 | 18 |
| | | Straight | 88 (9) | 117 (2) | 126 | 141 |
| | | Right to L4032 | 4 | 3 | 2 | 6 |
| R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 Eastbound | Left to L8078 | 0 | 0 | 5 | 5 |
| | | Straight | 53 (2) | 119 (3) | 63 | 118 |
| | | Right to L4034 | 6 | 6 | 12 | 14 |
| | L8078 | Left | 2 | 2 | 3 | 3 |
| | | Straight | 1 | 1 | 0 | 1 |
| | | Right | 3 | 11 (2) | 10 | 5 |
| | R352 Westbound | Left to L4034 | 7 | 13 | 11 | 16 |
| | | Straight | 74 (9) | 76 (2) | 98 | 106 |
| | | Right to L8078 | 2 | 2 | 2 | 1 |
| | L4034 Harbour Road | Left | 19 (1) | 40 | 33 | 69 |
| | | Straight | 2 | 2 | 2 | 5 |
| | | Right | 9 | 21 | 20 | 28 |

### 6.6.6 Current Boat Traffic Movements

During the summer tourist season, there are typically eight round boat trips daily between Mountshannon Harbour and Inis Cealtra; and typically, one to two round boat trips between the L8070 slipway/pier access and Inis Cealtra.

Waterways Ireland (WWI) has indicated that 2023 levels of boat activity on Lough Derg at the nearest Lock, Victoria Lock, from April to October in 2023 included a total of 4,600 cruisers through the Lock.

This equates to a typical circa 22 cruisers daily, and excludes resident boats around Lough Derg, which WWI estimate would be in excess of 200 cruisers.

During the July 2023 peak season surveys, the following boat numbers were recorded at Mountshannon Harbour:

- 12 boats and six small craft boats at the west side pontoon (original buildout concrete);
- 12 boats moored at the harbour wall;
- Nine boats at the east side pontoon;
- Eight boats at the central pontoon;
- 30 boats anchored in the open water; and
- Eight boats moored at Inis Cealtra Sailing Club and 24 small craft boats on land.

### 6.6.7 Current Inis Cealtra Visitor Numbers

Clare County Council's **Visitor Management Plan** for the proposed Inis Cealtra Visitor Experience indicates that Inis Cealtra generates circa 10,000 visitors annually.

## 6.7 The 'Do Nothing' Scenario

In the event that the proposed development does not proceed, the future traffic and transport environment will continue to evolve in line with relevant policy and permitted developments. The future traffic and transport effects in the event that the proposed development does not proceed are set out hereunder in this 'Do Nothing' scenario section.

Clare County Council's traffic and transport policies and objectives for County Clare, are set out in their Clare County Development Plan 2023 – 2029, in respect of access and movement, transport planning, local transport plans, active travel towns, walking and cycling, public transport and bus transport.

Clare County Council's Development Plan objectives include:

*"Walking and Cycling*

- *To facilitate and support the delivery of a safe, accessible and convenient cycle network and environment across the county and in the Limerick-Shannon Metropolitan Area as set out in the Cycle Network Plans for Shannon and Limerick contained in the LSMATS;*
- *To support the development and enhancement of long distance cycling routes in County Clare, in accordance with the Strategy for the Future Development of National and Regional Greenways;*
- *To provide for cycling trips for people of all ages and abilities from residential areas to town centres, employment centres and school locations, in line with the National Cycle Manual;*
- *To support the enhancement of permeability, footpaths and the provision of safe crossing points in the towns and villages of the county;*
- *To support the creation of a safer environment for cyclists and signposted 'quiet routes' off the arterial roads which include speed limit reviews and junction redesigns where appropriate;*

*Bus Transport*

- *To support the provision of more regular, efficient and fully accessible bus services throughout the county, including through initiatives arising from the NTA's Connecting Ireland rural mobility plan;*
- *To encourage and support TFI Local Link Limerick Clare private/public/ community partnerships in the provision of a more widespread rural bus services;*
- *To work with all relevant stakeholders to provide new bus pick-up/drop-off locations and bus shelters in towns and villages across the county.*

*Strategic Regional Roads*

*Regional roads provide an important function in linking smaller towns and villages with the larger urban centres and with national primary and secondary routes.*

*There are several regional roads which have been selected by the Council as strategic routes that act as feeder routes based on the volumes of traffic that they carry on a daily basis. The Council will protect the identified strategic regional roads from a proliferation of access points and will ensure that their key function is retained."*

Strategic Regional Roads include the *"R352 Ennis – Tuamgraney"*.

The Clare County Development Plan Volume 3c Killaloe Municipal District Settlement Plans includes Mountshannon. The Development Plan objectives for Mountshannon include the following:

*"Transport, Active Travel and Connectivity*

*Bus Eireann provides a Saturday Service from Limerick to Mountshannon and the expansion of the bus service would greatly support the tourism product in the area and would provide a valuable alternative to the private car for local residents, encouraging a modal shift to a more sustainable transport option. TFI Local Link Limerick Clare provide two bus services from Mountshannon, the C1 Scarriff-Whitegate on Saturdays and the C2 Scarriff-Whitegate (Monday to Fridays). Upgrades to and provision for green infrastructure such as walking and cycling routes would promote active recreation and sustainable travel in the village and its environs. There is an opportunity to develop walks, cycle and recreational routes from the village along the East Clare Way."*

The Clare County Development Plan land use zoning and objectives map for Mountshannon is provided in Figure 6-5.

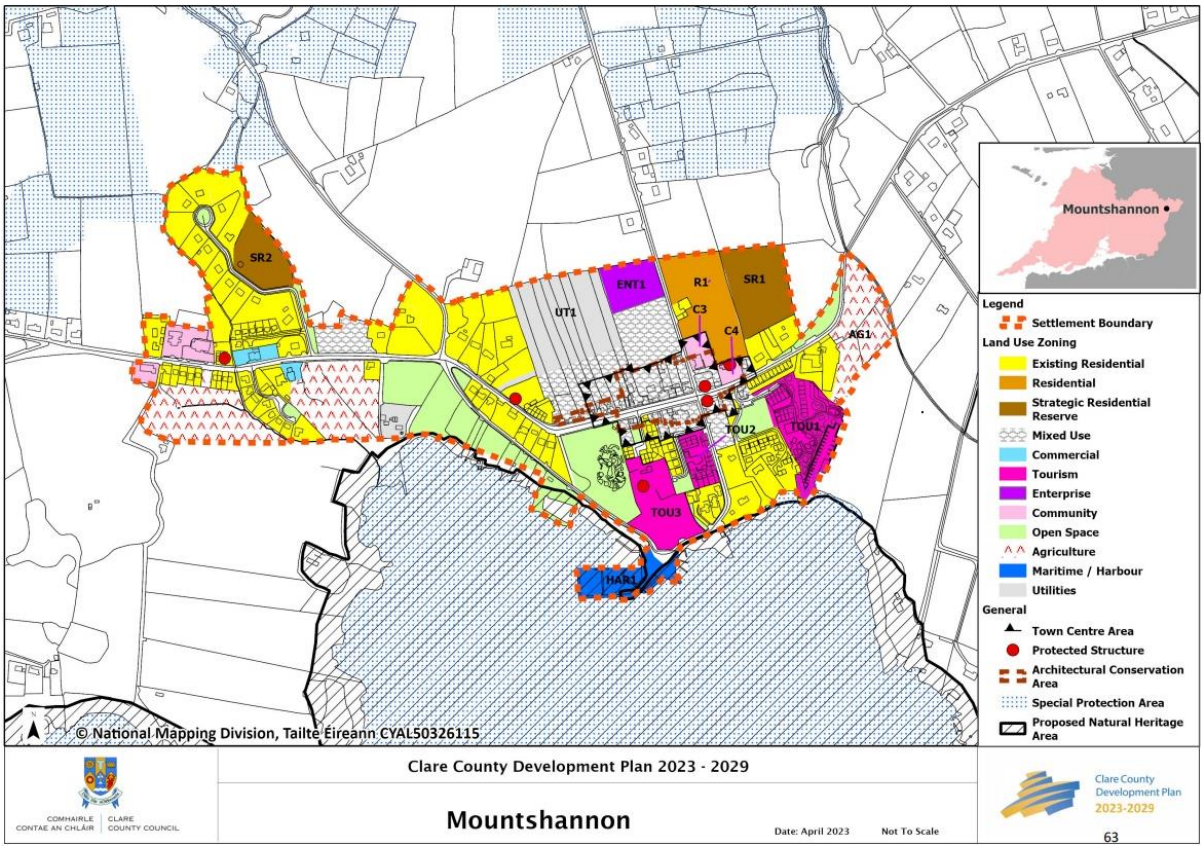



**Figure 6.5 Clare County Development Plan Mountshannon Map**

### 6.7.1 Permitted Old Rectory Interpretive Centre

Clare County Council's Part 8 permitted Old Rectory Interpretive Centre in Mountshannon is currently under construction.

Clare County Council's **Visitor Management Plan** for the proposed Inis Cealtra Visitor Experience indicates that a limited visitor experience and visitor facilities will be provided in the Old Rectory Interpretive Centre, which is scheduled to open in 2025, and will include car and cycle parking facilities located off Harbour Road. Pedestrian access will be provided on Main Street, via Aistear Park, and on Harbour Road. It is projected to attract up to 15,000 visitors annually, including new visitors and existing Inis Cealtra visitors. The Old Rectory Interpretive Centre will be open seasonally, seven days a week, from March to September. Opening times will be 9.00 a.m. to 5.00 p.m., March to June, extended to 6.00 p.m. from July to September.

The permitted Old Rectory Interpretive Centre includes seven staff during peak season.

Clare County Council's Part 8 planning application for the now permitted Old Rectory Building development did not warrant a Traffic and Transport Assessment, as the projected visitor trip generation would include a significant proportion of future baseline visitors, and new visitors are included in TII's expected future traffic growth factors.

The permitted Old Rectory Building development includes 12 car parking spaces, a vehicle set-down space and 20 bicycle parking spaces.

#### 6.7.1.1 Future Baseline Visitors

Clare County Council envisage that future baseline visitors to East Clare would increase by circa 3% annually.

### 6.7.2 Permitted Main Street Public Realm and Mobility Plan Works

Clare County Council's permitted Mountshannon R352 Main Street Public Realm and Mobility Plan works include enhanced pedestrian facilities on Main Street. The works include provision for the proposed Village Car Park access and a new controlled pedestrian crossing located on the east side of the proposed Village Car Park site at the Aistear Park pedestrian access, which will provide access to the permitted Old Rectory Interpretive Centre.

The Main Street Public Realm and Mobility Plan works also include a new pedestrian crossing located circa 60 metres east of the proposed Village Car Park site. Traffic calming raised tables and enhanced pedestrian crossing facilities are proposed at the R352 Main Street/L4034 Harbour Road/L8078 junction, and at the existing crossing located immediately east of the Aistear Park pedestrian access on Main Street.

The Main Street Public Realm and Mobility Plan construction works are scheduled to commence during late 2024 and to be completed during 2025.

### 6.7.3 Future Background Traffic Volumes

The TII Traffic and Transport Assessment Guidelines recommend that the opening year of a development proposal and plan years, five and 15 years after the opening year, should be considered for assessing a development proposal.

Subject to planning permission, Phase 1 of the proposed development is scheduled to be open and operational in Q1 2028; and Phase 2 of the proposed development is scheduled to be fully complete and operational in Q3 2042. The proposed development Phase 1 peak construction year is 2027 and the Phase 2 peak construction year is 2041. The proposed development Phase 1 peak operational initial year is Phase 1 Year 5, 2032. The proposed development ultimate peak operational initial year is Phase 2 Year 5, 2046.

TII in their Project Travel Demand Projections PE-PAG-02017 October 2021 envisage that car and light vehicle volumes on Clare national roads would increase by an annual factor of 1.0156 during the period to 2030, and by a factor of 1.0417 for heavy vehicles, based on their central growth rates. The equivalent factors for the periods 2030 to 2040 and 2040 to 2050 are 1.0038 and 1.0029, respectively, and 1.0157 and 1.0197, respectively.

The existing weekday and weekend morning peak hour and evening peak hour traffic volumes on the existing Mountshannon local road network, in the vicinity of the proposed development, have been factored to 2027, 2028, 2032, 2041 and 2046 levels on the basis of TII's predicted growth rates, and are provided in Tables 6-3, 6-4 and 6-5.

**Table 6.3 Predicted Weekday and Weekend Peak Hour Link Traffic Volumes With TII Growth**

| Year | Location | Road Link | Weekday Peak Hour Vehicles (HGVs) | | Weekend Peak Hour Vehicles (HGVs) | |
|---|---|---|---|---|---|---|
| | | | Morning | Evening | Morning | Evening |
| 2027 | R352/L4034 Harbour Road/L4032 Junction | R352 West | 196 (14) | 315 (9) | 275 | 329 |
| | | L4032 | 20 | 19 | 11 | 18 |
| | | R352 East | 185 (13) | 284 (9) | 246 | 305 |
| | | L4034 Harbour Road | 25 (1) | 49 | 45 | 65 |
| | R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 166 (14) | 269 (8) | 235 | 337 |
| | | L8078 | 11 | 19 | 23 | 21 |
| | | R352 East | 158 (13) | 249 (6) | 210 | 289 |
| | | L4034 Harbour Road | 47 (1) | 88 | 83 | 148 |
| 2028 | R352/L4034 Harbour Road/L4032 Junction | R352 West | 200 (15) | 321 (10) | 279 | 334 |
| | | L4032 | 21 | 20 | 11 | 18 |
| | | R352 East | 189 (14) | 289 (10) | 250 | 310 |
| | | L4034 Harbour Road | 25 (1) | 50 | 45 | 66 |
| | R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 170 (15) | 274 (9) | 239 | 343 |
| | | L8078 | 11 | 20 | 24 | 22 |
| | | R352 East | 161 (14) | 252 (6) | 213 | 294 |
| | | L4034 Harbour Road | 48 (1) | 90 | 84 | 150 |
| 2032 | R352/L4034 Harbour Road/L4032 Junction | R352 West | 210 (21) | 334 (11) | 290 | 347 |
| | | L4032 | 21 | 20 | 11 | 19 |
| | | R352 East | 197 (15) | 301 (11) | 259 | 322 |
| | | L4034 Harbour Road | 26 (1) | 52 | 47 | 69 |
| | R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 178 (17) | 285 (10) | 248 | 356 |
| | | L8078 | 11 | 20 | 25 | 23 |
| | | R352 East | 168 (15) | 263 (7) | 221 | 309 |
| | | L4034 Harbour Road | 49 (1) | 93 | 88 | 156 |
| 2041 | R352/L4034 Harbour Road/L4032 Junction | R352 West | 219 (19) | 349 (13) | 301 | 361 |
| | | L4032 | 22 | 21 | 12 | 20 |
| | | R352 East | 206 (17) | 314 (13) | 270 | 335 |
| | | L4034 Harbour Road | 28 (2) | 54 | 49 | 71 |
| | R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 186 (19) | 297 (11) | 258 | 370 |
| | | L8078 | 12 | 21 | 26 | 23 |
| | | R352 East | 176 (17) | 274 (8) | 230 | 318 |
| | | L4034 Harbour Road | 52 (2) | 97 | 91 | 162 |

| Year | Location | Road Link | Weekday Peak Hour Vehicles (HGVs) | | Weekend Peak Hour Vehicles (HGVs) | |
|---|---|---|---|---|---|---|
| | | | Morning | Evening | Morning | Evening |
| 2046 | R352/L4034 Harbour Road/L4032 Junction | R352 West | 222 (21) | 353 (14) | 304 | 364 |
| | | L4032 | 22 | 21 | 12 | 20 |
| | | R352 East | 210 (19) | 318 (14) | 272 | 338 |
| | | L4034 Harbour Road | 28 (2) | 54 | 50 | 72 |
| | R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 189 (21) | 301 (12) | 260 | 373 |
| | | L8078 | 12 | 21 | 26 | 24 |
| | | R352 East | 179 (19) | 278 (9) | 232 | 324 |
| | | L4034 Harbour Road | 53 (2) | 98 | 92 | 164 |

**Table 6.4 Predicted Weekday and Weekend Peak Hour R352/L4034 Harbour Road/L4032 Junction Traffic Volumes With TII Growth**

| Junction | Year | Approach | Movement | Weekday Peak Hour Vehicles (HGVs) | | Weekend Peak Hour Vehicles (HGVs) | |
|---|---|---|---|---|---|---|---|
| | | | | Morning | Evening | Morning | Evening |
| R352/L4034 Harbour Road/L4032 Junction | 2027 | R352 Eastbound | Left to L4032 | 5 | 7 | 3 | 3 |
| | | | Straight | 73 (2) | 141 (7) | 100 | 127 |
| | | | Right to L4034 | 16 (1) | 37 | 36 | 46 |
| | | L4032 | Left | 4 | 3 | 1 | 3 |
| | | | Straight | 0 | 0 | 3 | 2 |
| | | | Right | 6 | 5 | 1 | 3 |
| | | R352 Westbound | Left to L4034 | 9 | 12 | 9 | 19 |
| | | | Straight | 95 (11) | 125 (2) | 134 | 150 |
| | | | Right to L4032 | 4 | 3 | 2 | 6 |
| | 2028 | R352 Eastbound | Left to L4032 | 5 | 8 | 3 | 3 |
| | | | Straight | 75 (2) | 143 (7) | 102 | 129 |
| | | | Right to L4034 | 16 (1) | 38 | 37 | 47 |
| | | L4032 | Left | 4 | 3 | 1 | 3 |
| | | | Straight | 0 | 0 | 3 | 2 |
| | | | Right | 7 | 5 | 1 | 3 |
| | | R352 Westbound | Left to L4034 | 9 | 12 | 9 | 20 |
| | | | Straight | 96 (11) | 126 (2) | 136 | 152 |
| | | | Right to L4032 | 4 | 3 | 2 | 7 |

| Junction | Year | Approach | Movement | Weekday Peak Hour Vehicles (HGVs) | | Weekend Peak Hour Vehicles (HGVs) | |
|---|---|---|---|---|---|---|---|
| | | | | Morning | Evening | Morning | Evening |
| R352/L4034 Harbour Road/L4032 Junction (continued) | 2032 | R352 Eastbound | Left to L4032 | 6 | 8 | 3 | 3 |
| | | | Straight | 78 (3) | 150 (8) | 106 | 134 |
| | | | Right to L4034 | 17 (1) | 39 | 38 | 48 |
| | | L4032 | Left | 5 | 3 | 1 | 3 |
| | | | Straight | 0 | 0 | 3 | 2 |
| | | | Right | 7 | 6 | 1 | 3 |
| | | R352 Westbound | Left to L4034 | 9 | 12 | 9 | 20 |
| | | | Straight | 101 (12) | 132 (3) | 142 | 158 |
| | | | Right to L4032 | 5 | 3 | 2 | 7 |
| | 2041 | R352 Eastbound | Left to L4032 | 6 | 8 | 4 | 4 |
| | | | Straight | 81 (3) | 157 (10) | 110 | 139 |
| | | | Right to L4034 | 18 (2) | 41 | 40 | 50 |
| | | L4032 | Left | 5 | 4 | 1 | 4 |
| | | | Straight | 0 | 0 | 4 | 2 |
| | | | Right | 7 | 6 | 1 | 4 |
| | | R352 Westbound | Left to L4034 | 9 | 13 | 9 | 21 |
| | | | Straight | 106 (14) | 134 (3) | 147 | 165 |
| | | | Right to L4032 | 5 | 4 | 2 | 7 |
| | 2046 | R352 Eastbound | Left to L4032 | 6 | 8 | 4 | 4 |
| | | | Straight | 83 (4) | 159 (11) | 111 | 140 |
| | | | Right to L4034 | 19 (2) | 41 | 40 | 51 |
| | | L4032 | Left | 5 | 4 | 1 | 4 |
| | | | Straight | 0 | 0 | 4 | 2 |
| | | | Right | 7 | 6 | 1 | 4 |
| | | R352 Westbound | Left to L4034 | 9 | 13 | 9 | 21 |
| | | | Straight | 109 (16) | 140 (4) | 148 | 166 |
| | | | Right to L4032 | 5 | 4 | 2 | 7 |

**Table 6.5 Predicted Weekday and Weekend Peak Hour R352 Main Street/L4034 Harbour Road/L8078 Junction Traffic Volumes With TII Growth**

| Junction | Year | Approach | Movement | Weekday Peak Hour Vehicles (HGVs) | | Weekend Peak Hour Vehicles (HGVs) | |
|---|---|---|---|---|---|---|---|
| | | | | Morning | Evening | Morning | Evening |
| R352 Main Street/L4034 Harbour Road/L8078 Junction | 2027 | R352 Eastbound | Left to L8078 | 0 | 0 | 5 | 5 |
| | | | Straight | 56 (2) | 127 (4) | 67 | 126 |
| | | | Right to L4034 | 6 | 6 | 13 | 15 |
| | | L8078 | Left | 2 | 2 | 3 | 3 |
| | | | Straight | 1 | 1 | 0 | 1 |
| | | | Right | 3 | 12 (2) | 11 | 5 |
| | | R352 Westbound | Left to L4034 | 7 | 14 | 12 | 17 |
| | | | Straight | 80 (11) | 81 (2) | 104 | 113 |
| | | | Right to L8078 | 2 | 2 | 2 | 1 |
| | | L4034 Harbour Road | Left | 20 (1) | 43 | 35 | 73 |
| | | | Straight | 2 | 2 | 2 | 5 |
| | | | Right | 10 | 22 | 21 | 30 |
| | 2028 | R352 Eastbound | Left to L8078 | 0 | 0 | 5 | 5 |
| | | | Straight | 57 (2) | 129 (4) | 68 | 128 |
| | | | Right to L4034 | 7 | 7 | 13 | 15 |
| | | L8078 | Left | 2 | 2 | 3 | 3 |
| | | | Straight | 1 | 1 | 0 | 1 |
| | | | Right | 3 | 12 (2) | 11 | 5 |
| | | R352 Westbound | Left to L4034 | 8 | 14 | 12 | 17 |
| | | | Straight | 81 (11) | 82 (2) | 106 | 115 |
| | | | Right to L8078 | 2 | 2 | 2 | 1 |
| | | L4034 Harbour Road | Left | 21 (1) | 43 | 36 | 75 |
| | | | Straight | 2 | 2 | 2 | 5 |
| | | | Right | 10 | 23 | 22 | 30 |
| | 2032 | R352 Eastbound | Left to L8078 | 0 | 0 | 5 | 5 |
| | | | Straight | 60 (3) | 134 (4) | 71 | 133 |
| | | | Right to L4034 | 7 | 7 | 14 | 16 |
| | | L8078 | Left | 2 | 2 | 3 | 3 |
| | | | Straight | 1 | 1 | 0 | 1 |
| | | | Right | 3 | 13 (3) | 11 | 6 |
| | | R352 Westbound | Left to L4034 | 8 | 15 | 12 | 18 |
| | | | Straight | 85 (12) | 86 (3) | 110 | 119 |

| Junction | Year | Approach | Movement | Weekday Peak Hour Vehicles (HGVs) | | Weekend Peak Hour Vehicles (HGVs) | |
|---|---|---|---|---|---|---|---|
| | | | | Morning | Evening | Morning | Evening |
| R352 Main Street/L4034 Harbour Road/L8078 Junction (continued) | | | Right to L8078 | 2 | 2 | 2 | 1 |
| | | L4034 Harbour Road | Left | 21 (1) | 45 | 37 | 78 |
| | | | Straight | 2 | 2 | 2 | 6 |
| | | | Right | 10 | 24 | 23 | 31 |
| | 2041 | R352 Eastbound | Left to L8078 | 0 | 0 | 6 | 6 |
| | | | Straight | 63 (3) | 140 (5) | 74 | 138 |
| | | | Right to L4034 | 7 | 7 | 14 | 16 |
| | | L8078 | Left | 2 | 2 | 4 | 4 |
| | | | Straight | 1 | 1 | 0 | 1 |
| | | | Right | 4 | 14 (3) | 12 | 6 |
| | | R352 Westbound | Left to L4034 | 8 | 15 | 13 | 19 |
| | | | Straight | 90 (14) | 89 (3) | 114 | 124 |
| | | | Right to L8078 | 2 | 2 | 2 | 1 |
| | | L4034 Harbour Road | Left | 23 (2) | 47 | 39 | 81 |
| | | | Straight | 2 | 2 | 2 | 6 |
| | | | Right | 11 | 25 | 23 | 33 |
| | 2046 | R352 Eastbound | Left to L8078 | 0 | 0 | 6 | 6 |
| | | | Straight | 64 (4) | 142 (5) | 74 | 139 |
| | | | Right to L4034 | 7 | 7 | 14 | 17 |
| | | L8078 | Left | 2 | 2 | 4 | 4 |
| | | | Straight | 1 | 1 | 0 | 1 |
| | | | Right | 4 | 15 (4) | 12 | 6 |
| | | R352 Westbound | Left to L4034 | 8 | 15 | 13 | 19 |
| | | | Straight | 93 (16) | 91 (4) | 115 | 125 |
| | | | Right to L8078 | 2 | 2 | 2 | 1 |
| | | L4034 Harbour Road | Left | 23 (2) | 47 | 39 | 81 |
| | | | Straight | 2 | 2 | 2 | 6 |
| | | | Right | 11 | 25 | 24 | 33 |

### 6.7.4 Main Street Urban Road Link Capacity

The UK Traffic Capacity of Urban Roads TA 79/99 identifies an urban road link capacity of 750 vehicles per direction for a 6.1 metres wide busy urban all-purpose street with frontage activity (UAP4 classification).

#### 6.7.4.1 Main Street Link Volume/Capacity Ratios

The urban road link capacity of the R352 Main Street, within the Mountshannon 50 km/hour urban speed limit zone, estimated on the basis of the Traffic Capacity of Urban Roads TA79/99, is provided in Table 6-6. The capacity is per direction based on a 60/40 directional split.

**Table 6.6 Estimated R352 Main Street Urban Road Link Capacity**

| R352 Main Street | Urban Road Link | | | |
|---|---|---|---|---|
| | Type | Lanes | Carriageway Width (m) | Capacity/Hour/Direction (Vehicles) |
| R352 Main Street | UAP4 | 2 | 6.1 | 750 |

The estimated existing urban road link peak hour volume/capacity ratios for the R352 Main Street, within the Mountshannon 50 km/hour urban speed limit zone, are provided in Table 6-7, on the basis of the Traffic Capacity of Urban Roads TA 79/99, with TII's predicted traffic growth rates.

**Table 6.7 Estimated R352 Main Street Urban Road Link Peak Hour Volume/Capacity Ratios With TII Growth**

| R352 Main Street | Year | Highest Direction Peak Hour Vehicles | Capacity/Hour/ Direction (Vehicles) | Volume/Capacity Ratio |
|---|---|---|---|---|
| R352 Main Street | 2027 | 175 | 750 | 23% |
| | 2028 | 179 | | 24% |
| | 2032 | 185 | | 25% |
| | 2041 | 193 | | 26% |
| | 2046 | 195 | | 26% |

The R352 Main Street, within the Mountshannon 50 km/hour urban speed limit zone, would operate well within its estimated urban road link capacity, with a highest volume/capacity ratio during the 2046 highest direction peak hour of 26%.

### 6.7.5 Junction Capacity Analysis

The R352/L034 Harbour Road/L4032 junction and R352 Main Street/L4034 Harbour Road/L8078 junction have been analysed using the computer programme PICADY for priority controlled junctions,

for the predicted 2032 and 2046 weekday and weekend morning and evening peak hour traffic volumes with TII's predicted traffic growth. These years coincide with the proposed development Phase 1 peak operational year (Phase 1 Year 5, 2032) and the proposed development ultimate peak operational initial year (Phase 2 Year 5, 2046).

Full details of the PICADY junction capacity analysis are provided in Appendix 6-1. The predicted results are summarised in Table 6-8.

**Table 6.8 PICADY Junction Capacity Analysis With TII Growth**

| Junction | Year & Peak Hour | Highest Ratio of Flow to Capacity (RFC) @ 15 Minutes Intervals | Highest Mean Maximum Queue Length (vehicles) @ 15 Minutes Intervals | Junction Delay per Vehicle (minutes) for Total Time Period |
|---|---|---|---|---|
| R352/L4034 Harbour Road/L4032 Junction | 2032 Weekday AM | 0.033 | 0.0 | 0.12 |
| | 2032 Weekday PM | 0.076 | 0.1 | 0.12 |
| | 2032 Weekend AM | 0.072 | 0.1 | 0.12 |
| | 2032 Weekend PM | 0.093 | 0.1 | 0.13 |
| | 2046 Weekday AM | 0.039 | 0.1 | 0.12 |
| | 2046 Weekday PM | 0.081 | 0.1 | 0.12 |
| | 2046 Weekend AM | 0.076 | 0.1 | 0.13 |
| | 2046 Weekend PM | 0.100 | 0.1 | 0.13 |
| R352 Main Street/L4034 Harbour Road/L8078 Junction | 2032 Weekday AM | 0.064 | 0.1 | 0.11 |
| | 2032 Weekday PM | 0.134 | 0.2 | 0.12 |
| | 2032 Weekend AM | 0.120 | 0.1 | 0.11 |
| | 2032 Weekend PM | 0.218 | 0.3 | 0.13 |
| | 2046 Weekday AM | 0.071 | 0.1 | 0.11 |
| | 2046 Weekday PM | 0.139 | 0.2 | 0.13 |
| | 2046 Weekend AM | 0.124 | 0.1 | 0.11 |
| | 2046 Weekend PM | 0.228 | 0.3 | 0.13 |

PICADY identifies a Ratio to Capacity (RFC) of 0.90 as the practical capacity of a priority controlled junction.

The analysis confirms that the R352/L034 Harbour Road/L4032 junction and R352 Main Street/L4034 Harbour Road/L8078 junction would operate well within practical capacity, for the predicted 2032 and 2046 weekday and weekend morning and evening peak hour traffic volumes with TII's predicted traffic growth, with no significant traffic queues and delays.

The R352/L034 Harbour Road/L4032 junction would operate with a highest RFC of up to 0.100, in 2046, and highest delays per vehicle of 0.13 minutes.

The R352 Main Street/L4034 Harbour Road/L8078 junction would operate with a highest RFC of 0.228, in 2046, and highest delays per vehicle of 0.13 minutes.

### 6.7.6 Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island)

Clare County Council envisage that future baseline visitors to East Clare would increase by circa 3% annually. It is envisaged that future boat activity on Lough Derg would typically increase at a similar annual rate.

## 6.8 Phase 1 Construction Effects

The proposed Phase 1 construction includes the upgrade works at Inis Cealtra island and the new Village Car Park at Mountshannon, north of Aistear Park. The Phase 1 construction is scheduled for 12 months. The proposed development Phase 1 peak construction year is 2027.

### 6.8.1 Construction and Environmental Management Plan (CEMP)

This planning application is accompanied by a **Construction and Environmental Management Plan (CEMP)**. The CEMP provides a comprehensive description of the construction phase and outlines the commitments and mitigation measures to be implemented during the construction phase of the proposed development.

### 6.8.2 Proposed Construction Traffic Management Plan (CTMP)

A full Construction Traffic Management Plan will be completed prior to the works commencing and this will be agreed between the main contractor and Clare County Council to ensure that traffic is managed during the works safely and with least impact. The preliminary **Construction Traffic Management Plan (CTMP)** includes the hereunder.

All construction parking and compounds will be provided within the site confines. Construction wheel wash facilities will be provided on-site. A specialist road washing and cleaning vehicle will be used regularly to maintain public roads, as appropriate. All necessary construction signage and other measures required by Clare County Council will be provided, including construction traffic warning signage.

#### 6.8.2.1 Community Liaison

The main construction contractor contract manager and project manager will be based on site and will be available to liaise with the community. Contact phone numbers will be displayed on construction site signage. The construction contractor will provide regular updates to the community on the progress on the project, liaise regarding any construction issues, including regarding other projects in the area that may require coordination, and address any issues that might be raised by local residents. The construction contractor will also liaise regularly with Clare County Council.

#### 6.8.2.2 Construction Hours

Subject to planning conditions, the proposed construction working hours are 8.00 a.m. to 7.00 p.m. Monday to Friday and 8.00 a.m. to 1.00 p.m. on Saturday. No work will be undertaken on Sundays and Bank Holidays.

#### 6.8.2.3 Construction Access

Construction access for the Inis Cealtra Island works will be via Mountshannon Harbour and the construction of new floating access jetty and walkway located at the north west of the island where the existing mooring point is located.

Construction access for the new Village Car Park works at Mountshannon, north of Aistear Park, will be via a single site access on Main Street, at the approximate location of the existing site gated access.

#### 6.8.2.4 Construction Staff

The number of construction staff working on site will vary over the expected 12 months construction period, with a total maximum of up to 45 personnel, comprising a maximum of 20 personnel for the Inis Cealtra Island works and a maximum of 25 personnel for the new Village Car Park works.

#### 6.8.2.5 Temporary Construction Compound and Parking

A temporary construction compound will be provided on Inis Cealtra Island for the Island works. A temporary construction compound will be provided within the new Village Car Park site for the Village Car Park works.

All construction parking will be located within the temporary construction compound at the new Village Car Park site. This will prevent construction staff parking in public on-street locations and at the public Harbour Car Park.

#### 6.8.2.6 Construction Staff Welfare Facilities

All welfare facilities for construction staff will be provided on site at the proposed construction compounds for each construction element, including staff canteen facilities. This will minimise construction staff vehicle trips during construction working hours.

#### 6.8.2.7 Construction Staff Vehicles

It is envisaged that construction staff will travel to and from site by car/van with a typical vehicle occupancy of 1.5 staff/vehicle. During construction, the majority of construction staff will typically arrive and depart outside peak traffic hours and local schools' start and finish times.

During Phase 1 construction, peak construction staff vehicles would generate 30 daily inbound vehicles and 30 daily outbound vehicles.

During certain periods, including restricted daylight hours and adverse weather conditions, it is envisaged that up to 50% of construction staff could arrive during the weekday morning peak traffic hour and depart during the weekday evening peak traffic hour. This would generate up to 15 construction staff vehicles during the weekday peak traffic hours.

#### 6.8.2.8 Construction Demolition and Earthworks Volumes

Demolition volumes generated by the Inis Cealtra upgrade works will be relatively low for removal to a licensed recycling facility. Excavated earthworks volumes for removal off the Island will be minimal.

There will be relatively low demolition volumes for removal off site for the new Village Car Park works, in respect of the existing boundary wall and adjacent footway. Excavated earthworks volumes generated by the new Village Car Park works will include circa 3,200 $m^3$ of topsoil and circa 4,200 $m^3$ of bulk excavation for sub formation. These excavated volumes will be temporarily stockpiled on site and then removed off site on a phased basis by truck to a licensed recycling facility. The removal of materials off site would generate up to 25 daily trucks, both inbound and outbound, during the initial period of the proposed Phase 1 construction. The removal of earthworks volumes will be during off-peak traffic periods and outside local schools' start and finish times.

#### 6.8.2.9 Construction Deliveries Traffic Volumes

Peak construction delivery and heavy vehicle volumes would generate a peak total of up to 35 daily vehicles, both to and from site, for the Phase 1 construction works, including up to 25 daily delivery vehicles generated by the Village Car Park works and up to 10 daily delivery vehicles generated by the Island works.

Peak construction deliveries will not coincide with the phased removal of earthworks and demolition volumes to a licensed recycling facility.

#### 6.8.2.10 Peak Phase 1 Construction Total Traffic Volumes

It is envisaged that the distribution of construction vehicles would be all via the R352 at Mountshannon, with a similar directional distribution to the recorded baseline traffic volumes on the R352, of circa 60% west and 40% east.

The predicted Phase 1 peak construction total traffic volumes are provided in Table 6-9.

**Table 6.9 Predicted Peak Phase 1 Construction Vehicles**

| Phase 1 Construction | Morning Peak Hour Vehicles | | Evening Peak Hour Vehicles | | Peak Daily Vehicles | |
|---|---|---|---|---|---|---|
| | Arrivals | Departures | Arrivals | Departures | Arrivals | Departures |
| Staff Vehicles | 15 (1) | 0 | 0 | 15 (1) | 30 | 30 |
| Deliveries | 8 | 8 | 8 | 8 | 35 | 35 |
| **Total** | **23** | **8** | **8** | **23** | **65** | **65** |

Note (1): During restricted daylight hours and adverse weather conditions. Otherwise, construction staff will travel outside peak traffic hours.

### 6.8.3 Link Traffic Volumes

The predicted Phase 1 peak construction year, 2027, weekday and weekend morning peak hour and evening peak hour traffic volumes on the Mountshannon local road network, in the vicinity of the proposed development, with the proposed development peak construction, are provided in Table 6-10.

**Table 6.10 Predicted 2027 Weekday and Weekend Peak Hour Link Traffic Volumes With Peak Phase 1 Construction**

| Location | Road Link | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | | Weekend Morning Peak Hour | | Weekend Evening Peak Hour [1] | |
|---|---|---|---|---|---|---|---|---|---|
| | | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change [1] |
| R352/L4034 Harbour Road/L4032 Junction | R352 West | 215 (24) | +19 (10) | 334 (19) | +19 (10) | 285 (6) | +10 (6) | 329 | 0 |
| | L4032 | 20 | 0 | 19 | 0 | 11 | 0 | 18 | 0 |
| | R352 East | 204 (23) | +19 (10) | 303 (19) | +19 (10) | 256 (6) | +10 (6) | 305 | 0 |
| | L4034 Harbour Road | 26 (2) | + 1 (1) | 50 (1) | + 1 (1) | 46 (1) | +1 (1) | 65 | 0 |
| R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 178 (20) | + 12 (6) | 281 (14) | + 12 (6) | 241 (6) | +6 (6) | 337 | 0 |
| | L8078 | 11 | 0 | 19 | 0 | 23 | 0 | 21 | 0 |
| | R352 East | 170 (19) | +12 (6) | 261 (12) | +12 (6) | 216 (6) | +6 (6) | 289 | 0 |
| | L4034 Harbour Road | 49 (2) | + 2 (1) | 90 (1) | + 2 (1) | 85 (1) | +2 (1) | 148 | 0 |

Note [1]: Subject to planning conditions, weekend construction working hours will be 8.00 a.m. to 1.00 p.m. on Saturdays. No work will be undertaken on Sundays and Bank Holidays.

The proposed Phase 1 peak construction would increase weekday morning and evening peak hour traffic volumes by up to 19 vehicles on the R352 and up to two vehicles on the L4034 Harbour Road. The peak hour increases in traffic volumes on the R352 would equate to an increase of up to 10.3%. The predicted peak hour increases in traffic volumes on the L4034 would equate to an increase of up to 4.3%.

### 6.8.4 Main Street Link Volume/Capacity Ratios

The predicted urban road link peak hour highest volume/capacity ratio for the R352 Main Street, within the Mountshannon 50 km/hour urban speed limit zone, with the predicted Phase 1 peak construction during 2027, are provided in Table 6-11, on the basis of the Traffic Capacity of Urban Roads TA 79/99.

**Table 6.11 Predicted R352 Main Street Urban Road Link Peak Hour Volume/Capacity Ratio With Phase 1 Peak Construction**

| R352 Main Street | Year | Highest Direction Peak Hour Vehicles | Capacity/Hour/ Direction (Vehicles) | Volume/Capacity Ratio |
|---|---|---|---|---|
| R352 Main Street | 2027 | 187 | 750 | 25% |

The R352 Main Street, within the Mountshannon 50 km/hour urban speed limit zone, would operate well within its estimated urban road link capacity, with the predicted Phase 1 peak construction during 2027, with a highest volume/capacity ratio during of 25%. This compares to a highest ratio of 23% in 2027 without the proposed development Phase 1 peak construction.

### 6.8.5 Junction Capacity Analysis

As detailed in Section 6.7.5, the R352/L034 Harbour Road/L4032 junction and R352 Main Street/L4034 Harbour Road/L8078 junction would operate well within practical capacity, for the predicted 2032 and 2046 weekday and weekend morning and evening peak hour traffic volumes with TII's predicted traffic growth, with no significant traffic queues and delays. The proposed Phase 1 peak construction in 2027 would not significantly increase peak hour traffic volumes at these junctions, with an even lower, not significant, increase in vehicle turning volumes. Accordingly, both junctions would continue to operate well within practical capacity during the proposed Phase 1 peak construction in 2027.

The predicted Phase 1 peak hour traffic turning volumes generated by the proposed Phase 1 peak construction, at the proposed Village Car Park site access on Main Street, would be up to 31 vehicles, which would equate to one vehicle every 1.94 minutes, which would be well within the practical capacity of the priority T-junction and significantly less than the predicted traffic turning volumes at the R352/L034 Harbour Road/L4032 junction and the R352 Main Street/L4034 Harbour Road/L8078 junction.

### 6.8.6 Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island)

During the Phase 1 construction, Inis Cealtra Island will generally remain closed for the duration of the works, except where access is required for a burial and by a farmer for livestock.

The proposed Phase 1 construction would generate up to eight round boat trips daily between Mountshannon Harbour and Inis Cealtra Island.

The proposed Phase 1 construction works activity would not increase expected typical future baseline round boat trips daily between Mountshannon Harbour and Inis Cealtra Island. The proposed Phase 1 construction works activity would reduce the expected typical future baseline round boat trips daily between the L8070 slipway/pier access and Inis Cealtra Island.

The proposed Phase 1 construction would not increase expected 2027 levels of boat activity on Lough Derg.

### 6.8.7 Mitigation

The proposed CTMP and CEMP outline the commitments and mitigation measures to be implemented during the construction phase of the proposed development, and are part of the proposal assessed in this Traffic and Transport chapter. No further mitigation measures are warranted.

When the construction contractor is appointed, an updated Construction Traffic Management Plan will be submitted to Clare County Council, for approval, prior to the commencement of construction.

### 6.8.8 Phase 1 Construction Impact Significance and Duration

On the basis of the EPA EIAR Guidelines, the Phase 1 construction effect of the proposed development will be slight negative to moderate negative and temporary-to-short term.

### 6.8.9 Cumulative Phase 1 Construction Impacts

It is envisaged that any cumulative construction activities traffic impact, occurring during the proposed development construction programme, will be a temporary to short term, slight to moderate effect on the basis of the EPA EIAR Guidelines.

## 6.9 Phase 1 Operational Impacts

The proposed Phase 1 development includes the upgrade works at Inis Cealtra island and the new Village Car Park at Mountshannon, north of Aistear Park.

Subject to planning permission, Phase 1 of the proposed development is scheduled to be open and operational in Q1 2028. The proposed development Phase 1 peak operational initial year is Phase 1 Year 5, 2032.

### 6.9.1 Visitor Management Plan (VMP)

The proposed development includes a detailed **Visitor Management Plan (VMP)**. The VMP provides a comprehensive description of projected visitor numbers, types, times, travel modes, parking, management and mitigation measures. The VMP also includes details of staff types, numbers and times.

### 6.9.2 Access

Access for the new Village Car Park at Mountshannon, north of Aistear Park, will be via a single site access on the north side of Main Street, at the approximate location of the existing site gated access.

Pedestrian access for the Old Rectory Interpretive Centre will be provided on Main Street, via Aistear Park, and on Harbour Road, including for Mountshannon Harbour. Pedestrian crossing facilities will be provided on Main Street as part of Clare County Council's R352 Main Street Public Realm and Mobility Plan enhancement works.

### 6.9.3 Parking

The proposed Village Car Park for the proposed development will be a public daytime car park, with a total of 169 car parking spaces, six coach/bus parking spaces and bicycle parking spaces. The 169 car parking spaces include 11 accessible spaces, 105 standard spaces and 53 overflow spaces. EV charging points will be provided for 20% of the car parking spaces.

The car park has been designed to accommodate sufficient parking for the projected staff and visitor numbers, considering that full capacity will not be required year-round, with a split between permanent and overflow parking.

Access to the car park will be restricted by barrier out of hours, prohibiting overnight parking.

### 6.9.4 Hours

The proposed development Phase 1 will be open from March to October annually. The proposed development operational opening hours are provided in Table 6-12.

**Table 6.12 Phase 1 Operational Opening Hours**

| Season | Opening Hours |
|---|---|
| Low Season | 9.00 a.m.to 5.00 p.m. |
| High Season (July & August) | 9.00 a.m. to 6.00 p.m. |

### 6.9.5 Staff

The predicted staff numbers for the Phase 1 operations, with peak Phase 1 visitor numbers by 2032 (Phase 1, Year 5), are provided in Table 6-13.

**Table 6.13 Predicted Phase 1 Operational Staff**

| Phase 1 Operational Development | Staff Type/Location | Number of Staff | |
|---|---|---|---|
| | | Low Season | High Season |
| Phase 1 Peak (Year 5, 2032) | Old Rectory Interpretive Centre | 4.3 | 7.5 |
| | Inis Cealtra Island Tours | 1.3 | 1.3 |
| **Total Phase 1 Staff** | | **5.6** | **8.8** |

The permitted Old Rectory Interpretive Centre includes seven staff during peak season. Accordingly, additional staff numbers will be relatively low and could generate up to four additional daily staff vehicle trips two-way during high season, including up to two additional staff vehicle trips during the peak traffic hour.

### 6.9.6 Visitors

The projected visitor numbers for the Phase 1 operations are provided in Table 6-14.

**Table 6.14 Projected Phase 1 Operational Visitors**

| Phase 1 Operational Development | Annual Visitors | Typical Daily Visitors High Season |
|---|---|---|
| Opening Year (Year 1, 2028) | 20,000 | 129 |
| Peak Year (Year 5, 2032) | 40,000 | 258 |

The permitted Old Rectory Interpretive Centre is projected to attract up to 15,000 visitors annually, including new visitors and existing Inis Cealtra visitors. Accordingly, the proposed Phase 1 development would increase projected visitors by 5,000 visitors annually in Year 1 and by 25,000 visitors by Year 5. This would equate to an average of 33 additional daily visitors in Year 1 and an average of 162 additional daily visitors by Year 5.

### 6.9.7 Vehicle Trips

During high season, the Old Rectory Interpretive Centre will have a peak daily capacity of 372 visitors, which is significantly higher than the projected typical daily visitors during high season of 258 visitors. In order to consider a worst case traffic impact during high season, it is envisaged that the peak daily capacity of 372 visitors would visit on certain days. This would equate to 276 additional daily visitors compared to the permitted projected typical visitors.

On the basis of the **Visitor Management Plan**, it is envisaged that circa 30% of visitors would travel via coach/bus, with up to 25 visitors per coach/bus; and up to 70% of visitors would travel via car, with an average of 2.3 visitors per car. It is envisaged that some visitors would travel via bicycle and public transport.

The predicted additional vehicle trips generated by the proposed development during Phase 1 peak operations during high season, by Year 5, are provided in Table 6-15.

**Table 6.15 Predicted Phase 1 Peak Operations High Season Additional Operational Vehicles With Peak Capacity Daily Visitors**

| Phase 1 Development | Morning Peak Traffic Hour Additional Vehicles | | Evening Peak Traffic Hour Additional Vehicles | | Daily Additional Vehicles | |
|---|---|---|---|---|---|---|
| | Arrivals | Departures | Arrivals | Departures | Arrivals | Departures |
| Staff | 2 | 0 | 0 | 2 | 4 | 4 |
| Visitors | 10 | 10 | 10 | 10 | 88 | 88 |
| **Total** | **12** | **10** | **10** | **12** | **92** | **92** |

The proposed Phase 1 peak operations high season, with peak capacity daily visitors, would generate up to 22 additional vehicles two-way, during the peak traffic hours. The projected typical additional vehicles during high season would be up to 12 vehicles two-way, during the peak traffic hours.

It is envisaged that the distribution of operational vehicles generated by the proposed development would be similar to the recorded during high season baseline traffic volumes on the R352, of circa 60% west and 40% east.

### 6.9.8 Link Traffic Volumes

The Phase 1 peak operations high season weekday and weekend morning peak hour and evening peak hour traffic volumes on the Mountshannon local road network, in the vicinity of the proposed development, with the proposed development peak capacity daily visitors, during the initial peak year 2032 (Phase 1, Year 5), are provided in Table 6-16.

**Table 6.16 Predicted 2032 Weekday and Weekend Peak Hour Link Traffic Volumes With Peak Season Phase 1 Operational Development With Peak Capacity Daily Visitors**

| Location | Road Link | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | | Weekend Morning Peak Hour | | Weekend Morning Peak Hour | |
|---|---|---|---|---|---|---|---|---|---|
| | | Total Vehicles( HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change |
| R352/L4034 Harbour Road/L4032 Junction | R352 West | 223 (21) | +13 | 347 (11) | +13 | 303 | +13 | 360 | +13 |
| | L4032 | 21 | 0 | 20 | 0 | 11 | 0 | 19 | 0 |
| | R352 East | 210 (15) | +13 | 314 (11) | +13 | 272 | +13 | 335 | +13 |
| | L4034 Harbour Road | 26 (1) | 0 | 52 | 0 | 47 | 0 | 69 | 0 |
| R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 187 (17) | +9 | 294 (10) | +9 | 257 | +9 | 345 | +9 |
| | L8078 | 11 | 0 | 20 | 0 | 25 | 0 | 23 | 0 |
| | R352 East | 177 (15) | +9 | 272 (7) | +9 | 230 | +9 | 3189 | +9 |
| | L4034 Harbour Road | 49 (1) | 0 | 93 | 0 | 88 | 0 | 156 | 0 |

The proposed Phase 1 peak operations high season, with peak capacity daily visitors, would increase peak hour traffic volumes on the R352 Main Street by up to 13 vehicles two-way, with the proposed

development peak capacity daily visitors. This would equate to one additional vehicle every 4.6 minutes and would not be significant. The projected typical increase in peak hour traffic volumes on the R352 Main Street during high season would be up to seven vehicles two-way, during the peak traffic hours.

### 6.9.9 Main Street Urban Link Volume/Capacity Ratios

The predicted urban road link peak hour highest volume/capacity ratio for the R352 Main Street, within the Mountshannon 50 km/hour urban speed limit zone, with the proposed Phase 1 peak operations high season, with peak capacity daily visitors, during 2032, are provided in Table 6-17, on the basis of the Traffic Capacity of Urban Roads TA 79/99.

**Table 6.17 Predicted R352 Main Street Urban Road Link Peak Hour Volume/Capacity Ratio With Peak Season Phase 1 Operational Development With Peak Capacity Daily Visitors**

| R352 Main Street | Year | Highest Direction Peak Hour Vehicles | Capacity/Hour/ Direction (Vehicles) | Volume/Capacity Ratio |
|---|---|---|---|---|
| R352 Main Street | 2032 | 198 | 750 | 27% |

The R352 Main Street, within the Mountshannon 50 km/hour urban speed limit zone, would operate well within its estimated urban road link capacity, with the proposed Phase 1 peak operations high season, with peak capacity daily visitors, during 2032, with a highest volume/capacity ratio during of 27%. This compares to a highest ratio of 25% in 2032 without the proposed development.

### 6.9.10 Junction Traffic Volumes and Capacity Analysis

As detailed in Section 6.7.5, the R352/L034 Harbour Road/L4032 junction and R352 Main Street/L4034 Harbour Road/L8078 junction would operate well within practical capacity, for the predicted 2032 and 2046 weekday and weekend morning and evening peak hour traffic volumes with TII's predicted traffic growth, with no significant traffic queues and delays. The proposed Phase 1 peak operations high season, with peak capacity daily visitors, would not significantly increase peak hour traffic volumes at these junctions, with no increase in vehicle turning volumes. Accordingly, both junctions would continue to operate well within practical capacity during the proposed Phase 1 peak operations high season, with peak capacity daily visitors.

The total predicted 2032 peak hour junction traffic volumes generated at the proposed Village Car Park access junction on Main Street, during the proposed Phase 1 peak operations high season, with peak capacity daily visitors, including permitted visitors generated by the Old Rectory Interpretive Centre, are provided in Table 6-18.

**Table 6.18 Predicted 2032 Weekday and Weekend Peak Hour R352 Main Street/Visitor Car Park Access Junction Traffic Volumes With Peak Season Phase 1 Operations With Peak Capacity Daily Visitors**

| Junction | Year | Approach | Movement | Weekday Peak Hour Vehicles (HGVs) | | Weekend Peak Hour Vehicles (HGVs) | |
|---|---|---|---|---|---|---|---|
| | | | | Morning | Evening | Morning | Evening |
| R352 Main Street/Village Car Park Access Junction | 2032 | R352 Eastbound | Left to Village Car Park | 10 | 8 | 10 | 8 |
| | | | Straight | 67 (3) | 141 (4) | 90 | 154 |
| | | Village Car Park | Right | 8 | 10 | 8 | 10 |
| | | | Left | 6 | 6 | 6 | 6 |
| | | R352 Westbound | Straight | 109 (13) | 144 (6) | 158 | 203 |
| | | | Right to Village Car Park | 6 | 6 | 6 | 6 |

The proposed R352 Main Street/Village Car Park access junction have been analysed using the computer programme PICADY for priority controlled junctions for the predicted 2032 weekday and weekend morning and evening peak hour traffic volumes, with proposed Phase 1 peak operations high season and peak capacity daily visitors, including permitted visitors generated by the Old Rectory Interpretive Centre, plus TII's predicted traffic growth.

Full details of the PICADY junction capacity analysis are provided in Appendix 6-1. The predicted results are summarised in Table 6-19.

**Table 6.19 PICADY Junction Capacity Analysis With Peak Season Phase 1 Operations With Peak Capacity Daily Visitors**

| Junction | Year & Peak Hour | Highest Ratio of Flow to Capacity (RFC) @ 15 Minutes Intervals | Highest Mean Maximum Queue Length (vehicles) @ 15 Minutes Intervals | Junction Delay per Vehicle (minutes) for Total Time Period |
|---|---|---|---|---|
| R352 Main Street/Village Car Park Access Junction | 2032 Weekday AM | 0.029 | 0.0 | 0.11 |
| | 2032 Weekday PM | 0.036 | 0.0 | 0.12 |
| | 2032 Weekend AM | 0.030 | 0.0 | 0.11 |
| | 2032 Weekend PM | 0.037 | 0.0 | 0.12 |

PICADY identifies a Ratio to Capacity (RFC) of 0.90 as the practical capacity of a priority controlled junction.

The analysis confirms that the proposed R352 Main Street/Village Car Park access junction would operate well within practical capacity, for the predicted 2032 weekday and weekend morning and evening peak hour traffic volumes with the proposed Phase 1 peak operations high season and peak capacity daily visitors, including permitted visitors generated by the Old Rectory Interpretive Centre, plus TII's predicted traffic growth, with no significant traffic queues and delays.

The proposed R352 Main Street/Village Car Park access junction would operate with a highest RFC of up to 0.037, in 2032, and highest delays per vehicle of 0.12 minutes.

### 6.9.11 Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island)

The proposed Phase 1 visitors' boat service to/from Inis Cealtra Island from/to Mountshannon Harbour will be seasonal, ranging from two round trip daily boat services during low season to eight round trip daily boat services during high season. The expected high season eight daily round trip sailings is of the same order as the existing summer tourist season - there are typically eight existing round boat trips daily between Mountshannon Harbour and Inis Cealtra.

Accordingly, there will be no increase in total boat traffic generated by Mountshannon Harbour and on Lough Derg with the proposed Phase 1 development in operation.

The maximum daily capacity on the Inis Cealtra island will be 400 persons, with no more than 100 people permitted on the island at any one time.

### 6.9.12 Phase 1 Operational Mitigation

The proposed development includes a detailed **Visitor Management Plan (VMP)**. Visitor capacity will be limited and visitor access will be on a booked basis only, with pre booking online and a timed visitor entry system to stagger visitor arrivals. The VMP will control visitor traffic generation volumes and times and is part of the proposal. No additional operational mitigation is warranted.

Total operational staff numbers for Phase 1 will be up nine staff, including up to two additional staff with the permitted Old Rectory development. Total operational staff numbers will be significantly less than the 75 employees threshold identified by the Clare County Development Plan 2023-2029 for a **Mobility Management Plan**.

### 6.9.13 Phase 1 Operational Impact Significance and Duration

On the basis of the EPA EIAR Guidelines, the operational effect of the proposed development on traffic and transportation will be not significant negative to slight negative, and long term to permanent.

### 6.9.14 Phase 1 Cumulative Operational Impacts

The predicted Phase 1 development high season 2032 traffic volumes include TII's predicted future traffic growth, which includes traffic generated by other developments. No significant other developments' traffic generation is envisaged in addition to TII's predicted growth rates. The predicted traffic generated by the proposed development is in addition to TII's predicted traffic growth. It is envisaged that any cumulative operational traffic effect will be not significant to slight negative and long term to permanent, on the basis of the EPA EIAR Guidelines.

## 6.10 Phase 2 Construction Effects

The proposed Phase 2 construction includes the reconfiguration and enhancement of the Harbour Car Park and the new Visitor Centre at Mountshannon, south east of Aistear Park. The Phase 2 construction is scheduled for 18 months with the proposed Phase 1 peak operational development in place. The Harbour Car Park construction works are scheduled for six months and to coincide with the new Visitor Centre construction works schedule for 18 months. The proposed development Phase 2 peak construction year is 2041.

### 6.10.1 Construction and Environmental Management Plan (CEMP)

This planning application is accompanied by a **Construction and Environmental Management Plan (CEMP)**. The CEMP provides a comprehensive description of the construction phase and outlines the commitments and mitigation measures to be implemented during the construction phase of the proposed development.

### 6.10.2 Proposed Construction Traffic Management Plan (CTMP)

A full Construction Traffic Management Plan will be completed prior to the works commencing and this will be agreed between the Contractor and Clare County Council to ensure that traffic is managed during the works safely and with least impact. The preliminary construction traffic management plan includes the hereunder.

All construction parking and compounds will be provided within the site confines. Construction wheel wash facilities will be provided on-site. A specialist road washing and cleaning vehicle will be used regularly to maintain public roads, as appropriate. All necessary construction signage and other measures required by Clare County Council will be provided, including construction traffic warning signage.

#### 6.10.2.1 Community Liaison

The main construction contractor contract manager and project manager will be based on site and will be available to liaise with the community. Contact phone numbers will be displayed on construction site signage. The construction contractor will provide regular updates to the community on the progress on the project, liaise regarding any construction issues, including regarding other projects in the area that may require coordination, and address any issues that might be raised by local residents. The construction contractor will also liaise regularly with Clare County Council.

#### 6.10.2.2 Construction Hours

Subject to planning conditions, the proposed construction working hours are 8.00 a.m. to 7.00 p.m. Monday to Friday and 8.00 a.m. to 1.00 p.m. on Saturday. No work will be undertaken on Sundays and Bank Holidays.

#### 6.10.2.3 Construction Access

Construction access for the reconfiguration of Mountshannon Harbour Car Park and the new Visitor Centre will be via the L4034 Harbour Road and the R352.

#### 6.10.2.4 Construction Staff

The number of construction staff working on site will vary over the expected 18 months construction period, with a total maximum of up to 70 personnel, comprising a maximum of 20 personnel for the Harbour Car Park works and a maximum of 50 personnel for the new Visitor Centre Car Park works.

#### 6.10.2.5 Temporary Construction Compound and Parking

A temporary construction compound will be provided at the new Visitor Centre site for the Visitor Centre construction works. A temporary construction compound will be provided at the Harbour Car Park site for the Harbour Car Park works.

All construction parking will be located within the temporary construction compounds for the Phase 2 construction works. During low season, temporary construction staff car parking will also be provided at the Phase 1 construction Village Car Park.

#### 6.10.2.6 Construction Staff Welfare Facilities

All welfare facilities for construction staff will be provided on site at the proposed construction compound, including staff canteen facilities. This will minimise construction staff vehicle trips during construction working hours.

#### 6.10.2.7 Construction Staff Vehicles

It is envisaged that construction staff will travel to and from site by car/van with a typical vehicle occupancy of 1.5 staff/vehicle. During construction, the majority of construction staff will typically arrive and depart outside peak traffic hours and local schools' start and finish times. It is envisaged that the distribution of construction vehicles would be all via the R352 at Mountshannon, with a similar directional distribution to the recorded baseline traffic volumes on the R352, of circa 60% west and 40% east.

During Phase 2 construction, peak construction staff vehicles would generate 47 daily inbound vehicles and 47 daily outbound vehicles.

During certain periods, including restricted daylight hours and adverse weather conditions, it is envisaged that up to 50% of construction staff could arrive during the weekday morning peak traffic hour and depart during the weekday evening peak traffic hour. This would generate up to 24 construction staff vehicles during the weekday peak traffic hours.

#### 6.10.2.8 Construction Demolition and Earthworks Volumes

There will be no significant demolition volumes generated by the Phase 2 construction works for removal off site to a licensed recycling facility.

Excavated earthworks volumes generated by the Phase 2 construction works will include circa 1,600 $m^3$ of topsoil and circa 7,200 $m^3$ of excavation for sub formation. These excavated volumes will be removed off site on a phased basis by truck to a licensed recycling facility. The removal off site of excavated earthworks materials would generate up to 20 trucks, both inbound and outbound, during the initial phase of the proposed Phase 1 construction. The removal of earthworks volumes will be during off-peak traffic periods and outside local schools' start and finish times.

### 6.10.2.9 Construction Deliveries Traffic Volumes

Peak construction delivery and heavy vehicle volumes would generate a peak total of up to 30 daily vehicles, both to and from site, for the Phase 2 construction works, including up to 20 daily delivery vehicles generated by the Visitor Centre works and up to 10 daily delivery vehicles generated by the Harbour Car Park works.

Peak construction deliveries will not coincide with the phased removal of earthworks and demolition volumes to a licensed recycling facility.

### 6.10.2.10 Peak Phase 2 Construction Total Traffic Volumes

It is envisaged that the distribution of construction vehicles would be all via the R352 at Mountshannon, with a similar directional distribution to the recorded baseline traffic volumes on the R352, of circa 60% west and 40% east.

The predicted Phase 2 peak construction total traffic volumes are provided in Table 6-20.

**Table 6.20 Predicted Peak Phase 2 Construction Vehicles**

| Phase 1 Construction | Morning Peak Hour Vehicles | | Evening Peak Hour Vehicles | | Peak Daily Vehicles | |
|---|---|---|---|---|---|---|
| | Arrivals | Departures | Arrivals | Departures | Arrivals | Departures |
| Staff Vehicles | 24 (1) | 0 | 0 | 24 (1) | 47 | 47 |
| Deliveries | 7 | 7 | 7 | 7 | 30 | 30 |
| **Total** | **31** | **7** | **7** | **31** | **77** | **77** |

Note (1): During restricted daylight hours and adverse weather conditions. Otherwise, construction staff will travel outside peak traffic hours.

## 6.10.3 Link Traffic Volumes

The predicted Phase 2 peak construction year, 2041, weekday and weekend morning peak hour and evening peak hour traffic volumes on the Mountshannon local road network, in the vicinity of the proposed development, with the proposed development peak Phase 2 construction and the proposed Phase 1 high season operational phase with peak capacity visitors, are provided in Table 6-21.

**Table 6.21 Predicted 2041 Weekday and Weekend Peak Hour Link Traffic Volumes With Peak Phase 2 Construction and Phase 1 High Season Operational Phase With Peak Capacity Visitors**

| Location | Road Link | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | | Weekend Morning Peak Hour | | Weekend Evening Peak Hour [1] | |
|---|---|---|---|---|---|---|---|---|---|
| | | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change [1] |
| R352/L4034 Harbour Road/L4032 Junction | R352 West | 219 (19) | +36 (8) | 349 (13) | +36 (8) | 301 | +21 (8) | 361 | +13 |
| | L4032 | 22 | 0 | 21 | 0 | 12 | 0 | 20 | 0 |
| | R352 East | 206 (17) | +36 (8) | 314 (13) | +36 (8) | 270 | +17 (4) | 335 | +13 |
| | L4034 Harbour Road | 28 (2) | + 4 (4) | 54 | + 4 (4) | 49 | +4 (4) | 71 | 0 |
| R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 186 (19) | + 24 (6) | 297 (11) | + 24 (6) | 258 | +13 (4) | 370 | +9 |
| | L8078 | 12 | 0 | 21 | 0 | 26 | 0 | 23 | 0 |
| | R352 East | 176 (17) | +24 (6) | 274 (8) | +24 (6) | 230 | +15 (6) | 318 | +9 |
| | L4034 Harbour Road | 52 (2) | + 34 (10) | 97 | + 34 (10) | 91 | +10 (10) | 162 | 0 |

Note [1]: Subject to planning conditions, weekend construction working hours will be 8.00 a.m. to 1.00 p.m. on Saturdays. No work will be undertaken on Sundays and Bank Holidays.

The proposed development peak Phase 2 construction and the proposed Phase 1 high season operational phase, with peak capacity visitors, would increase weekday morning and evening peak hour traffic volumes by up to 36 vehicles on the R352 and up to 34 vehicles on the L4034 Harbour Road. The peak hour increases in traffic volumes on the R352 would equate to an increase of up to 17.5%. The predicted peak hour increases in traffic volumes on the L4034 would equate to an increase of up to 65.4%.

### 6.10.4 Main Street Link Volume/Capacity Ratios

The predicted urban road link peak hour highest volume/capacity ratio for the R352 Main Street, within the Mountshannon 50 km/hour urban speed limit zone, with the predicted proposed development peak Phase 2 construction and the proposed Phase 1 high season operational phase, with peak capacity visitors, during 2041, are provided in Table 6-22, on the basis of the Traffic Capacity of Urban Roads TA 79/99.

**Table 6.22 Predicted R352 Main Street Urban Road Link Peak Hour Volume/Capacity Ratio With Phase 2 Peak Construction and Phase 1 High Season Operational Phase With Peak Capacity Visitors**

| R352 Main Street | Year | Highest Direction Peak Hour Vehicles | Capacity/Hour/ Direction (Vehicles) | Volume/Capacity Ratio |
|---|---|---|---|---|
| R352 Main Street | 2041 | 217 | 750 | 29% |

The R352 Main Street, within the Mountshannon 50 km/hour urban speed limit zone, would operate well within its estimated urban road link capacity, with the predicted proposed development peak Phase 2 construction and the proposed Phase 1 high season operational phase, with peak capacity visitors, during 2041, with a highest volume/capacity ratio during of 29%. This compares to a highest ratio of 26% in 2041 without the proposed development.

### 6.10.5 Junction Capacity Analysis

As detailed in Section 6.7.5, the R352/L034 Harbour Road/L4032 junction and R352 Main Street/L4034 Harbour Road/L8078 junction would operate well within practical capacity (RFC = 0.900), for the predicted 2046 weekday and weekend morning and evening peak hour traffic volumes with TII's predicted traffic growth, with no significant traffic queues and delays (highest RFCs of 0.100 and 0.228, respectively). As detailed in Section 6.9.10, the R352 Main Street/Village Care Park Access junction would operate well within practical capacity (RFC = 0.900) with the proposed Phase 1 high season operational phase with peak capacity visitors plus TII's predicted traffic growth, with no significant traffic queuing and delays (highest RFC of 0.037). The proposed Phase 1 peak construction in 2041 would not significantly increase peak hour traffic volumes at these junctions, to materially affect the predicted not significant traffic queuing and delays; and the junctions would continue to operate well within practical capacity during the proposed Phase 2 peak construction in 2041.

### 6.10.6 Mitigation

The proposed CTMP and CEMP outline the commitments and mitigation measures to be implemented during the construction phase of the proposed development, and are part of the proposal assessed in this Traffic and Transport chapter. No further mitigation measures are warranted.

When the construction contractor is appointed, an updated Construction Traffic Management Plan will be submitted to Clare County Council, for approval, prior to the commencement of construction.

### 6.10.7 Phase 2 Construction Impact Significance and Duration

On the basis of the EPA EIAR Guidelines, the Phase 2 construction effect of the proposed development will be slight negative to moderate negative and temporary-to-short term.

### 6.10.8 Cumulative Phase 2 Construction Impacts

The proposed Phase 2 construction will be carried out with the proposed Phase 1 operational phase in place, and the cumulative effects have been considered. The cumulative effects will be temporary

to short term, slight to moderate negative effects on the basis of the EPA EIAR Guidelines. The cumulative effects of the proposed Phase 2 construction with any other construction works will also be temporary to short term, slight to moderate negative effects on the basis of the EPA EIAR Guidelines.

## 6.11 Phase 2 Operational Impacts

The proposed Phase 2 development includes the reconfiguration of the Harbour Car Park and the new Visitor Centre at Mountshannon, south of Aistear Park.

Subject to planning permission, Phase 2 of the proposed development is scheduled to be open and operational in Q3 2042. The proposed development Phase 2 peak operational initial year is Phase 2 Year 5, 2046.

### 6.11.1 Visitor Management Plan (VMP)

The proposed development includes a detailed **Visitor Management Plan (VMP)**. The VMP provides a comprehensive description of projected visitor numbers, types, times, travel modes, parking, management and mitigation measures. The VMP also includes details of staff types, numbers and times.

### 6.11.2 Access

Access for the Phase 1 Village Car Park at Mountshannon, north of Aistear Park, will be via a single site access on the north side of Main Street, at the approximate location of the existing site gated access.

Pedestrian access for the new Visitor Centre will be provided on Main Street, via Aistear Park, and on Harbour Road. Pedestrian crossing facilities will be provided on Main Street as part of Clare County Council's R352 Main Street Public Realm and Mobility Plan enhancement works.

### 6.11.3 Parking

The proposed Village Car Park for the proposed development will be a public daytime car park, with a total of 169 car parking spaces, six coach/bus parking spaces and bicycle parking spaces. The 169 car parking spaces include 11 accessible spaces, 105 standard spaces and 53 overflow spaces. EV charging points will be provided for 20% of the car parking spaces.

The car park has been designed to accommodate sufficient parking for the projected staff and visitor numbers, considering that full capacity will not be required year-round, with a split between permanent and overflow parking. Access to the car park will be restricted by barrier out of hours, prohibiting overnight parking.

The reconfiguration of the Harbour Car Park will increase the total car parking spaces at the Mountshannon Harbour Car Park from 46 spaces to 49 spaces, including one additional accessible space to provide three accessible spaces.

### 6.11.4 Hours

As detailed in the VMP, The proposed development Phase 2 will be open from March to October annually. The proposed development operational opening hours are provided in Table 6-23.

**Table 6.23 Phase 2 Operational Opening Hours**

| Season | Opening Hours |
|---|---|
| Low Season | 9.00 a.m.to 5.00 p.m. |
| High Season (July & August) | 9.00 a.m. to 6.00 p.m. |

### 6.11.5 Staff

The predicted staff numbers for the Phase 2 operations, with peak Phase 2 visitor numbers by 2046 (Phase 2, Year 5), are provided in Table 6-24.

**Table 6.24 Predicted Phase 2 Operational Staff**

| Phase 2 Operational Development | Staff Type/Location | Number of Staff | |
|---|---|---|---|
| | | Low Season | High Season |
| Phase 2 Peak (Year 5, 2046) | Old Rectory Visitor Experience | 8.5 | 14.2 |
| | Inis Cealtra Island Tours &Twilight Tours | 1.3 | 5.3 |
| **Total Phase 2 Staff** | | **9.8** | **19.5** |

The permitted Old Rectory Interpretive Centre includes seven staff during peak season. Accordingly, additional staff numbers, for Phase 2, will be up to 12.5 persons and could generate up to 13 additional daily staff vehicle trips two-way during high season, including up to seven additional staff vehicle trips during the peak traffic hour.

### 6.11.6 Visitors

The projected visitor numbers for the Phase 2 operations are provided in Table 6-25.

**Table 6.25 Projected Phase 2 Operational Visitors**

| Phase 2 Operational Development | Annual Visitors | Typical Daily Visitors High Season |
|---|---|---|
| Opening Year (Year 1, 2042) | 40,000 | 258 |
| Peak Year (Year 5, 2046) | 75,000 | 484 (1) |
| Note (1): Daily maximum during high season. | | |

The permitted Old Rectory Interpretive Centre is projected to attract up to 15,000 visitors annually, including new visitors and existing Inis Cealtra visitors. Accordingly, the proposed Phase 2 development would increase projected visitors by 25,000 visitors annually in Year 1 and by 60,000

visitors by Year 5. This would equate to an average of 162 additional daily visitors in Year 1 and an average of 388 additional daily visitors by Year 5.

### 6.11.7 Vehicle Trips

During high season, the Phase 2 peak daily number of visitors will be 484 visitors.

On the basis of the **Visitor Management Plan**, it is envisaged that circa 30% of visitors would travel via coach/bus, with up to 25 visitors per coach/bus; and up to 70% of visitors would travel via car, with an average of 2.3 visitors per car. It is envisaged that a relatively low proportion of visitors would travel via bicycle and public transport.

The predicted additional vehicle trips generated by the proposed development during Phase 2 peak operations during high season, by Phase 2 Year 5, are provided in Table 6-26.

**Table 6.26 Predicted Phase 2 Peak Operations High Season Additional Operational Vehicles**

| Phase 2 Development | Morning Peak Traffic Hour Additional Vehicles | | Evening Peak Traffic Hour Additional Vehicles | | Daily Additional Vehicles | |
|---|---|---|---|---|---|---|
| | Arrivals | Departures | Arrivals | Departures | Arrivals | Departures |
| Staff | 7 | 0 | 0 | 7 | 13 | 13 |
| Visitors | 14 | 14 | 14 | 14 | 124 | 124 |
| **Total** | **21** | **14** | **14** | **21** | **137** | **137** |

The proposed Phase 2 peak operations high season would generate up to 35 additional vehicles two-way, during the peak traffic hours.

It is envisaged that the distribution of operational vehicles generated by the proposed development would be similar to the recorded during high season baseline traffic volumes on the R352, of circa 60% west and 40% east.

### 6.11.8 Link Traffic Volumes

The Phase 2 peak operations high season weekday and weekend morning peak hour and evening peak hour traffic volumes on the Mountshannon local road network, in the vicinity of the proposed development, with the proposed development peak season daily visitors, during the initial peak year 2046 (Phase 2, Year 5), are provided in Table 6-27.

**Table 6.27 Predicted 2046 Weekday and Weekend Peak Hour Link Traffic Volumes With Phase 2 High Season Operational Development**

| Location | Road Link | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | | Weekend Morning Peak Hour | | Weekend Morning Peak Hour | |
|---|---|---|---|---|---|---|---|---|---|
| | | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change |
| R352/L4034 Harbour Road/L4032 Junction | R352 West | 243 (21) | +21 | 374 (14) | +21 | 325 | +21 | 385 | +21 |
| | L4032 | 22 | 0 | 21 | 0 | 12 | 0 | 20 | 0 |
| | R352 East | 231 (19) | +21 | 339 (14) | +21 | 293 | +21 | 359 | +21 |
| | L4034 Harbour Road | 28 (2) | 0 | 54 | 0 | 50 | 0 | 72 | 0 |
| R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 213 (21) | +14 | 315 (12) | +14 | 274 | +14 | 387 | +14 |
| | L8078 | 12 | 0 | 21 | 0 | 26 | 0 | 24 | 0 |
| | R352 East | 193 (19) | +14 | 292 (9) | +14 | 246 | +14 | 338 | +14 |
| | L4034 Harbour Road | 53 (2) | 0 | 98 | 0 | 92 | 0 | 164 | 0 |

The proposed Phase 2 peak operations high season would increase peak hour traffic volumes on the R352 Main Street by up to 21 vehicles two-way. This would equate to one additional vehicle every 2.9 minutes and would not be significant.

### 6.11.9 Main Street Urban Link Volume/Capacity Ratios

The predicted urban road link peak hour highest volume/capacity ratio for the R352 Main Street, within the Mountshannon 50 km/hour urban speed limit zone, with the proposed Phase 2 peak operations high season, during 2046, are provided in Table 6-28, on the basis of the Traffic Capacity of Urban Roads TA 79/99.

**Table 6.28 Predicted R352 Main Street Urban Road Link Peak Hour Volume/Capacity Ratio With Peak Phase 2 High Season Operational Development**

| R352 Main Street | Year | Highest Direction Peak Hour Vehicles | Capacity/Hour/ Direction (Vehicles) | Volume/Capacity Ratio |
|---|---|---|---|---|
| R352 Main Street | 2046 | 216 | 750 | 29% |

The R352 Main Street, within the Mountshannon 50 km/hour urban speed limit zone, would operate well within its estimated urban road link capacity, with the proposed Phase 2 peak operations high season, with peak capacity daily visitors, during 2046, with a highest volume/capacity ratio during of 29%. This compares to a highest ratio of 26% in 2046 without the proposed development.

### 6.11.10 Junction Traffic Volumes and Capacity Analysis

As detailed in Section 6.7.5, the R352/L034 Harbour Road/L4032 junction and R352 Main Street/L4034 Harbour Road/L8078 junction would operate well within practical capacity (RFC = 0.900), for the predicted 2046 weekday and weekend morning and evening peak hour traffic volumes with TII's predicted traffic growth, with no significant traffic queues and delays (highest RFCs of 0.100 and 0.228, respectively). The proposed Phase 2 peak operations high season would not significantly increase peak hour traffic volumes at these junctions, with no increase in vehicle turning volumes. Accordingly, both junctions would continue to operate well within practical capacity during the proposed Phase 2 peak operations high season.

The total predicted 2046 peak hour junction traffic volumes generated at the proposed Village Car Park access junction on Main Street, during the proposed Phase 2 peak operations high season, including visitors generated by the permitted Old Rectory Interpretive Centre, are provided in Table 6-29.

**Table 6.29 Predicted 2046 Weekday and Weekend Peak Hour R352 Main Street/Visitor Car Park Access Junction Traffic Volumes With Peak Season Phase 2 Operations**

| Junction | Year | Approach | Movement | Weekday Peak Hour Vehicles (HGVs) | | Weekend Peak Hour Vehicles (HGVs) | |
|---|---|---|---|---|---|---|---|
| | | | | Morning | Evening | Morning | Evening |
| R352 Main Street/Village Car Park Access Junction | 2046 | R352 Eastbound | Left to Village Car Park | 15 | 10 | 15 | 10 |
| | | | Straight | 91 (6) | 204 (9) | 125 | 226 |
| | | Village Car Park | Right | 10 | 15 | 10 | 15 |
| | | | Left | 7 | 9 | 7 | 9 |
| | | R352 Westbound | Straight | 103 (16) | 108 (4) | 130 | 145 |
| | | | Right to Village Car Park | 9 | 7 | 9 | 7 |

The proposed R352 Main Street/Village Car Park access junction have been analysed using the computer programme PICADY for priority controlled junctions for the predicted 2046 weekday and weekend morning and evening peak hour traffic volumes, with proposed Phase 2 peak operations high season, including permitted visitors generated by the Old Rectory Interpretive Centre, plus TII's predicted traffic growth.

Full details of the PICADY junction capacity analysis are provided in Appendix 6-1. The predicted results are summarised in Table 6-30.

**Table 6.30 PICADY Junction Capacity Analysis With Peak Season Phase 2 Operations**

| Junction | Year & Peak Hour | Highest Ratio of Flow to Capacity (RFC) @ 15 Minutes Intervals | Highest Mean Maximum Queue Length (vehicles) @ 15 Minutes Intervals | Junction Delay per Vehicle (minutes) for Total Time Period |
|---|---|---|---|---|
| R352 Main Street/Village Car Park Access Junction | 2046 Weekday AM | 0.036 | 0.0 | 0.12 |
| | 2046 Weekday PM | 0.054 | 0.1 | 0.13 |
| | 2046 Weekend AM | 0.036 | 0.0 | 0.12 |
| | 2046 Weekend PM | 0.055 | 0.1 | 0.13 |

PICADY identifies a Ratio to Capacity (RFC) of 0.90 as the practical capacity of a priority controlled junction.

The analysis confirms that the proposed R352 Main Street/Village Car Park access junction would operate well within practical capacity, for the predicted 2046 weekday and weekend morning and evening peak hour traffic volumes with the proposed Phase 2 peak operations high season, including visitors generated by the permitted Old Rectory Interpretive Centre, plus TII's predicted traffic growth, with no significant traffic queues and delays.

The proposed R352 Main Street/Village Car Park access junction would operate with a highest RFC of up to 0.055, in 2046, and highest delays per vehicle of 0.13 minutes.

### 6.11.11 Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island)

The proposed Phase 2 visitors' boat service to/from Inis Cealtra Island from/to Mountshannon Harbour will be seasonal, ranging from six round trip daily boat services during low season to 14 round trip daily boat services during high season. The expected high season 14 daily round trip boat sailings would be six additional to the existing summer tourist season - there are typically eight existing round boat trips daily between Mountshannon Harbour and Inis Cealtra.

Accordingly, there will be up to 12 additional boat traffic movement volumes generated by Mountshannon Harbour and on Lough Derg with the proposed Phase 2 development in operation.

The maximum daily capacity on the Inis Cealtra island will be 400 persons, with no more than 100 people permitted on the island at any one time.

### 6.11.12 Phase 2 Operational Mitigation

The proposed development includes a detailed **Visitor Management Plan (VMP)**. Visitor capacity will be limited and visitor access will be on a booked basis only, with pre booking online and a timed visitor

entry system to stagger visitor arrivals. The VMP will control visitor traffic generation volumes and times and is part of the proposal. No additional operational mitigation is warranted.

Total operational staff numbers for Phase 2 will be up 20 staff, including up to 13 additional staff with the permitted Old Rectory development. Total operational staff numbers will be significantly less than the 75 employees threshold identified by the Clare County Development Plan 2023-2029 for a **Mobility Management Plan**.

### 6.11.13 Phase 2 Operational Impact Significance and Duration

On the basis of the EPA EIAR Guidelines, the operational effect of the proposed development on traffic and transportation will be not significant negative to slight negative, and long term to permanent.

### 6.11.14 Phase 2 Cumulative Operational Impacts

The predicted Phase 2 development high season 2046 traffic volumes include TII's predicted future traffic growth, which includes traffic generated by other developments. No significant other developments' traffic generation is envisaged in addition to TII's predicted growth rates. The predicted traffic generated by the subject proposed development is in addition to TII's predicted traffic growth. It is envisaged that any cumulative operational traffic effect will be not significant to slight negative and long term to permanent, on the basis of the EPA EIAR Guidelines.

## 6.12 Risk of Major Accidents or Disasters

Vehicle traffic, boat traffic and pedestrians generated by the proposed development could be involved in collisions, resulting in potential material damage and injuries, including fatal injuries.

The mitigation measures inherent in the proposal, including as detailed in the CEMP and VMP, would reduce the risk of collisions. When the construction contractor is appointed, an updated Construction Traffic Management Plan will be submitted to Clare County Council, for approval, prior to the commencement of construction, which would reduce the risk of collisions.

## 6.13 Interactions

Traffic generated by the proposed development could have interactions with other environmental effects considered in this EIAR, including noise and vibration, air quality and climate, and hydrology.

## 6.14 Monitoring

Traffic and transport monitoring is not required, as the predicted traffic volumes and effects are identified in this chapter.

## 6.15 Summary of Mitigation and Monitoring

The construction phase mitigation measures are detailed in the proposed CTMP and CEMP, and are part of the proposal assessed in this Traffic and Transport chapter. A summary of the proposed construction phase mitigation measures and monitoring are provided in Table 6-31.

**Table 6.31 Summary of Construction Phase Mitigation and Monitoring**

| Likely Significant Effect | Mitigation | Monitoring |
|---|---|---|
| Construction Phase Generated Traffic Volumes | Mitigation measures are provided in the CTMP & CEMP as part of the proposal. | None |

The operational phase mitigation measures are included in the proposed VMP, and are part of the proposal assessed in this Traffic and Transport chapter. A summary of the proposed operational phase mitigation measures and monitoring are provided in Table 6-32.

**Table 6.32 Summary of Operational Phase Mitigation and Monitoring**

| Likely Significant Effect | Mitigation | Monitoring |
|---|---|---|
| Operational Phase Generated Traffic Volumes | Mitigation measures are provided in the VMP as part of the proposal. | None |

Total operational staff numbers will be up to 20 staff and significantly less than the 75 employees threshold identified by the Clare County Development Plan 2023-2029 for a **Mobility Management Plan**.

This EIAR Traffic and Transport Chapter is a **Traffic and Transport Assessment** of the proposed development, in accordance with the TII TTA Guidelines.

## 6.16 References

References are provided in the foregoing section 6.4 of this chapter.

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 7
# MATERIAL ASSETS: BUILT SERVICES & WASTE

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


7 Material Assets: Built Services & Waste Management ..... 7-4
7.1 Introduction ..... 7-4
7.2 Expertise & Qualifications ..... 7-4
7.2.1 Legislation ..... 7-5
7.3 Proposed Development ..... 7-5
7.3.1 Inis Cealtra Island ..... 7-5
7.3.2 Mainland – Mountshannon ..... 7-6
7.3.3 Schedule of Construction Works ..... 7-6
7.3.4 Aspects Relevant to this Assessment ..... 7-9
**7.4 Methodology** ..... 7-9
**7.4.1 Desktop Study** ..... 7-10
**7.4.2 Relevant Legislation & Guidance** ..... 7-10
**7.4.3 Sources of Information** ..... 7-11
**7.4.4 Scope of Assessment** ..... 7-12
7.4.5 Scoped out from Further Assessment ..... 7-13
**7.4.6 Consultation** ..... 7-13
7.5 Difficulties Encountered ..... 7-13
**7.6 Baseline Environment** ..... 7-13
7.6.1 Surface Water Drainage ..... 7-13
7.6.2 Wastewater Drainage ..... 7-14
7.6.3 Water Supply ..... 7-14
7.6.4 Electrical Supply ..... 7-15
7.6.5 Gas Supply ..... 7-16
7.6.6 Telecommunications ..... 7-19
7.6.7 Waste ..... 7-20
7.7 Proposed Development ..... 7-21
7.7.1 Surface Water Drainage ..... 7-21
7.7.2 Wastewater Drainage ..... 7-23
7.7.3 Water Supply ..... 7-24
7.7.4 Electrical Supply ..... 7-24
7.7.5 Gas Supply ..... 7-25
7.7.6 Telecommunications ..... 7-25
7.7.7 Waste ..... 7-25
**7.8 The 'Do Nothing' Scenario** ..... 7-28
**7.9 Potential Significant Effects** ..... 7-28
**7.9.1 Demolition Phase** ..... 7-28

**7.9.2 Construction Phase** ..... 7-28
**7.9.3 Operational Phase** ..... 7-36
7.9.4 Cumulative Effects ..... 7-41
**7.9.5 Summary** ..... 7-47
**7.10 Mitigation and Monitoring Measures** ..... 7-48
**7.10.1 Incorporated Design Mitigation** ..... 7-48
**7.10.2 Mitigation Measures for Surface Water Drainage** ..... 7-48
**7.10.3 Mitigation Measures for Wastewater/Water Supply** ..... 7-48
7.10.4 Mitigation Measures for Electricity ..... 7-49
7.10.5 Mitigation Measures for Telecommunications ..... 7-49
7.10.6 Mitigation Measures for Waste Management ..... 7-50
**7.11 Residual Impact Assessment** ..... 7-50
7.11.1 Demolition and Construction Phase ..... 7-50
**7.11.2 Operational Phase** ..... 7-50
**7.11.3 Summary of Post-mitigation Effects** ..... 7-50
**7.11.4 Cumulative Residual Effects** ..... 7-52
**7.12 Risk of Major Accidents or Disasters** ..... 7-52
**7.13 Worst Case Scenario** ..... 7-52
**7.14 Interactions** ..... 7-52
**7.15 Monitoring Measures** ..... 7-52
**7.16 Summary of Mitigation and Monitoring** ..... 7-54
7.17 Conclusion ..... 7-56
7.18 References and Sources ..... 7-57

# Table of Figures

Figure 7-1: Aerial image of proposed site ..... 7-6
Figure 7-2: Phasing site plans for the different elements of the proposed development (not to scale) [Adapted from McCullough Mulvin Architects drawings] ..... 7-9
Figure 7-3: Uisce Éireann utility map ..... 7-14
Figure 7-4 Electrical Supply Infrastructure in Mountshannon (Source: ESB Networks) ..... 7-16
Figure 7-5 Existing Gas Infrastructure in Mountshannon Harbour (Source: Gas Networks Ireland) 7-17
**Figure 7-6: Existing Gas Infrastructure in Mountshannon – Village Car Park Site (Source: Gas Networks Ireland)** ..... 7-18
**Figure 7-7: Existing Gas Infrastructure at Inis Cealtra (Source: Gas Networks Ireland)** ..... 7-19
Figure 7-8: Comreg Map (Source Commission for Communications Regulation Site Viewer) ..... 7-20
Figure 7-9 Example Dry Toilet Arrangement ..... 7-24
Figure 7-10 Existing Visitor Shelter to be Demolished ..... 7-27

# Table of Tables

Table 7.1 Material Assets and Topics to be included ..... 7-12
Table 7.2 Sample Authorised Waste Facilities ..... 7-20
Table 7.3 Construction Phase: Surface Water Drainage Works Effects on Existing Surface Water Drainage Infrastructure ..... 7-29
Table 7.4 Construction Phase: Wastewater Drainage Works Effects on Receiving Wastewater Drainage Network ..... 7-30
Table 7.5 Construction Phase: Wastewater Drainage Works Effects on Hydrology ..... 7-30
Table 7.6 Construction Phase: Water Supply Works Effects on Receiving Water Supply Network ..... 7-32
Table 7.7 Construction Phase: Electricity Works Effects on Existing Power Supply ..... 7-33
Table 7.8 Construction Phase: Telecommunication Work Effects on Telecommunication Infrastructure ..... 7-34
Table 7.9 Construction Phase: Waste Management Issues Effects on Environment ..... 7-35
Table 7.10 Operational Phase: Surface Water Drainage Operational Effects on Existing Network ..... 7-36
Table 7.11 Operational Phase: Wastewater Drainage Operational Effects on Existing Network ..... 7-37
Table 7.12 Operational Phase: Water Supply Operational Effects on Existing Network ..... 7-37
Table 7.13 Operational Phase: Electrical Usage Effects on Existing Network ..... 7-38
Table 7.14 Operational Phase: Telecoms Usage Effects on Existing Network ..... 7-39
Table 7.15 Operational Phase: Waste Management Operational Effects on Environment ..... 7-39
Table 7.16 Planned and permitted developments in proximity to the proposed development ..... 7-41
Table 7.17 Summary of Demolition & Construction Phase Likely Significant Effects in the absence of mitigation ..... 7-47
Table 7.18 Summary of Operational Phase Likely Significant Effects in the absence of mitigation ..... 7-47
Table 7.19 Summary of Demolition & Construction Phase Effects Post Mitigation ..... 7-51
Table 7.20 Summary of Operational Phase Effects Post Mitigation ..... 7-51
Table 7.21 Summary of Demolition and Construction Stage Monitoring Measure ..... 7-53
Table 7.22 Summary of Demolition & Construction Phase Mitigation and Monitoring ..... 7-54
Table 7.23 Summary of Operational Phase Mitigation and Monitoring ..... 7-56

# 7 Material Assets: Built Services & Waste Management

## 7.1 Introduction

This chapter of the EIAR considers the potential effects on material assets arising from the Proposed Development. A full description of the Proposed Development is provided in **Chapter 2 'Development Description'** of this Environmental Impact Assessment Report (EIAR).

The Environmental Protection Agency's (EPA) 'Guidelines on the information to be contained in an Environmental Impact Assessment Report' (EPA, 2022) describes material assets to be taken to mean 'built services' (i.e. built services networks including electricity, telecommunications, gas, water supply infrastructure and sewerage), and 'waste management'. These are all considered within this chapter, excluding traffic and transportation which is addressed separately in **Chapter 6** of this EIAR.

The nature and probability of effects on material assets arising from the proposed development has been assessed. The assessment comprises:

- A review of the existing receiving environment;
- Prediction and characterisation of likely impacts and associated effects;
- Evaluation of effects significance; and
- Consideration of mitigation measures, where appropriate.

## 7.2 Expertise & Qualifications

The assessment was completed by Aileen O'Connor of Malachy Walsh and Partners (MWP) and reviewed by Caitríona Fox (MWP). Aileen O'Connor (MWP), BSc (Hons), PGDip, has over 13 years' experience in the environmental field both in industry and consultancy work. Aileen is a Senior Environmental Consultant and holds a BSc (Hons) in Environmental Science and PGDip in Energy Management. Aileen is an experienced and competent environmental professional with a background in contaminated land assessment, licence compliance and waste management. Aileen has prepared and peer reviewed chapters of EIARs and has coordinated and delivered many environmental assessment reports and consent applications for transmission and power generation projects including the preparation of Resource Waste Management Plans (RWMP)s and contributed to Material Assets Impact Assessments.

This assessment has been reviewed by Caitríona Fox, BA MSc. Caitríona has over twenty years' experience in Environmental Impact Assessment and has worked on Material Asset EIAR Chapters for a range of developments including wind energy developments, marine developments, and large scale industrial developments.

### 7.2.1 Legislation

This chapter has been prepared in accordance with the Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU.

In preparing this EIAR Chapter, MWP have taken cognisance of the Clare County Development Plan 2023 – 2029. Of particular relevance to this assessment in Volume 3c Killaloe Municipal District contained in the Mountshannon section, the following objectives are stated:

- To encourage developments that will provide services for both visitors to the area and the local population in order to generate year-round activity and employment in the area;
- To work with relevant stakeholders to support the implementation of the Visitor Management and Sustainable Tourism Development Plan for Inis Cealtra (Holy Island), including the development of a visitor centre in the village (and associated facilities);
- To consolidate the existing village, support the tourism industry in the area and encourage the development and enhancement of a range of amenities and services for both permanent residents in the village and surrounding hinterland as well as visitors to the area.

## 7.3 Proposed Development

A detailed description of the proposed development is contained within **Chapter 2 'Development Description'** of this EIAR and the Planning Statement that accompanies the application.

The Inis Cealtra Visitor Experience (see **Figure 7-1**) is to be developed on Inis Cealtra (Holy Island) and on the mainland, in two principal locations within Mountshannon Village and comprises of four elements/locations outlined as follows:

• Developing of Inis Cealtra with upgraded landing, paths, and pods;

• Village Car Park located north of Aistear Park;

• Construction of a Visitor Centre on the grounds of the Rectory;

• Reconfiguration of the Harbour Car Park.

### 7.3.1 Inis Cealtra Island

- Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island.
- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp.
- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.
- Provision of three staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

### 7.3.2 Mainland – Mountshannon

- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, together with coach parking and bicycle parking facilities.
- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building incorporating a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.
- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.

**Figure 7-1: Aerial image of proposed site**

### 7.3.3 Schedule of Construction Works

The typical construction works will be completed in phases as outlined below. This is illustrated in MCM's Phasing Site Plan (INC2-P-003).

• Phase 1 (Inis Cealtra & Village Car park) with completion aimed for Q1 of 2028.

• Phase 2 (Harbour Car Park & Visitor Centre) with a completion date aimed for Q3 2042 with peak construction activity envisaged to occur in 2041 as works would be envisaged to overlap between the Visitor Centre and the Harbour Car Park.

**PHASE 1**

New Village Car Park at Main Street

- Pre-commencement activities including site investigation work and pre-construction surveys.
- Pre-construction activities.
- Site clearance works.
- Construction of temporary site construction compound.
- Construction of new public car park on a site to the north of Main Street at the northern side of Mountshannon Village and all associated ancillary site works.
- Complete site works, tidy up site, landscaping, restoration.
- Demobilisation of site compound facilities.

Inis Cealtra

- Pre-commencement activities including site investigation work and pre-construction surveys.
- Pre-construction activities including demolition of one existing concrete structure on the island.
- Site clearance works.
- Construction of temporary site construction compound.
- Construction of new floating access jetty, canoe launch jetty and walkway at northwest of island at location of existing mooring point.
- Construction of 3 no. new staff and public welfare facility "pods" on the island.
- Construction of new pedestrian paths on the island.
- Complete site works, tidy up site, landscaping, restoration.
- Demobilisation of site compound facilities.

**PHASE 2**

Mountshannon Harbour Car Park Reconfiguration

- Pre-commencement activities including site investigation work and pre-construction surveys.
- Pre-construction activities.

- Site clearance works.
- Construction of temporary site construction compound.
- Reconfiguration of existing Mountshannon Harbour car park, and all associated ancillary site works.
- Complete site works, tidy up site, landscaping, restoration.
- Demobilise site compound facilities.

Visitor Centre

- Pre-commencement activities including site investigation work and pre-construction surveys.
- Site preparation and pre-construction activities.
- Environmental measures.
- Construction of temporary site construction compound.
- Construction traffic routes.
- Site construction drainage system.
- Construction of proposed visitor centre at the southern end of the Old Rectory site.
- Complete site works, tidy up site, landscaping, restoration.
- Demobilisation of site compound facilities.

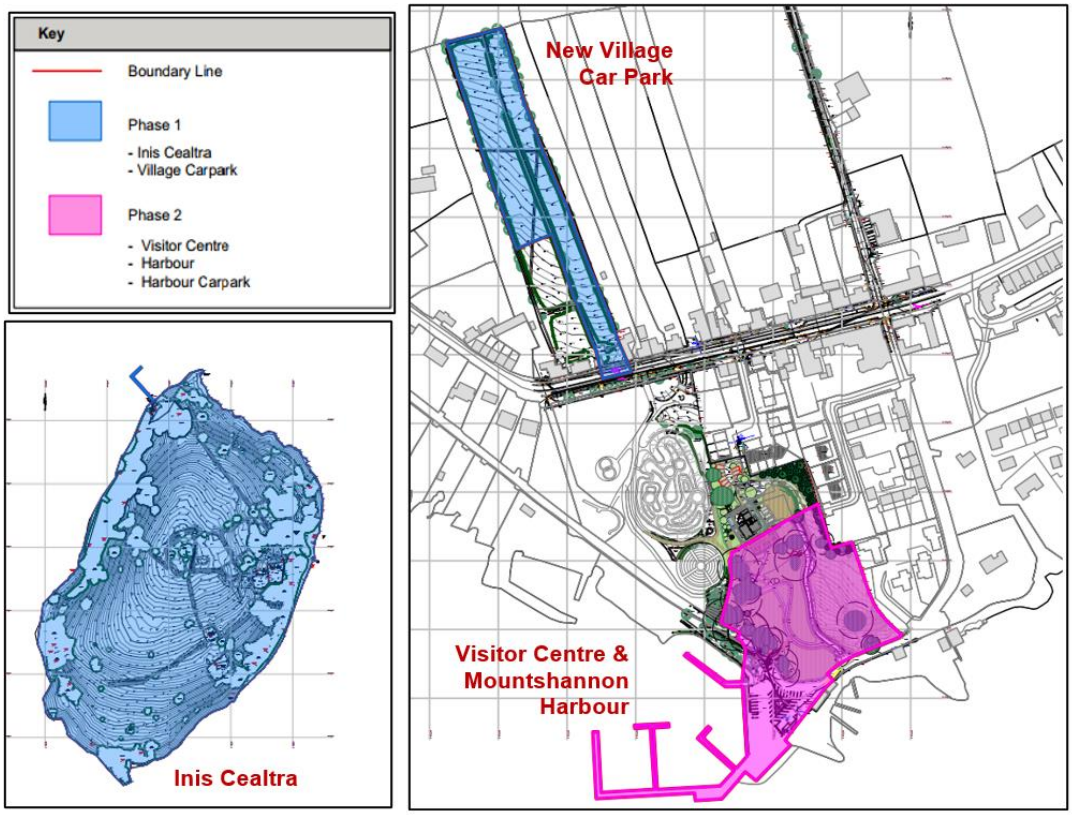



**Figure 7-2: Phasing site plans for the different elements of the proposed development (not to scale) [Adapted from McCullough Mulvin Architects drawings]**

### 7.3.4 Aspects Relevant to this Assessment

The following aspects of the proposed development are relevant to this chapter:

- Surface water drainage;
- Wastewater drainage;
- Water supply;
- Electrical and Gas supply;
- Telecommunications, and
- Waste.

## 7.4 Methodology

The methodology of the assessment comprises:

- Identifying baseline conditions of the site and its environs.
- Identifying the sensitivity of receptors that had potential to be affected by changes in the baseline conditions.
- Predicting the magnitude of likely changes to the baseline receiving environment.
- Assessing the significance of effect taking into account sensitivity of receptors and magnitude of effect.

- Identifying and assessing appropriate mitigation measures, including alternatives.
- Assessing the significance of residual effects, taking account of any mitigation measures.

### 7.4.1 Desktop Study

The methodology used for this study included desk-based research of published information to assemble information on the local receiving environment. The desk study included the following activities:

- Review of Ordnance Survey Mapping and aerial photography to establish existing land use and settlement patterns within the study area.
- Review of local and regional development plans and planning policy in order to identify future development and identify any planning allocations within the study area, for example Clare County Development Plan (CDP) 2023-2029 and Inis Cealtra Strategic Environmental Assessment (SEA); and
- Review of Clare County Council's (CCC) Planning Register to identify relevant development proposals permitted and currently under consideration by the Council.
- Review of the following sources for information regarding existing utilities:
    - Gas networks Ireland Dial Before You Dig Maps (DBYD);
    - ESB Dial Before You Dig Maps (DBYD);
    - EIR eMaps open eir Civil Engineering Infrastructure Service;
    - Irish Water Utility Mapping.

Further information has been sourced from the Construction Environmental Management Plan (CEMP), Civil Utilities Planning Report, Inis Cealtra Visitor Experience Visitor Management Plan, as well as the Architectural Design Statement and Conservation Report and design drawings by McCullough Mulvin Architects.

### 7.4.2 Relevant Legislation & Guidance

The legislation, policy and guidance applicable to the assessment is as follows:

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Advice notes on current practice in the preparation of Environmental Impact Statements (Environmental Protection Agency (EPA), 2003);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018); and
- Environmental Impact Assessment of Projects, Guidance on the preparation of the Environmental Impact Assessment Report (EU,2017).

**National waste management regulations in Ireland include the following:**

- Circular Economy And Miscellaneous Provisions Act 2022;
- A Waste Action Plan for a Circular Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025 (Government of Ireland);
- Landfill Directive (2018/850) (EU, 2018a);
- The European Commission's 'Circular Economy Action Plan' (EC, 2020);
- The European Union Waste Framework Directive (2018/851) (EU, 2018b);
- Southern Region Waste Management Plan 2015-2021;
- The Waste Management (Collection Permit) (Amendment) (No. 2) Regulations 2023;
- European Union (Waste Licensing) (Amendment) Regulations 2019;
- Waste Management (Packaging) Regulations 2014 to 2022 (as amended);
- Waste Management (Planning) Regulations 1997 (as amended) (S.I No. 137/1997);
- Waste Management (Landfill Levy) (Amendment) Regulations 2023;
- Waste Management (Food Waste) Regulations 2009 – 2015 (as amended);
- Waste Management (Hazardous Waste) Regulations 1998 to 2000;
- Waste Management (Shipments of Waste) Regulations 2007 (as amended) (S.I. No. 419/2007);
- Waste Management Act 1996 (as amended) (Act No. 10/1996);
- Environmental Protection Agency Acts 1992 – 2011 (as amended);
- Protection of the Environment Act 2003 (as amended) (Act No 27/2003);
- Litter Pollution Acts 1997 to 2009 (as amended); and
- Planning and Development Act 2000 - 2023 (as amended) (Act No. 30/2000).

### 7.4.3 Sources of Information

Information for the assessment of potential impacts on the identified material assets was obtained by means of a desk-based review, and included the following sources:

- Gas Networks Ireland (GNI) Dial Before You Dig Maps (DBYD);
- ESB DBYD Maps;
- Open eir eMaps - open eir Civil Engineering Infrastructure Service;
- Eir – Fibre Broadband coverage checker;
- Commission for Communications Regulation (ComReg) Site Viewer;
- Uisce Éireann Utility Mapping;

- Waste Management Plan contained in the Construction Environmental Management Plan (CEMP) to this EIAR;
- Flood Risk Assessment Appendix to this EIAR;
- Civil Utilities Planning Report Appendix to this EIAR.

### 7.4.4 Scope of Assessment

The Environmental Protection Agency's (EPA) '*Guidelines on the information to be contained in an Environmental Impact Assessment Report*' (EPA, 2022) were consulted as part of preparation of this assessment. The EPA Guidelines describes material assets to be taken to mean 'built services' (i.e. utilities networks including electricity, telecommunications, gas, water supply and sewerage), 'waste management' and 'infrastructure' (e.g. roads and traffic). Traffic and transportation is addressed in **Chapter 6** of this EIAR.

**Table 7-1** outlines the issues which the EPA guidance documents suggest may be examined as part of the material assets impact assessment. The EPA SEA Process Draft Checklist (2013, as amended) defines material assets as the "critical infrastructure essential for the functioning of society such as: electricity generation and distribution, water supply, wastewater treatment, transportation, etc". In this context, any physical developments associated with the Proposed Development would be assessed in line with requirements of the Clare CDP 2023 -2029. The EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports identify topics typically of relevance to each environmental factor.

**Table 7.1 Material Assets and Topics to be included**

| Material Asset | Topics to be Covered |
|---|---|
| Built Services | Electricity<br>Telecommunications<br>Gas<br>Water Supply Infrastructure<br>Sewerage |
| Waste Management | Construction Waste<br>Operational Waste |
| Roads & Traffic | Construction Phase<br>Operational Phase<br>Unplanned Events (i.e. Accidents) |

Accordingly, the scope of this assessment is made with respect to these topic areas identified in **Table 7-1** and considers the effects of the construction, and operation of the proposed development in terms of how the proposal could affect built services. The subject of Material Assets Roads and Traffic are addressed in **Chapter 6 – Traffic & Transport** of this EIAR.

#### 7.4.4.1 Assessment Criteria

Determination of the significance of an effect will be made in accordance with the terminology outlined in the Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA 2022) as outlined in **Chapter 1 Introduction**.

### 7.4.5 Scoped out from Further Assessment

All built services (electricity, telecommunications, gas, water supply, wastewater infrastructure and waste management) within the proposed development area and surrounds were considered during the assessment. The study area includes the area of the proposed development as well as built services that adjoin the boundary of the proposed development. This assessment does not include the subject of Material Assets: Roads & Traffic as this is addressed in a separate chapter: **Chapter 6 – Traffic & Transport** of this EIAR.

### 7.4.6 Consultation

Uisce Éireann have been engaged as part of the pre consultation process. A Confirmation of Feasibility letter was sent dated 12th September 2024 to confirm a review of the pre-connection enquiry has been completed by Uisce Éireann and advised there is capacity for both a water and wastewater connection for the proposed development.

Telecommunication providers BT Ireland, eNet and Virgin Media were also contacted to request information on telecommunications infrastructure in the vicinity of the proposed development site.

## 7.5 Difficulties Encountered

The assessment is based on the project details that were made available at the time of writing.

## 7.6 Baseline Environment

The following section discusses the material assets outlined above in the existing environment relevant to the Inis Cealtra Visitor Experience including both Mountshannon on the mainland and the island of Inis Cealtra.

### 7.6.1 Surface Water Drainage

#### 7.6.1.1 Mainland - Mountshannon

A review of the existing surface water network in the area, based on CCC record drawings, and site topography was undertaken to assess the baseline environment.

There exists a 225mm diameter storm drain within the Rectory site. However, this serves the Mountshannon Court estate to the north of the proposed development. The Rectory site does not avail of this drain. There is no existing dedicated storm drain serving the Rectory site itself. The stormwater outlets, namely the rainwater downpipes, discharge into a combined foul/storm system that connects to the Uisce Éireann network. No surface water infrastructure exists in the proposed Village car parks area and there is a hydraulic regime in the Harbour Car Park.

#### 7.6.1.2 Inis Cealtra

There is currently no surface water drainage infrastructure available on the island.

### 7.6.2 Wastewater Drainage

#### 7.6.2.1 Mainland - Mountshannon

The site is currently served by a wastewater/foul system that was installed as part of the redevelopment of the Old Rectory building which includes a treatment unit. This treatment unit reduces the biological load from the effluent prior to discharging into the public sewer on Harbour Road that is connected to Mountshannon WWTP. The wastewater infrastructure consists of a single 150mm outlet heading westwards towards Harbour Road and is the only foul drainage outlet on the Mountshannon site. There is no pre-existing wastewater infrastructure located in either the proposed Village or Harbour car park areas.

#### 7.6.2.2 Inis Cealtra

There is no wastewater drainage or treatment infrastructure on Inis Cealtra.

### 7.6.3 Water Supply

#### 7.6.3.1 Mainland - Mountshannon

Mountshannon village is served by a public water supply which has sufficient capacity to cater for the target population. There is an existing 150mm diameter water pipe to the south of the Visitor Centre site on Harbour Road, see **Figure 7-3**. Currently there is no water supply to the Village car park or the Harbour car park areas.

**Figure 7-3: Uisce Éireann utility map**

#### 7.6.3.2 Inis Cealtra

There is no drinking water supply on Inis Cealtra; it is understood when cattle grazed the island they accessed freshwater from the shore. It is understood that a bottled water supply is used on site by Office of Public Works (OPW) staff currently.

### 7.6.4 Electrical Supply

#### 7.6.4.1 Mainland - Mountshannon

There is an existing ESB Networks overhead line running down the Eastern side of the Rectory site. There is no existing ESB Networks infrastructure a located in either the proposed Village or Harbour car park areas. **Figure 7-4** shows the ESB infrastructure at the Proposed Development site, provided by ESB networks.

The following ESB networks infrastructure are present:

- 38 kV & higher voltage overhead lines;
- 10KV/20KV medium voltage overhead lines;
- 400V/230V low voltage overhead lines;
- 38KV and higher underground cable route; and
- 10KV/20/KV/400V/230V underground cable route.

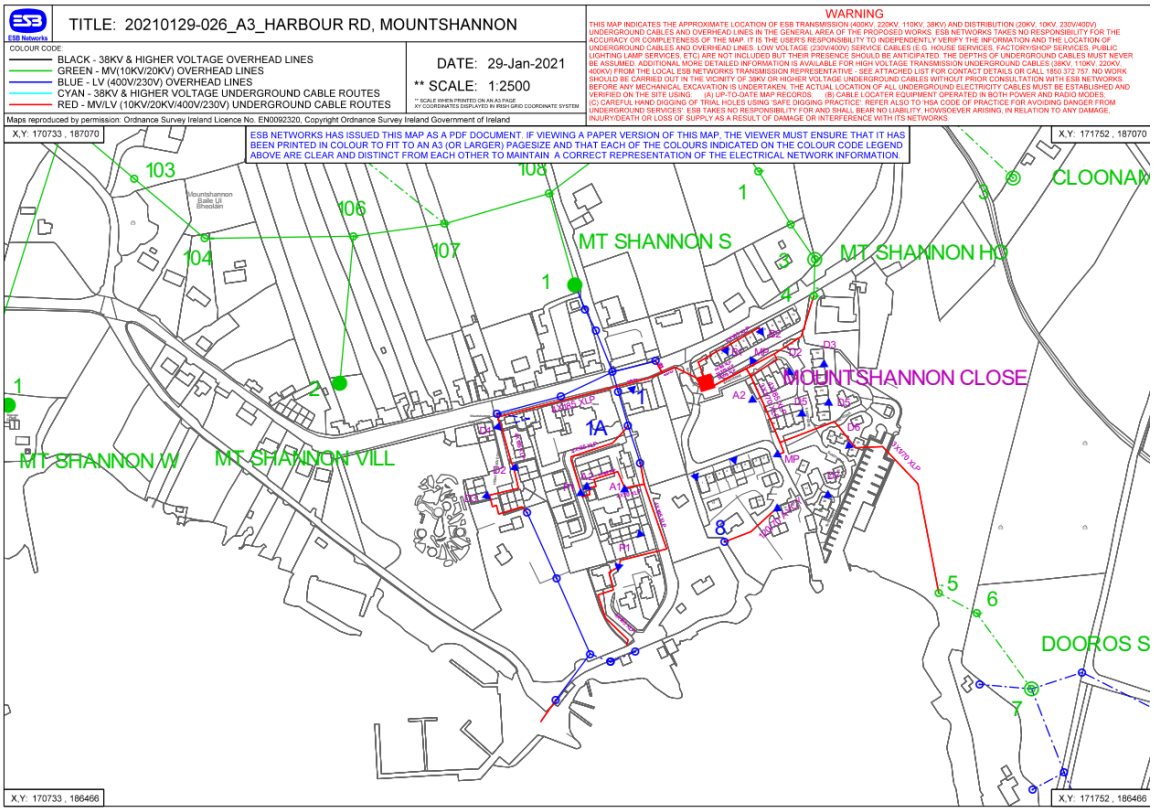



**Figure 7-4 Electrical Supply Infrastructure in Mountshannon (Source: ESB Networks)**

#### 7.6.4.2 Inis Cealtra

There is no existing ESB Networks infrastructure on Inis Cealtra.

### 7.6.5 Gas Supply

#### 7.6.5.1 Mainland - Mountshannon

Based on information from GNI, there is no existing gas infrastructure in the Mountshannon area (**Figures 7-5** and **Figure 7-6**).

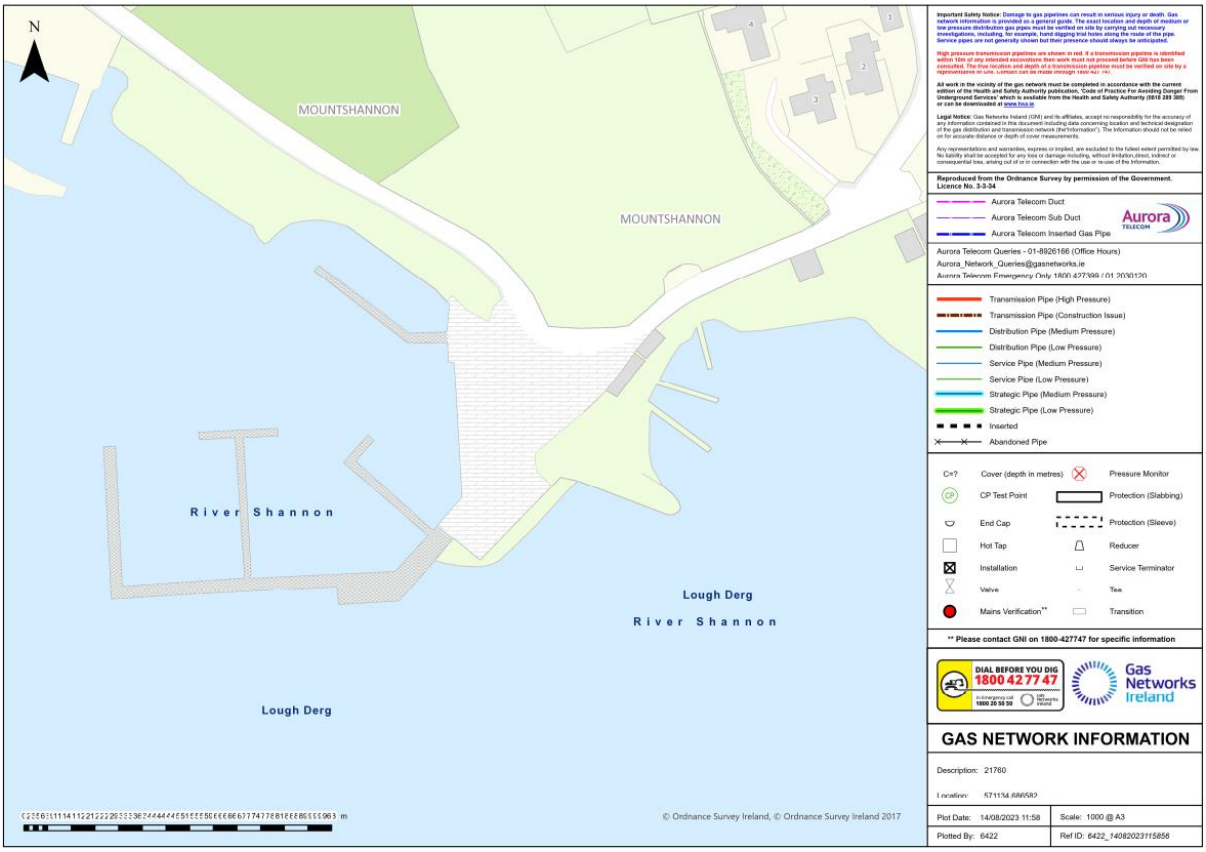



**Figure 7-5 Existing Gas Infrastructure in Mountshannon Harbour (Source: Gas Networks Ireland)**

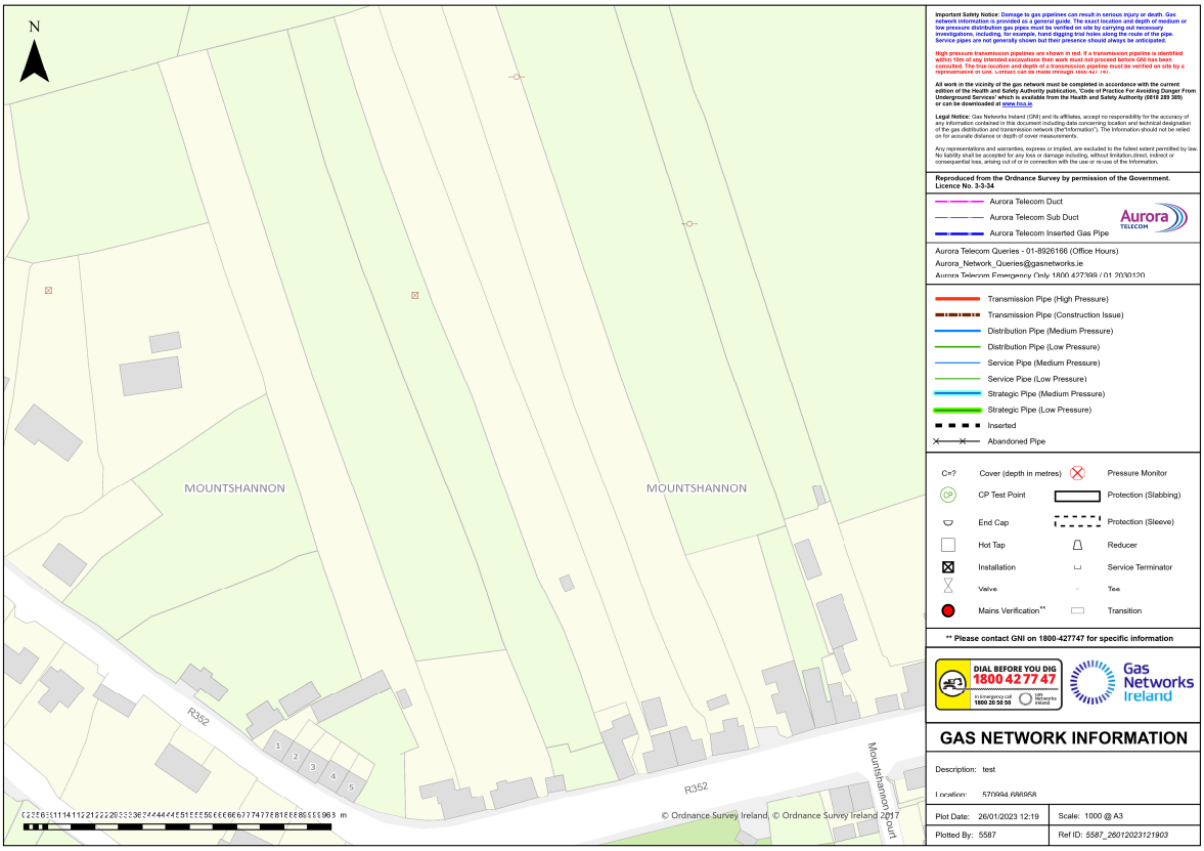



**Figure 7-6: Existing Gas Infrastructure in Mountshannon – Village Car Park Site (Source: Gas Networks Ireland)**

### 7.6.5.2 Inis Cealtra

Based on information from GNI, there is no existing gas infrastructure on Inis Cealtra (see **Figure 7-7**). It is understood that bottled gas is currently used by OPW staff on Inis Cealtra.

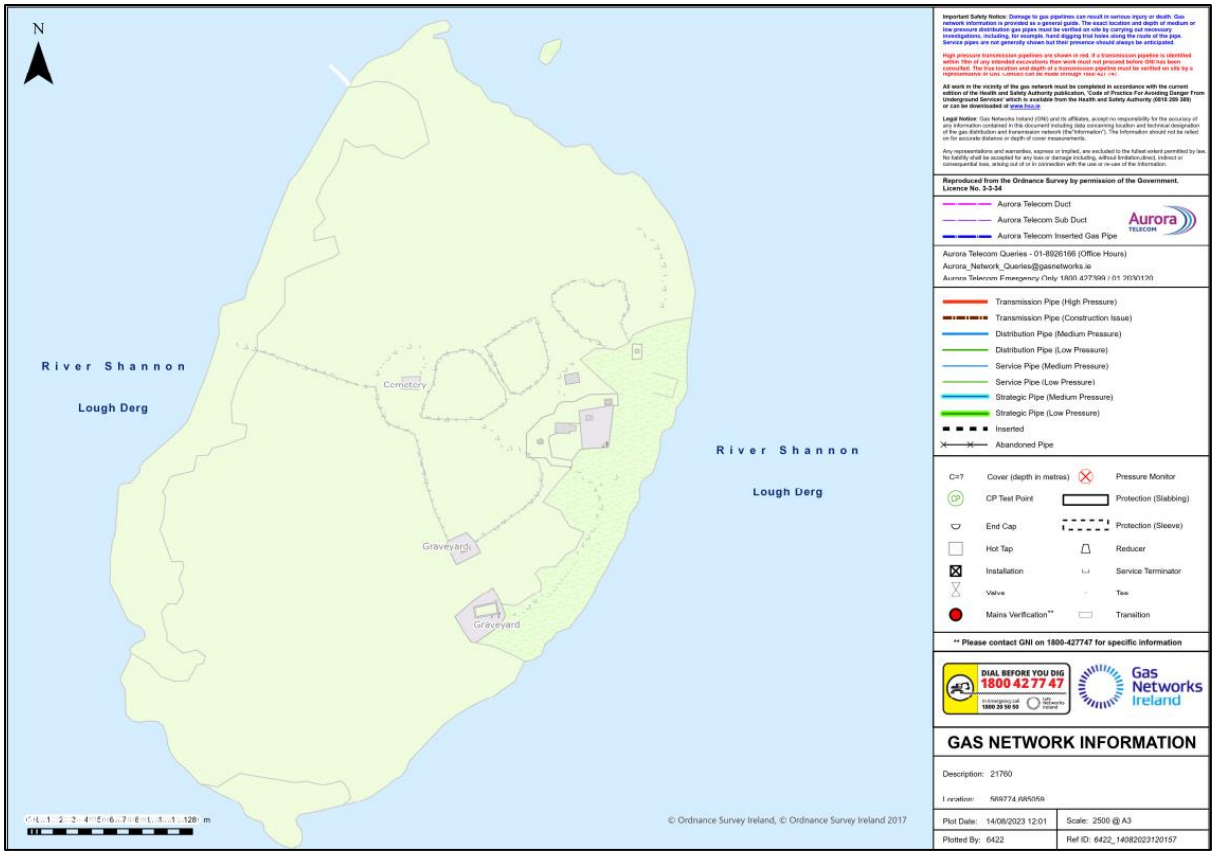



**Figure 7-7: Existing Gas Infrastructure at Inis Cealtra (Source: Gas Networks Ireland)**

## 7.6.6 Telecommunications

### 7.6.6.1 Mainland - Mountshannon

Mapping of the existing telecoms infrastructure has been sourced from open Eir maps which enables users to view and request maps of telecoms infrastructure. BT Ireland, eNet and Virgin Media were also contacted to request information on telecommunications infrastructure in the vicinity of the proposed development site and responded to confirm they do not have any record of underground services near the proposed development in Mountshannon. There is an existing Eir network which enters the Rectory site from Mountshannon Court to the north.

The Commission for Communications Regulation (ComReg) site map in **Figure 7-8** shows no masts in the surrounding areas of the proposed development. The nearest telecommunication mast is located approximately 10km north of the proposed development site and provides communication links with Three Telecom service providers including Vodafone, Eircom and Three.

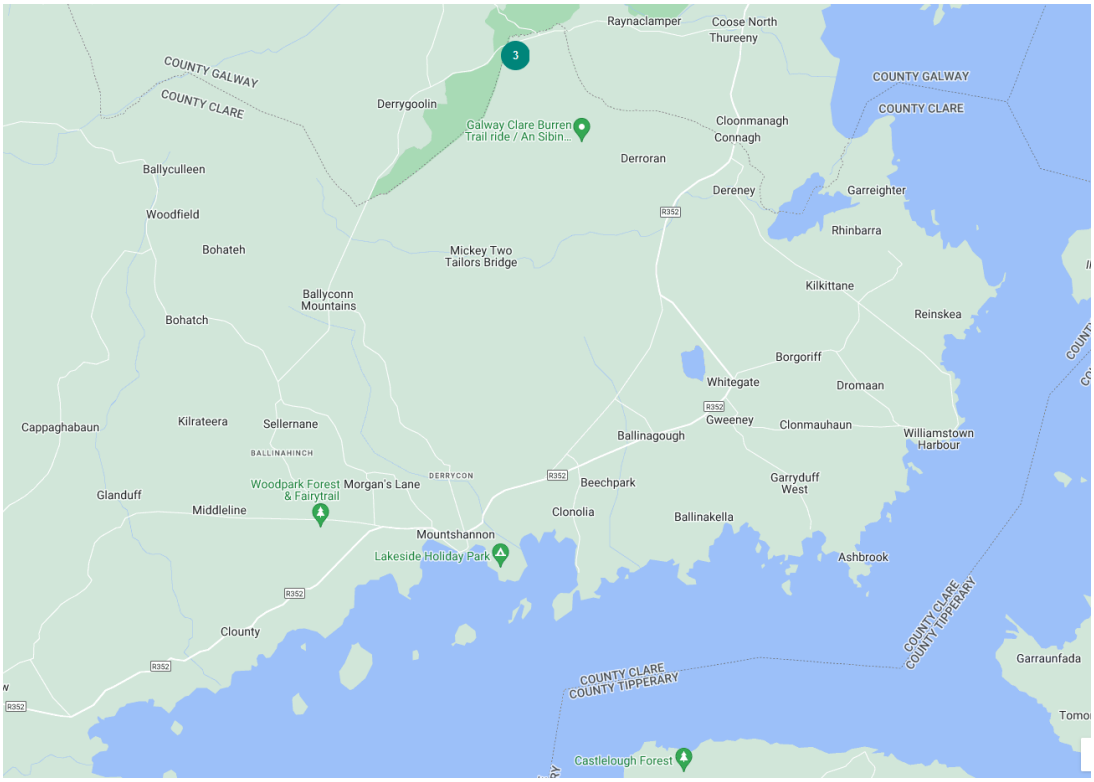



**Figure 7-8: Comreg Map (Source Commission for Communications Regulation Site Viewer)**

#### 7.6.6.2 Inis Cealtra

Based on information from open Eir, BT Ireland and Enet there is no existing telecommunications infrastructure on Inis Cealtra.

### 7.6.7 Waste

There are several waste collection, treatment, recovery, and disposal facilities available in Co. Clare to efficiently manage waste in the surrounding area. Authorised waste facilities in the study area are listed in **Table 7-2.**

**Table 7.2 Sample Authorised Waste Facilities**

| EWC Code | Waste Type/Stream | Facility | Location |
|---|---|---|---|
| 05 01 05* | Oil Spills | Clare Drains Environmental Ltd | Unit 10 Abbey Business Park<br>Quin Road<br>Ennis Co. Clare |
| | | New Gen Transport Ltd | Unit 2 Portdrine Business Park<br>Cratloe Co Clare |
| 07 02 13 | Waste plastic | Clean Ireland Recycling | Ballinagun<br>Cree Kilrush Co. Clare |
| | | Clare Drains Environmental Ltd | Unit 10 Abbey Business Park<br>Quin Road |

| EWC Code | Waste Type/Stream | Facility | Location |
|---|---|---|---|
| | | | Ennis Co. Clare |
| 15 01 01 | Paper and cardboard packaging | Clare Waste & Recycling Company Ltd. | Raheen Road Tuamgraney Scarriff Co. Clare |
| | | Clean Ireland Recycling | Ballinagun Cree Kilrush Co. Clare |
| 15 01 02 | Plastic packaging | Clare Waste & Recycling Company Ltd. | Raheen Road Tuamgraney Scarriff Co. Clare |
| | | Clean Ireland Recycling | Ballinagun Cree Kilrush Co. Clare |
| 17 09 04 | Mixed construction and demolition waste | Clare Waste & Recycling Company Ltd. | Raheen Road Tuamgraney Scarriff Co. Clare |
| | | Clean Ireland Recycling | Ballinagun Cree Kilrush Co. Clare |
| 20 03 01 | Mixed municipal waste | Clare Waste & Recycling Company Ltd. | Raheen Road Tuamgraney Scarriff Co. Clare |
| 20 03 07 | Bulky waste | Clare Waste & Recycling Company Ltd. | Raheen Road Tuamgraney Scarriff Co. Clare |

*Hazardous waste

#### 7.6.7.1 Mainland - Mountshannon

Currently there are no waste disposal facilities available at the Rectory site. There are also no waste disposal facilities available at the Village or Harbour car park areas.

#### 7.6.7.2 Inis Cealtra

It is understood that any waste generated on the island is removed on a daily basis by the individual such as the OPW or individuals when visiting. There are no waste disposal facilities on the island.

## 7.7 Proposed Development

### 7.7.1 Surface Water Drainage

#### 7.7.1.1 Mainland - Mountshannon

The storm water management system has been designed for the Mountshannon locations using the following criteria:

- Pipes are designed to reach self-cleansing velocity in the one in 2-year event
- Sewers not surcharging in the 2-year event

- Sewers not flooding in the 100-year event with 20% Climate Change
- Class 1 Bypass Petrol Interceptors
- Sub-surface attenuation systems designed for storage of a 1 in 100-year storm plus 20% Climate Change factor
- The sites/elements are designed to attenuate the greenfield runoff rate for the 1-year, 30-year and 100-year return periods respectively. An emergency overflow will also be provided in the event of a blockage occurring at the hydrobrake.

The proposed Village car park storm drainage management regime will be served by both hard and soft engineering solutions. It is proposed to integrate a traditional stormwater sewer system with a combination of SuDS measures to manage the stormwater runoff generated by the proposed site. The site has been split into multiple sub-catchments within the main catchment of the overall car park development. Surface water runoff from these sub-catchments will be captured via a combination of stormwater gullies and filter drains. The SuDS features such as filter drains have been designed and integrated within the car park development while taking cognisance of the four main pillars of SuDs which are water quantity, water quality, amenity and biodiversity.

The storm water management system will tie into a combined public sewer that is located on the R352 which runs east-west at the entrance to the Village Car Park. Discharge from the site will be limited to Greenfield runoff rates.

It is proposed that reinforced Grasscrete paving will be utilised in the overflow car parking section of the car park. This system allows for infiltration of the rainfall in this area into the ground. Any overflow that would occur would be catered for by the proposed access road to car park area which has been sloped towards the east of the site where a dry swale has been positioned to allow surface runoff to infiltrate into the ground naturally.

The site drainage will consist of the installation of suitable protection (e.g., silt curtain) around the site boundaries to control and treat any run-off during the construction works. Best practice and practical experience on other similar projects suggest that in addition to the above outlined drainage plans, there are additional site-based decisions and plans that can only be made in the field through interaction between the Construction Manager, the Design Engineer and the Environmental staff. In relation to decisions that are made on site, it is important to stress that these will be implemented in line with the associated drainage control measures recommended. When dealing with concrete pouring during the construction covers will be made available for freshly placed concrete to avoid the surface washing away into storm drains during heavy rain. Details of the storm drainage proposals are included in the Civil Utilities Planning Report showing proposed site services in Appendix C and the design calculation report is present in Appendix D.

There is an existing storm water system on the visitor centre site attenuating the discharge from the Old Rectory. The proposed system is to attenuate flows that are being generated from the impermeable surfaces within the Visitor Centre development. This will utilise a separate attenuation system with a hydrobrake downstream restricting flows to the greenfield runoff rate. The proposed drainage network will incorporate sumps within manholes for silt removal and a bypass petrol interceptor prior to discharge.

#### 7.7.1.2 Inis Cealtra

Stormwater generated on the island will be managed at its source by dispersing the runoff through the natural vegetation of Inis Cealtra and the use of permeable materials to maximise the use of SUDS measures where reasonably practicable. There are no plans to implement an underground sewer system.

### 7.7.2 Wastewater Drainage

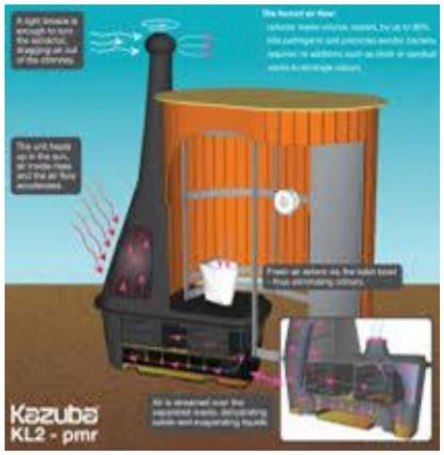
#### 7.7.2.1 Mainland - Mountshannon

During the construction phase of the visitor centre, the maximum wastewater production is estimated to be the same as the maximum water consumption of 400 litres per day. The project will utilise portaloos which would be serviced regularly or the use of a temporary wastewater connection to the adjacent foul sewer with the appropriate permission from Uisce Éireann.

The visitor centre site is currently served by a wastewater/foul system that was installed as part of the redevelopment of the Old Rectory building which includes a treatment unit. This treatment unit reduces the biological load from the effluent prior to discharging into the public sewer on Harbour Road. For the operational phase, it is proposed that the foul water generated within the Visitor Centre will be treated by the existing on-site treatment unit prior to discharge by an existing connection to the foul sewer in Harbour Road. Uisce Éireann have confirmed that this connection is feasible. The Confirmation of Feasibility is shown in Appendix A and the proposed layout is shown in Appendix C of the **Civil Utilities Planning Report** of this EIAR.

#### 7.7.2.2 Inis Cealtra

A dry toilet system (see **Figure 7-9**) will be implemented to overcome the logistical challenges of removing solids and liquids. Deposited waste will be separated into liquid and solid form. This waste will then be stored in a holding container as part of the dry toilet set-up. A contractor will be appointed to manage the maintenance of the foul system and waste removal from the island. The designated maintenance contractor will ensure that the waste is delivered to the appropriate Uisce Éireann treatment facility, where it will be processed in accordance with Uisce Éireann standards. Uisce Éireann has advised that the effluent collected will likely be taken by an authorised and licenced tankard wastewater haulier to Bunlicky Wastewater Treatment Plant (WWTP) in Limerick City.




Dry Toilet Schematic

Typical Dry Toilet Configuration

**Figure 7-9 Example Dry Toilet Arrangement**

### 7.7.3 Water Supply

#### 7.7.3.1 Mainland - Mountshannon

Potable water will be required for the construction employees. Potable water demand will differ greatly between the construction phases and when the project is finished. It is envisaged that the average potable water requirement will rise from an estimated maximum average of 400 litres depending on phasing per day during peak construction. A temporary connection will be sought from Uisce Éireann to supply the construction works demand.

A water connection will be performed on the existing water supply on Harbour Road at the gate and brought into the site. There will be a connection on this hydrant. Uisce Éireann has given a confirmation of feasibility and confirmed there is capacity at the Mountshannon Water Treatment Plant to supply the proposed development. The existing 150mm uPVC watermain on the local road serving this site can facilitate a new water connection. Water supply is not envisaged for the other elements of the proposed development at Mountshannon.

#### 7.7.3.2 Inis Cealtra

As there will be no water connection required during the construction or operational phase, bottled water will be used on the island, preferrable in re-usable drinking containers to reduce waste.

### 7.7.4 Electrical Supply

#### 7.7.4.1 Mainland - Mountshannon

There is a proposal for a new ESB substation to be installed on the site behind the Rectory building as part of the Rectory project on a separate planning application. It is envisioned the ESB supply to the new visitors centre will come from this substation. The proposed development will implement energy efficiency into the design with the implementation of LED lighting for the Visitor Centre, Harbour and

Village car parks. Electricity will be supplied to the proposed development via the ESB networks in accordance with ESB Networks relevant guidelines and requirements.

#### 7.7.4.2 Inis Cealtra

An electrical supply is not required for the proposed works on the island as there is no ESB infrastructure in place.

### 7.7.5 Gas Supply

#### 7.7.5.1 Mainland - Mountshannon

A gas supply is not applicable to the proposed works on the mainland.

#### 7.7.5.2 Inis Cealtra

A gas supply is not applicable to the proposed works on the island.

### 7.7.6 Telecommunications

#### 7.7.6.1 Mainland - Mountshannon

An existing Eir network is available in the Old Rectory building and a spare communications duct was installed from the Eir chamber in Mountshannon Court to the main entrance gate. It is proposed that a new duct will tee off from this existing duct to provide a broadband connection to the Visitor Centre. There are no connections to telecommunications proposed for the Harbour and Village car parks.

#### 7.7.6.2 Inis Cealtra

Not applicable for the proposed works as there is no telecommunication infrastructure available on the island.

### 7.7.7 Waste

#### 7.7.7.1 Mainland - Mountshannon

For the Visitor Centre area, approximately 1,600m$^3$ of topsoil will be excavated, carefully segregated and transported to an agreed temporary deposition point. This material would then be removed from the site with a minor amount may be kept on site in a temporary storage area for later use in landscaping.

Bulk excavation of approximately 6,200m$^3$ under the proposed building and font courtyard and 1000m$^3$ for the realigned access track and other external areas will then occur to the required sub formation levels using excavators and dumpers. This material may be temporarily stockpiled on the site prior to being removed from the site.

The Village car park location shall be cleared to the extent as shown in the relevant Planning Drawings. Site clearance will include clearing, grubbing and removing any required trees, hedgerows and any surface vegetation (topsoil/sub-soil/shrubs/etc) that will be stripped and collected using an excavator and dump truck. The mound/wall (245m in approximate length) present within the centre of the

Village car park site will be removed by construction plant with the waste generated being disposed of at an appropriately licenced facility. The existing masonry wall (approximately 13m) and gate at the southern boundary of the village car park will be removed by hand and machinery to allow for the construction of the car park. This material would be reused where reasonably practicable within the site with the remainder being sent to an appropriate waste facility. Refer to Demolition Site Plan – Mountshannon by MCM (INC2-D-003) for further information.

Topsoil stripping will be excavated to depths agreed upon and in conjunction with the site specifications and design drawings issued. This volume of approximately 3,200m$^3$ of material will be carefully segregated and transported to an agreed temporary deposition point from the Village car park. This material would then be removed from the site with a minor amount may be kept on site in a temporary storage area for later use in landscaping.

Bulk excavation of a volume of approximately 4200m$^3$ from the Village car park will then occur to the required sub-formation levels using excavators and dumpers. This material may be temporarily stockpiled on the site prior to being removed from the site.

All excavated material will be brought to a licence waste facility for final disposal. All potential waste shall be appropriately sampled and tested for waste assessment using the HazWaste OnlineTM Tool and Waste Acceptance Criteria (WAC) criteria. The assessment of potential soil waste would occur in situ, in advance of excavation during the initial site investigation and take account of the waste acceptance criteria for soil recovery facilities and/or waste landfills. All soil sampling, waste classification and reporting will be conducted by a suitably qualified person.

This waste classification assessment will form part of a Site Specific Soils Management Plan. Soil proposed to be re-used for landscape and fill purposes should be assessed in advance to determine the suitability for re-use with reference to the proposed site end-use.

A temporary construction compound will be constructed early in the project in order to provide site offices and accommodation for staff and for the delivery of materials. Any surface water management, bunding, waste management measures etc will also be put in place at the outset.

The main contractor working on site during the works will be responsible for the collection, control and disposal of all waste generated by the works. Construction phase waste may consist of hardcore, stone, concrete, steel reinforcement, ducting, shuttering timber, food waste from the canteen and unused oil, diesel and building materials. This waste will be collected at the end of the construction phase and taken off site to be reused, recycled, and disposed of in accordance with best practice procedures at an approved facility. Municipal waste from the on-site facilities will be collected on a regular basis by approved contractors and disposed of in an authorised facility in accordance with best practices. Plastic waste will be taken for recycling by an approved contractor(s) and disposed of or recycled at an approved facility.

All wastes arising during the occupation will be of domestic type and will be disposed of by the building and harbour operators with licensed waste operators (see **Table 7-2** for examples). Waste disposal facilities will be managed by the visitor centre operators for the Harbour car park and details are available in the Architectural Design Statement and Conservation Report and associated drawings.

### 7.7.7.2 Inis Cealtra

No excavation works are proposed to take place on Inis Cealtra island in connection with the new paths and construction of the pods.

To facilitate the new floating access jetty at Inis Cealtra Island, the lake bed ($2m^3$) will need to be excavated on the south end of the main breakwater jetty. The excavator will be positioned on a pontoon raft and will remove the material and place it on a skip on the pontoon raft to be removed off-site. A silt curtain will be placed around the excavation area when removing material.

Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island is proposed to facilitate the development. The existing shelter (see **Figure 7-10**) will be dismantled from the top down using hand tools to break the existing concrete and timber into sections that can be manually handled. Dismantling will start with the removal of the roof, followed by the removal of the window and door, taking down of the walls, breaking out of the floor slab and removal of foundations (if any). The material will be sorted into waste for disposal/ recycling and then removed off the island by boat where it will be disposed of by a licensed waste contractor.

**Figure 7-10 Existing Visitor Shelter to be Demolished**

Three new staff and public welfare facility 'pods' are proposed on the island to meet the minimum needs of staff and visitors by providing a weather shelter, WCs and a rest room for island staff with interconnecting timber walkways. All pod and walkway components will be assembled on the island to minimise the impact of their construction and are designed to be dismantled and removed if required, with little trace left on the landscape.

The new WC Pod proposed will contain 2 No. dry WCs and requires no foul drainage or water supply. Given the relative complexity of removing waste off the island but recognising the need for such facilities, WCs will be for 'emergency' use only with the aim of ensuring that their use and disposal are

appropriately managed. Sanitation gels will be used for hand hygiene as there is no public water supply available on the island.

A 'Leave no trace' policy will be in place by gathering any waste or rubbish that is generated and disposing of it appropriately on the mainland. No waste facilities are proposed to be installed on the island.

## 7.8 The 'Do Nothing' Scenario

This section considers the proposed development in the context of the likely impacts upon the receiving environment should the proposed development not take place.

In a 'Do Nothing' scenario, should the proposed development not take place, there would no additional demand or loading on the existing material assets.

## 7.9 Potential Significant Effects

### 7.9.1 Demolition Phase

There are no potential impacts/effects of the demolition phase on the material assets for the proposed development due to the scale of the work proposed once the appropriate construction method statements are prepared and implemented by the appointed contractor

### 7.9.2 Construction Phase

#### 7.9.2.1 Surface Water Drainage

The construction phase of the surface water infrastructure will involve the installation of stormwater gullies, attenuation tank, petrol interceptor and filter drains. Refer to MWP Drawing no. **21760 MWP 00 00 DR C 2120** for further details of the proposed surface water drainage network for the proposed Village car park. Refer to MWP Drawing no. **21760 MWP 00 00 DR C 2130** for further details of the proposed surface water drainage network for the proposed visitor centre.

The construction of below ground services within the development will require the excavation of trenches for the diverted wastewater sewer, diverted watermain and electricity supply. The excavation of the required trenches will disturb the existing ground and has potential to introduce suspended solids into run-off from the site.

The water pollution control measures outlined in the **CEMP** of this EIAR during construction will reduce the risk of contamination to existing surface water drainage systems within the site.

In the absence of mitigation, it is considered that surface water drainage works are **likely** to have a **negative, short-term, slight**, effect on existing surface water drainage systems, refer to **Table 7-3**.

**Table 7.3 Construction Phase: Surface Water Drainage Works Effects on Existing Surface Water Drainage Infrastructure**

| Construction Phase: Surface Water Drainage Works Effects on Existing Surface Water Drainage Infrastructure | | | | | | |
|---|---|---|---|---|---|---|
| | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
| Pre - Mitigation | Negative | Slight | Moderate | Short-term | Direct Reversible | Likely |
| Post- Mitigation (Residual effect) | Negative | Not significant | Moderate | Short-term | Direct Reversible | Likely |

**Mitigation Measures:**

The following mitigation measures must be applied:

- All mitigation measures outlined in the **CEMP** of this EIAR should also be implemented during the installation of wastewater infrastructure.
- Hydrocarbons or any liquids that could adversely affect the water supply network will be bunded.
- The appointed contractor(s) will survey all planned works areas for existing utilities. The appointed contractor will be required to review existing utility maps and to cat-scan the area prior to all works.

#### 7.9.2.2 Wastewater Drainage

The construction of the new wastewater infrastructure will involve trench excavation and installation of infrastructure such as pipes, valves, manhole chambers. The wastewater infrastructure construction phase will require connection to the existing wastewater network.

As discussed in **Section 7.7.2**, the proposed wastewater drainage infrastructure works involves connecting the proposed watermain network to the existing network foul sewer drainage network. Refer to MWP Drawing no. **21760 MWP 00 00 DR C 2130** for further details of the proposed foul sewer drainage network for the proposed visitor centre.

The proposed foul sewers within the new development will comply with Irish Water Code of Practice for Wastewater Infrastructure[1].

During the excavations for installation of wastewater infrastructure, the appointed contractor will be obliged to conduct the works in accordance with all relevant local authority and Uisce Éireann requirements as well as best practice measures outlined in the **CEMP** in relation to excavations. Appropriate construction method statements should be prepared and implemented by the appointed contractor. Effects are therefore unlikely to occur.

In the absence of mitigation, adverse impacts to the existing wastewater infrastructure could be caused during excavation work. This would cause issues in the wastewater networks ability to effectively collect and direct wastewater in the existing network for treatment. The impact would

[1] https://www.water.ie/docs/connections/faqs/Wastewater-Code-of-Practice.pdf

therefore be **likely** to have a **negative, brief/once to rarely, slight** effect on the local wastewater infrastructure, refer to **Table 7-4**.

**Table 7.4 Construction Phase: Wastewater Drainage Works Effects on Receiving Wastewater Drainage Network**

| Construction Phase: Wastewater Drainage Works Effects on Receiving Wastewater Drainage Network | | | | | | |
|---|---|---|---|---|---|---|
| | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
| Pre - Mitigation | Negative | Slight | Moderate | Brief/Once to Rarely | Direct Reversible | Likely |
| Post- Mitigation (Residual effect) | Negative | Not significant | Moderate | Brief/Once to Rarely | Direct Reversible | Likely |

There will be a requirement to connect the temporary construction compound to the existing foul network in the Village car park and Visitor centre. Potential adverse impacts include improper discharge of foul drainage from the temporary site compound. No waste water drainage exists on the island, therefore no impact expected.

As is the case with construction works for the proposed development wastewater infrastructure, the appointed contractor will be obliged to conduct the works for temporary connection to the existing foul network in accordance with all relevant local authority and Uisce Éireann requirements as well as best practice measures outlined in the **CEMP** in relation to excavations.

Untreated foul wastewater contains substantial polluting material which could have a significant effect on human health and the external environment if discharged to the receiving environment untreated and uncontrolled.

There are no existing watercourses on the proposed development. The river waterbody Kilrateera_Upper_010 (IE_SH_25K720870) is located approximately 0.5km to the east of the site proposed for the visitors centre and car park. The river waterbody Shannon (Lower)_040 (IE_SH_25A050100) is located approximately 0.4km and 0.5km to the west of the proposed visitors centre and car park respectively. There is no potential for impacts on the above mentioned rivers from Wastewater Drainage works. Any potential impact to the local watercourses are therefore considered **unlikely** and would be **short-term and not significant,** refer to **Table 7-5.**

**Table 7.5 Construction Phase: Wastewater Drainage Works Effects on Hydrology**

| Construction Phase: Wastewater Drainage Works Effects on Hydrology | | | | | | |
|---|---|---|---|---|---|---|
| | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
| Pre - Mitigation | Neutral | Not significant | Moderate | Short-term | Direct irreversible | Unlikely |
| Post- Mitigation (Residual effect) | Neutral | Imperceptible | Moderate | Short-term | Indirect Irreversible | Unlikely |

**Mitigation Measures:**

The following mitigation measures must be applied:

- Effluent generated on site from the contractors sanitary facilities will be discharge to the existing foul sewer network. Temporary discharge utilising the existing, or permitted sewerage networks will be in agreement with Uisce Éireann.
- All mitigation measures outlined in the **CEMP** of this EIAR should also be implemented during the installation of wastewater infrastructure.
- Hydrocarbons or any liquids that could adversely affect the water supply network will be bunded.

#### 7.9.2.3 Water Supply

The construction of the new water supply infrastructure for the visitors centre will involve trench excavation and installation of infrastructure such as pipes, valves, hydrants and manhole chambers.

The proposed watermain layout involves connecting to the existing network. Any such work will require a shutdown of water supply. The presence of valves within the wider vicinity of the water supply network will allow for shutoffs of water supply to be localised. Any localised shut down of water supply will ensure that downtime in supply will be brief and will occur once or rarely. Users will be notified prior to any shutdown of water supply and consultation and agreements with Uisce Éireann will also be required.

Excavations not carried out with best practice measures outlined in the **CEMP** would cause negative effect to the water quality of the water supply to end users. The appointed contractor will be obliged to conduct the works in accordance with Clare County Council and Uisce Éireann requirements. Appropriate construction method statements should be prepared and implemented by the appointed contractor. Hydrocarbons or any liquids that could adversely affect the water supply network will be bunded. Good construction practice and the implementation of all measures outlined in the **CEMP**, will effectively reduce the potential for impacts. Effects are therefore unlikely to occur.

In the absence of mitigation, any existing water supply infrastructure conflicting with excavations due to being close to the proposed works could cause ingress of suspended solids in the water supply effecting the water quality of receiving users. In addition to suspended solids, hydrocarbons may be released into water supply networks from accidental spills.

In the absence of mitigation, the water supply infrastructure works are therefore **likely** to cause a **negative, brief/once to rarely, slight** effect on the receiving water supply network, refer to **Table 7-6**.

**Table 7.6 Construction Phase: Water Supply Works Effects on Receiving Water Supply Network**

| Construction Phase: Water Supply Works Effects on Receiving Water Supply Network | | | | | | |
|---|---|---|---|---|---|---|
| | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
| Pre - Mitigation | Negative | Slight | Moderate | Brief/once to rarely | Direct Reversible | Likely |
| Post- Mitigation (Residual effect) | Negative | Not significant | Moderate | Brief/once to rarely | Direct Reversible | Likely |

**Mitigation Measures:**

The following mitigation measures must be applied:

- Details of temporary water supply will be agreed in advance with Uisce Éireann.
- To enable leak detection, a water meter will be installed for temporary water supplies. The water meter will monitor consumption of water and will be used to confirm potential leaks.
- All mitigation measures outlined in the **CEMP** of this EIAR should also be implemented during the installation of wastewater infrastructure.
- Hydrocarbons or any liquids that could adversely affect the water supply network will be bunded.

#### 7.9.2.4 Electrical Supply

During the construction period, there will be a requirement for a temporary connection to the local electrical supply network for the visitors centre.

In relation to working near overhead electric lines, the contractor will comply with ESB Networks Code of Practice for Avoiding Danger from Electricity Lines, 2019.

During the construction phase there is potential for some temporary local interruptions to existing dwellings/businesses during periods associated with connecting the new development to the ESB network. Although the exact number of interruption days for particular customers cannot be ascertained at this stage, any electricity interruptions are likely to be brief and occur rarely if required and will generally occur for a set number of hours per day (no more than eight hours where reasonably practicable).

During construction, it is **likely** that the proposed development electricity works cause a **negative**, **brief/once to rarely, not significant, reversible** effect on power supply to houses/businesses in the vicinity, refer to **Table 7-7**.

**Table 7.7 Construction Phase: Electricity Works Effects on Existing Power Supply**

| Construction Phase: Water Supply Works Effects on Receiving Water Supply Network | | | | | | |
|---|---|---|---|---|---|---|
| | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
| Pre - Mitigation | Negative | Slight | Moderate | Brief/once to rarely | Direct Reversible | Likely |
| Post- Mitigation (Residual effect) | Negative | Not significant | Moderate | Brief/once to rarely | Direct Reversible | Likely |

**Mitigation Measures:**

The following mitigation measures must be applied:

- During construction the appointed contractor will be obliged to put measures in place to ensure that there are no interruptions existing services to the local community and all services and utilities are maintained unless this has been agreed in advance with ESB Networks. Measures will include:
    - The appointed contractor(s) will survey all planned works areas for existing utilities. The appointed contractor will be required to review existing utility maps and to cat-scan the area prior to all works.
- All works in the vicinity of ESB infrastructure will be carried out in ongoing consultation with ESB networks and will be in compliance with any requirements they may have including procedures to ensure safe working practices are implemented when working near overhead/underground electrical lines.
- Where new services are required, the Contractor will apply to ESB Networks for a connection permit where appropriate and will adhere to their requirements.

#### 7.9.2.5 Gas Supply

There are no potential impacts/effects of the construction phase as no gas infrastructure exists surrounding the proposed development.

#### 7.9.2.6 Telecommunications

The installation of telecoms during the construction phase will require access to the local telecoms networks in the vicinity of the proposed development. It is proposed that a new duct will tee off from an existing duct to accommodate a broadband connection.

The telecoms works construction phase will be carried out in accordance with the utility providers method statement and service providers Codes of Practice, as well as best practice in accordance with the **CEMP**. Best practice measures include carrying out works in accordance with the utility providers method statement and service providers Codes of Practice. The areas where new duct is installed will be cat scanned prior to excavations to ensure existing services are avoided. Best practice measures in relation to excavations, as outlined in the **CEMP** in relation to excavations, will be followed during telecoms installation. The appointed service provider will also contact relevant service providers including Uisce Éireann, ESB, Gas Networks Ireland prior to utility installation works to ensure that services are avoided and located as necessary, prior to telecoms installation.

There is potential for a temporary loss of connection to the telecommunications infrastructure while carrying out works to provide connection to the proposed development. In the absence of mitigation, potential loss of connections could result from installation works disrupting existing telecoms infrastructure. This disruption could result from excavations works impacting on the existing telecoms infrastructure and also there may be brief disruption to local telecoms network when connecting the new telecoms infrastructure to the existing network. Potential disruptions if required would be brief (less than 8 hours) and occur once or rarely. The appointed service providers would be obliged to carry out maintenance if any disruptions occur due to their installation works.

In the absence of mitigation, any disruption in the local telecoms network during the construction phase would therefore **likely** result in a **negative**, **brief/once to rarely, slight, reversible** effect on telecoms network for receiving users, refer to **Table 7-8**.

**Table 7.8 Construction Phase: Telecommunication Work Effects on Telecommunication Infrastructure**

| Construction Phase: Telecommunication Work Effects on Telecommunication Infrastructure | | | | | | |
|---|---|---|---|---|---|---|
| | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
| Pre - Mitigation | Negative | Slight | Moderate | Brief/once to rarely | Direct Reversible | Likely |
| Post- Mitigation (Residual effect) | Negative | Not significant | Moderate | Brief/once to rarely | Direct Reversible | Likely |

Mitigation Measures:

The following mitigation measure must be applied:

- The telecoms works construction phase will be carried out in accordance with the utility providers method statement and service providers Codes of Practice, as well as best practice in accordance with the **CEMP**;
- The appointed contractor(s) will survey all planned works areas for existing utilities. The appointed contractor will be required to review existing utility maps and to cat-scan the area prior to all works.

### 7.9.2.7 Waste

During the construction phase, the proposed development will generate a range of non-hazardous and potentially hazardous waste materials. The construction employees will generate typical municipal waste and packaging of materials will also contribute to the waste streams. Waste material will be managed and stored correctly to prevent litter issues arising on site.

The use of permitted waste contractors and authorised waste facilities is essential to appropriately manage waste to prevent adverse environmental impacts. All waste will be dealt with in accordance with regional and national legislation. Resources and efficient waste management practices will be utilised to prevent adverse effects on the environment. The majority of construction waste arisings

from the proposed development will be recyclable or recoverable. There will also be soil, stone, gravel and clay excavated to facilitate site preparation for construction and foundation excavations. There will be a certain amount of excavated materials re-used as fill. Any remaining material will be removed offsite via a licensed haulier to an appropriately authorised facility. Correct classification and segregation of material is required to prevent adversely effecting workers on site or soils and drainage systems.

The use of non-permitted waste contractors or unauthorised facilities during construction could give rise to inappropriate management of waste and result in adverse environmental impacts in the form of waste pollution. If waste material is not stored correctly and managed, this could lead to litter issues on site. Any litter issues on site could potentially lead to the presence of vermin on site or at adjacent sites which would thus cause a **negative**, **short-term, slight** effect on the local environment, refer to **Table 7-9**.

**Table 7.9 Construction Phase: Waste Management Issues Effects on Environment**

| Construction Phase: Waste Management Issues Effects on Environment | | | | | | |
|---|---|---|---|---|---|---|
| | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
| Pre - Mitigation | Negative | Slight | Moderate | Short-term | Direct Reversible | Unlikely |
| Post- Mitigation (Residual effect) | Negative | Imperceptible | Moderate | Short-term | Direct Reversible | Unlikely |

**Mitigation Measures:**

The following mitigation measures must be applied:

The **CEMP** includes an **EMP** (Environmental Management Plan) **No.4** for construction waste management and presents a high level strategy presented which will ensure effective waste management, reuse, recycling, recovery and disposal of waste material during the construction phase of the proposed development.

The appointed contractor(s) will be required to develop a Construction Waste Management Plan (CWMP) which will form part of the overall live Construction Environmental Management Plan.

As part of the appointed contractors CWMP, all waste management measures outlined in EMP No.4 of the **CEMP** must be applied.

The appointed contractors must ensure that an authorised waste collector, with a permit to transport waste issued by the National Waste Collection Permit Office (NWCPO), to service the waste containers used for the storage of waste during construction and written evidence of the engagement will be obtained and retained throughout construction.

The facilities to which the waste is sent for processing or disposal must be appropriately permitted or licensed. Operators of waste management facilities should have an appropriate Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the Waste Management (Facility Permit & Registration) Regulations 2007, as amended, or a waste or IED (Industrial Emissions Directive) licence granted by the EPA. The COR/permit/licence will specify the

type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

### 7.9.3 Operational Phase

#### 7.9.3.1 Surface Water Drainage

The design and management of surface water will use Sustainable Urban Drainage Systems (SuDS) features such as filter drains and soakpits/infiltration trenches. All SuDS features will be designed and constructed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) and the CIRIA SuDS Manual.

The design methods have been implemented to provide sufficient storage capacity to restrict run-off from the developed catchment to that equivalent to the pre-development greenfield rate of run-off.

The potential **negative** effects of the surface water drainage system of the proposed development are therefore **likely** to be **long term/permanent** and **not significant**, refer to **Table 7-10**.

**Table 7.10 Operational Phase: Surface Water Drainage Operational Effects on Existing Network**

| Operational Phase: Surface Water Drainage Operational Effects on Existing Network | | | | | | |
|---|---|---|---|---|---|---|
| | **Quality of Effect** | **Significance** | **Spatial Extent** | **Duration** | **Other Relevant Criteria** | **Likelihood** |
| **Pre - Mitigation** | Negative | Not significant | Moderate | Long term/ Permanent | Direct Reversible | Likely |
| **Post- Mitigation (Residual effect)** | Negative | Imperceptible | Moderate | Long term/Permanent | Direct Reversible | Likely |

Mitigation Measures:

The following mitigation measures must be applied:

- The appointed contractor will implement maintenance regimes to monitor/maintain surface water drainage. This will include periodic cleaning out of gullies and drainage channels and cleaning of pipes if/when blockages occur.

#### 7.9.3.2 Wastewater Drainage

The potential effects of wastewater drainage discharge on hydrology and hydrogeology has been assessed in **Chapter 9** of this EIAR.

During the operational phase, there will be an increase in the wastewater discharge, which will result in an increase of wastewater entering the collection network and discharging to Mountshannon WWTP for treatment and disposal. Uisce Éireann has given a confirmation of feasibility and confirmed there is capacity at the Mountshannon Waste Water Treatment Plant to supply the proposed development.

The connection agreement does not require any alterations or upgrade of existing services. Given that there have been no capacity issues noted in the agreement, it is considered that no significant impacts

are likely on the existing wastewater network. The new wastewater network will be pressure tested to relevant Uisce Éireann standards prior to completion of the installation.

The potential **negative** effect of the proposed development on the existing wastewater network is therefore **likely** to be **long term/permanent** and **not significant**, refer to **Table 7-11**.

**Table 7.11 Operational Phase: Wastewater Drainage Operational Effects on Existing Network**

| Operational Phase: Wastewater Drainage Operational Effects on Existing Network | | | | | | |
|---|---|---|---|---|---|---|
| | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
| Pre - Mitigation | Negative | Not significant | Moderate | Long term/ Permanent | Direct Reversible | Likely |
| Post- Mitigation (Residual effect) | N/A | N/A | N/A | N/A | N/A | N/A |

### 7.9.3.3 Water Supply

The impact of the operational phase of the proposed development on the public water supply is likely to be an increase in the demand on the existing supply. Additional water quantities need to be treated and supplied through the existing network to the proposed development.

The majority of water supply for the visitor centre will be required for the number of staff on site using provision of staff and visitor ablutions and for the running of the canteen kitchen. The volume of demand is calculated at 0.755 L/sec, refer to Appendix B of the Civil Utilities Planning Report for water supply calculation details.

Uisce Éireann has given a confirmation of feasibility and confirmed there is capacity at the Mountshannon Water Treatment Plant to supply the proposed development. The connection agreement does not require any alterations or upgrade of existing services. The new water supply network will be pressure tested to relevant Uisce Éireann standards prior to completion of the installation. Water meters will also be installed which will allow for leak detection during the operational phase.

The impact of the operational phase of the proposed development on the public water supply is likely to increase the demand on the existing supply. As such additional water quantities would need to be treated and supplied through the existing network to the proposed development. The potential **negative** effect is therefore **likely** to be **long term/permanent** and **not significant**, refer to **Table 7-12**.

**Table 7.12 Operational Phase: Water Supply Operational Effects on Existing Network**

| Operational Phase: Water Supply Operational Effects on Existing Network | | | | | | |
|---|---|---|---|---|---|---|
| | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
| Pre - Mitigation | Negative | Not significant | Moderate | Long term/ Permanent | Direct Reversible | Likely |
| Post- Mitigation (Residual effect) | N/A | N/A | N/A | N/A | N/A | N/A |

### 7.9.3.4 Electrical Supply

The operational phase of the proposed development will result in an increase on the demand of the local electricity supply.

Negotiations with ESB which will inform design and ensure that capacity in the wider area is not impacted upon. No issues regarding capacity have been raised during negotiations.

Encouraging natural daylighting (for ambient light) where possible to reduce reliance on artificial lighting. The use of high efficiency LED fittings for artificial lighting shall be utilised throughout the development with the inclusion of control devices for motion detection.

The potential impact from the operational phase of the proposed development on the electricity supply network is therefore **likely** to be **neutral, long term/permanent** and **not significant**, refer to **Table 7-13**.

**Table 7.13 Operational Phase: Electrical Usage Effects on Existing Network**

| Operational Phase: Electrical Usage Effects on Existing Network | | | | | | |
|---|---|---|---|---|---|---|
| | **Quality of Effect** | **Significance** | **Spatial Extent** | **Duration** | **Other Relevant Criteria** | **Likelihood** |
| **Pre - Mitigation** | Negative | Not significant | Moderate | Long term/ Permanent | Direct Reversible | Likely |
| **Post- Mitigation (Residual effect)** | N/A | N/A | N/A | N/A | N/A | N/A |

### 7.9.3.5 Gas Supply

There is no gas infrastructure available for the proposed development therefore no impact is anticipated during the operational phase.

### 7.9.3.6 Telecommunications

During the operation phase of the proposed development, the new telecom duct infrastructure will act as a point for service providers to link new telecoms and carry out maintenance. The new underground infrastructure for telecoms will result in a **permanent, positive** effect for service providers and surrounding telecoms infrastructure.

Given that new telecoms infrastructure will be provided, there are no impacts expected on the surrounding network during the operational phase of the proposed development. Potential **neutral** effects on the surrounding telecoms networks are therefore considered **likely** to be **not significant** and **long term/permanent**, refer to **Table 7-14**.

**Table 7.14 Operational Phase: Telecoms Usage Effects on Existing Network**

| Operational Phase: Telecoms Usage Effects on Existing Network | | | | | | |
|---|---|---|---|---|---|---|
| | **Quality of Effect** | **Significance** | **Spatial Extent** | **Duration** | **Other Relevant Criteria** | **Likelihood** |
| **Pre - Mitigation** | Neutral | Not significant | Moderate | Long term/ Permanent | Direct Reversible | Likely |
| **Post- Mitigation (Residual effect)** | N/A | N/A | N/A | N/A | N/A | N/A |

### 7.9.3.7 Waste

All wastes arising during the occupation will be of domestic type and will be disposed of by the building and harbour operators with licensed waste operators.

During the operational phase, a variety of waste will be generated from the visitors and employees at the visitor centre. The appointed contractor will ensure that a Waste Management Plan is followed which provides a strategy for segregation, storage and collection of wastes generated within the development during the operational phase including dry mixed recyclables, organic waste, mixed non-recyclable waste and glass as well as batteries, bulbs, WEEE and cooking oil if generated.

The plan will abide by the Waste Hierarchy and will be in accordance with Clare County Development Plan (2023-2029) and the standard BS 5906:2005 Waste Code of Practice, as well as policies set out in A Waste Action Plan for a Circular Economy - Ireland's National Waste Policy 2020-2025.

The use of non-permitted waste contractors or unauthorised facilities during the operational phase could give rise to inappropriate management of waste and result in negative environmental impacts or pollution and more waste sent to landfill. Impacts would lead to hazardous waste and non-hazardous waste becoming prevalent in the proposed development area and adjacent area. The knock on effect of pollution issues is the presence of vermin in affected areas. It is therefore essential that all waste materials are dealt with in accordance with regional and national legislation.

The potential effect on the local environment, without mitigation, is **likely** to be **long term/permanent, significant** and **negative**, refer to **Table 7-15**.

**Table 7.15 Operational Phase: Waste Management Operational Effects on Environment**

| Operational Phase: Waste Management Operational Effects on Environment | | | | | | |
|---|---|---|---|---|---|---|
| | **Quality of Effect** | **Significance** | **Spatial Extent** | **Duration** | **Other Relevant Criteria** | **Likelihood** |
| **Pre - Mitigation** | Negative | Significant | Moderate | Long term/Permanent | Direct Reversible | Likely |
| **Post- Mitigation (Residual effect)** | Negative | Imperceptible | Moderate | Long term/Permanent | Direct Reversible | Likely |

**Mitigation Measures:**

The following mitigation measures must be applied:

- The appointed contractor will ensure that a Waste Management Plan is followed which provides a strategy for segregation, storage and collection of wastes generated within the development during the operational phase.
- All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill.
- The appointed contractor must ensure that an authorised waste collector, with a permit to transport waste issued by the National Waste Collection Permit Office (NWCPO), to service the waste containers used for the storage of waste during the operational phase and written evidence of the engagement will be obtained.
- The facilities to which the waste is sent for processing or disposal must be appropriately permitted or licensed. Operators of waste management facilities should have an appropriate Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the Waste Management (Facility Permit & Registration) Regulations 2007, as amended, or a waste or IED (Industrial Emissions Directive) licence granted by the EPA. The COR/permit/licence will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

### 7.9.4 Cumulative Effects

Cumulative effects relate to the addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.

A search of Clare County Council's (CCC) online planning enquiry system for granted or on-going planning applications for the townland of Mountshannon, Inis Cealtra, and western shores of Lough Derg at Knockaphort was undertaken on 4th November 2024, the results of which are presented in, **Table 7-16** below.

**Table 7.16 Planned and permitted developments in proximity to the proposed development**

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| 23597 | Brett and Marcha Cox | Main St, Mountshannon | Retain use of former office as shop and coffee shop, retain garden room erected alongside coffee shop and house, and permission for change of use of garden room to coffee roaster, toilet and all associated site works. | Granted: 05/03/24 |
| 2360172 | Jamie and Rachel Keating | No. 3, Harbour View, Mountshannon. | Renovation and extension of existing dwelling house to include (1) Removal of existing balcony and replace with new balcony area (2) Significant Alterations to North, South and West elevations and all associated site works. | Granted: 23/08/23 |
| 238001 | Clare County Council | The Old Rectory, Mountshannon | Alterations, modifications and change of use of existing Old Rectory from Residential to Tourism Interpretive Centre and Café uses on a site measuring 1.35ha, consisting of:<br>i. Demolition of existing outbuilding (157sq.m) to the north-east of the site;<br>ii. Construction of 57 sq.m single-storey ground floor extension to the north-west of building (double height space) with a maximum height of 6.4m (and lift height 7.8m) above ground level and new internal stair access; | Granted: 09/08/23 |

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| | | | iii. At ground floor level, exhibition and educational spaces, with supporting uses including reception area, welfare facilities and plant room;<br>iv. At first floor, a café, ancillary retail/office spaces with welfare facilities and storage area;<br>v. A new lift in footprint of existing building to provide universal access to 1st floor level;<br>vi. At ground floor level, new opening in northern and western wall of existing building to provide access to proposed extension, new and enlarged opening to internal walls between existing kitchen and utility room, new openings between existing hallway and lounge, removal of wall between existing WC and office and between existing kitchen and hallway;<br>vii. At first floor level, new openings and removal of internal partitions, an opening in the roof to provide access to lift and new opening in northern wall at first floor level to provide access to café;<br>viii. Cleaning and repointing works to existing brickwork, repair and replacement of any damaged roof slates with natural slate, replacement of PVC windows with double-glazed timber sash windows and removal of modern internal additions (flooring and cornices);<br>ix. Resurfacing of existing internal vehicular access road and construction of a new vehicle passing bay along the existing internal access road;<br>x. Provision of 2 new dedicated pedestrian access points from Harbour Road including 1 at existing site entrance and 1 to the south-west of site, together with construction of a 1.8m wide pedestrian footpath to the west of existing internal vehicular access road and a new public footpath to the south of Old Rectory site with new pedestrian crossing connecting to existing path to the south of Harbour Road; | |

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| | | | xi. Provision of a new pedestrian connection to Aistear Park to the west of the site;<br>xii. Regarding existing levels to the front (south side) of building to achieve universal access consistent with Part M of the Building Regulations;<br>xiii. Provision of 12 carparking spaces (with 2 disabled access spaces and 2 EV charging points), to north and east of building and inclusion of 1 set down space to east;<br>xiv. Provision of 20 secure bicycle parking spaces for visitors;<br>xv. Construction of ancillary structure comprising 15sq.m single-storey maintenance shed (max. height - 3.246m) to north of site, a semi-covered seating area to the west of the Old Rectory Building, and a 6 sq.m ESB Unit Substation (2.2m in height) to the north-east of Old Rectory building; and,<br>xvi. All ancillary site works including public lighting, landscaping, drainage, connections to public services and undergrounding of an existing ESB overhead line. | |
| CCC: 22123<br>ABP: 313431 | Mountshannon Community Council | Aistear Park, Mountshannon | Erect a Pavilion (a roofed open structure) for communal, cultural, education and events and gatherings and all associated site works. | CCC Granted: 07/04/22<br>Appealed to ABP: 27/04/22<br>ABP Granted: 24/07/23 |
| 22269 | Inis Housing Association CLG | Mountshannon | Development of 11 no. dwelling houses of varying size and design, 1 no. building containing 2 no. apartments, new site entrance, development access roads paths, landscaping, service connections and associated site works & services. | Granted: 03/05/23 |

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| 22688 | Josephine O'Brien | Mountshannon | Entrance and front boundary wall as constructed and all associated site works | Granted: 27/10/22 |
| 22340 | Paul Knapp | The Old School House & Church, Mountshannon | Development to existing building (protected structure (RPS No. 130)); (a) Retain change of use of building from church/school to single private residential unit; (b) Permission to replace existing roof covering with natural slate, re-render exterior of building with lime render, provide three no. new conservation roof windows to rear of roof and all associated ancillary site works. | Granted: 13/07/22 |
| 22124 | Dermot O'Sullivan | Mountshannon | Retention of porch as constructed to the front of the house and retain two sheds erected at rear of house and all associated site works. | Granted: 11/05/22 |
| 21985 | Josephine O'Brien | Mountshannon | Garage/shed as erected to rear of house and all associated site works. | Granted: 15/12/21 |
| 21968 | Pat Sweeney | Mountshannon | Construction of a garage/shed. | Granted: 08/12/21 |
| 21555 | Adrian Dooley | Millpool Road, Mountshannon | Erect a dwelling house, garage, driveway, install effluent treatment system and polishing filter and all associated site works. | Granted: 19/11/21 |
| 21253 | Mary Teresa Ryan | Old Rectory, Mountshannon | Retain demolition works and alterations to existing out-buildings (part of Old Rectory Protected Structure (RPS No.464)) and retain the constructed works to same incorporating garage and storage sheds. | Granted: 23/06/21 |

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| 218000 | Clare County Council | The Old Rectory, Mountshannon | Alterations, modifications and partial change of use of Old Rectory on site measuring 1.17ha, consisting of: i. Construction of 57sqm single-storey ground floor extension to northwest of building (double height space) - max. height of 6.4m (lift height 7.8m) above ground level for Education/Enterprise space of 30sqm, new internal stair access; ii. Ground floor change of use from residential to a) Education/Enterprise Facilities (2 no. rooms with total GFA of 79sqm) b). Reception Area (26sq.) c) Welfare Facilities (5sqm) d) Storeroom (2sqm) e) Plant (3sqm) iii. First floor partial change of use from residential to: a) Community Facility/Co-working Space (16sqm) b) Welfare Facilities (7sqm) iv. 1-bedroom apartment (87sqm) with private amenity space of 50sqm; v. New lift within footprint of existing building; vi. Ground floor - new opening in north and west wall of existing building, new and enlarged openings to internal walls between existing kitchen/utility room and between existing hallway/lounge; vii. First floor - new openings/removal of internal partitions, opening in roof for access to lift and new opening in north wall at first floor; viii. Clean/repoint existing brickwork, repair/replacement of damaged roof slates with natural slate, replacement of PVC windows with double-glazed timber sash windows, removal of modern internal additions (flooring, cornices); ix. Resurface existing vehicular access, construct new vehicle passing bay; x. Construct 1.8m-wide pedestrian footpath west of existing vehicular access; xi. Demolish new build section existing splayed entrance, reinstatement of splayed entrance. | Granted: 27/05/21 |
| 20941 | Gerry Cantrell | 4 Harbour View, Harbour Road, Mountshannon | Retain minor elevational changes to the existing dwelling house. | Granted: 08/03/21 |

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| 21555 | Adrian Dooley | Millpool Road, Mountshannon | Erect a dwelling house, garage, driveway, install effluent treatment system and polishing filter and all associated site works. | Granted: 19/11/21 |

All the existing approved planning applications are/will be subject to appropriate planning and regulatory consents, to ensure that there are no significant effects on material assets.

Additionally, mitigation measures will be implemented as part of this **EIAR** and the **CEMP** to ensure that there will be no significant adverse effects on the material assets pertaining to the development site.

Having considered the implementation of good construction practice and design for the proposed development and other development in the surrounding area, no cumulative effects are anticipated.

### 7.9.5 Summary

**Table 7-17** summarises the identified likely significant effects during the demolition and construction phase of the proposed development before mitigation measures are applied.

**Table 7.17 Summary of Demolition & Construction Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Mainland - Mountshannon** | | | | | | |
| Material run-off | Negative | Not significant | Local | Unlikely | Temporary | Direct |
| Excavation of soil | Negative | Moderate | Local | Unlikely | Temporary | Direct |
| Release of hydrocarbons | Negative | Moderate | Local | Unlikely | Short-term | Direct |
| Waste management | Negative | Moderate | Local | Unlikely | Short-term | Direct |
| Surface water/Wastewater | Negative | Moderate | Local | Unlikely | Short-term | Direct |
| **Inis Cealtra Island** | | | | | | |
| Waste management | Negative | Not significant | Local | Unlikely | Temporary | Direct |

The **Table 7-18** below summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

**Table 7.18 Summary of Operational Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Mainland - Mountshannon** | | | | | | |
| Water supply/Waste water demand | Negative | Slight | Local | Likely | Long term | Direct |
| Electricity supply | Negative | Not significant | Local | Unlikely | Long term | Direct |
| Telecommunications | Negative | Not significant | Local | Unlikely | Long term | Direct |

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Waste management | Negative | Slight | Local | Likely | Long term | Direct |
| Surface water | Negative | Slight | Local | Likely | Long term | Direct |
| **Inis Cealtra Island** | | | | | | |
| Waste management | Negative | Not significant | Local | Likely | Long term | Direct |

## 7.10 Mitigation and Monitoring Measures

### 7.10.1 Incorporated Design Mitigation

The design seeks to mitigate potential negative effects by:

-The Village and Harbour Car Park are designed with SuDS features to attenuate and treat surface water reducing the amount of suspended solids and potential drain blockages.

- The installation of suitable protection (e.g., silt curtain) around the site boundaries to control and treat any run-off during the works.

### 7.10.2 Mitigation Measures for Surface Water Drainage

#### 7.10.2.1 Demolition and Construction Phase

The appointed contractor will be obliged to consult the **CEMP**, which includes a Surface Water Management Plan (SWMP) EMP-1 for implementation of mitigation measures to prevent impacts damage to existing infrastructure and over ground infrastructure and watercourses.

Prior to excavation the Contractor will ensure that adequate silt management methods are implemented and that silt controls are in place as recommended in CEMP and SWMP.

All silt controls will be checked on a regular basis in accordance with a monitoring schedule outlined in the CEMP and SWMP.

#### 7.10.2.2 Operation Phase

Appropriate maintenance regimes will be put in place to monitor/maintain surface water drainage. This will include periodic cleaning out of gully pots & drainage channel sumps and cleaning out of pipes if/when blockages occur.

### 7.10.3 Mitigation Measures for Wastewater/Water Supply

#### 7.10.3.1 Demolition & Construction Phase

All mitigation measures outlined in the CEMP should be implemented during installation of water supply and wastewater infrastructure.

Any temporary water supply for the temporary site compound will be agreed with Uisce Éireann. To enable leak detection, a water meter will be installed for the temporary water supply. The water meter will monitor consumption of water and will be used to help confirm potential leaks.

Effluent generated on site from the contractors sanitary facilities will be discharged to a holding tank and removed off site to a licensed removal contractor. Temporary discharge utilising the existing, or permitted sewerage network will be in agreement with Uisce Éireann. All necessary health and safety measures will be undertaken to ensure the safety and welfare of construction personnel, the public and road users during construction of the foul infrastructure.

#### 7.10.3.2 Operational Phase

Once the proposed development is complete, the water supply network and wastewater network will be vested to Uisce Éireann who will have responsibility for operation and maintenance of the water supply.

### 7.10.4 Mitigation Measures for Electricity

#### 7.10.4.1 Construction Phase

The Appointed Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with ESB Networks.

All works in the vicinity of ESB Networks infrastructure will be carried out in ongoing consultation with ESB networks and will be in compliance with any requirements or guidelines they may have including procedures to ensure safe working practices are implemented when working near live overhead/underground electrical lines.

Where and if new services are required, the Contractor will apply to ESB Networks for a connection permit where appropriate and will adhere to their requirements.

#### 7.10.4.2 Operational Phase

It is not envisaged that any other reductive measures will be necessary upon completion of the development.

### 7.10.5 Mitigation Measures for Telecommunications

#### 7.10.5.1 Constructional Phase

All works in the vicinity of the telecommunications providers infrastructure will be carried out in ongoing consultation with the relevant provider and will be in compliance with any requirements or guidelines that are included in the **CEMP**.

#### 7.10.5.2 Operational Phase

The design and construction of the required telecoms services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential impacts during the

operational phase of the development, with the exception of any routine maintenance of the site services.

### 7.10.6 Mitigation Measures for Waste Management

#### 7.10.6.1 Construction Phase

All measures included in the EMP 4 -Construction Waste Management of the CEMP which is included in this EIAR, should be adhered to ensure. Effective waste management and minimisation, reuse, recycling and disposal of waste material generated during the construction phase of the proposed development.

Prior to commencement of the construction phase, the contractor (s) will be required to refine/update the CEMP to detail specific measures to minimise waste generation and provide details of the proposed waste contractors and destinations for each waste stream.

#### 7.10.6.2 Operation Phase

The appointed contractor will ensure that a Waste Management Plan (WMP) is updated and implemented. This will be a live document that will be kept under review and if appropriate, based on new services locally or introduction of new waste legislation, the WMP will be updated.

The plan will abide by the Waste Hierarchy and will be in accordance with Clare County Development Plan (2023-2029) and the standard BS 5906:2005 Waste Code of Practice, as well as policies set out in A Waste Action Plan for a Circular Economy - Ireland's National Waste Policy 2020-2025.

## 7.11 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

### 7.11.1 Demolition and Construction Phase

Provided all mitigation measures are implemented in full, no significant residual impacts are expected in the demolition and construction phase.

### 7.11.2 Operational Phase

Provided all mitigation measures are implemented in full, no significant residual impacts are expected in the operational phase.

### 7.11.3 Summary of Post-mitigation Effects

The following Table summarises the identified likely significant residual effects during the demolition and construction phase of the proposed development following the application of mitigation measures.

**Table 7.19 Summary of Demolition & Construction Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Mainland - Mountshannon** | | | | | | |
| Material run-off | Negative | Not significant | Local | Unlikely | Temporary | Direct |
| Excavation of soil | Negative | Imperceptible | Local | Unlikely | Temporary | Direct |
| Release of hydrocarbons | Negative | Imperceptible | Local | Unlikely | Short-term | Direct |
| Waste management | Negative | Imperceptible | Local | Unlikely | Short-term | Direct |
| Surface water/Wastewater | Negative | Imperceptible | Local | Unlikely | Short-term | Direct |
| **Inis Cealtra Island** | | | | | | |
| Suspended Solids | Negative | Not significant | Local | Unlikely | Temporary | Direct |
| Waste management | Negative | Not significant | Local | Unlikely | Temporary | Direct |

The following Table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

**Table 7.20 Summary of Operational Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Mainland - Mountshannon** | | | | | | |
| Water supply/Waste water demand | Negative | Imperceptible | Local | Likely | Long term | Direct |
| Surface Water | Negative | Imperceptible | Local | Likely | Long term | Direct |
| Electricity supply | Negative | Imperceptible | Local | Likely | Long term | Direct |
| Telecommunications | Negative | Imperceptible | Local | Likely | Long term | Direct |
| Waste management | Negative | Imperceptible | Local | Likely | Long term | Direct |
| **Inis Cealtra Island** | | | | | | |
| Waste management | Negative | Not significant | Local | Likely | Long term | Direct |

### 7.11.4 Cumulative Residual Effects

The cumulative residual effects of the proposed development and other consented developments are considered to be slight.

## 7.12 Risk of Major Accidents or Disasters

This section presents an assessment of the vulnerability of the proposed development in relation to major accidents and disasters. It assesses the likelihood of the proposed development to cause an increased risk of major accidents and disasters.

Major accidents can relate to any incident, technological or otherwise, which has the potential to have a significant impact on the facility or on the receiving environment. Examples of major accidents which have such potential are fire, explosion, traffic collisions, contamination and pollution.

A natural disaster is an all-encompassing term which describes any severe natural event which has the potential to cause disturbance to an individual, development or population. The severity depends on the receptor and the type of disaster. Examples of natural disasters are earthquakes, flooding, tsunamis, lightning strikes, hurricanes or any other extreme natural event. This section has considered the potential increased risk of such events occurring as a result of climate change, such as increased frequency in the occurrence of extreme weather events.

It is considered that there is no potential for the proposed development to cause a major accident or disaster. Furthermore, there is no increased risk to the development from a major accident or disaster.

## 7.13 Worst Case Scenario

A worst-case scenario would arise if mitigation and best practice measures are not implemented during the construction phase of the development. This may result in the generation of uncontrolled release of suspended solids or hazardous materials such as oils or concrete from the site which would result in an unacceptable impact on local receptors and the receiving environment.

## 7.14 Interactions

Material Assets will Interact / Interrelate with hydrology and hydrogeology. The proposed infrastructure upgrades to the water drainage systems and storm water drainage systems will improve welfare facilities for the anticipated tourists to the visitor centre and parking facilities. The upgraded surface water drainage system will attenuate and cleanse the surface water runoff.

Provided that all mitigation measures that are detailed in the CEMP are followed the impacts are considered to be not significant.

## 7.15 Monitoring Measures

A programme of monitoring is outlined within the **CEMP** of this EIAR.

The ESB will test and commission all their work and network cabling post installation. All supplies will be metered to allow the new loads on network be monitored in use.

The proposed water supply system will incorporate water meters at all points of connection to the public watermain network and will facilitate ongoing monitoring of demand.

The appointed contractor (s) during the construction phase during the operational phase will be responsible for monitoring compliance. This will include the following:

- Checking on the permit of the waste collection contractor prior to contract award and periodically through the contract.
- Checking on the suitability of the vehicle and security of the waste as the waste is collected by the waste transporter.
- Ensuring that all wastes are being taken to appropriately licensed waste processing/disposal facilities.
- Periodically checking the facilities to which the site's waste is taken to make sure it is being managed appropriately and as much as possible is being recycled.

A preliminary monitoring schedule has been prepared as part of the CEMP and will be finalised pending the appointment of the contractor. The site checklist must have the following information included as minimum:

**Table 7.21 Summary of Demolition and Construction Stage Monitoring Measure**

| Aspect | Area of Inspection | Monitoring Required | Note/Checks | Frequency | Responsibility |
|---|---|---|---|---|---|
| Surface water Run-off | Weather Forecast | Met Éireann download | • Pre-determined rainfall trigger levels (e.g. 1 in 5-year storm event or heavy rainfall at >25mm/hr) | Every 24 hours minimum | Project Manager |
| Water quality monitoring | Excavations and Roadside attenuation drain | Visual inspection | •Colour, presents of silts | Daily | Environmental Manager |
| Temporary Site Compound Area | Fuel & Oil Storage areas | Visual inspection | • Damage to containers or ancillary equipment<br>• Leakages<br>• Unlocked storage container | Daily | Environmental Manager |
| | Construction Materials Storage Areas | Visual inspection | • Damage<br>• Untidiness | Daily | Environmental Manager |

| Aspect | Area of Inspection | Monitoring Required | Note/Checks | Frequency | Responsibility |
|---|---|---|---|---|---|
| | Spoil Storage areas | Visual inspection | •Levels/Slippage<br>• Re-vegetation | Daily early/weekly | Environmental Manager |
| | Waste Collection Areas | Visual inspection | • Damage<br>• Untidiness<br>• Full skips | Daily | Environmental Manager |
| | Concrete chute washout area | Visual inspection | • Damages<br>• Leakages<br>• Unacceptable level of concrete washings | Daily | Environmental Manager |
| Operation Control | Wastewater facilities | Visual inspection | • Portaloos requiring servicing | Weekly | Project Manager |
| | Hoarding and boundary fences | Visual inspection | • Signs of movement (i.e. not in a straight line)<br>• Damaged or fallen sections of fence | Weekly | Project Manager |
| | Concrete pours | Visual inspection | • Run-off / spills | To be scheduled with pours | Project Manager |
| | Dust generation | Visual inspection | • Cleanliness of roads and compound area<br>• Dust at stockpiles<br>• Dust from delivery vehicles | Daily | Project Manager |

## 7.16 Summary of Mitigation and Monitoring

The following Table summarises the Demolition and Construction Phase mitigation and monitoring measures.

**Table 7.22 Summary of Demolition & Construction Phase Mitigation and Monitoring**

| Character of potential impact | Mitigation Measure |
|---|---|
| Deterioration in the surface water infrastructure. | • The appointed contractor will be obliged to consult the CEMP, which includes a Surface Water Management Plan (SWMP) EMP-1 for implementation of mitigation measures to prevent impacts damage to existing |
| Damage to Wastewater drainage system. | |
| Disruption to Telecommunications service | |
| Inappropriate waste management practices | |

| Character of potential impact | Mitigation Measure |
|---|---|
| Disruption to water supply | infrastructure and over ground infrastructure and watercourses.<br>• Prior to excavation the Contractor will ensure that adequate silt management methods are implemented and that silt controls are in place as recommended in CEMP and SWMP.<br>• All silt controls will be checked on a regular basis in accordance with a monitoring schedule outlined in the CEMP and SWMP.<br>• The Appointed Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with ESB Networks.<br>• The construction compound will include an enclosed wastewater management system (holding tank). This will be emptied on a regular basis as required by a licensed contractor for treatment and disposal.<br>• All works in the vicinity of the telecommunications providers infrastructure will be carried out in ongoing consultation with the relevant provider and will be in compliance with any requirements or guidelines that are included in the CEMP.<br>• Effective waste management and minimisation, reuse, recycling and disposal of waste material generated during the construction phase of the proposed development. |

The following Table summarises the Operational Phase mitigation and monitoring measures.

**Table 7.23 Summary of Operational Phase Mitigation and Monitoring**

| Character of potential impact | Mitigation Measure |
|---|---|
| Deterioration in the surface water infrastructure.<br>Damage to Wastewater drainage system.<br>Inappropriate waste management practices<br>Disruption to water supply | • A contractor will be appointed to manage the maintenance of the foul system and waste removal from the site.<br>• Water supply and wastewater services will be managed by Uisce Éireann and any issues reported as soon as feasible.<br>• Periodic monitoring and maintenance of proposed drainage network which includes periodic cleaning out of gully pots & drainage channel sumps and cleaning out of pipes if/when blockages occur.<br>• The appointed contractor will ensure that the Waste Management Plan (WMP) contained within the CEMP is updated and implemented. |
| | |
| | |
| | |

## 7.17 Conclusion

In conclusion, no significant effects on the material assets of the proposed development will occur during the demolition, construction and operational phase due to the correct procedures and outlined mitigations being implemented. Pollution control and other preventative measures have been incorporated into the project design to minimise adverse effects on the material assets. Mitigation by design has been the principal means which will reduce suspended sediment run-off arising from construction activities. Preventative measures are also included which are incorporated into the project CEMP.

The proposed development does not pose a significant risk to the existing local electricity infrastructure, water, wastewater or waste infrastructure.

The assessment also confirms that there will be no significant cumulative effects on the material assets as a result of the proposed development and other proposed projects.

## 7.18 References and Sources


- Irish Waters Code of Practice for Water Infrastructure https://www.water.ie/docs/connections/faqs/Water-Code-of-Practice.pdf
- Irish Waters Code of Practice for Wastewater Infrastructure https://www.water.ie/docs/connections/faqs/Wastewater-Code-of-Practice.pdf
- https://cei.openeir.ie/
- https://comreg.ie/
- Clare County Development Plan 2023-2029, Clare County Council.
- Gas Networks Ireland Dial Before You Dig Maps (DBYD);
- ESB Dial Before You Dig Maps (DBYD);
- ESB Networks Code of Practice for Avoiding Danger from Electricity Lines, 2019;
- Guidelines on the information to be contained in Environmental Impact Assessment Reports EIAR (EPA 2022);
- EPA, (2003): Advice Notes on Current Practice (in the preparation on Environmental Impact Statements);
- The Planning and Development Act 2000 as amended, and the Planning and Development Regulations 2001 as amended 2001 - 2023;
- S.I. No. 296/2018 European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2001-2018;
- Dept Of Housing, Local Government and Heritage, (2018). Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, and
- A Waste Action Plan for a Circular Economy - Ireland's National Waste Policy 2020-2025 Depart. Of Communications, Climate Action and Environment.

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 8
# LAND & SOILS

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


8 Land & Soils ..... 8-3
8.1 Introduction ..... 8-3
8.2 Expertise & Qualifications ..... 8-3
8.3 Proposed Development ..... 8-3
8.3.1 Aspects Relevant to this Chapter ..... 8-4
8.4 Methodology, Guidance and References ..... 8-5
8.4.1 Desktop Survey ..... 8-5
8.4.2 Site Surveys/Investigations ..... 8-6
8.4.3 Consultation ..... 8-6
8.5 Difficulties Encountered ..... 8-6
8.6 Baseline Environment ..... 8-6
8.6.1 Land Use at Site & Surrounds ..... 8-7
8.6.2 Topography ..... 8-8
8.6.3 Bedrock Geology ..... 8-9
8.6.4 Soil and Subsoil ..... 8-9
8.6.5 Site Investigation Results ..... 8-11
8.6.6 Geotechnical Conditions ..... 8-12
8.7 The 'Do Nothing' Scenario ..... 8-13
8.8 Potential Significant Effects ..... 8-13
8.8.1 Demolition Phase ..... 8-13
8.8.2 Construction Phase ..... 8-14
8.8.3 Operational Phase ..... 8-17
8.8.4 Cumulative Effects ..... 8-18
8.8.5 Summary ..... 8-19
8.9 Mitigation ..... 8-21
8.9.1 Incorporated Design Mitigation ..... 8-21
8.9.2 Construction and Demolition Phase Mitigation ..... 8-22
8.9.3 Operational Phase Mitigation ..... 8-24
8.10 Residual Impact Assessment ..... 8-25
8.10.1 Demolition and Construction Phase ..... 8-25
8.10.2 Operational Phase ..... 8-25
8.10.3 Summary of Post-mitigation Effects ..... 8-25
8.10.4 Cumulative Residual Effects ..... 8-27
8.11 Risk of Major Accidents or Disasters ..... 8-27
8.12 Worst Case Scenario ..... 8-28
8.13 Interactions ..... 8-28

8.14 Monitoring ..... 8-28
8.15 Summary of Mitigation and Monitoring ..... 8-30
8.16 Conclusion ..... 8-31
8.17 References and Sources ..... 8-32

## Table of Figures

Figure 8-1 Site Layout ..... 8-7
Figure 8-2 CORINE Land Use map ..... 8-8
Figure 8-3: Bedrock Geology of Mountshannon, Inis Cealtra and the surrounding area. ..... 8-9
Figure 8-4 Teagasc soils of the proposed development site and surrounding area. ..... 8-10
Figure 8-5 Quaternary Sediments and Geomorphology of the proposed development site and surrounding area. ..... 8-11
Figure 8-6 Site Investigation 2022 ..... 8-12

## Table of Tables

Table 8.1 Planned and permitted developments in proximity to the proposed development ..... 8-18
Table 8.2 Summary of Demolition & Construction Phase Likely Significant Effects in the absence of mitigation ..... 8-19
Table 8.3 Summary of Operational Phase Likely Significant Effects in the absence of mitigation ..... 8-21
Table 8.4 Summary of Demolition & Construction Phase Effects Post Mitigation ..... 8-25
Table 8.5 Summary of Operational Phase Effects Post Mitigation ..... 8-26
Table 8.6 Summary of Construction Phase Mitigation and Monitoring ..... 8-30
Table 8.7 Summary of Operational Phase Mitigation and Monitoring ..... 8-31

# 8 Land & Soils

## 8.1 Introduction

This chapter of the **Environmental Impact Assessment Report (EIAR)** considers the potential effects on the existing land and soils environment arising from the proposed development. The nature and probability of effects on the existing land and soils environment arising from the overall project has been assessed. The assessment comprises:

- A review of the existing receiving environment.
- Prediction and characterisation of likely effects;
- Evaluation of significance of effects; and
- Consideration of mitigation measures, where appropriate.

## 8.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Sally Kelly and Serena O'Donnell of MWP. Sally has over 20 years post graduate experience in geo-environmental consultancy with significant experience in the management of soil and groundwater remediation projects and has a MSc in Environmental Diagnostics. Sally has worked on the co-ordination and preparation of EIAR chapters and prepared and peer reviewed environmental reports for a variety of project types including wind energy, solar farms and commercial developments.

Serena holds a BA in Geography and a MSc in Applied Environmental Geoscience from University College Cork. Since joining MWP Serena has worked on assisting with the preparation of EIAR chapters for a wind farm, an RWMP and Geotechnical Interpretative reports for solar farms and wind farms.

## 8.3 Proposed Development

The full description of the proposed development is outlined in **Chapter 2 'Development Description'** of this **EIAR**. An overview of the development is given below:

The Inis Cealtra Visitor Experience is to be developed on Inis Cealtra (Holy Island) and on the mainland, in two principal locations within Mountshannon Village. The project is comprised of different elements as set out below.

**Inis Cealtra Island**

- Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island.
- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp.
- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.

- Provision of three staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

**Mainland – Mountshannon**

- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, together with coach parking and bicycle parking facilities.
- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building incorporating a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.
- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.

### 8.3.1 Aspects Relevant to this Chapter

The following aspects of the proposed development are relevant to this chapter

Inis Cealtra Island

- Construction activities associated with the new mooring, pods and walkway.
- Operational increase in visitor numbers with potential to cause erosion and compaction of soils

Village car park

- The construction of a temporary site construction compound of a new public car park which will permanently change the land use.
- Construction activities such as excavation, cut and fill, soil sealing, compaction and erosion.
- Potential contamination from construction materials and machinery.
- Potential contamination from vehicles once operational and surface drainage management.

Visitor Centre

- The land use of the southern part of the 'Old Rectory Site' will be permanently changed due to the construction of the Visitor Centre.
- Construction activities such as excavation, cut and fill, soil sealing, compaction and erosion.
- Potential contamination from construction materials and machinery
- Operational increase in visitor numbers with potential to cause erosion and compaction of soils and surface drainage management.

Mountshannon Harbour Car Park

- Construction activities associated with the seating area, bin store and new tree planting.
- Reconfiguring the area may cause potential contamination that may occur from construction materials and machinery.

## 8.4 Methodology, Guidance and References

The land and soils assessment has been prepared in accordance with the requirements of European Union Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the 'EIA Directive') as amended by Directive 2014/52/EU. The requirements of the following legislation and guidelines are complied with:

- The Planning and Development Act 2000 as amended, and the Planning and Development Regulations 2001 as amended 2001 - 2023;
- The Heritage Act 1995, as amended;
- S.I. No. 296/2018 European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2001-2018; and,
- European Communities (Environmental Impact Assessment) Regulations 1989 to 2006.
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (Institute of Geologists of Ireland, 2013);
- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (National Roads Authority (NRA), 2009); and
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Dept. Of Housing, Local Government and Heritage, August 2018).

### 8.4.1 Desktop Survey

The methodology used for this study included desk-based research of published information and site visits to assemble information on the local receiving environment. The desk study included the following activities:

- Review of Ordnance Survey Ireland (OSI) Mapping and aerial photography to establish existing land use and settlement patterns within the study area;
- Examination of the Geological Survey of Ireland (GSI) datasets pertaining to geological (bedrock, heritage, subsoil, ETC.) and extractive industry data;
- Examination of EPA / GeoHive / Teagasc online soil and subsoil maps;
- Review of Clare County Council's (CCC) local and regional development plans and planning policy in order to identify future development and identify any planning allocations within the study area;
- Review of CCC's Planning Register to identify relevant development proposals currently under consideration by the Council.

Following the desk top study and field surveys, a set of geological and soils maps were generated in GIS using data acquired by Geological Survey Ireland (GSI), the Environmental Protection Agency (EPA) and GeoHive Online maps and are included as figures in this chapter.

### 8.4.2 Site Surveys/Investigations

Priority Geotechnical Ltd. (pgl) were appointed to undertake site investigation (SI) works on between 28 February and 01 March 2022 at the Old Rectory and Visitor Centre site. The SIs consisted of:

- Visit to project site to observe existing conditions;
- Excavation of 4 No. Trial Pits to a maximum depth of 2.2m below ground level (BGL);
- Carry out 4 No. Soakaways to determine a soil infiltration value to BRE digest 365;
- Carry out 2 No. Rotary Core Boreholes to a maximum depth of 14.90m BGL;
- Carry out a Geophysical Survey to determine existing ground conditions;
- Carry out a Ground Penetrating Radar Survey (GPR) to locate existing services; and
- Geotechnical & Environmental Laboratory testing

### 8.4.3 Consultation

As there are no excavations on Inis Cealtra Island, and excavations within the development in Mountshannon will be relatively shallow, no consultation with the GSI has been sought.

## 8.5 Difficulties Encountered

No geotechnical SIs have been completed to date for the harbour, village car park site or Inis Cealtra. Pre-commencement activities including site investigation work and pre-construction surveys will occur on Inis Cealtra Island, village car park, harbour car park and the visitor centre.

The assessment is based on the project details that were made available at the time of writing.

## 8.6 Baseline Environment

The proposed development site is located within the townland and village of Mountshannon and the island of Inis Cealtra.

The rectory site is located within Mountshannon on the banks of Lough Derg. Adjacent to the southern extent of the subject site lies Mountshannon Harbour, a south facing harbour with a slipway for recreational use by locals and visitors. The area surrounding the remainder of the project site is a mosaic of greenfield sites, single dwellings, multi-residential developments, and commercial developments which make up the village of Mountshannon. Directly west of the rectory site lies Aistear Park, which spans 4.5 acres. The car park site is located to the north of Aistear park, on the far side of the regional road, R352, which connects Ennis to Portumna and runs to the west of Lough Derg**.**

Inis Cealtra is a 20 hectare (50 acre) island located in Scariff Bay on the south-west part of Lough Derg between County Clare and County Galway. The closest village to the island is Mountshannon, and boat access is available from both the village marina, and from Knockaphort Pier on the shore near the island.

The site layout is shown in **Figure 8-1** below.

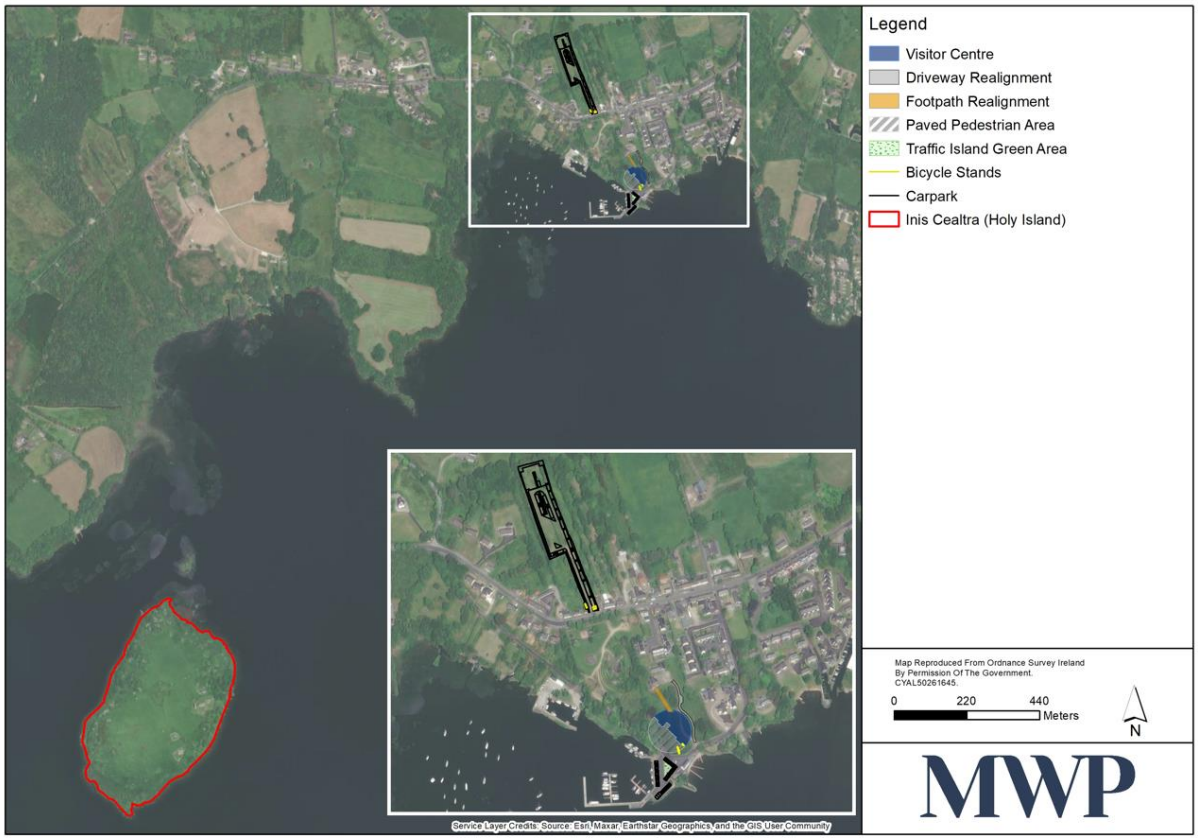



**Figure 8-1 Site Layout**

### 8.6.1 Land Use at Site & Surrounds

The land cover mapping was created using information from CORINE Land Cover 2018 available on the EPA online mapping system (EPA Unified GIS Application). The land use at the site has been mapped as shown in **Figure 8-2**.

The following land uses have been identified within and around the site:

- 512 – Water bodies;
- 141 - Green Urban areas;
- 112 – Discontinuous Urban fabric;
- 313 – Mixed forests;
- 243 - Land principally occupied by agriculture with significant areas of natural vegetation; and
- 231 – Pastures.

The proposed development site in Mountshannon is dominated by land mapped as *Discontinuous Urban fabric*, with a small part at the north of the car park mapped as *Land principally occupied by agriculture with significant areas of natural vegetation.* The proposed development site in Inis Cealtra is mapped as *Water bodies*.

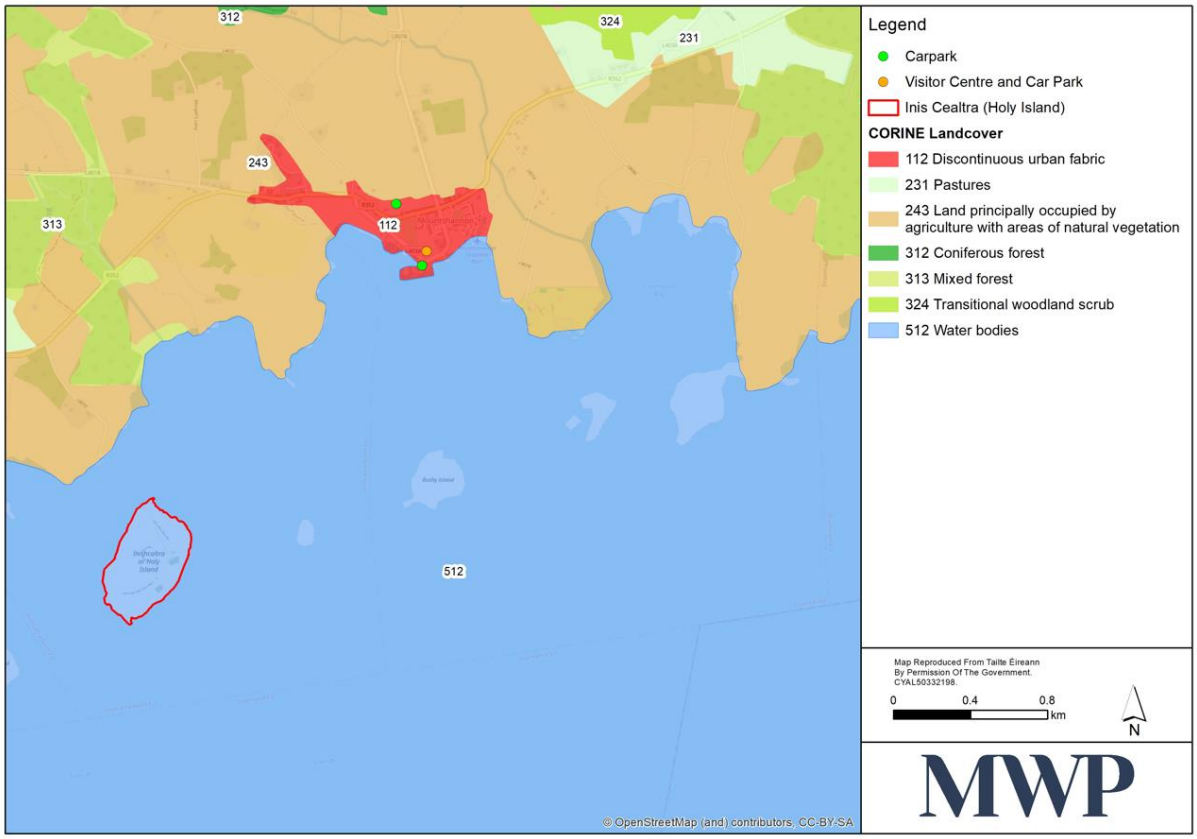



**Figure 8-2 CORINE Land Use map**

(Source: EPA Maps)

### 8.6.2 Topography

*Inis Cealtra Island*

The topography of the island slopes upward from the jetty location, at approximately +30.00m OD, to a relatively flat plateau with a high point of +40.00m OD.

Overall, the Mountshannon development has a gentle downward slope from the village car park to the north, to the harbour to the south.

*Village Car Park*

The highest point in the car park is at approximately +50.00m OD.

*Harbour Car Park Reconfiguration*

The harbour car park level is at approximately +32.00m OD.

*Visitor Centre*

The existing Rectory site slopes up relatively steeply from south to north, rising from approximately +32.00m OD at its southern boundary to +40.00m OD at the rectory building itself.

### 8.6.3 Bedrock Geology

Inis Cealtra and the Mountshannon area is underlain by Lower Carboniferous Limestone (Ballysteen Formation). The formation consists of irregularly bedded and nodular bedded argillaceous bioclastic limestones (wackestones and packstones), interbedded with fossiliferous calcareous shales.

The bedrock geology of the site location and surrounding area is shown in **Figure 8-3**. There are no mapped karst landforms in the area.

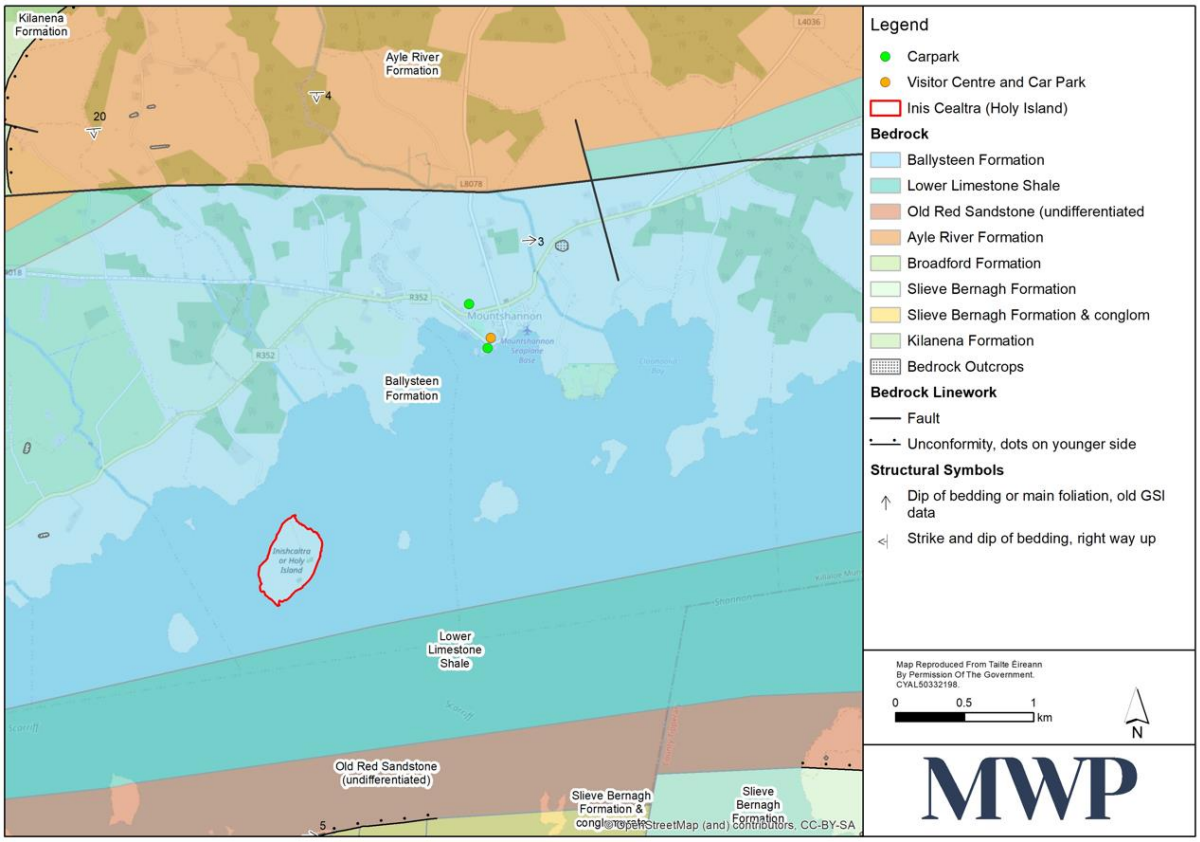



**Figure 8-3: Bedrock Geology of Mountshannon, Inis Cealtra and the surrounding area.**

(Source: GSI)

### 8.6.4 Soil and Subsoil

The predominant soil group of the Mountshannon rectory and village car park and harbour car park site is "*AminPD-Surface water Gleys, Ground water Gleys Acidic*" whose parent material name is "*TDSs, Till derived chiefly from Devonian sandstones*" according to the Teagasc/EPA Soil Maps available on the GSI online mapping system **(Figure 8-4)**. The description of the above soil type based on data from Teagasc is "*Mineral poorly drained (Mainly acidic)*". Between the rectory site and the village car park the built-up area of Mountshannon is mapped as having some *"Made Ground*'' and to the west and east of the site areas are mapped having *''AlluvMIN – Mineral alluvium"* whose parent material name is "Alluvium". The Harbour car park is also developed on some "*AminDW-Acid Brown Earths/ brown Podzolics*" whose parent material is "*Till derived chiefly from Devonian sandstones*". The soil group on Inis Cealtra is mapped as "BminDW - Grey Brown Podzolics Brown Earths" whose parent material

name is "*TLs, Till derived chiefly from limestone*" described as "*deep well drained mineral (Mainly basic)*" **(Figure 8-4)**.

The Quaternary Sediments at the Mountshannon site **(Figure 8-5)** are shown on the GSI online mapping system as "*TDSs, Till derived from Devonian sandstones*". The Quaternary Sediments on Inis Cealtra Island are mapped as "*TLs, Till derived from Limestones*" **(Figure 8-5).**Figure 8-5 Quaternary Sediments and Geomorphology of the proposed development site and surrounding area. The subsoil on the island is considered to be of moderate permeability due to the well-draining characteristics of the soil.

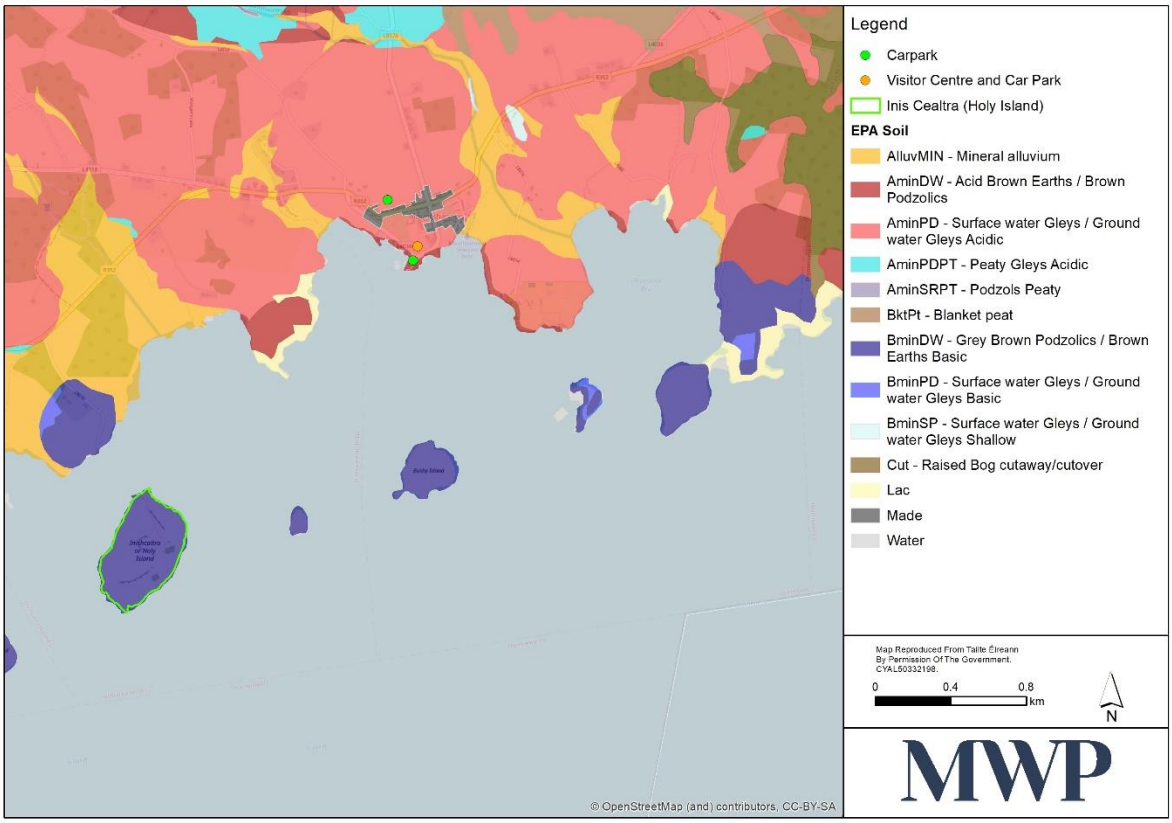



**Figure 8-4 Teagasc soils of the proposed development site and surrounding area.**

(Source: GSI)

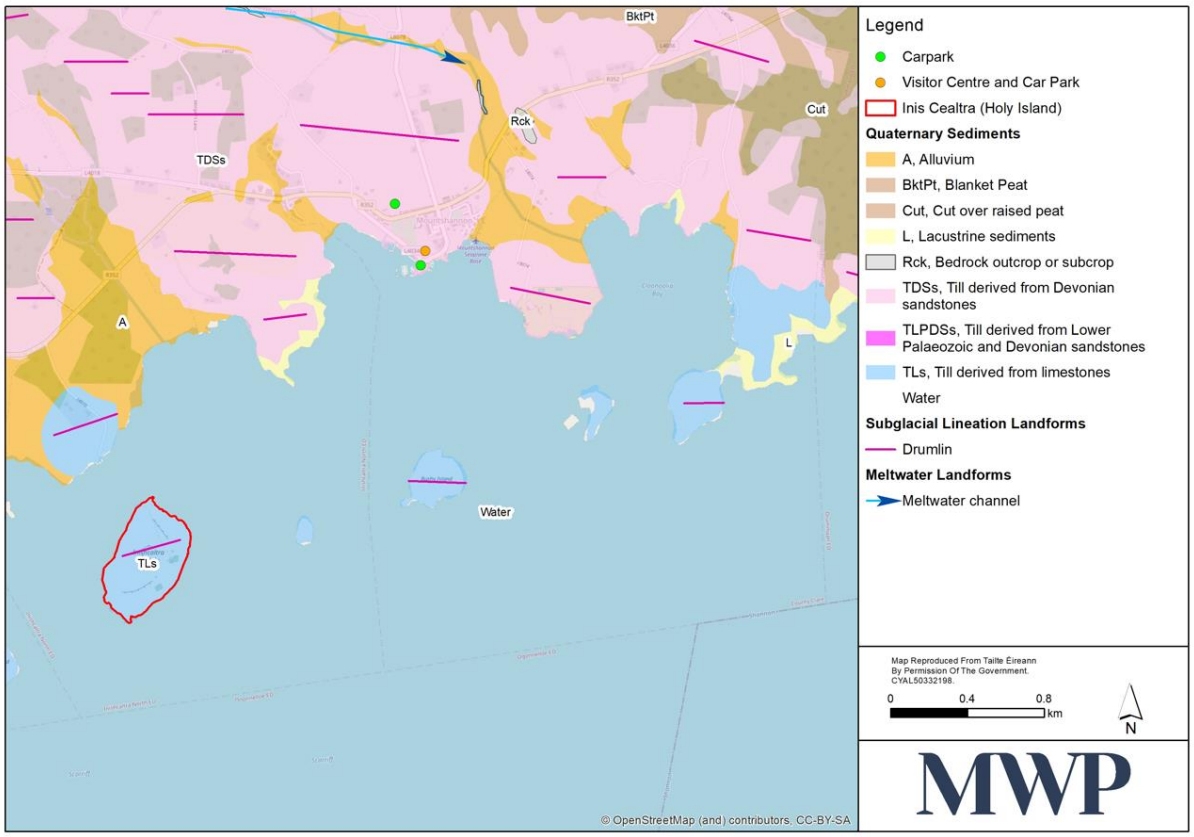



**Figure 8-5 Quaternary Sediments and Geomorphology of the proposed development site and surrounding area.**

(Source: GSI)

The quaternary geology demonstrates the influence of the glacial processes operating in this area, notably through the retreat of the ice sheets, and creation of drumlins and ribbed moraines around the area.

### 8.6.5 Site Investigation Results

Priority Geotechnical Ltd. (pgl) were appointed to undertake site investigation (SI) works between 28 February and 01 March 2022 at the Rectory and Visitor Centre. **Figure** 8-**6** shows the locations of the two rotary core boreholes (RC) and four trial pits (TP).

**Figure 8-6 Site Investigation 2022**

The rotary borehole logs indicate that the area consisted of CLAY. RC01 indicated a stiff dark brown, slightly sandy slightly gravelly CLAY. The sand present is fine to coarse with gravel also fine to coarse, angular to sub rounded. RC02 indicated a stiff CLAY. The boreholes were advanced to a maximum of 14.9m BGL.

The trial pit logs described the area as mainly consisting of SAND and GRAVEL with SAND found in each trial pit. SILT was present in Trial Pit 1A and COBBLES were present in Trial Pit 1. The gravel present in each trial pit was fine to coarse, sub angular to sub rounded. The trial pits depth ranged from 1.6m to 2.2m. All four trial pits had poor or poor to very poor stability. No groundwater was detected in trial pit 1. However, water was encountered in all of the other trial pits. Metal inclusions and timber posts were found in Trial pit 3 with a low cobble count. Black plastic weed proof mat at base of gravel were found in Trial pit 2 at 0.2m. The matrix of the fill is varied from 'soft' and 'soft to firm'. The colour of the soil usually was a loose grey white on top that transitioned into a brown red, red brown or red. Trial pit 3 was a dark brown, grey mottled colour.

### 8.6.6 Geotechnical Conditions

GSI Online Mapping found no external geotechnical sites within the vicinity of the proposed development site. Geotechnical boreholes and site investigations are submitted by industry to the GSI, stored in the National Geotechnical Borehole Database and displayed online to the public to provide context to the geotechnical conditions in the area.

## 8.7 The 'Do Nothing' Scenario

Under the do-nothing scenario, the land and soils environment at the proposed development is discussed below.

As vehicle access is needed at the harbour, it is likely that the lands and soils environment would remain unchanged beneath the harbour car park.

As the Inis Cealtra Island is a sensitive archaeological site it is likely that the land and soils environment would remain unchanged.

The garden at the Old Rectory Site could potentially be developed for alternative land uses subject to planning and the land proposed for the Village Car Park could be subject to future developments or agricultural changes.

## 8.8 Potential Significant Effects

This section will describe the impacts associated with the proposed development before mitigation measures are applied. Both direct and indirect impacts will be addressed for the construction and operation of the proposed development. The nature, extent and duration of the impacts will also be assessed.

The project has incorporated some elements of best practice into the construction and operational design of the project. Assessments are therefore based on this being implemented.

The current proposal is to develop the project in two phases. Phase 1 construction will be completed and in operation before the commencement of Phase 2.

- The proposed Phase 1 construction includes the upgrade works at Inis Cealtra Island and the new Village Car Park at Mountshannon, north of Aistear Park.
- The proposed Phase 2 construction includes the reconfiguration of the Harbour Car Park and the new Visitor Centre at Mountshannon, south of Aistear Park.

### 8.8.1 Demolition Phase

#### 8.8.1.1 Soil Erosion and Compaction

Inis Cealtra Island

The existing shelter adjacent to the existing pier at the north-west of the island will be demolished. The existing shelter is simple in its construction, being of mass concrete walls and floor with a flat roof and a single window and door. The existing shelter will be dismantled from the top down using hand tools to break the existing concrete and timber into sections that can be manually handled. Dismantling will start with the removal of the roof, followed by the removal of the window and door, taking down of the walls, breaking out of the floor slab and removal of foundations (if any). The material will be sorted into waste for disposal/recycling and then removed off the island by boat where it will be disposed of by a licensed waste contractor.

Removal of the shelter, and removal of the shelter to the boat to remove it from the island, will disturb the soil which may lead to soil erosion, compaction or slippage.

The effect is assessed as negative, not significant, localised, likely, reversible, direct effect.

Village Car Park

Site clearance will include clearing, grubbing and removing any required trees, hedgerows and any surface vegetation (topsoil/ sub-soil/ shrubs/ etc) that will be stripped and collected using an excavator and dump truck. Removal of the vegetation will both disturb the soil around the roots and expose the soil to heavy machinery.

The mound/wall (245m in approximate length) present within the centre of the site will be removed by construction plant. The existing gate and an 8m section of the existing masonry wall (which has a total length of approx. 13m) along the site's frontage at the southern boundary will also be removed.

Removal of the vegetation and mound/wall will both disturb the soil around the roots and expose the soil to heavy machinery, increasing the likelihood of conditions which could lead to soil erosion, compaction or slippage.

Overall, the effect of soil erosion and compaction during the demolition phase is assessed as negative, significant, localised, likely, reversible, direct effect.

#### 8.8.1.2 Accidental Spills & Contamination/Pollution

Village Car Park

Accidental spills associated with the use of construction plant to clear the site would results in the release of hydrocarbons to the soils beneath.

Overall, the effect during the demolition phase is assessed as negative, moderate, localised, unlikely, short-term, direct effect.

### 8.8.2 Construction Phase

#### 8.8.2.1 Land Take

Inis Cealtra Island

Notwithstanding the footprint of the proposed pods and walkway, there will be an additional temporary land take of pasture land during the construction phase for the temporary construction compound. This area will be reinstated once the construction works have been completed.

Overall, the effect of land take during the construction phase is assessed as negative, not-significant, localised, likely, temporary, direct effect.

The Village Car Park

The new public car park measuring 8,594 sq.m will require a permanent land take. The layout has been developed to minimise the extent of hard paving required on site.

Overall, the effect is assessed as negative, moderate, localised, likely, permanent, direct effect.

### 8.8.2.2 Earthworks

Inis Cealtra Island – Sheet and H piles

Installation of 4 number 800mm (max diameter) steel piles will be required to retain the new floating jetty, which will be accessed via a ramp requiring 4 number 203mm H piles to support the concrete (2mx2m) anchor base that retains the ramp anchor points. Similarly, 2 254mm x 254mm H piles will be required to retain the Canoe Launch section. These piles will be vibrated into the bed by an excavator on the pontoon raft.

The effect is assessed as a negative, slight, localised, likely, long-term, direct effect.

The Village Car Park – Subsoil and Topsoil excavation

Approximately 3,200$m^3$ of topsoil will be excavated to depths agreed upon and in conjunction with the site specifications and design drawings issued.

Bulk excavation of a volume of 4,200$m^3$ approximately will then occur to the required sub-formation levels using excavators and dumpers.

The effect is assessed as a negative, moderate, localised, likely, permanent, direct effect.

Visitor Centre and Harbour Reconfiguration of Car Park– Subsoil and Topsoil excavation

Approximately 1,600$m^3$ of topsoil will be excavated, carefully segregated and transported to an agreed deposition area. This material would then be removed from the site with a minor amount kept on site in a temporary storage area for later use in landscaping.

Bulk excavation of approximately 6,200$m^3$ under the proposed building and front courtyard and 1000$m^3$ for the realigned access track and other external areas will then occur to the required sub formation levels using excavators and dumpers.

The effect is assessed as a negative, moderate, localised, likely, permanent, direct effect.

### 8.8.2.3 Use of Natural Resources

Aggregates and concrete will be used during construction. Materials required will mainly consist of higher-grade materials not available to be won on site, e.g. stone material for roads and foundations, and concrete for the construction of the hardstanding areas.

Inis Cealtra Island

Stone will be used for gabions around H piles to support the concrete anchor platform of the proposed new jetty and to provide a 3 m wide level surface for the causeway.

The effect is assessed as a negative, not significant, localised, likely, permanent, direct effect.

Village Car Park

Layers of imported stone aggregate material of approximately 4,200$m^3$ will be provided and compacted in layers as per the Engineering drawings.

The effect is assessed as a direct, negative, not significant, localised, permanent effect.

Visitor Centre

Layers of imported stone aggregate material of approximately 600m$^3$ under the proposed building and 150m$^3$ in external areas compacted in layers as per the Engineering drawings. Local stone for façade of the building and natural stone for public realm area in front of main façade.

The effect is assessed as a direct, negative, not significant, localised, permanent effect.

#### 8.8.2.4 Accidental Spills & Contamination/Pollution

Inis Cealtra Island, Village Car Park, Visitor Centre and Reconfiguration of Car Park

Construction materials, including any hazardous substances such as fuel and oil and concrete, have the potential to affect the soil and geological environment should a spill occur. The accumulation of spills of fuels and lubricants during routine plant use can also be a pollution risk. Construction plant and machinery will be run on hydrocarbon fuel and any oil and activities relating to hydrocarbons (storage, bunding, refuelling) will be managed during the works. Any effect from a hydrocarbon spill to soil may also indirectly effect the hydrological/hydrogeological environment.

Contaminated runoff arising from soil erosion on construction sites can pose a significant risk to the geological and hydrogeological environments, if allowed to percolate into the soil matrix.

The effect is assessed as a negative, moderate, localised, unlikely, short-term, direct effect.

#### 8.8.2.5 Soil Erosion, Soil Compaction and Soil Stability

Village Car Park, Visitor Centre and Harbour Car Park

Soil erosion describes the removal of soil particles from the soil. This can be caused by weather, water flow or the movement of heavy vehicles.

Soil erosion may occur on site due to earthworks taking place, stockpiling of soils and extra surface water run-off. The movement of construction vehicles, maintenance vehicles and heavy machinery with large tyre threads throughout the site may remove topsoil which may also lead to soil erosion.

Soil compaction may occur due to movement of overland traffic, such as construction and maintenance vehicles, resulting in reduction of pore space within the soil structure, an increase in bulk density, reduced rate of water infiltration and drainage, expulsion of air within the soil, and change in soil strength. Regular movement of heavy vehicles and plant on off-alignment sections, and greenfield areas would result in an increased risk to soil and subsoil integrity during the construction phase of the proposed development. Without mitigation other effects such as temporary increase in surface water runoff, and subsequently an increase in erosion may results.

The effect is assessed as a negative, significant, localised, likely, reversible, direct effect.

##### 8.8.2.5.1 Slope Stability

A slope failure involves a mass movement of earth material under shear stress along one or several surfaces. A slip is defined as a small movement of soil, debris, earth, or rock down a slope. These can affect the land and soils environment during the construction phase of a development, particularly in excavations, material movement, earthworks, and storage of material on site. Without appropriate mitigation measures as outlined in further sections, this can result in several direct effects including

erosion, contamination, sedimentation, instability of the land, and waste generation, as well as indirectly effecting other environments including water, biodiversity, material assets and landscape and visual.

Slippage can occur as a result of an increase in overburden load on slopes, earthworks that affect slope angles and embankments, unstable embankments, unstable excavations, cut-and-fill techniques from excavations, uncovered stockpiled materials, or unforeseen ground conditions not identified during geotechnical investigations. These can be exacerbated by adverse weather conditions from heavy rain, wind, and ice. Slips are more likely to occur on slopes >25° but have been known to occur on much gentler slopes.

Stockpiled material is at risk of slipping if no mitigation measures are implemented.

#### 8.8.2.6 Sedimentation

Inis Cealtra Island, Village Car Park, Visitor Centre and Reconfiguration of Car Park

Sedimentation can also affect safety on the site from build-up, flooding from drain blockages, and maintenance issues from soil erosion. Soil loss due to erosion can result if areas are left exposed.

The effect is assessed as a negative, moderate, localised, likely, reversible, direct effect.

### 8.8.3 Operational Phase

#### 8.8.3.1 Land Take

Inis Cealtra Island

The Island development will require a permanent land take of 23 sq.m for the Weather Shelter Pod, 16sq.m for the WC Pod and 23sq.m for the Staff Pod. The land use, which is typical of the surrounding areas, currently consists of agricultural land (pasture) which is currently grazed on by sheep from early summer to winter. There are pockets of woodland that offer shelter to the sheep.

The effect is assessed as a direct, negative, not significant, localised, reversible effect.

#### 8.8.3.2 Accidental Spills & Contamination/Pollution

Village Car Park and Harbour Car Park

During the operational phase of the proposed development, there is still a risk that contamination from on-site oils, fuels from vehicles and brown water, can affect the land and soils environment. Any effect from a hydrocarbon spill to soil may also indirectly effect the hydrological/hydrogeological environment.

The effect is assessed as a direct, negative, significant , localised, short-term effect.

#### 8.8.3.3 Soil Compaction

Village Car Park and Harbour Car Park

Due to the development of the Inis Cealtra Visitor Experience, soil compaction may occur due to movement of overland traffic, such as vehicles parking and accessing the slip way, resulting in

reduction of pore space within the soil structure, an increase in bulk density, reduced rate of water infiltration and drainage, expulsion of air within the soil, and change in soil strength.

The effect is assessed as a direct, negative, not significant, localised, permanent effect.

Inis Cealtra Island

Due to the increased number of visitors the land and soils on Inis Cealtra Island may also experience soil compaction due to the increased number of visitors walking on the soils.

The effect is assessed as a direct, negative, slight, localised, reversible effect.

#### 8.8.3.4 Sedimentation

Inis Cealtra Island, Village Car Park, Visitor Centre and Reconfiguration of Car Park

Sedimentation can also affect safety on the site from build-up, flooding from drain blockages, and maintenance issues from soil erosion. Soil loss due to erosion can result if areas are left exposed.

The effect is assessed as a direct, negative, moderate, localised, short-term effect.

### 8.8.4 Cumulative Effects

Cumulative effects relate to the addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.

A description of all the existing and planned developments around the proposed development site is provided in **Table 8-1 below:**

**Table 8.1 Planned and permitted developments in proximity to the proposed development**

| File Number | Application Status | Decision Date | Decision Code | Address | Development Description | Local Authority |
|---|---|---|---|---|---|---|
| 2180 | APPLICATION FINALISED | 29/04/2021 | CONDITIONAL | Clooonoolia North Mountshannon Co Clare | to construct an extension to slatted cattle shed and associated site works... | Clare County Council |
| 218000 | DECISION MADE | 10/05/2021 | CONDITIONAL | The Old Rectory Mountshannon Co Clare | to carry out the following development. Alterations, modifications and partial change of use of the ... | Clare County Council |
| 22123 | APPLICATION FINALISED | 06/04/2022 | CONDITIONAL | Aistear Park Mountshannon Co Clare | to erect a Pavilion (a roofed open structure) for communal, cultural, education and events and gathe... | Clare County Council |

| File Number | Application Status | Decision Date | Decision Code | Address | Development Description | Local Authority |
|---|---|---|---|---|---|---|
| 22269 | APPLICATION FINALISED | 28/03/2023 | CONDITIONAL | Mountshannon Co Clare | the development will consist of 11 no. dwelling houses of varying size and design, 1 no. building co... | Clare County Council |
| 22340 | APPLICATION FINALISED | 03/06/2022 | CONDITIONAL | The Old School House & Church Mountshannon Co Clare V94 AT2W | of the following development to the existing building which is a protected structure (RPS No. 130); ... | Clare County Council |
| 238001 | DECISION MADE | 10/07/2023 | UNCONDITIONAL | The Old Rectory Mountshannon Co Clare | to carry out the following development, Alterations, modifications and change of use of the existing... | Clare County Council |

All the existing approved planning applications are/will be subject to appropriate planning and regulatory consents, to ensure that there are no significant effects on land and soils.

A Screening for Appropriate Assessment (Stage 1) and Natura Impact Statement (Stage 2) were completed for the proposed development and determined that there will be no adverse impacts on any qualifying species of protected Natura 2000 sites. Additionally, mitigation measures will be implemented as part of this **EIAR** and the **CEMP** to ensure that there will be no significant adverse effects on the land and soils pertaining to the development site.

Having considered the implementation of good construction practice and design for the proposed development and other development in the surrounding area, no cumulative effects are anticipated.

### 8.8.5 Summary

The following Table summarises the identified likely significant effects during the demolition and construction phase of the proposed development before mitigation measures are applied.

**Table 8.2 Summary of Demolition & Construction Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Inis Cealtra Island** | | | | | | |
| Land Take | Negative | Not significant | Localised | Likely | Temporary | Direct |
| Vibration from piling | Negative | Slight | Localised | Likely | Long-term | Direct |

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Release of hydrocarbons or concrete to soils from construction plant or materials | Negative | Moderate | Localised | Unlikely | Short-term | Direct |
| Use of natural resources | Negative | Not Significant | Localised | Likely | Permanent | Direct |
| **Village Car Park** | | | | | | |
| Soil erosion and compaction | Negative | Significant | Localised | Likely | Reversible | Direct |
| Release of hydrocarbons or concrete to soils from construction plant or materials | Negative | Moderate | Localised | Unlikely | Short-term | Direct |
| Land Take | Negative | Moderate | Localised | Likely | Permanent | Direct |
| Subsoil and Topsoil Excavation | Negative | Moderate | Localised | Likely | Permanent | Direct |
| Use of natural resources | Negative | Not Significant | Localised | Likely | Permanent | Direct |
| Increase in Traffic | Negative | Not Significant | Localised | Likely | Temporary | In-Direct |
| **Visitor Centre** | | | | | | |
| Subsoil and Topsoil Excavation | Negative | Moderate | Localised | Likely | Permanent | Direct |
| Use of natural resources | Negative | Not Significant | Localised | Likely | Permanent | Direct |
| Increase in Traffic | Negative | Not Significant | Localised | Likely | Temporary | In-Direct |
| Release of hydrocarbons or concrete to soils from construction plant or materials | Negative | Moderate | Localised | Unlikely | Short-term | Direct |
| Soil Erosion, Soil Compaction and Soil Stability | Negative | Significant | Localised | Likely | Reversible | Direct |
| **Mountshannon Harbour Car Park Reconfiguration** | | | | | | |
| Subsoil and Topsoil Excavation | Negative | Moderate | Localised | Likely | Permanent | Direct |
| Release of hydrocarbons or concrete to soils from construction plant or materials | Negative | Moderate | Localised | Unlikely | Short-term | Direct |
| Soil Erosion, Soil Compaction and Soil Stability | Negative | Significant | Localised | Likely | Reversible | Direct |

Table 8-3 summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

**Table 8.3 Summary of Operational Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Inis Cealtra Island** | | | | | | |
| Land Take | Negative | Not significant | Localised | Likely | Reversible | Direct |
| Soil Compaction | Negative | Slight | Localised | Likely | Reversible | Direct |
| **Village Car Park** | | | | | | |
| Release of hydrocarbons to soils from vehicles using car park vehicles using car park | Negative | Significant | Localised | Unlikely | Short-term | Direct |
| Soil Compaction | Negative | Not significant | Localised | Likely | Permanent | Direct |
| **Mountshannon Harbour Car Park** | | | | | | |
| Release of hydrocarbons to soils from vehicles using car park | Negative | Significant | Localised | Unlikely | Short-term | Direct |
| Soil Compaction | Negative | Not Significant | Localised | Likely | Permanent | Direct |

## 8.9 Mitigation

### 8.9.1 Incorporated Design Mitigation

The design of the paths is in line with the principles of minimal intervention to archaeological and natural heritage, which also results in minimum intervention with the land and soils. The paths are all proposed as mown paths to existing ground level with several path options proposed to spread the footfall reducing soil compaction and erosion. These may be phased in different seasons as the intensity of use is observed.

The design of the three new staff and public welfare facility 'pods' were designed to be lightweight, freestanding, timber pavilions, raised on timber legs so that their contact with the ground will be minimal, reducing the impact to land and soils.

The incorporated design mitigation of the pods and pathways for the island thereby reducing potential effects associated with impact to land and soils.

The Village Car Park is designed with SuDS features to attenuate and treat surface water reducing the associated impact on soils

### 8.9.2 Construction and Demolition Phase Mitigation

#### 8.9.2.1 Phase 1(Inis Cealtra Island and Village Car Park)

A site-specific Construction & Environmental Management Plan will be developed and implemented during the construction phase. Implementation of the measures outlined in this plan will ensure that the potential impacts of the proposed development do not occur during the construction phase. Site enabling works on Inis Cealtra will include but are not limited to the following:

- Secure site and erect fencing, hoarding, and signage as required;
- Locate and terminate existing live services where required;
- Install any bunding and/or run-off controls where required;
- Identification of temporary stockpiling and storage areas;
- Set up contractor welfare facilities and site accommodation.
- Provision of temporary power, lighting and water services.

The island will be closed during the works with exception to access for farmers or funerals should it be required. The existing concrete shelter will be carefully dismantled using hand tools will all materials stripped and separated for removal. The waste will then be removed by boat from the island. A temporary compound will be set up at commencement of the construction phase beside the existing slipway. The compound will be used as secure storage for materials and welfare units for construction personnel.

Control measures to be implemented for Inis Cealtra Island include:

- In order to avoid erosion, where heavy footfall is expected, a layer of crushed aggregate is proposed with topsoil spread on top to allow for grass to develop. This will allow for sufficient air and moisture for grass to develop even with heavier footfall and only expose the aggregate in extreme situations rather than eroded topsoil. No plastics, geotextile or edging is being proposed.

Control measures to be implemented for the Village Car Park:

- Fuels, oils, greases, and hydraulic fluids will be stored in bunded compounds. Refuelling of machinery, etc. must be carried out in bunded areas. Fuels will be stored during the construction phase in bunded fuel storage tanks with a 110% holding capacity. Where it is necessary to dispense fuels on site, this will be undertaken in areas covered with an impermeable surface to protect soils and groundwater;
- Construction works, especially ones involving the pouring of concrete, will be conducted in the dry weather where possible;
- Ensuring that covers are available for freshly placed concrete to avoid the surface washing away in heavy rain which could cause potential soil contamination;

- To help prevent the contamination of the ground and groundwater, contaminated materials (oils, fuels, chemicals etc.) will be stored in 110% capacity bunded compounds as outlined in the relevant guidance, i.e. CIRIA (2001) and DMRB Volume 11 (1994);
- Concrete washout will only take place within the secure compound;
- Chute washout will be carried out at designated locations only;
- Any surface water management, waste management measures and soils management plan etc will be put in place at the outset. A Site Specific Soils Management Plan. Soil proposed to be re-used for landscape and fill purposes should be assessed in advance to determine the suitability for re-use with reference to the proposed site end-use.
- Part of the pre commencement activities will include:
    - The installation of suitable protection (e.g., silt curtain) around the site boundaries to control and treat any run-off during the works.
    - Excavated materials from construction activities will be temporarily stockpiled during construction and subsequently reused on site for backfill/re-grading or re-vegetation. It is envisaged that the made ground, where applicable, will be transported off site in trucks and disposed of at a licensed waste facility. This will prevent any contaminated run-off to public roadside drains and adjacent soils during heavy rainfall.
- All construction parking and compounds will be provided within the site confines. Construction wheel wash facilities will be provided on-site. A specialist road washing and cleaning vehicle will be used regularly to maintain public roads, as appropriate.
- When the construction contractor is appointed, an updated Construction Traffic Management Plan will be submitted to Clare County Council, for approval, prior to the commencement of construction.

During construction of the jetty, the CEMP will be implemented, including the management of concrete management plan to ensure minimisation of the likelihood of an accidental spill of concrete. Concrete batching will take place off site and wash down and wash out of concrete trucks will take place off site. Weather conditions and typical seasonal weather variations will be taken account of when planning concrete pours. The refuelling of the excavator will use a drip tray and a spill kit will be made available in the event of a spill on the pontoon.

The control measures and monitoring requirements listed in this section will be implemented throughout the project by the appointed contractor.

The mitigation and control measures are outlined in the **CEMP**. The appointed contractor will be responsible for developing the **CEMP** and implementing the control measures set out in the **CEMP**.

#### 8.9.2.2 Phase 2 (Visitor Centre and Harbour Car Park)

The CEMP is a live document and will be reviewed in advance of Phase 2 commencement. The Phase 2 mitigation will be implemented for the Visitor Centre and Harbour car park. Mitigation measures will include:

Temporary Construction Compound

- A bunded containment area will be provided within the compound for the storage of fuels, lubricants, oils etc.; and
- The compound will be in place for the duration of the construction phase and will be removed once commissioning is complete;
- The secure compound will be used for the concrete washout area;
- The compound will include an enclosed wastewater management system (holding tank) capable of handling the demand during the construction phase when as many as 50 people will be working on site

Storage and Stockpiles

- The installation of suitable protection (e.g., silt curtain) around the site boundaries to control and treat any run-off during the works.
- Temporary stockpiles of excavated earth will be constructed within the lands during construction;
- All excavated materials from the site or introduced materials for construction will be either used or removed from the site;
- No permanent spoil or stockpiles will be left on site, other than those materials required for landscaping, berm construction and construction generally;
- Temporary storage areas for fuels and other hazardous materials required by the contractor during construction will be stored in appropriately bunded facilities to prevent the accidental spillage of hazardous liquids that could cause soil and groundwater contamination.

### 8.9.3 Operational Phase Mitigation

#### 8.9.3.1 Phase 1 (Inis Cealtra Island and Village Car Park)

There is no significant impact foreseen from the operational phase of the Inis Cealtra visitor experience or the new car park.

On Inis Cealtra Island where the footfall is expected to be the heaviest, 1m on either side of the path is proposed to be mown in addition to the 2m width in the main season to allow visitors to spread over a wider width of the path limiting compaction of soils. A 6-week mowing regime is proposed in the summer for the additional strips. The pods have been designed to be dismantled and removed if required, with little trace left on the landscape.

The new car park is designed with SuDS features to attenuate and treat surface water reducing the associated impact on soils to negligible.

#### 8.9.3.2 Phase 2 (Visitor Centre and Harbour Car Park)

There is no significant impact foreseen from the operational phase of the Harbour car park reconfiguration and visitor centre. There will be no alteration to the existing footprint for the car park. The proposed drainage network will incorporate sumps within manholes for silt removal and a bypass petrol interceptor prior to discharge preventing soil contamination. The proposed development includes a detailed Visitor Management Plan (VMP). No additional operational mitigation is warranted.

## 8.10 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

### 8.10.1 Demolition and Construction Phase

#### 8.10.1.1 Phase 1 and Phase 2

Provided all mitigation measures are implemented in full, no significant residual impacts are expected in the demolition and construction phase.

### 8.10.2 Operational Phase

#### 8.10.2.1 Phase 1 and Phase 2

Provided all mitigation measures are implemented in full, no significant residual impacts are expected in the demolition and construction phase.

### 8.10.3 Summary of Post-mitigation Effects

The following Table summarises the identified likely significant residual effects during the demolition and construction phase of the proposed development following the application of mitigation measures.

**Table 8.4 Summary of Demolition & Construction Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Inis Cealtra Island** | | | | | | |
| Land Take | Negative | Not significant | Localised | Likely | Temporary | Residual |
| Release of hydrocarbons or concrete to soils from construction plant or materials | Negative | Not significant | Localised | Unlikely | Short-term | Residual |
| Use of natural resources | Negative | Not Significant | Localised | Likely | Permanent | Residual |
| **Village Car Park** | | | | | | |
| Soil erosion and compaction | Negative | Slight | Localised | Likely | Reversible | Residual |
| Release of hydrocarbons or concrete to soils from construction plant or materials | Negative | Not Significant | Localised | Unlikely | Short-term | Residual |
| Land Take | Negative | Moderate | Localised | Likely | Permanent | Residual |

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Subsoil and Topsoil Excavation | Negative | Moderate | Localised | Likely | Permanent | Residual |
| Use of natural resources | Negative | Not Significant | Localised | Likely | Permanent | Residual |
| Increase in Traffic | Negative | Imperceptible | Localised | Likely | Temporary | Residual |
| **Visitor Centre** | | | | | | |
| Subsoil and Topsoil Excavation | Negative | Moderate | Localised | Likely | Permanent | Residual |
| Use of natural resources | Negative | Not Significant | Localised | Likely | Permanent | Residual |
| Increase in Traffic | Negative | Imperceptible | Localised | Likely | Temporary | Residual |
| Release of hydrocarbons or concrete to soils from construction plant or materials | Negative | Not Significant | Localised | Unlikely | Short-term | Residual |
| Soil Erosion, Soil Compaction and Soil Stability | Negative | Slight | Localised | Likely | Reversible | Residual |
| **Mountshannon Harbour Car Park Reconfiguration** | | | | | | |
| Subsoil and Topsoil Excavation | Negative | Moderate | Localised | Likely | Permanent | Residual |
| Release of hydrocarbons or concrete to soils from construction plant or materials | Negative | Not Significant | Localised | Unlikely | Short-term | Residual |
| Soil Erosion, Soil Compaction and Soil Stability | Negative | Slight | Localised | Likely | Reversible | Residual |

The following Table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

**Table 8.5 Summary of Operational Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Inis Cealtra Island** | | | | | | |
| Land Take | Negative | Not Significant | Localised | Likely | Reversible | Direct |
| Soil Compaction | Negative | Imperceptible | Localised | Likely | Reversible | Direct |

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Inis Cealtra Island** | | | | | | |
| Village Car Park | | | | | | |
| Release of hydrocarbons to soils from vehicles using car park vehicles using car park | Negative | Not Significant | Localised | Unlikely | Short-term | Direct |
| Soil Compaction | Negative | Not Significant | Localised | Likely | Permanent | Direct |
| **Mountshannon Harbour Car Park** | | | | | | |
| Release of hydrocarbons to soils from vehicles using car park | Negative | Not Significant | Localised | Unlikely | Short-term | Direct |
| Soil Compaction | Negative | Not Significant | Localised | Likely | Permanent | Direct |

### 8.10.4 Cumulative Residual Effects

There will be no significant cumulative residual effects.

## 8.11 Risk of Major Accidents or Disasters

This section presents an assessment of the vulnerability of the proposed development in relation to major accidents and disasters. It assesses the likelihood of the proposed development to cause an increased risk of major accidents and disasters.

Major accidents can relate to any incident, technological or otherwise, which has the potential to have a significant impact on the facility or on the receiving environment. Examples of major accidents which have such potential are fire, explosion, traffic collisions, contamination and pollution.

A natural disaster is an all-encompassing term which describes any severe natural event which has the potential to cause disturbance to an individual, development or population. The severity depends on the receptor and the type of disaster. Examples of natural disasters are earthquakes, flooding, tsunamis, lightning strikes, hurricanes or any other extreme natural event. This section has considered the potential increased risk of such events occurring as a result of climate change, such as sea-level rise and increased frequency in the occurrence of extreme weather events.

The Control of Major Accident Hazards Involving Dangerous Substances Regulations 2015 (S.I. No. 209 of 2015) (the 'COMAH Regulations') place an obligation on operators of establishments that store,

handle or process dangerous substances above certain thresholds to take all necessary measures to prevent major accidents and to limit the consequences for human health and the environment. The proposed development is not subject to the requirements of the COMAH Regulations.

## 8.12 Worst Case Scenario

A worst-case scenario would arise if best practice measures are not implemented during the construction phase of the development. In terms of land and soils this would relate to the spillage of fuel during the construction phase which would impact the soil quality and could contaminate soil. Implementing best practice measures will make this scenario unlikely.

## 8.13 Interactions

There is potential for land and soils to interact with water and hydrology. With removal of ground cover during construction work increasing surface water run-off and potential of impact to surface water drainage. Any contamination of soils has potential to reach groundwater.

Demolition works in the village car park require site clearance which will include clearing, grubbing and removing any required trees, hedgerows and the mound/wall using an excavator and dump truck. Removal of the vegetation has the potential impact on biodiversity.

Provided that all mitigation measures that are detailed in the CEMP are followed the impacts are considered to be not significant.

## 8.14 Monitoring

A preliminary monitoring schedule has been prepared as part of the CEMP and will be finalised pending the appointment of the contractor. The site checklist must have the following information included as minimum:

| Aspect | Area of Inspection | Monitoring Required | Note/Checks | Frequency | Responsibility |
|---|---|---|---|---|---|
| Surface water Run-off that may cause soil contamination | Weather Forecast | Met Éireann download | • Pre-determined rainfall trigger levels (e.g. 1 in 5-year storm event or heavy rainfall at >25mm/hr) | Every 24 hours minimum | Project Manager |
| Water quality monitoring | Excavations and Roadside attenuation Drain | Visual inspection | •Colour, presents of silts | Daily | Environmental Manager |

| Aspect | Area of Inspection | Monitoring Required | Note/Checks | Frequency | Responsibility |
|---|---|---|---|---|---|
| Roads | Site Entrance | Visual inspection | •Unacceptable level of sediment/silt on the road surface<br>• Presence of waste<br>• Surface condition | Daily | Project Manager |
| Temporary Site Compound Area | Fuel & Oil Storage areas | Visual inspection | • Damage to containers or ancillary equipment<br>• Leakages<br>• Unlocked storage container | Daily | Environmental Manager |
| | Construction Materials Storage Areas | Visual inspection | • Damage<br>• Untidiness | Daily | Environmental Manager |
| | Spoil Storage areas | Visual inspection | •Levels/Slippage<br>• Re-vegetation | Daily early/weekly | Environmental Manager |
| | Waste Collection Areas | Visual inspection | • Damage<br>• Untidiness<br>• Full skips | Daily | Environmental Manager |
| | Concrete chute washout area | Visual inspection | • Damages<br>• Leakages<br>• Unacceptable level of concrete washings | Daily | Environmental Manager |
| Operation Control | Wastewater facilities | Visual inspection | • Portaloos requiring servicing | Weekly | Project Manager |
| | Hoarding and boundary fences | Visual inspection | • Signs of movement (i.e. not in a straight line)<br>• Damaged or fallen sections of fence | Weekly | Project Manager |
| | Concrete pours | Visual inspection | • Run-off / spills | To be scheduled with pours | Project Manager |

| Aspect | Area of Inspection | Monitoring Required | Note/Checks | Frequency | Responsibility |
|---|---|---|---|---|---|
| | Dust generation | Visual inspection | • Cleanliness of roads and compound area<br>• Dust at stockpiles<br>• Dust from delivery vehicles | Daily | Project Manager |

## 8.15 Summary of Mitigation and Monitoring

The following Table summarises the Demolition and Construction Phase mitigation and monitoring measures.

**Table 8.6 Summary of Construction Phase Mitigation and Monitoring**

| Character of potential impact | Mitigation Measure |
|---|---|
| Impact to surface water from soil excavation | • A site-specific Construction & Environmental Management Plan will be developed and implemented during the construction phase. Implementation of the measures outlined in this plan will ensure that the potential impacts of the proposed development do not occur during the construction phase.<br>• Install any bunding and/or run-off controls where required such as installation of suitable protection (e.g., silt curtain) around the site boundaries to control and treat any run-off during the works<br>• Weather conditions and typical seasonal weather variations will be taken account of when planning stripping of topsoil and excavations.<br>• All oils, fuels, paints and other chemicals will be stored in a bunded containment area.<br>• The construction compound will include an enclosed wastewater management system (holding tank). This will be emptied on a regular basis as required by a licensed contractor for treatment and disposal. |
| Soil erosion and compaction | |
| Accidental spills and leaks associated with storage of oils and fuels, leaks from construction machinery | |
| Concrete runoff, particularly discharge of wash water from concrete trucks | |
| Improper discharge of foul drainage from contractor's compound | |

**Table 8.7 Summary of Operational Phase Mitigation and Monitoring**

The following Table summarises the Operational Phase mitigation and monitoring measures.

| Character of potential impact | Mitigation Measure |
|---|---|
| Soil erosion and compaction due to increased footfall | • Where/when heavy footfall expected, widening of mown paths, and addition of crushed aggregate mixed with topsoil, and rotation of paths used.<br>• A contractor will be appointed to manage the maintenance of the foul system and waste removal from the island.<br>• Periodic monitoring and maintenance of proposed drainage network which includes Class 1 Bypass Petrol Interceptors. |
| Accidental spills and leaks associated with the dry toilet facilities | |
| Accidental spills and leaks associated with fuel leaks from vehicles | |
| | |

## 8.16 Conclusion

During the construction and operation/maintenance phases of the proposed development, a number of activities will take place, some of which will have the potential to affect the land and soil quality at the site or its vicinity.

Pollution control and other preventative measures have been incorporated into the project design to minimise adverse effects on soil quality. Mitigation by design has been the principal means which will reduce suspended sediment run-off arising from construction activities. Preventative measures also include fuel, concrete, and waste management, which are incorporated into the project CEMP.

In conclusion, no significant effects on the land, soil and geology of the proposed development site will occur during the demolition, construction and operational phase due to the correct procedures and outlined mitigations being implemented.

The assessment also confirms that there will be no significant cumulative effects on the land, soil and geology environment as a result of the proposed development and other proposed projects.

## 8.17 References and Sources

EPA, 2022. Guidelines on Information to be contained in Environmental Impact Assessment Reports.

EPA Online Maps Accessed on 27.09.2024

Geohive Online Maps Accessed on 27/09/2024

Geological Survey of Ireland Online Map Accessed on 27/09/2024

Institute of Geologists Ireland, 2013. Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements

National Roads Authority, 2008. Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

EPA, (2003): Advice Notes on Current Practice (in the preparation on Environmental Impact Statements) where relevant

The Heritage Act 1995,

The Planning and Development Act 2000 as amended, and the Planning and Development Regulations 2001 as amended 2001 - 2023;

S.I. No. 296/2018 European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2001-2018; and,

Dept Of Housing, Local Government and Heritage, (2018). Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 9
# WATER & HYDROLOGY

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


9 Water & Hydrology ..... 9-3
9.1 Introduction ..... 9-3
9.2 Expertise & Qualifications ..... 9-3
9.3 Proposed Development ..... 9-3
9.3.1 Development Summary ..... 9-3
9.3.2 Aspects Relevant to this Chapter ..... 9-5
9.4 Methodology ..... 9-5
9.4.1 Scope of the Assessment ..... 9-5
9.4.2 Study Area ..... 9-5
9.4.3 Desktop Study ..... 9-6
9.4.4 Field Work / Site Walkover ..... 9-7
9.4.5 Assessment Criteria ..... 9-7
9.4.6 Relevant Legislation and Guidance ..... 9-7
9.4.7 Other Relevant Guidance and Policy ..... 9-10
9.4.8 Consultation ..... 9-10
9.5 Difficulties Encountered ..... 9-10
9.6 Baseline Environment ..... 9-11
9.6.1 Local Hydrology ..... 9-11
9.6.2 Hydrogeology ..... 9-18
9.6.3 Project Water Demand and Wastewater Management ..... 9-22
9.7 Potential Significant Effects ..... 9-23
9.7.1 The 'Do Nothing' Scenario ..... 9-23
9.7.2 Construction Phase ..... 9-23
9.7.3 Operational Phase ..... 9-26
9.7.4 Cumulative Effects ..... 9-28
9.7.5 Summary ..... 9-31
9.8 Mitigation ..... 9-32
9.8.1 Incorporated Design Mitigation ..... 9-32
9.8.2 Construction Phase Mitigation ..... 9-33
9.8.3 Operational Phase Mitigation ..... 9-34
9.9 Residual Impact Assessment ..... 9-35
9.9.1 Construction Phase ..... 9-35
9.9.2 Operational Phase ..... 9-35
9.9.3 Summary of Post-mitigation Effects ..... 9-36
9.9.4 Cumulative Residual Effects ..... 9-37
9.10 Risk of Major Accidents or Disasters ..... 9-37
9.11 Worst Case Scenario ..... 9-37

9.12 Interactions ..... 9-37
9.13 Monitoring ..... 9-38
9.14 Summary of Mitigation and Monitoring ..... 9-39
9.15 Conclusion ..... 9-40
9.16 References and Sources ..... 9-42

## Table of Figures

Figure 9.1: Study Area ..... 9-6
Figure 9.2 WFD Catchment Area ..... 9-11
Figure 9.3: River water bodies in proximity to the development site ..... 9-12
Figure 9.4: Surface Water Body WFD Risk Status ..... 9-13
Figure 9.5: Lake water bodies in proximity to the development site ..... 9-14
Figure 9.6: Lake Water Body WFD Risk Status ..... 9-15
Figure 9.7: Designated Bathing Area ..... 9-16
Figure 9.8: Groundwater Aquifer ..... 9-19
Figure 9.9: Groundwater Body ..... 9-19
Figure 9.10: Groundwater Body Risk ..... 9-20
Figure 9.11: Groundwater Vulnerability ..... 9-21
Figure 9.12: Groundwater Wells and Springs ..... 9-22

## Table of Tables

Table 9.1: Phases of Development ..... 9-4
Table 9.2: Surface Water Body Biological Quality Status and Risk ..... 9-13
Table 9.3: Lake Water Body Biological Quality Status and Risk ..... 9-15
Table 9.4: Groundwater Body Quality Status and Risk ..... 9-20
Table 9.5: Planned and permitted developments in proximity to the proposed development ..... 9-28
Table 9.6 Summary of Demolition & Construction Phase Likely Significant Effects in the absence of mitigation ..... 9-32
Table 9.7 Summary of Operational Phase Likely Significant Effects in the absence of mitigation ..... 9-32
Table 9.8 Summary of Demolition & Construction Phase Effects Post Mitigation ..... 9-36
Table 9.9 Summary of Operational Phase Effects Post Mitigation ..... 9-36
Table 9.10 Summary of Demolition & Construction Stage Monitoring Measures ..... 9-38
Table 9.11 Summary of Demolition & Construction Phase Mitigation and Monitoring ..... 9-39
Table 9.12 Summary of Operational Phase Mitigation and Monitoring ..... 9-40

# 9 Water & Hydrology

## 9.1 Introduction

This chapter of the **Environmental Impact Assessment Report (EIAR)** considers the potential effects on the existing water environment arising from the proposed development. The nature and probability of effects on the existing water environment arising from the overall project has been assessed. The assessment comprises:

- A review of the existing receiving environment.
- Prediction and characterisation of likely effects;
- Evaluation of significance of effects; and
- Consideration of mitigation measures, where appropriate.

## 9.2 Expertise & Qualifications

The assessment was completed by Kate Cain of MWP. Kate Cain has a BSc Honours in Geography and Environmental Management. She is an environmental consultant at MWP and has over 15 years of experience. Kate has authored EIA Screening reports, Environmental Impact Assessment Reports (EIAR), Detailed Site Assessments, Environmental Reports and Construction and Environmental Management Plans (CEMPs) for a wide range of projects. She has a strong background in hydrology and has undertaken water chapters and Water Framework Directive assessments for a wide range of projects. These include but are not limited to Dernacart Grid Connection, Ballynisky Wind Farm, Brittas Wind Farm, Abbot Kilkenny Facility.

This assessment has been reviewed by Claire Boylan of Malachy Walsh and Partners. Claire Boylan holds a BSc (EnvMgt), an Adv Dip Planning and Environmental Law, a BBS and DipSci. Claire is an experienced Environmental Scientist at Malachy Walsh and Partners (MWP), having worked for 6 years in the environmental sector. Claire has worked on a variety of infrastructure projects, environmental licensing applications, conducted environmental assessments and supported the delivery of a number of environmental deliverables including Environmental Impact Assessment (EIA) Screening Reports, Appropriate Assessment (AA), Natura Impact Statements (NIS) and Environmental Impact Assessment Reports (EIAR).

## 9.3 Proposed Development

### 9.3.1 Development Summary

The full description of the proposed development is outlined **in Chapter 02 Development Description** of this **EIAR**. The statutory notice should also be referenced. Following is a summary description of the development.

The Inis Cealtra Visitor Experience is to be developed on Inis Cealtra (Holy Island) and on the mainland, in two principal locations within Mountshannon Village. The project is comprised of different elements as set out below.

**Inis Cealtra Island**

- Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island.
- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp.
- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.
- Provision of three staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

**Mainland – Mountshannon**

- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, together with coach parking and bicycle parking facilities.
- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building incorporating a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.
- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.

The current indicative phasing strategy suggests that the project will be split over 2 phases. For EIA purposes, Phase 1 will be assessed with the current baseline. Phase 2 will be assessed with Phase 1 included as part of the baseline.

**Table 9.1: Phases of Development**

| Phase | Project Element / Proposed Works | Duration of Works | Anticipated Completion |
|---|---|---|---|
| 1 | (a) Works at Inis Cealtra island including:<br>• Mooring point<br>• Demolition of existing visitor shelter & OPW cabin<br>• Network of pedestrian pathways<br>• Welfare Pods<br>(b) New Car Park in Mountshannon Village | 12 months | Q1 of 2028 |
| 2 | (a) Visitor Centre, Mountshannon<br>(b) Reconfiguration of Mountshannon Harbour car park and upgrade works to the existing jetties | 18 months<br>6 months | Q3 of 2042 |

### 9.3.2 Aspects Relevant to this Chapter

The following aspects of the proposed development are relevant to this chapter:

- Surface drainage management applicable to the proposed development during construction and operation;
- Flood attenuation;
- Temporary stockpiles and storage areas;
- Disposal of spoil; and
- Increased boat activity moving from the mainland to the Island.

## 9.4 Methodology

### 9.4.1 Scope of the Assessment

The scope of the chapter and assessment includes the following:

1. Establish the baseline conditions on site;
2. Identify the likely significant adverse effects on hydrology and hydrogeological aspects of the proposed project during construction, operation, and decommissioning;
3. Identify and develop mitigation measures to avoid, reduce or eliminate likely significant adverse effects; and
4. Identify any significant residual impacts, effects and possible cumulative effects after mitigation measures are implemented.

### 9.4.2 Study Area

The proposed development is located in Mountshannon (proposed visitor centre, new car park and upgrade of the car park at the harbour) and on Holy Island in Lough Derg in County Clare. Inis Cealtra is one of Ireland's most important historical and ecclesiastical sites. Mountshannon is a seasonally busy village and is a popular destination for Shannon cruisers. Attractions include a tour of Holy Island, fly fishing, angling, walking trails and bird watching.

The study area for this chapter therefore includes the associated hydrological (catchment and sub catchment areas) and geohydrological (aquifers) aspects relating to the proposed development.

**Figure 9.1: Study Area**

### 9.4.3 Desktop Study

The methodology used for this study included desk-based research of published information to assemble information on the local receiving environment. The desk study included the following activities:

- Review of local and regional development plans and planning policy in order to identify future development and identify any planning allocations within the study area, for example Clare County Development Plan 2023-2029 and Inis Cealtra Strategic Environmental Assessment (SEA);
- Review of Clare County Council's Planning Register to identify relevant development proposals currently under consideration by the Council.
- Environmental Protection Agency (EPA) – website mapping and database information (accessed July 2024);
- National Parks and Wildlife Services (NPWS) – Protected Site Register (accessed July 2024);
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie) (accessed July 2024);
- Examination of the Geological Survey of Ireland (GSI) online datasets pertaining to hydro-geology features such as aquifers, wells, groundwater bodies and groundwater protection schemes (accessed July 2024);

- Examination of the Environmental Protection Agency – "HydroTool" Map Viewer (www.epa.ie) (accessed July 2024);
- Examination of CFRAM Preliminary Flood Risk Assessment (PFRA) maps (www.cfram.ie) (accessed July 2024); and
- Examination of information on private wells or water supply available from the GSI online datasets and the EPA Water Abstraction Register (accessed July 2024).

### 9.4.4 Field Work / Site Walkover

A site walkover was carried out by MWP within the site boundary and the study area (upstream and downstream of the site) to determine the existing site conditions. The survey was used to inform the assessment of potential effects on the local water environment and involved the following:

- Multidisciplinary walkover surveys were carried out on multiple dates between 2021 and 2024 which included identification of hydrological features on site, wet ground, drainage patterns and distribution for flood risk assessment, exposures, and drains; and
- Confirmation of the site catchments and drainage regime, and any hydrological buffers to be implemented.

Priority Geotechnical Ltd. (pgl) were appointed to undertake site investigation (SI) works between 28th February and 01st March 2022 at the Old Rectory and Visitor Centre site. The SI consisted of:

- Visit to project site to observe existing conditions;
- Excavation of 4 No. Trial Pits to a maximum depth of 2.2m below ground level (BGL);
- Carry out 4 No. Soakaways to determine a soil infiltration value to BRE digest 365;
- Carry out 2 No. Rotary Core Boreholes to a maximum depth of 14.90m BGL;
- Carry out a Geophysical Survey to determine existing ground conditions;
- Carry out a Ground Penetrating Radar Survey (GPR) to locate existing services; and
- Geotechnical & Environmental Laboratory testing.

### 9.4.5 Assessment Criteria

The method of impact assessment and prediction follows the EPA (2022) *Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR).* The methodology and approach outlined in the EPA Guidelines was used to determine whether the proposed development had the potential to cause significant effects on the hydrological or hydrogeological environment. Further detail in relation to the assessment methodology and impact rating terminology outlined in the EPA Guidelines is delineated in **Chapter 01 Introduction** of this **EIAR**.

### 9.4.6 Relevant Legislation and Guidance

In addition to legislation detailed in **Chapter 01 Introduction** of the **EIAR**, this chapter has also complied with the following legislation specifically relating to water:

#### 9.4.6.1 Water Framework Directive (WFD) (2000/60/EC)

The Water Framework Directive (WFD) (2000/60/EC) (as amended) establishes an integrated and coordinated framework for the sustainable management of water. Under the WFD1, the island of Ireland has been divided into a number of River Basin Districts (RBD) in order to facilitate the effective implementation of the WFD objectives. The proposed development site is located within the Irish River Basin District (IRBD) in Hydrometric Area No. 15.

The strategies and objectives of the WFD in Ireland have influenced a range of national legislation and regulations, since its inception in the year 2000.

The WFD (1st Cycle) was transposed into national legislation in 2003, with the aims to:

- Prevent deterioration of status for surface and groundwaters and the protection, enhancement and restoration of all water bodies;
- Achieve good ecological status and good chemical status for surface waters and good chemical and good quantitative status for groundwaters;
- Progressively reduce pollution of priority substances and phase-out of priority hazardous substances in surface waters and prevention and limitation of input of pollutants in groundwaters;
- Reverse any significant, upward trend of pollutants in groundwaters; and
- Achieve standards and objectives set for protected areas in Community legislation.

The objective for each surface water and groundwater body is to prevent deterioration, maintain high and good status waters, restore waters to at least good status where necessary, and ensure that the requirements of associated protected areas are met.

The River Basin Management Plan for Ireland 2022 - 2027 (RBMP), the third-cycle of river basin management planning under the WFD, provides for the targeted implementation of the two principle objectives of the WFD, namely;

1. To prevent the deterioration of water bodies and to protect, enhance and restore them with the aim of achieving at least good status; and
2. To achieve compliance with the requirements for designated protected areas.

Five key 'evidence-based' priorities form the pillar of this iteration of the RBMP are outlined as follows:

1. Ensure full compliance with relevant EU legislation;
2. Prevent deterioration;
3. Meet the objectives for designated protected areas;
4. Protect high-status waters; and
5. Implement targeted actions and pilot schemes in focused sub-catchments aimed at:
    a) targeting water bodies close to meeting their objective; and

[1] Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy.

b) addressing more complex issues that will build knowledge for the third cycle.

The assessment will determine the effect in accordance with the following regulations which give effect to the WFD:

- S.I No. 9 of 2010 European Communities Environmental Objectives (Groundwater) Regulations 2010 (as amended);
- S.I. No. 272 of 2009 European Communities Environmental Objectives (Surface Water Regulations) 2009 (as amended);
- S.I. No. 293 of 1988: Quality of Salmonid Water Regulations;
- European Communities Environmental Objectives (Freshwater Pearl Mussel Regulations) 2009 to 2018 (as amended); and
- Urban Waste Water Treatment Regulations (SI No. 254 of 2001 as amended) (UWW Regulations).

These Regulations have been devised to implement the requirements of the WFD and establish Environmental Quality Standards for the purpose of assessing the status of surface waters and groundwaters. The Surface Waters Regulations apply to all surface waters including lakes, rivers, canals, transitional waters, and coastal waters and supersede all previous water quality regulations.

#### 9.4.6.2 Water Framework Directive - Protected Areas

The WFD requires a register of protected areas. These are protected for their use (such as fisheries or drinking water) or because they have important habitat and/or species that directly depend on water. The register includes areas identified by the WFD itself or other European Directives. These may include the following:

- Areas used for water abstraction - European Union (Water Policy) (Abstractions Registration) Regulations 2018 (S.I. No. 261 of 2018);
- Areas designated for the protection of economically significant aquatic species (Freshwater Fish Directive 78/659/EEC; Shellfish Directive 79/923/EEC);
- Recreational waters (Bathing Waters Directive 76/160/EEC);
- Nutrient Sensitive Areas (Nitrates Directive 91/676/EEC; Wastewater Treatment Directive 91/271/EEC);
- Areas of protected species or habitats where water quality is an important factor in their protection (Natura 2000 sites under Birds Directive 79/409/EEC and Habitats Directive 72/43/EEC); and
- Surface waters (The European Communities Environmental Objectives (Surface Waters) Regulations [S.I. No 272 of 2009], and amendment regulations 2012 [S.I. 327 of 2012]).

The Lough Derg (Shannon) Special Protection Area (SPA) and Slieve Aughty Mountains SPA are located to the south and north of the proposed development respectively. Potential impacts of the proposed development on the SPAs are addressed in **Chapter 10 Biodiversity** and in the **Appropriate Assessment Screening** submitted with the planning application package.

### 9.4.7 Other Relevant Guidance and Policy

The following guidelines and policies have been complied with to the extent that they are applicable for the preparation and assessment of impacts effects from the proposed development on hydrology and geohydrology, including:

- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW);
- River Basin Management Plan (RBMP) for Ireland 2022 - 2027;
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' CIRIA 532, 2001);
- Environmental Protection Agency (2022): *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*;
- *Transport Infrastructure Ireland (previously National Road Authority) - Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for national Road Schemes (TII, 2009);*
- Clare County Development Plan 2023-2029;
- The *SuDS Manual (C753) - Construction Industry Research and Information Association* (CIRIA), 2015;
- Guidelines on *Protection of Fisheries during Construction Works in and Adjacent to Waters* (IFI, 2016); and
- CIRIA B14 *Design of Flood Storage Reservoirs* (Hall et al. 1993).
- EPA (2022) *Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EIAR)*; and
- Institute of Geologists of Ireland (2013) *Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements*.

These Regulations have been devised to implement the requirements of the WFD and establish Environmental Quality Standards for the purpose of assessing the status of surface waters and groundwaters. The Surface Waters Regulations apply to all surface waters including lakes, rivers, canals, transitional waters, and coastal waters and supersede all previous water quality regulations.

### 9.4.8 Consultation

Meetings have been undertaken with Uisce Éireann (previously Irish Water) to discuss the proposed development. A meeting was undertaken on the 13th June 2022 and a second meeting held on the 24th June 2022. A confirmation of feasibility (COF) was issued in September 2024 by Uisce Éireann for a wastewater connection and water connection for the visitors centre and rectory.

## 9.5 Difficulties Encountered

The assessment is based on the project details that were made available at the time of writing.

## 9.6 Baseline Environment

### 9.6.1 Local Hydrology

#### 9.6.1.1 Catchment Area

All elements of the proposed development (the visitors centre, car park, harbour, Lough Derg and the Island) are located within Hydrometric Area No. 25C, also known as the Lower Shannon catchment,

The Lower Shannon (Lough Derg) Catchment covers an area of 1,820km² and comprises Lough Derg and its catchment. The catchment is characterised by flat limestone plains, a small proportion of which are karstified to the east of Lough Derg, and the uplands of the Devil's Bit Hills in the southeast, the Slieve Aughty Mountains in the west and the Slieve Bearnagh and Arra Mountains in the south, between which the Shannon escapes to the south from Lough Derg. All of these upland areas are underlain by old red sandstone with metamorphic and volcanic rocks in the higher summit areas. This catchment can be divided into two regions, the area draining into the western and eastern sides of Lough Derg. The Lower Shannon (Lough Derg) Catchment is divided into 12 sub-catchments and has 84 surface water bodies and 19 groundwater bodies.

The proposed development is located within the sub catchment 25C_10 [Shannon(Lower)_SC_070]. Refer to **Figure 9-2** for an overview of the catchment and sub-catchment extents.

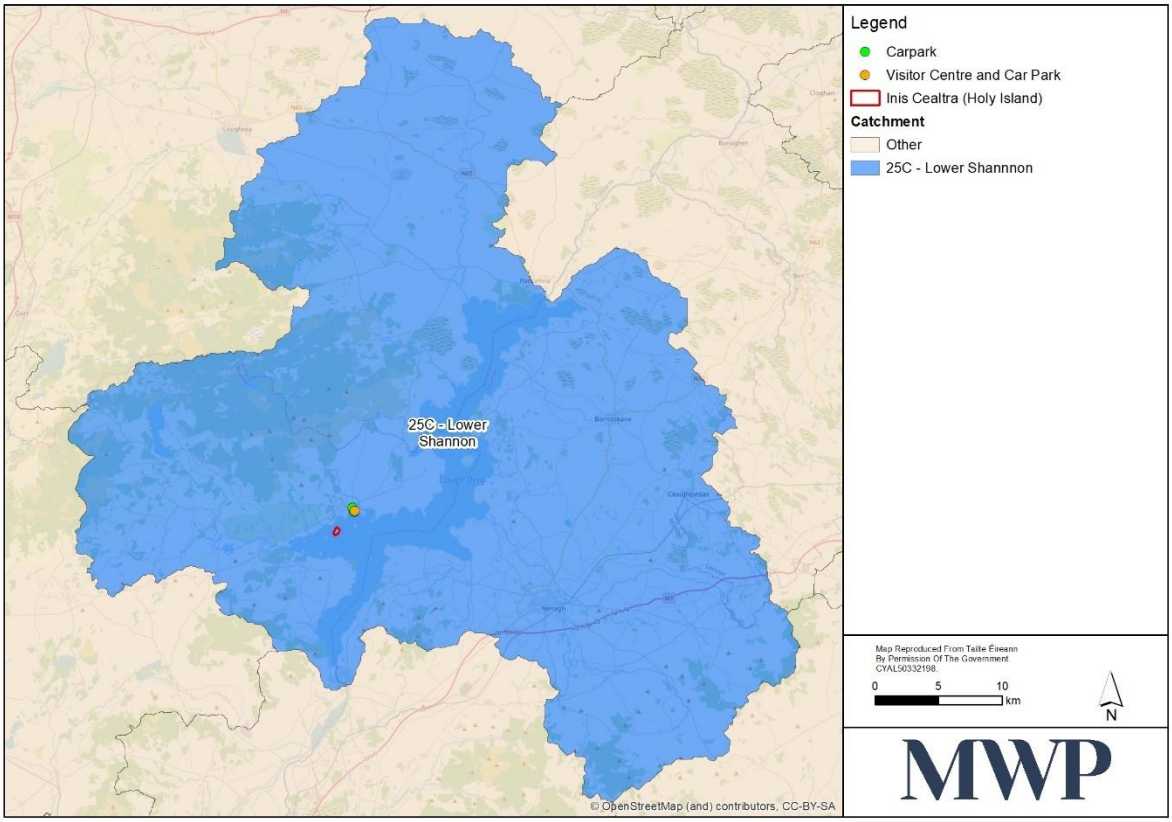



**Figure 9.2 WFD Catchment Area**

### 9.6.1.2 Surface Water Bodies

There are no surface water bodies located within the proposed development footprint of the proposed visitors centre and car park. The Derg TN lake waterbody is located adjacent to the harbour car park to the east, south and west.

There is no surface water i.e. streams on Inis Cealtra but there is a spring associated with the holy well which is fed by groundwater from a locally important aquifer in the limestone bedrock (refer to **Section 9.6.2**).

The river waterbody Kilrateera_Upper_010 (IE_SH_25K720870) is located approximately 0.5km to the east of the site proposed for the visitors centre and car park. The river waterbody Shannon (Lower)_040 (IE_SH_25A050100) is located approximately 0.4km and 0.5km to the west of the proposed visitors centre and car park respectively. Refer to **Figure 9.3** for the location of the proposed development within proximity of these water bodies.

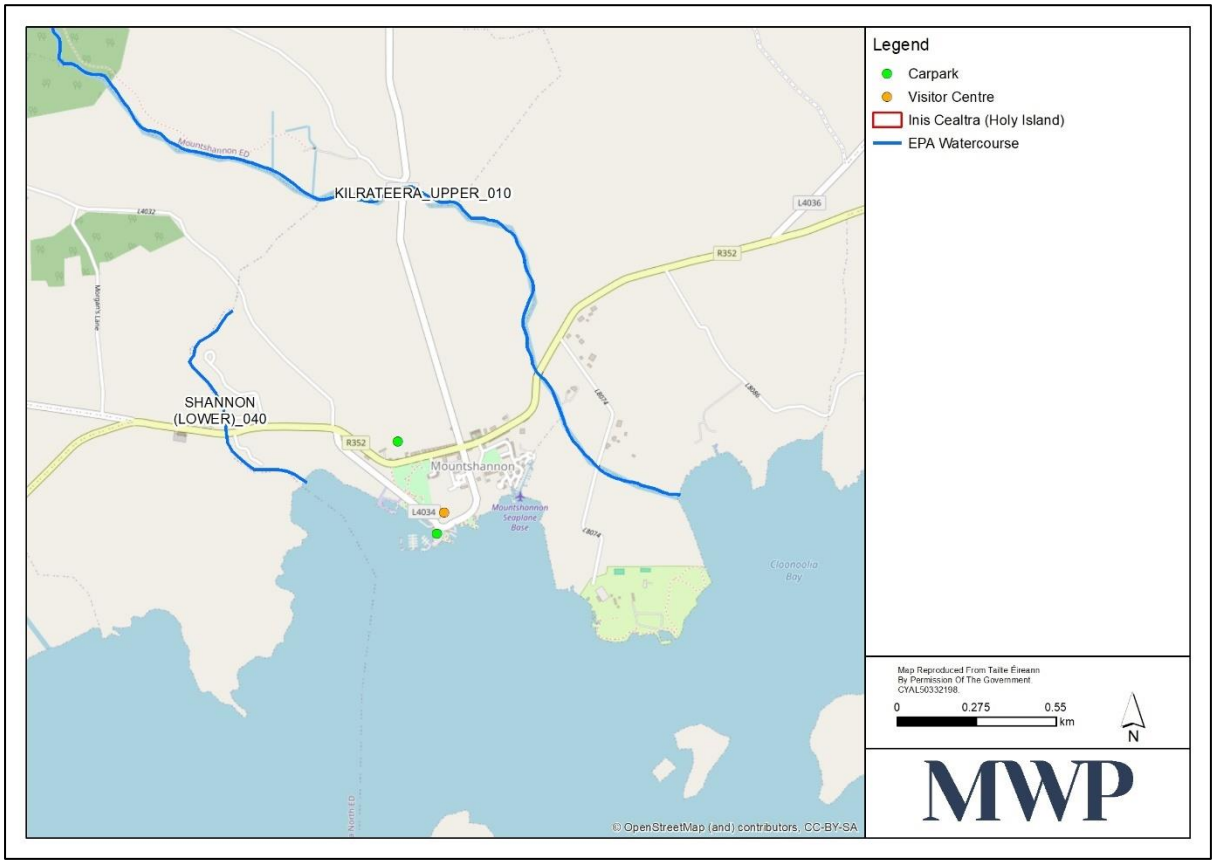



**Figure 9.3: River water bodies in proximity to the development site**

The EPA Water Framework Directive river water quality status of the Kilrateera_Upper_010 and Shannon (Lower)_04 is considered 'Good' for the period 2016-2021 (**Table 9.2**) No more recent data

was available at the time of writing of this chapter. The WFD Risk Score for this river waterbody is 'Review'[2] (**Figure 9.4**).

**Table 9.2: Surface Water Body Biological Quality Status and Risk**

| Surface Water Body | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Code** | **EPA Name** | **Type** | **WFD Risk*** | **Water Quality Status (Q Value)** | | | | |
| | | | | **2007-2009** | **2010-2012** | **2010-2015** | **2013-2018** | **2016-2021** |
| IE_SH_25K720870 | Kilrateera_Upper_010 | River | Review | Not assigned | Not assigned | Not assigned | Moderate | Good |
| | | | | N/A | N/A | N/A | (Q3-4) | Q4 |
| IE_SH_25A050100 | Shannon (Lower)_040 | River | Review | Not assigned | Not assigned | Not assigned | Not assigned | Good |
| | | | | N/A | N/A | N/A | N/A | Q4 |
| **Water bodies for Review are not considered to be At Risk but require further evidence that the objectives are being met, typically with ongoing monitoring and/or possibly modelling.* | | | | | | | | |

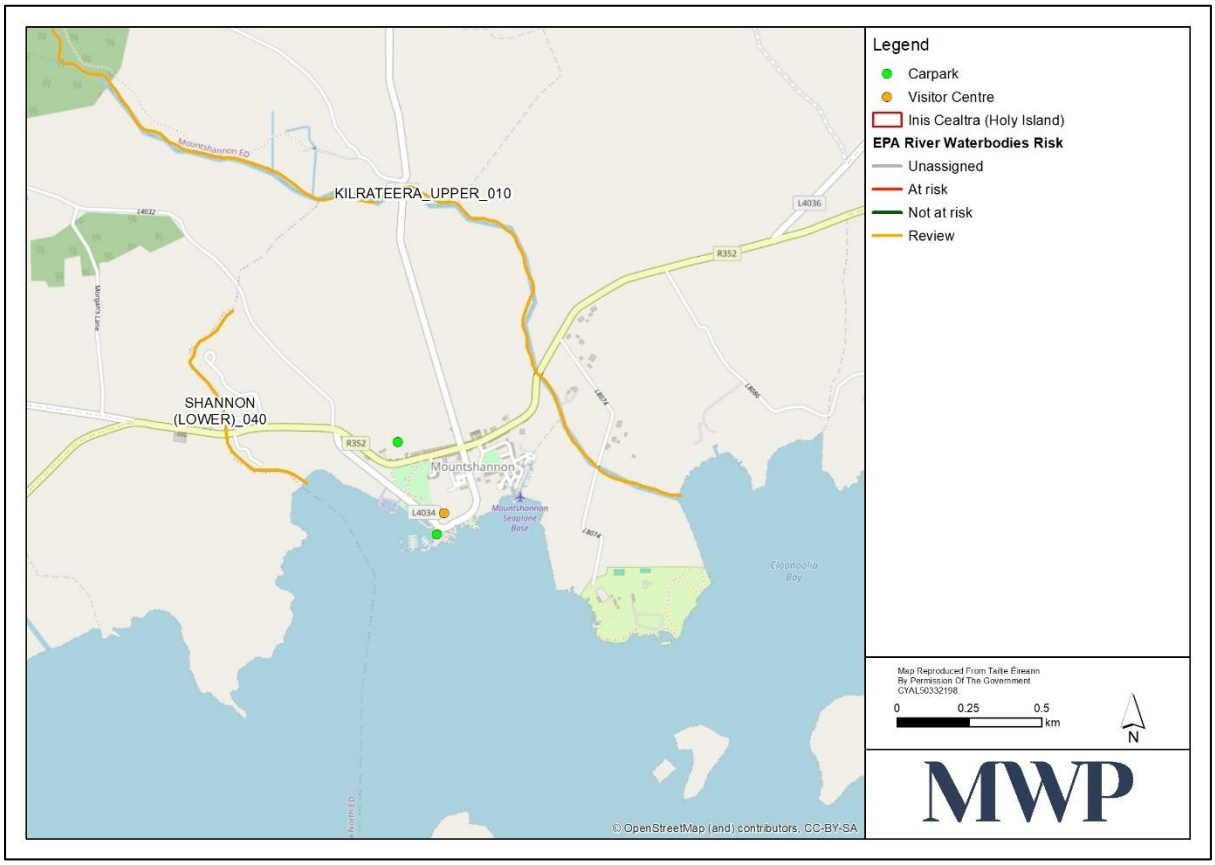



**Figure 9.4: Surface Water Body WFD Risk Status**

[2] **Water bodies for Review are not considered to be At Risk but require further evidence that the WFD objectives are being met, typically with ongoing monitoring and/or possibly modelling.*

### 9.6.1.3 Chemical Water Quality

There are no EPA monitoring stations located on the surface water bodies associated with the proposed development and currently no monitoring data available.

### 9.6.1.4 Lake Water Bodies

The Lough Derg TN lake water body (IE_SH_25_191a) is located 0.1km south of the proposed visitors centre, 0.2km south of the proposed car park and adjacent to the Mountshannon Harbour car park. Inis Cealtra is located within this lake water body. Refer to **Figure 9.5** for the location of the proposed development within proximity of the Derg lake water body.

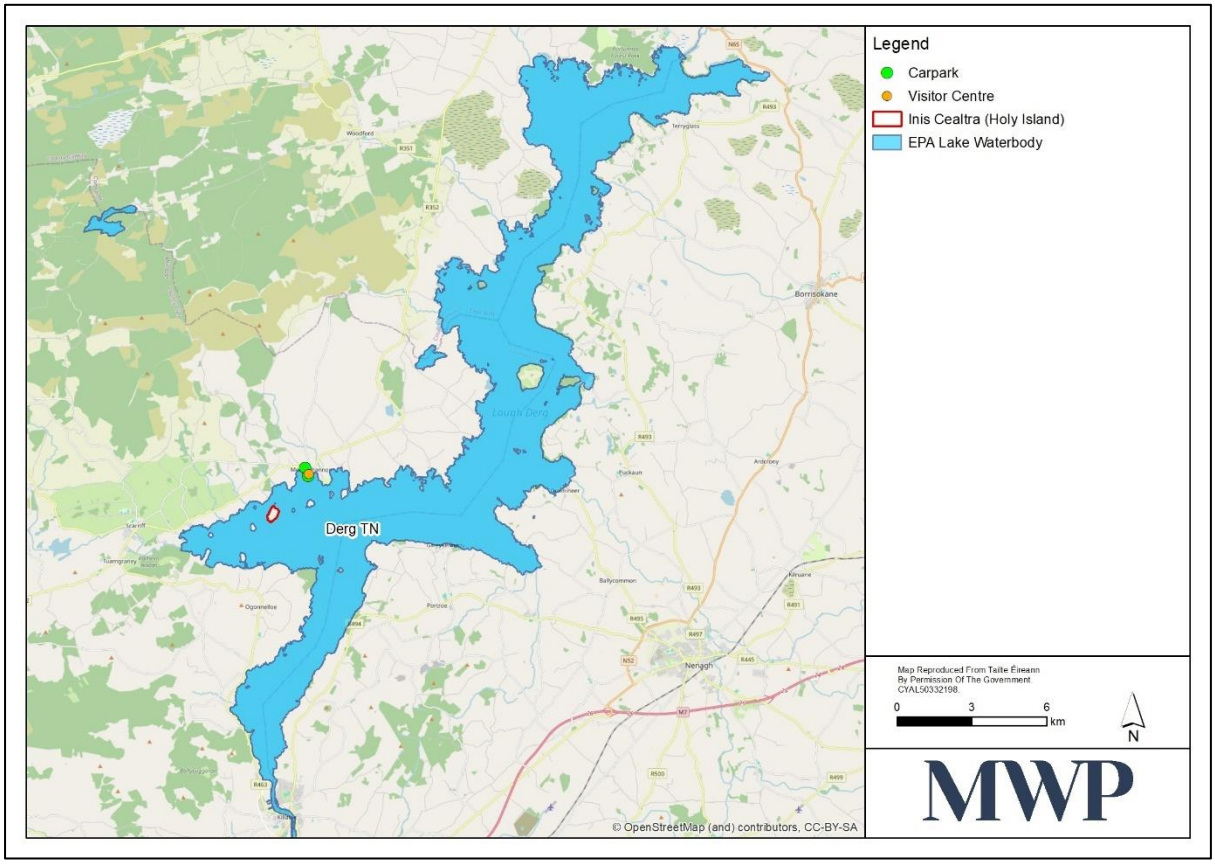



**Figure 9.5: Lake water bodies in proximity to the development site**

The EPA Water Framework Directive lake water quality status of the Lough Derg TN is considered 'Poor' for the period 2016-2021 (**Table 9.3**) No more recent data was available at the time of writing of this chapter. The WFD Risk Score for this river waterbody is 'At Risk' (**Figure 9.6**) and is failing to meet compliance limits for Benzo(a)pyrene and Mercury. The ecological status has been consistently 'Poor' from 2007 with a slight improvement to a 'Moderate' rating from the 2013-2018 sample run.

Significant pressures have been identified for waterbodies that are At Risk of not meeting their water quality objectives under the WFD. While there are a multitude of pressures in every waterbody, the significant pressures are those pressures which need to be addressed in order to improve water quality. The Lough Derg TN has the following pressures:

- Pressure from agricultural - agricultural pressure can be diffuse and/or point source of pollution;
- Hydromorphology pressure - Impacts from hydromorphology include sediment/siltation pollution and alteration to the physical environment; and
- Invasive species - impacts from invasive species include sediment pollution via alteration of waterbodies and competition of species within the aquatic ecosystem.

**Table 9.3: Lake Water Body Biological Quality Status and Risk**

| Lake Water Body | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Code** | **EPA Name** | **Type** | **WFD Risk*** | **Chemical Surface Water Status** | | | | |
| | | | | **2007-2009** | **2010-2012** | **2010-2015** | **2013-2018** | **2016-2021** |
| IE_SH_25_191a | Derg TN | Lake | At Risk | Good | Good | Good | Good | Poor |
| | | | | Q4 | Q4 | Q4 | Q4 | (Q3, Q2-3) |
| | | | | **Ecological Status / Potential** | | | | |
| | | | | **2007-2009** | **2010-2012** | **2010-2015** | **2013-2018** | **2016-2021** |
| | | | | Poor | Poor | Poor | Moderate | Moderate |
| | | | | (Q3, Q2-3) | (Q3, Q2-3) | (Q3, Q2-3) | (Q3-4) | (Q3-4) |

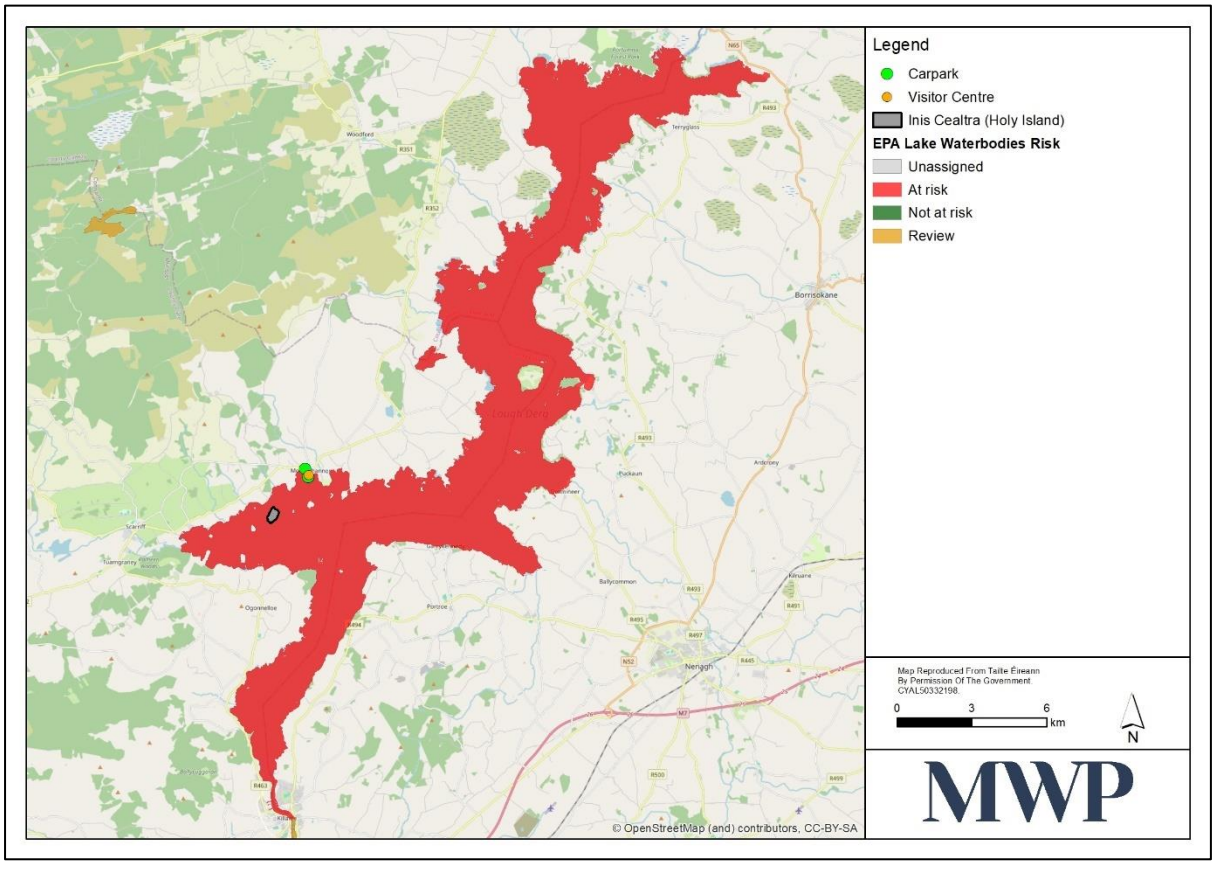



**Figure 9.6: Lake Water Body WFD Risk Status**

The Lough Derg is a protected area in terms of the WFD protected areas for drinking water (Article 7 abstraction for drinking water) and falls within the Shannon International River Basin District (IRBD). It is also designated for the Lough Derg (Shannon) SPA (004058). Refer to **Chapter 10 Biodiversity** and the **Appropriate Assessment Screening** submitted with the planning application package for further details on this designated site.

#### 9.6.1.5 Bathing Water

There is a designated bathing area east of the main harbour at Mountshannon that has up to 150[3] visitors during peak times. The quality of the bathing water is identified as excellent in the most recent sampled dated July 2024.

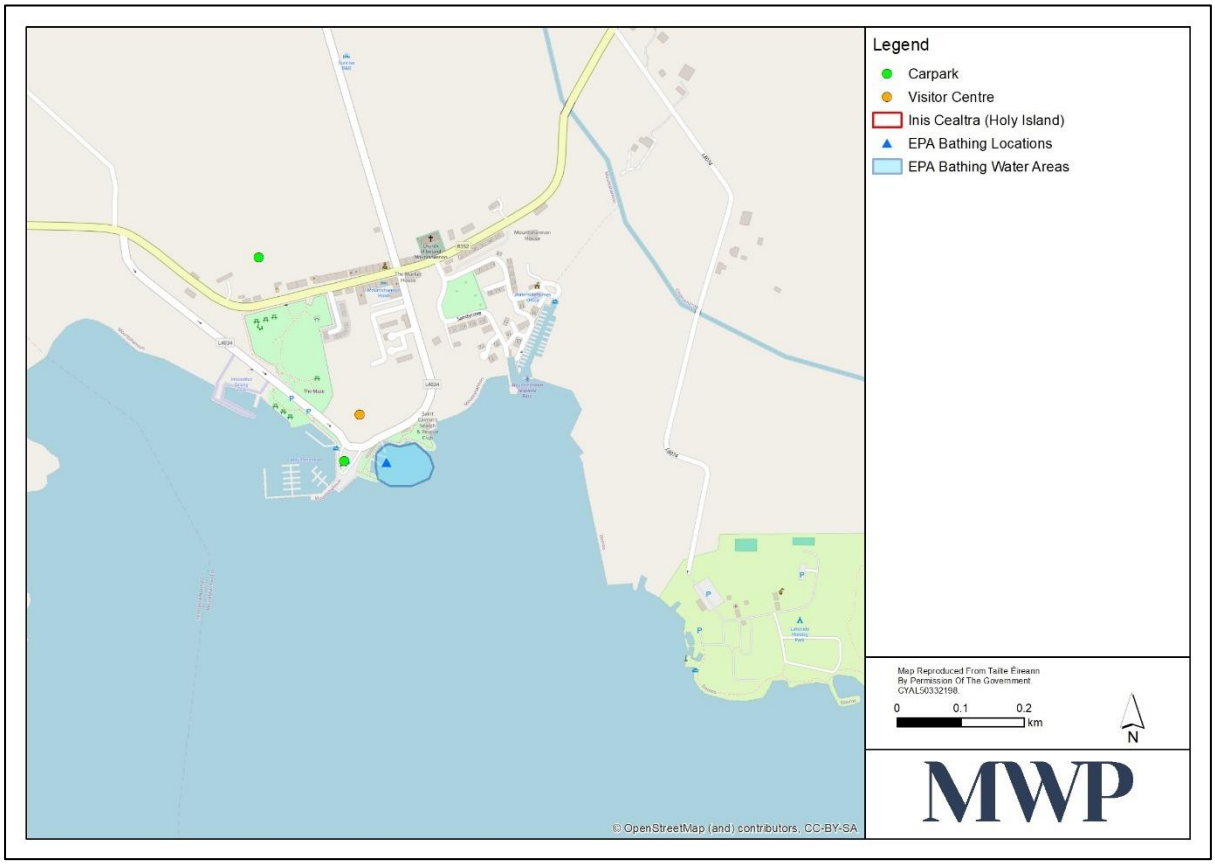



**Figure 9.7: Designated Bathing Area**

#### 9.6.1.6 Flood Risk

The initial stage of a site-specific flood risk assessment includes an assessment of the available flood risk data to identify flood risk indicators in the study area.

[3] Source: www.beaches.ie

The study area is subject to three potential flood risk mechanisms;

- Fluvial flooding caused by overtopping of Rivers and Streams;
- Pluvial flooding caused when the intensity of rainfall events is such that the ground cannot absorb rainfall run-off effectively or urban drainage systems cannot carry the run off generated; and
- Groundwater–flooding caused by a rise in the level of the water table.

Indicators of flood risk are identified using available data, most of which is historically derived. The following data source was used for the flood risk assessment:

- Records available on the Office of Public Work's National Flood Risk Website, www.floodinfo.ie;
- Preliminary FRA & Catchment FRA mapping produced under Catchment Flood Risk Assessment and Management (CFRAM) programme;
- The Strategic Flood Risk Assessment carried out to inform the making of the Local Area Plan;
- Geological Survey of Ireland (GSI) mapping available through its websitewww.gsi.ie;
- Ordnance Survey mapping; and
- Topographical survey information.

**Fluvial:** There are no river water bodies located within the footprint of the proposed development. A review of the indicative fluvial mapping data indicates that there is no risk of fluvial flooding at the proposed development.

**Pluvial:** Intense rainfall events have the potential to cause localised flooding. The storm water drainage for both phases is designed where possible in accordance with the following:

- Pipes are designed to reach self-cleansing velocity in the one in 2-year event
- Sewers not surcharging in the 2-year event
- Sewers not flooding in the 100-year event with 20% Climate Change
- Class 1 Bypass Petrol Interceptors
- Sub-surface attenuation systems designed for storage of a 1 in 100-year storm plus 20% Climate Change factor
- The sites/elements are designed to attenuate the greenfield runoff rate for the 1-year, 30-year and 100-year return periods respectively. This is in compliance with Appendix E of the Greater Dublin Strategic Drainage Strategy. The aim of this is to mimic the existing hydrological regime existing on the site so to minimize the impact of the development. An emergency overflow will be provided also in the event of blockage occurring at the hydrobrake.

The stormwater generated on Inis Cealtra will be managed at its source by dispersing the runoff through the natural vegetation of Inis Cealtra and the use of permeable materials to maximise the use of SUDS measures where reasonably practicable. There are no plans to implement an underground sewer system.

There will be no alteration to the harbour car park reconfiguration hydraulic regime.

The visitor centre has an existing storm water system attenuating the discharge from the Old Rectory. The proposed system will attenuate flows from the impermeable surfaces within the visitor centre development. The proposed drainage system will incorporate sumps within manholes for silt removal and bypass petrol interceptors prior to discharge. The outfall will be to Lough Derg.

The new village car park will incorporate both hard and soft engineering solutions for storm water management. The site is split into multiple sub-catchments. The overflow car park will use Grasscrete paving allowing for infiltration of rainfall to ground. The hardstand car parking will capture rainfall via gullies and filter drains. The stormwater will tie into a combined public sewer which runs adjacent to the site entrance.

**Groundwater:** The GSI Groundwater Flooding Data View and OPW flood maps show the closest area at risk of groundwater flooding as being over 10km to the east in County Tipperary. Therefore, the risk due to groundwater flooding is deemed to be low.

#### 9.6.1.6.1 Flood Risk Assessments

Flood Risk Assessment reports have been prepared as part of the planning application. An FRA was prepared on behalf of Clare County Council for the proposed development on the island of Inis Cealtra and Mountshannon, Co. Clare. The report concluded that elements of the project are within Flood Zone A & B as defined in the Flood Risk Management Guidelines. The proposed uses are justified based on existing zoning, existing use and the SFRA conducted for the County Development Plan.

An additional FRA was prepared for the jetty development to be located at Inis Cealtra. The development is classed as 'water compatible' development and therefore are allowed in any flood zone.

### 9.6.2 Hydrogeology

#### 9.6.2.1 Aquifer and Groundwater Body

There is one bedrock aquifer underlying the proposed visitors centre and car park and harbour car park, according to the GSI (www.gsi.ie/mapping). The aquifer is a Locally Important (LI) Aquifer – Bedrock which is Moderately Productive only in Local Zones (**Figure 9.8**).

There is a poor bedrock aquifer located approximately 0.5-1km north of the project development.

The Groundwater Body underlying all elements of the proposed development (the proposed visitors centre, car park, harbour, Lough Derg and the Island) is the Tynagh Groundwater Body (GWB) (EU code: IE_SE_G_236).

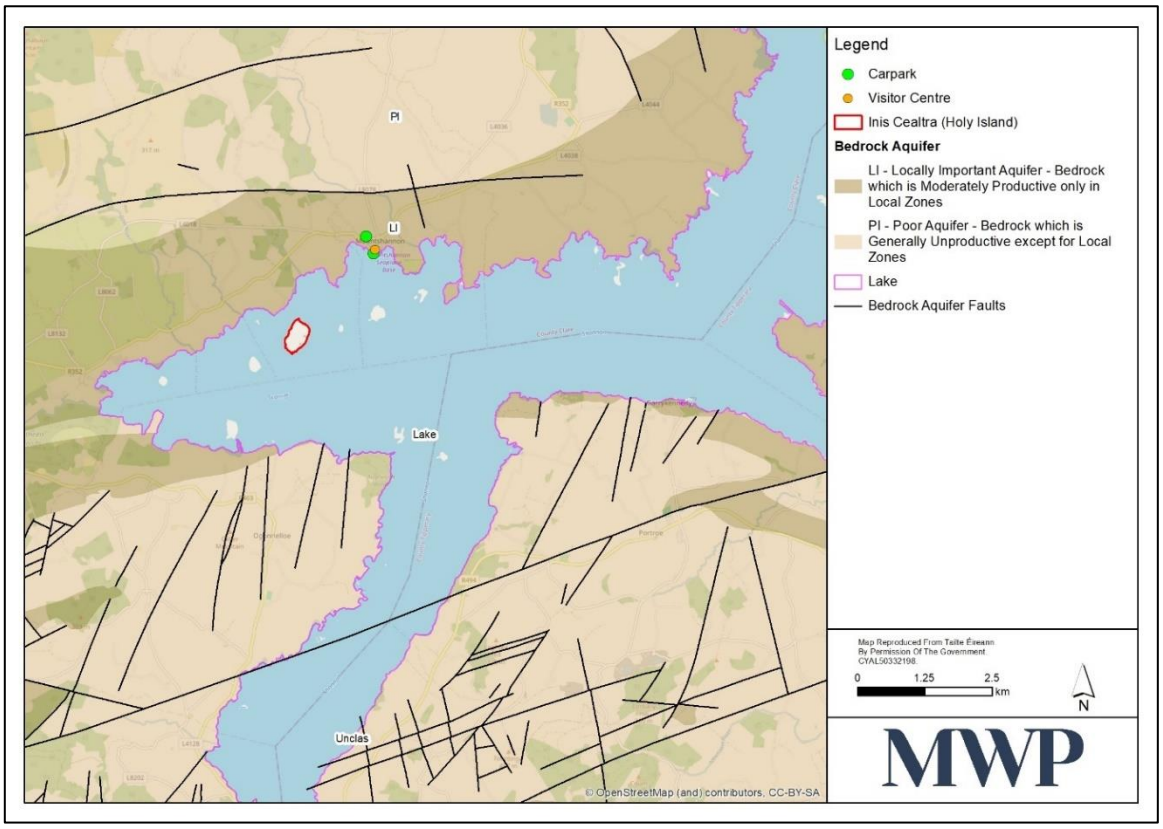



**Figure 9.8: Groundwater Aquifer**

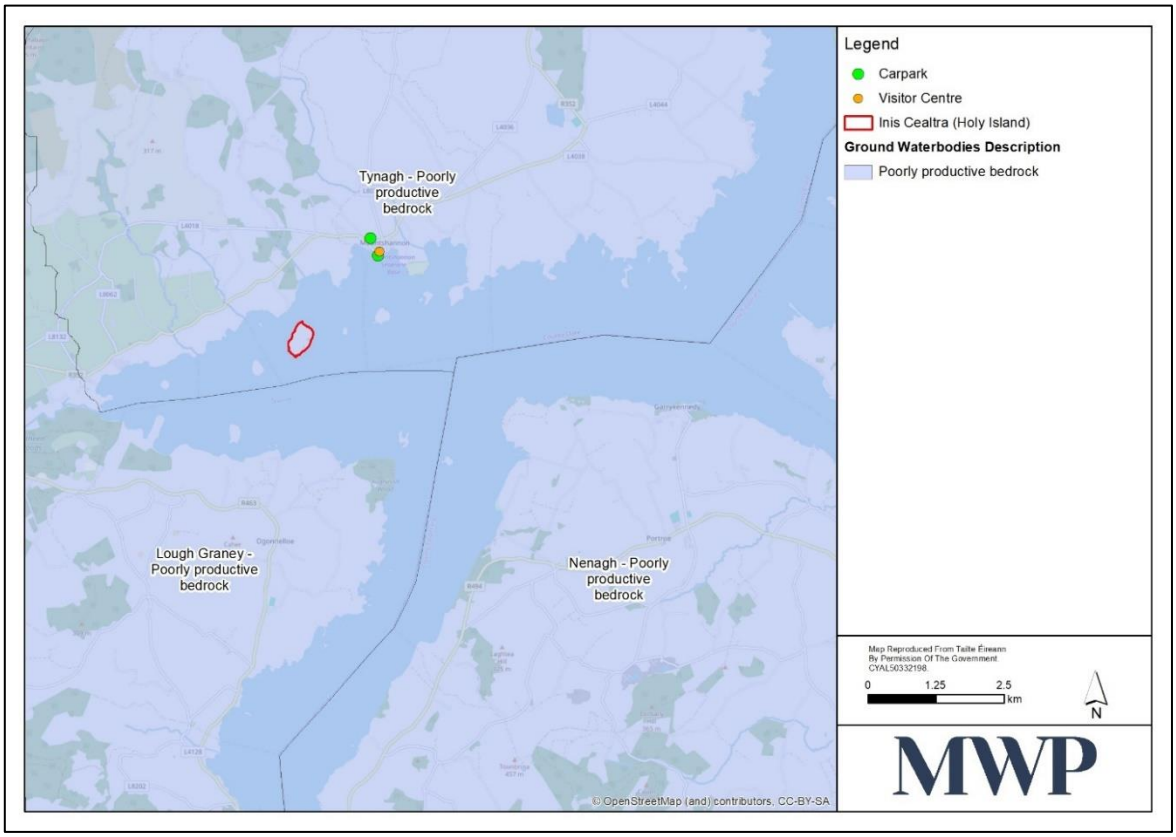



**Figure 9.9: Groundwater Body**

The EPA classifies the Tynagh GWB as having WFD Status (2016-2021) of 'Good' (**Table 9.4**) , with a current WFD risk score of 'Not at risk' No more recent data was available at the time of writing of this chapter. **Figure 9.10** presents the most recent data (2021) from the EPA website on groundwater body risk.

**Table 9.4: Groundwater Body Quality Status and Risk**

| Groundwater Body | | | | | | | |
|---|---|---|---|---|---|---|---|
| Code | Name | Type | WFD Risk* | Water Quality Status | | | |
| | | | | 2007-2012 | 2010-2015 | 2013-2018 | 2016-2021 |
| IE_SH_G_236 | Tynagh | Groundwater | Not at Risk | Good | Good | Good | Good |

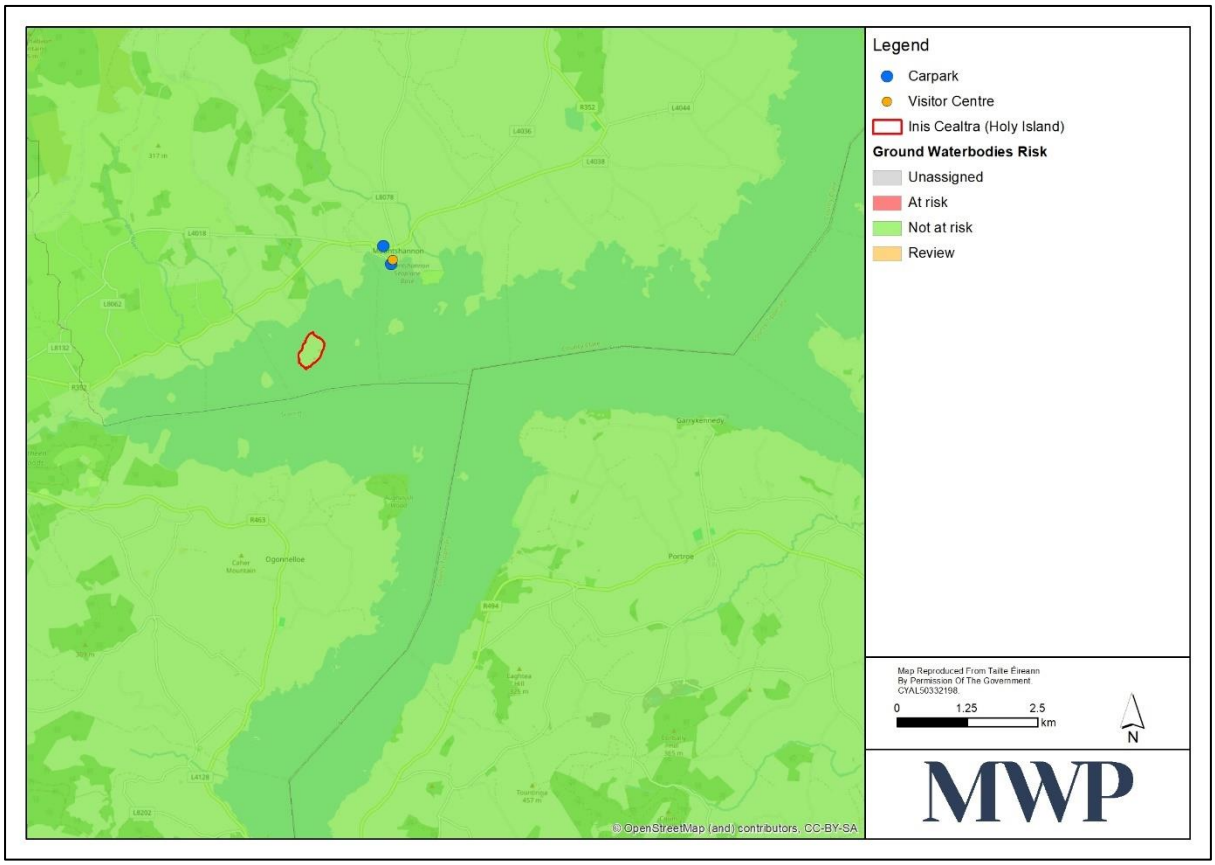



**Figure 9.10: Groundwater Body Risk**

### 9.6.2.2 Groundwater Vulnerability

Groundwater vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Mapping provided by the GSI indicates that the majority of the site is underlain by an aquifer of low vulnerability for the proposed visitors centre, car park and harbour. Inis Cealtra is underlain by an aquifer of medium vulnerability. Refer to **Figure 9.11** for groundwater vulnerability mapping beneath the site and within the greater area.

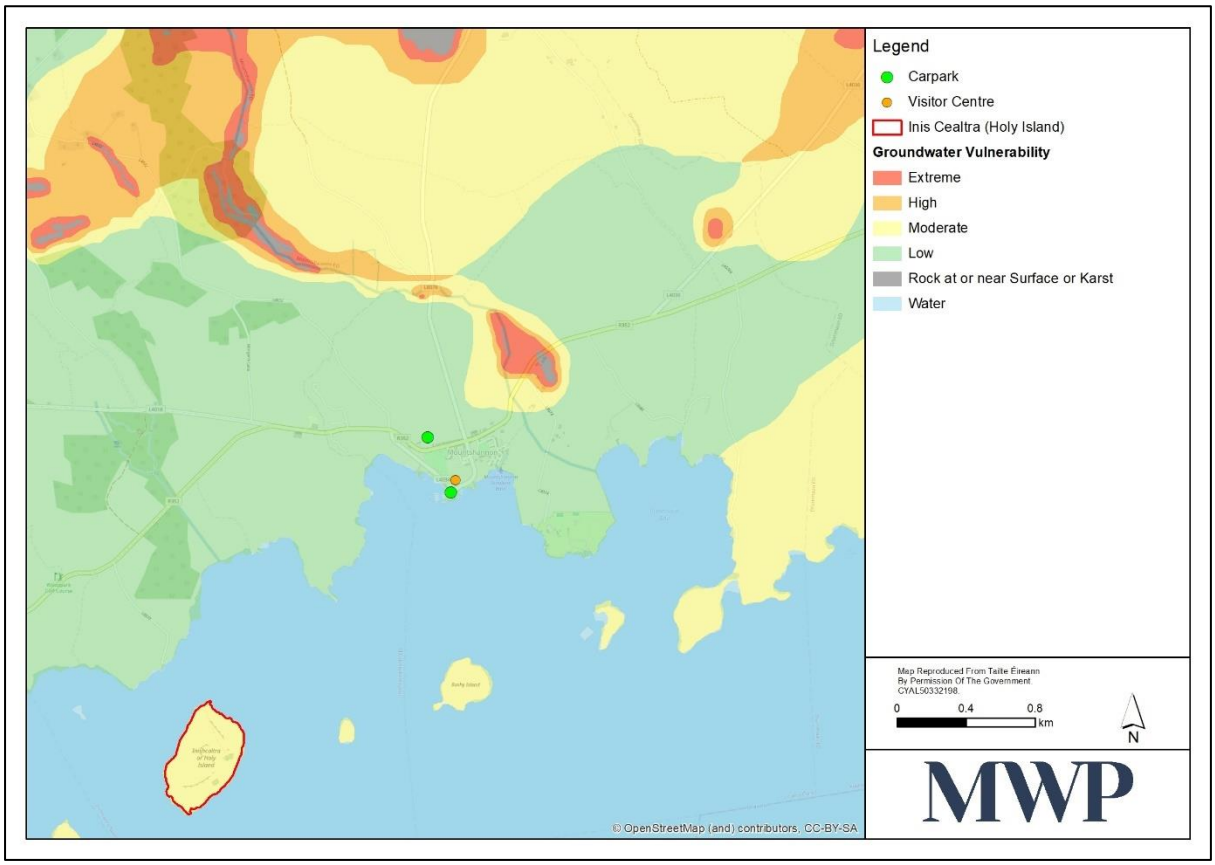



**Figure 9.11: Groundwater Vulnerability**

### 9.6.2.3 Groundwater Wells and Springs

There are no Groundwater Survey Ireland (GSI) groundwater wells and springs within the site boundary of the proposed development on the mainland. There are several groundwater abstraction wells located in lands to the north of the proposed development. Refer to **Figure 9.12** for the location of these groundwater wells.

Our Lady's Holy Well is situated a short distance south of Saint Mary's Church on the east shore of the Island (Holy Island). A large circular wall, constructed in the 1970s, surrounds the well. Many offerings and coins were found during excavations of the area around the well. None were dated to earlier than 1850. The holy well was the last station on the rounds of the pilgrimage which took place on the island. According to tradition, if a pilgrim sees his reflection in the water, his sins are forgiven.

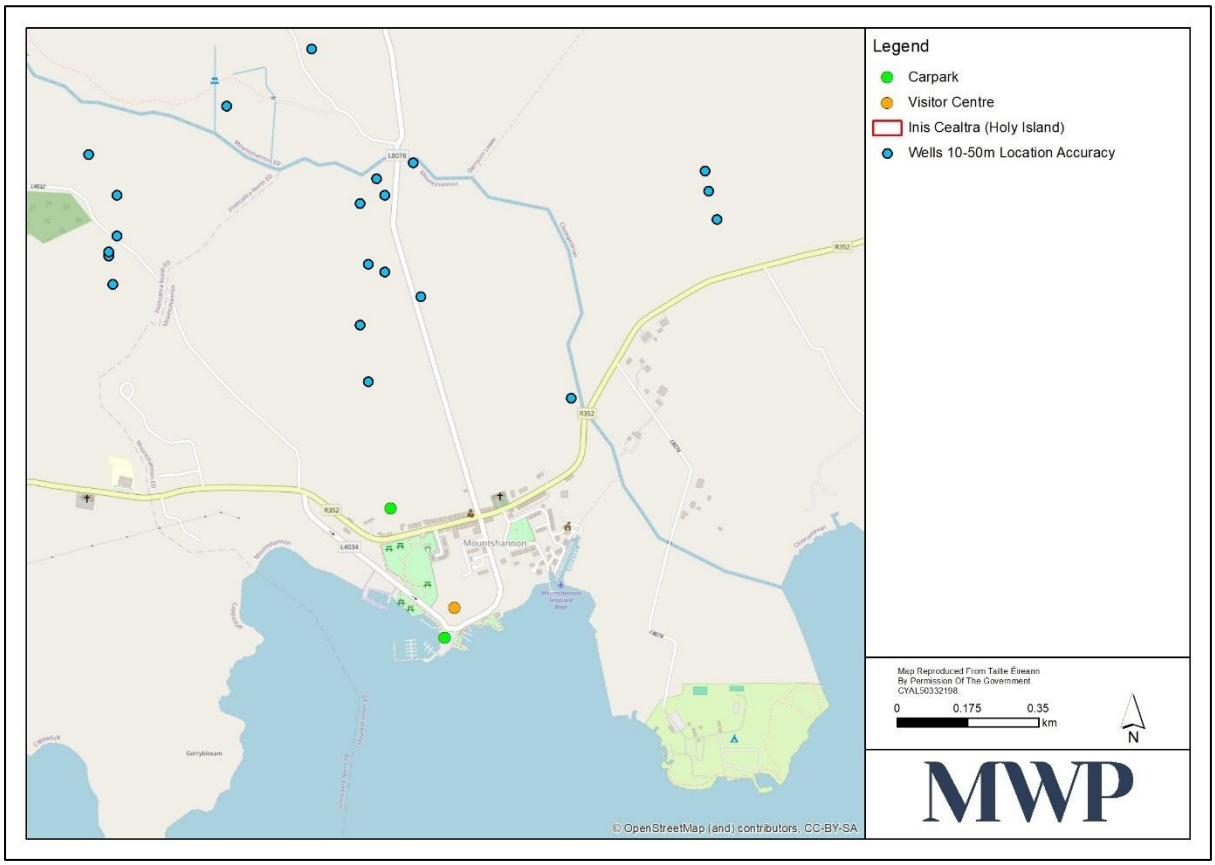



**Figure 9.12: Groundwater Wells and Springs**

### 9.6.3 Project Water Demand and Wastewater Management

**Inis Cealtra:** It is not reasonably participable to establish a direct water supply connection to the existing Uisce Éireann network to serve Inis Cealtra due to its inherent constraints being an island. In this instance, it is proposed to serve the island with a bottled potable water supply that will meet the needs of the staff on the island and the medical needs of visitors if it arises. Regular boat trips will be scheduled to transport sufficient potable water to meet the needs of staff and visitors. This method of water delivery will be carefully managed to maintain consistent availability and uphold health and safety standards.

A dry toilet system will be implemented on Inis Cealtra to address the logistical challenges of removing solids and liquids. Deposited waste is separated into liquid and solid form. This waste is then stored in a holding container as part of the dry toilet set up. A contractor will be appointed to manage the maintenance of the foul system and waste removal from the island. The designated maintenance contractor will ensure that the waste is delivered to the appropriate Uisce Éireann treatment facility, where it will be processed in accordance with Uisce Éireann standards. Uisce Éireann advised that it is likely that effluent collected would likely be taken by an authorised and licenced tankered wastewater haulier to a WWTP such as Bunlicky Wastewater Treatment Plant in Limerick City.

**Car Parks:** There is no water requirement for the village car park or harbour car park reconfiguration. There is no foul sewer requirement for either of the car parks.

**Visitor Centre:** The visitor centre will be serviced for potable water by a 100mm pipe via a T-junction to the existing 150mm diameter water main located on Harbour Road. The T-junction is split into two branches: the western branch will be reserved for connecting to the Visitor Centre, pending planning approval, and the eastern branch will serve the Old Rectory.

The site is currently served by a wastewater/foul system that was installed as part of the redevelopment of the Old Rectory building which includes a treatment unit. This treatment unit reduces the biological load from the effluent prior to discharging into the public sewer on Harbour Road.

It is proposed that the foul water generated within the Visitor Centre will be treated by the existing on-site treatment unit prior to discharge by an existing connection to the foul sewer in Harbour Road.

## 9.7 Potential Significant Effects

This section will describe the impacts associated with the proposed development before mitigation measures are applied. Both direct and indirect impacts will be addressed for the construction and operation of the proposed development. The nature, extent and duration of the impacts will also be assessed. The project has incorporated some elements of best practice into the construction and operational design of the project. Assessments are therefore based on this being implemented.

### 9.7.1 The 'Do Nothing' Scenario

If the proposed development for which this document has been prepared does not go ahead, it is assumed that the current landuse will remain unchanged. There will be no alteration of the existing hydrological and geohydrological regime on the mainland or the island.

### 9.7.2 Construction Phase

#### 9.7.2.1 Phase 1

Phase 1 construction includes the works on Inis Cealtra and the new car park in Mountshannon. The risk of potential significant impacts occurring during the construction phase (in the absence of adequate management and mitigation measures) can arise from several activities. These could typically include:

- Discharge of vehicle wash-down water to surface waters;
- Discharge of construction materials, e.g. uncured concrete to surface or ground waters;
- Uncontrolled sediment erosion and contaminated silty run-off;
- Refuelling facilities, chemical and waste storage or handling areas;
- Polluted drainage and discharges from site;
- Increased boat traffic;
- Increased run-off from cleared and capped areas (relative to Greenfield values); and
- Works within water.

During construction, pollution from mobilised suspended solids would generally be the main concern, but spillage of fuels, lubricants, hydraulic fluids and cement from construction plant may lead to incidents, especially where there are inadequate pollution mitigation measures. Activities within or

close to the watercourse channels can lead to increased turbidity through re-suspension of bed sediments and release of new sediments from earthworks.

#### 9.7.2.1.1 Inis Cealtra

a) Demolition: One building (GFA 16 sq.m.) will be demolished and the materials removed by boat to the mainland for disposal by a licensed contractor. It is not proposed there will be any earthworks on the island therefore there will be no stockpiling of materials that could potentially cause run-off to Lough Derg.
b) Pods: Three new staff and public welfare facility 'pods' are proposed on the island to meet the minimum needs of staff and visitors by providing a weather shelter, WCs and a rest room for island staff. The proposed pods will be timber framed structures sitting on metal piles. The structure will be infilled with timber and clad with timber on their roof and walls.
c) Site enabling works: Contractor welfare facilities, storage areas, bunding, run-off controls and provision of temporary power, light and water services will be required to facilitate the development. The enabling works and development will also result in increased levels of boat traffic. It is proposed that works on the island will only be completed in periods of dry weather, making run-off unlikely. The welfare facilities will include portaloos and contents will be removed and disposed of to a licensed facility. There will be no foul water generated during construction. Construction boat traffic would be in the region of 8 round boat trips daily. The proposed Phase 1 construction would not increase expected 2027 levels of boat activity on Lough Derg.

Given the relatively small scale of the works, the nature and limited scale of the materials being used for construction and duration of the works, the overall effect will be negative, short-term, localised and not significant.

d) Mooring Point: The installation will include a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty and a stone and concrete causeway which will be connected by a steel access ramp. To facilitate the new floating jetty, the lake bed (2m3) will need to be excavated on the south end of the main breakwater jetty. Steel piles will be required to retain the jetty. This will require 4 number 203mm H piles to support the concrete (2m x2m) anchor base that retains the ramp anchor points. These piles will be vibrated into the bed by an excavator on the pontoon raft along the stone causeway on the Southern side and the piles will be hidden inside the stone filled gabions to the Island. Similarly, 2 254mm x 254mm H piles will be required to retain the Canoe Launch section in the sheltered side of the land Structure. They will be vibrated also into place by the excavator on the Pontoon raft. The excavator will place a gabion mattress of washed stone inside the trench sheet wall. Pre-mixed concrete will be poured into the shuttered area to form the anchor point for the ramp to the floating jetty. 4 piles will be core drilled into the lake bed as brackets for the floating jetty. These works will take approximately 7-8 weeks.

Impacts on hydrology from this stage of the project could include:

- Discharge of construction materials, e.g. uncured concrete to surface or ground waters;

- Release of sediment and silt from vibration driving of metal piles and excavation of lake bed;
- Accidental fuel spill from excavator.

Given the nature of the works, the location and materials to be used, the potential for impact on water has to potential to be slight, negative, localised and short-term without mitigation.

#### 9.7.2.1.2 Village Car Park

The new car park will involve site clearance works, construction of a temporary site construction compound and construction of a new public car park. The site drainage will consist of the installation of suitable protection (e.g., silt curtain) around the site boundaries to control and treat any run-off during the works. There is no direct hydrological connection between the proposed car park and Lough Derg, however the proximity of the proposed works provides a remote possibility for an indirect hydrological connection via surface water run-off/drainage. Clearance works including topsoil and bulk excavation may be kept in a temporary storage area with some soil held for future landscaping. The remainder of the material will be brought to a suitably licenced facility. Stone and asphalt will be imported to form a new hardcore area and grasscrete blocks will be used for the overflow car park. Drainage works including manholes and gullies will be connected to the existing combined drain which runs along the site entrance. Bunded containment will be provided for storage of lubricants, oils and site generators. A temporary construction compound to include concrete washout, waste materials and welfare facilities will be provided with surface water management being constructed early in the project and a wastewater management system with disposal by a suitably licensed contractor for the duration of the project.

Given the nature of the works, the location and materials to be used and the lack of hydrological connectivity the potential for impact on water will not be significant, negative, localised and short-term without mitigation..

### 9.7.2.2 Phase 2

Phase 2 works include the reconfiguration of the Harbour car park and the development of a visitor centre at the Old Rectory site.

#### 9.7.2.2.1 Harbour Car Park Reconfiguration

The car park will be reconfigured to provide 49 total car parking spaces and public realm enhancements. There will be no alteration to the existing drainage regime. The proximity of the car park to Lough Derg provides the possibility of an indirect hydrological connection. A temporary site construction compound for the visitor centre development and car park reconfiguration will be required which will provide a bunded containment area for the storage of lubricants, oils and site generators. The car park will be resurfaced and new paving and finishes provided throughout.

Given the scale of the works, the location and materials to be used, the potential for impact on water will not be significant, negative, localised and short-term without mitigation.

#### 9.7.2.2.2 Visitor Centre

A part-one-storey, part-two-storey Visitor Centre with a gross floor area (GFA) of 1,594 sq.m and maximum height of 7.8m is proposed to be constructed in the southern part of the Old Rectory site, fronting Harbour Road.

a) Demolition – sections of stone wall at the south and south-west boundary (approx. 45m in total) is required to be removed to facilitate access from the ground level of the building to the harbour. This material will be transported off site in trucks and disposed of at a licensed waste facility.
b) Topsoil stripping of approx. 1,600m$^3$ will be required with the material moved off-site with exception of a small amount for later use in landscaping. Bulk excavation materials will be temporarily stockpiled during construction and subsequently reused on site for backfill/re-grading or re-vegetation. It is envisaged that the made ground, where applicable, will be transported off site in trucks and disposed of at a licensed waste facility. This will prevent any contaminated run-off to public roadside drains during heavy rainfall.
c) Concrete pours will be planned in advance and special procedures outlined in the CEMP, will be adopted in advance of and during all concrete ours to minimise risk of pollution. This will include; Using weather forecasting to assist in planning concrete pours and avoiding large pours where prolonged periods of heavy rain are forecast, Ensuring that excavations are sufficiently dewatered before concreting begins, Ensuring that covers are available for freshly placed concrete to avoid the surface washing away in heavy rain.
d) Site drainage will consist of a silt curtain around the site boundaries to control and treat and run-off during the works.
e) A foul drainage connection will be made within the public road to the south of the site. Both a Road Closure Licence and a Road Opening Licence will be required for this operation. Regularly serviced portaloos will be used on the site until the foul connection is made. A temporary foul connection with the onsite foul drainage may be utilised also. The contents would be removed and disposed of at a licenced facility.
f) An existing watermain connection exists on the site, and this will be availed of during the construction phase and/or a temporary connection may be made to Uisce Éireann's water mains if dictated by the Contractor's methodology.
g) A bunded containment area will be provided within the compound for the storage of lubricants, oils and site generators etc. If necessary, the compounds will be fenced and secured with locked gates.

A construction methodology is provided in the Construction Environmental Management Plan. An environmental manager will be appointed to ensure that the CEMP is developed, implemented and maintained. A number of surface water plans including a Surface Water Management and Run-off Control Management Plan, a Fuels and Oils Management Plan and a Concrete Management Plan will form part of the CEMP.

Given the scale of the works, the location and materials to be used, the potential for impact on water will not be significant, negative, localised and short-term without mitigation.

### 9.7.3 Operational Phase

#### 9.7.3.1 Phase 1

Inis Cealtra: The phase 1 works are anticipated to be completed in Q1 of 2028. The proposed Phase 1 visitors boat service to/from Inis Cealtra Island from/to Mountshannon Harbour will be seasonal and the Traffic & Transport Assessment indicates there will be no increase in total boat traffic generated by Mountshannon Harbour and on Lough Derg with the proposed Phase 1 development in operation.

A dry toilet system will be implemented to overcome the logistical challenges of removing solids and liquids. Deposited waste will be separated into liquid and solid form. This waste will then be stored in a holding container as part of the dry toilet set-up. A contractor will be appointed to manage the maintenance of the foul system and waste removal from the island. The designated maintenance contractor will ensure that the waste is delivered to the appropriate Uisce Éireann treatment facility, where it will be processed in accordance with Uisce Éireann standards. Uisce Éireann has advised that the effluent collected will likely be taken by an authorised and licenced tankard wastewater haulier to Bunlicky Wastewater Treatment Plant (WWTP) in Limerick City. The Annual Environmental Report for Bunlicky Wastewater Treatment Plant (2023) indicates that the facility capacity will not be exceeded in the next three years. The facility is EPA licensed and required to be compliant with emission limits so as not to impact receiving waters.

There will be no impact on hydrology and hydrogeology from the Inis Cealtra works as the jetty upgrade will not result in any operational impacts on water quality.

The new car park drainage will be connected to the combined sewer and the overflow stormwater will infiltrate to ground. There will be no additional impact on water quality or flooding from the development.

Overall, the operational effects on hydrology and hydrogeology will not be significant, neutral, long-term and direct from the operation of Phase 1 of the development.

#### 9.7.3.2 Phase 2

The phase 2 works are anticipated to be completed in Q3 of 2042.

During operation the visitor centre will generate some additional foul water, estimated loading is 40PE. The new foul connection to the mains combined sewer is currently served by a wastewater/foul system that was installed as part of the redevelopment of the Old Rectory building which includes a treatment unit. This treatment unit reduces the biological load from the effluent prior to discharging into the public sewer on Harbour Road.

It is proposed that the foul water generated within the Visitor Centre will be treated by the existing on-site treatment unit prior to discharge by an existing connection to the foul sewer in Harbour Road. During pre feasibility meetings with UE, UE noted that the existing Mountshannon WWTP has capacity to accept additional flow from the development. Mountshannon WWTP discharges to Lough Derg. The Confirmation of Feasibility is included at Appendix A of the Civil Utilities Planning Report.

The storm water system has been designed using the following criteria:

- Pipes are designed to reach self-cleansing velocity in the one in 2-year event
- Sewers not surcharging in the 2-year event
- Sewers not flooding in the 100-year event with 20% Climate Change
- Class 1 Bypass Petrol Interceptors
- Sub-surface attenuation systems designed for storage of a 1 in 100-year storm plus 20% Climate Change factor

- The sites/elements are designed to attenuate the greenfield runoff rate for the 1-year, 30-year and 100-year return periods respectively. This is in compliance with Appendix E of the Greater Dublin
- Strategic Drainage Strategy. The aim of this is to mimic the existing hydrological regime existing on the site so to minimize the impact of the development. An emergency overflow will be provided also in the event of blockage occurring at the hydrobrake.

There is an existing storm water system on the site attenuating the discharge from the Old Rectory. The proposed system is to attenuate flows that are being generated from the impermeable surfaces within the Visitor Centre development. This will utilise a separate attenuation system with a hydrobrake downstream restricting flows to the greenfield runoff rate.

The proposed drainage network will incorporate sumps within manholes for silt removal and a bypass petrol interceptor prior to discharge.

The intent for the harbour car park stormwater disposal is not to change the existing hydraulic regime that currently exists. The existing outfalls will be maintained. The addition of green areas would assist with reducing the rate of runoff from this area.

Once the proposed Visitor Centre (Phase 2) is operational, the expected boat service will increase to between six and fourteen daily round trip boat services during low and high season, respectively. This rise in the number of boats and visitors on the lake will increase the risk of direct discharge or run-off of hydrocarbons, silts, and other such substances to the lake.

Overall, the operational effects on hydrology and hydrogeology may be slight to not significant, negative, long-term and direct from operation of Phase 2 of the development.

### 9.7.4 Cumulative Effects

Cumulative effects relate to the addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.

A description of all the existing and planned developments around the proposed development site is provided in **Table 9-5** following:

**Table 9.5: Planned and permitted developments in proximity to the proposed development**

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| 23597 | Brett and Marcha Cox | Main St, Mountshannon | Retain use of former office as shop and coffee shop, retain garden room erected alongside coffee shop and house, and permission for change of use of garden room to coffee roaster, toilet and all associated site works. | Granted: 05/03/24 |
| 2360172 | Jamie and Rachel Keating | No. 3, Harbour View, Mountshannon. | Renovation and extension of existing dwelling house to include (1) Removal of existing balcony and replace with new balcony area (2) | Granted: 23/08/23 |

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| | | | Significant Alterations to North, South and West elevations and all associated site works. | |
| CCC: 22123 ABP: 313431 | Mountshannon Community Council | Aistear Park, Mountshannon | Erect a Pavilion (a roofed open structure) for communal, cultural, education and events and gatherings and all associated site works. | CCC Granted: 07/04/22 Appealed to ABP: 27/04/22 ABP Granted: 24/07/23 |
| 22269 | Inis Housing Association CLG | Mountshannon | Development of 11 no. dwelling houses of varying size and design, 1 no. building containing 2 no. apartments, new site entrance, development access roads paths, landscaping, service connections and associated site works & services. | Granted: 03/05/23 |
| 22688 | Josephine O'Brien | Mountshannon | Entrance and front boundary wall as constructed and all associated site works | Granted: 27/10/22 |
| 22340 | Paul Knapp | The Old School House & Church, Mountshannon | Development to existing building (protected structure (RPS No. 130)); (a) Retain change of use of building from church/school to single private residential unit; (b) Permission to replace existing roof covering with natural slate, re-render exterior of building with lime render, provide three no. new conservation roof windows to rear of roof and all associated ancillary site works. | Granted: 13/07/22 |
| 22124 | Dermot O'Sullivan | Mountshannon | Retention of porch as constructed to the front of the house and retain two sheds erected at rear of house and all associated site works. | Granted: 11/05/22 |
| 21985 | Josephine O'Brien | Mountshannon | Garage/shed as erected to rear of house and all associated site works. | Granted: 15/12/21 |
| 21968 | Pat Sweeney | Mountshannon | Construction of a garage/shed. | Granted: 08/12/21 |

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| 21555 | Adrian Dooley | Millpool Road, Mountshannon | Erect a dwelling house, garage, driveway, install effluent treatment system and polishing filter and all associated site works. | Granted: 19/11/21 |
| 21253 | Mary Teresa Ryan | Old Rectory, Mountshannon | Retain demolition works and alterations to existing out-buildings (part of Old Rectory Protected Structure (RPS No.464)) and retain the constructed works to same incorporating garage and storage sheds. | Granted: 23/06/21 |
| 218000 | Clare County Council | The Old Rectory, Mountshannon | Alterations, modifications and partial change of use of Old Rectory on site measuring 1.17ha, consisting of: i. Construction of 57sqm single-storey ground floor extension to northwest of building (double height space) - max. height of 6.4m (lift height 7.8m) above ground level for Education/Enterprise space of 30sqm, new internal stair access; ii. Ground floor change of use from residential to a) Education/Enterprise Facilities (2 no. rooms with total GFA of 79sqm) b). Reception Area (26sq.) c) Welfare Facilities (5sqm) d) Storeroom (2sqm) e) Plant (3sqm) iii. First floor partial change of use from residential to: a) Community Facility/Co-working Space (16sqm) b) Welfare Facilities (7sqm) iv. 1-bedroom apartment (87sqm) with private amenity space of 50sqm; v. New lift within footprint of existing building; vi. Ground floor - new opening in north and west wall of existing building, new and enlarged openings to internal walls between existing kitchen/utility room and between existing hallway/lounge; vii. First floor - new openings/removal of internal partitions, opening in roof for access to lift and new opening in north wall at first floor; viii. Clean/repoint existing brickwork, repair/replacement of damaged roof slates with natural slate, replacement | Granted: 27/05/21 |

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| | | | of PVC windows with double-glazed timber sash windows, removal of modern internal additions (flooring, cornices); ix. Resurface existing vehicular access, construct new vehicle passing bay; x. Construct 1.8m-wide pedestrian footpath west of existing vehicular access; xi. Demolish new build section existing splayed entrance, reinstatement of splayed entrance. | |
| 20941 | Gerry Cantrell | 4 Harbour View, Harbour Road, Mountshannon | Retain minor elevational changes to the existing dwelling house. | Granted: 08/03/21 |
| 21555 | Adrian Dooley | Millpool Road, Mountshannon | Erect a dwelling house, garage, driveway, install effluent treatment system and polishing filter and all associated site works. | Granted: 19/11/21 |

All the existing approved planning applications are/will be subject to appropriate planning and regulatory consents, to ensure that there are no significant effects on hydrology and hydrogeology. Implementation of the CEMP for the duration of the project including daily visual inspections by the Environmental Site Manager of the excavations, drains, fuel storage areas and spoil storage areas will ensure that any cumulative effects are avoided in the event of overlapping construction with other projects.

A Natura Impact Statement was completed for the proposed development and determined that with the implementation measures outlined in the report, it can be objectively concluded that significant adverse residual impacts on the Conservation Objectives of any identified Natura 2000 sites, will not occur because of the proposed development, either independently or in combination with other plans or projects. Additionally, mitigation measures will be implemented as part of this **EIAR** and the **CEMP** to ensure that there will be no significant adverse effects on the hydrological or hydrogeological regime pertaining to the development site.

Having considered the implementation of good construction practice and design for the proposed development and other development in the surrounding area, no cumulative effects are anticipated.

### 9.7.5 Summary

The following Table summarises the identified likely significant effects during the demolition and construction phase of the proposed development before mitigation measures are applied.

**Table 9.6 Summary of Demolition & Construction Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Material run-off during demolition | Negative | Not significant | Local | Unlikely | Temporary | Direct |
| Suspended Solids to surface water during excavation | Negative | Not significant | Local | Unlikely | Temporary | Direct |
| Release of hydrocarbons from storage areas or refuelling to water | Negative | Not significant | Local | Unlikely | Temporary | Direct |
| Release of concrete during jetty construction | Negative | Slight | Local | Unlikely | Temporary | Direct |

The Table below summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

**Table 9.7 Summary of Operational Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Impact on water quality from boat traffic | Negative | Slight | Local | Likely | Long term | Direct |
| Increased impermeable surface area increasing flood risk elsewhere | Negative | Not significant | Local | Unlikely | Long term | Direct |

## 9.8 Mitigation

### 9.8.1 Incorporated Design Mitigation

Management of surface water during the operational phases of the development has been considered in detail at the project design stage and has been designed to replicate, insofar as is practicable, the same run-off characteristics for the developed site as existed for pre-development conditions The proposed drainage design has incorporated several widely used Sustainable Drainage Systems (SUDS) mechanisms to alleviate any potential detrimental effects of stormwater drainage.

The dry toilet system used on Inis Cealtra is designed to overcome the logistical challenges of removing solids and liquids. The designated maintenance contractor will ensure that the waste is delivered to the appropriate Uisce Éireann treatment facility.

### 9.8.2 Construction Phase Mitigation

#### 9.8.2.1 Phase 1

A site-specific Construction & Environmental Management Plan will be developed and implemented during the construction phase. Implementation of the measures outlined in this plan will ensure that the potential impacts of the proposed development do not occur during the construction phase. Site enabling works on Inis Cealtra will include but are not limited to the following:

- Secure site and erect fencing, hoarding, and signage as required;
- Locate and terminate existing live services where required;
- Install any bunding and/or run-off controls where required;
- Identification of temporary stockpiling and storage areas;
- Set up contractor welfare facilities and site accommodation.
- Provision of temporary power, lighting and water services.

The island will be closed during the works with exception to access for farmers or funerals should it be required. The cabin will be carefully dismantled using hand tools with all materials stripped and separated for removal. The waste will then be removed by boat from the island. A temporary compound will be set up at commencement of the construction phase beside the existing slipway. The compound will be used as secure storage for materials and welfare units for construction personnel. Control measures to be implemented include:

- Fuels, oils, greases, and hydraulic fluids will be stored in bunded compounds. Refuelling of machinery, etc. must be carried out in bunded areas. Fuels will be stored during the construction phase in bunded fuel storage tanks with a 110% holding capacity. Where it is necessary to dispense fuels on site, this will be undertaken in areas covered with an impermeable surface to protect ground water;
- Construction works, especially ones involving the pouring of concrete, will be conducted in the dry weather where possible;
- To help prevent the contamination of the ground and groundwater, contaminated materials (oils, fuels, chemicals etc.) will be stored in 110% capacity bunded compounds as outlined in the relevant guidance, i.e. CIRIA (2001) and DMRB Volume 11 (1994);
- Concrete washout will only take place within the secure compound;
- Chute washout will be carried out at designated locations only.

During construction of the jetty and excavation of the lake bed, the CEMP will be implemented, including the management of concrete management plan to ensure minimisation of the likelihood of an accidental spill of concrete to surface waters. Concrete batching will take place off site and wash down and wash out of concrete trucks will take place off site. Weather conditions and typical seasonal weather variations will be taken account of when planning concrete pours. The refuelling of the excavator will use a drip tray and a spill kit will be made available in the event of a spill on the pontoon.

Project works will be carried out in accordance with the following guidance documents which were referenced in developing mitigation measures specific to water:

- CIRIA 32 (2001) Control of Water Pollution from Construction Sites–Guidance for consultants and contractors.

The control measures and monitoring requirements listed in this section will be implemented throughout the project by the appointed contractor.

The mitigation and control measures are outlined in the **CEMP**. The appointed contractor will be responsible for developing the **CEMP** and implementing the control measures set out in the **CEMP**.

#### 9.8.2.2 Phase 2

The CEMP is a live document and will be reviewed in advance of Phase 2 commencement. The Phase 2 mitigation will be implemented for the Visitor Centre and Harbour car park. Mitigation measures will include:

Temporary Construction Compound

- Temporary toilet facilities will be managed by the Contractor during the construction phase;
- A bunded containment area will be provided within the compound for the storage of fuels, lubricants, oils etc.; and
- The compound will be in place for the duration of the construction phase and will be removed once commissioning is complete;
- The secure compound will be used for the concrete washout area;
- The compound will include an enclosed wastewater management system (holding tank) capable of handling the demand during the construction phase when as many as 50 people. will be working on site

Storage and Stockpiles

- Surface water management, waste management measures etc will be put in place at the outset;
- The installation of suitable protection (e.g., silt curtain) around the site boundaries to control and treat any run-off during the works.
- Temporary stockpiles of excavated earth will be constructed within the lands during construction;
- All excavated materials from the site or introduced materials for construction will be either used or removed from the site;
- No permanent spoil or stockpiles will be left on site, other than those materials required for landscaping, berm construction and construction generally;
- Temporary storage areas for fuels and other hazardous materials required by the contractor during construction will be stored in appropriately bunded facilities to prevent the accidental spillage of hazardous liquids that could cause soil and groundwater contamination.

### 9.8.3 Operational Phase Mitigation

#### 9.8.3.1 Phase 1

There is no significant impact foreseen from the operational phase of the Inis Cealtra visitor experience or the new car park. There will be no additional storm water or foul water generated on

the island and there will be no increase in total boat traffic generated by Mountshannon Harbour and on Lough Derg with the proposed Phase 1 development in operation. The new car park is designed with SuDS features to attenuate and treat surface water reducing the associated impact to negligible.

#### 9.8.3.2 Phase 2

There is no significant impact foreseen from the operational phase of the Harbour car park reconfiguration and visitor centre. There will be no alteration to the existing footprint or drainage regime for the car park. The visitor centre will be designed with an attenuation system for 1 in 100-year storm plus 20% Climate Change factor. This will restrict flows to a greenfield runoff rate. The proposed drainage network will incorporate sumps within manholes for silt removal and a bypass petrol interceptor prior to discharge. During operation of the visitor centre, foul water generated will be treated by the existing on-site treatment unit prior to discharge by an existing connection to the foul sewer in Harbour Road.

## 9.9 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

### 9.9.1 Construction Phase

#### 9.9.1.1 Phase 1

All phases of construction including demolition shall be undertaken in accordance with the measures outlined in the CEMP. It is predicted that the residual impacts will be imperceptible from the operational phase. An NIS has also been prepared for the proposed development. The NIS determined that there will be no adverse effects on any qualifying interests of protected Natura 2000 sites hydrologically linked and downstream of the proposed site with the proposed mitigation measures. Therefore, there will be no significant adverse effects on the hydrological or hydrogeological regime pertaining to the development site.

#### 9.9.1.2 Phase 2

All phases of construction shall be undertaken in accordance with the measures outlined in the CEMP. It is predicted that the residual impacts will be imperceptible from the operational phase. An NIS has also been prepared for the proposed development. The NIS determined that there will be no adverse effects on any qualifying interests of protected Natura 2000 sites hydrologically linked and downstream of the proposed site with the proposed mitigation measures. Therefore, there will be no significant adverse effects on the hydrological or hydrogeological regime pertaining to the development site.

### 9.9.2 Operational Phase

The use of SuDS features will mitigate any potential impacts relating to changes in runoff rates and volumes whilst also maintaining quality of water the vicinity of Lough Derg. There will, therefore, be an imperceptible impact from development in the operational phase. An NIS has also been prepared for the proposed development. The NIS determined that there will be no adverse effects on any

qualifying interests of protected Natura 2000 sites hydrologically linked and downstream of the proposed site. Therefore, there will be no significant adverse effects on the hydrological or hydrogeological regime pertaining to the development site.

### 9.9.3 Summary of Post-mitigation Effects

The following Table summarises the identified likely significant residual effects during the demolition and construction phase of the proposed development following the application of mitigation measures.

**Table 9.8 Summary of Demolition & Construction Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Run off from demolition of shelters on Inis Cealtra. | Negative | Imperceptible | Local | Unlikely | Temporary | Residual |
| Earthworks New Car Park resulting in mobilisation of suspended solids | Negative | Imperceptible | Local | Unlikely | Temporary | Residual |
| Potential release of hydrocarbons from storage compound. | Negative | Imperceptible | Local | Unlikely | Temporary | Residual |
| Potential release of Cement-Based Products during construction activities | Negative | Not significant | Local | Unlikely | Temporary | Residual |
| Potential Effects on Hydrology of Designated Sites during construction activities | Negative | Not significant | Local | Unlikely | Short-term | Residual |
| Potential Hydrological Effects from Vibration Driving Works | Negative | Not significant | Local | Unlikely | Temporary | Residual |

The following Table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

**Table 9.9 Summary of Operational Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Potential Effects on Hydrology of Designated Sites during operational activity | Neutral | Not significant | Local | Unlikely | Long term | Direct |
| Potential effects of change in flood risk during operation | Negative | Imperceptible | Local | Unlikely | Long term | Direct |

### 9.9.4 Cumulative Residual Effects

There will be no significant cumulative residual effects.

## 9.10 Risk of Major Accidents or Disasters

This section presents an assessment of the vulnerability of the proposed development in relation to major accidents and disasters. It assesses the likelihood of the proposed development to cause an increased risk of major accidents and disasters.

Major accidents can relate to any incident, technological or otherwise, which has the potential to have a significant impact on the facility or on the receiving environment. Examples of major accidents which have such potential are fire, explosion, traffic collisions, contamination and pollution.

A natural disaster is an all-encompassing term which describes any severe natural event which has the potential to cause disturbance to an individual, development or population. The severity depends on the receptor and the type of disaster. Examples of natural disasters are earthquakes, flooding, tsunamis, lightning strikes, hurricanes or any other extreme natural event. This section has considered the potential increased risk of such events occurring as a result of climate change, such as increased frequency in the occurrence of extreme weather events.

It is considered that there is no potential for the proposed development to cause a major accident or disaster. Furthermore, there is no increased risk to the development from a major accident or disaster.

## 9.11 Worst Case Scenario

A worst-case scenario would arise if the water quality and best practice measures are not implemented during the construction phase of the development. This may result in the generation of uncontrolled release of suspended solids or hazardous materials such as oils or concrete from the site which would result in an unacceptable impact on local receptors and the receiving environment.

## 9.12 Interactions

Hydrology will interact with the following

Population and Human Health: The upgraded water drainage system will have a positive impact on the visitors of the proposed development during operation. The SuDS features will mitigate any potential impacts relating to changes in runoff rates and volumes whilst also maintaining quality of water in vicinity. The interaction is described as long term and imperceptible for the operational phase and neutral, short term and not significant for the construction phases.

Biodiversity: Construction activities have the potential to pose a risk to nearby watercourses, which could affect a range of marine species. The NIS and the Outline CEMP set out mitigation measures to prevent the runoff of contaminants during construction stage. These measures will mitigate the risk to biodiversity within the Natura 2000 sites identified. During the operational phase, the SuDS surface water design will mitigate any potential impacts on water quality, whilst also maintaining quality of water in vicinity. The interaction is described as long term and imperceptible for the operational phase and neutral, short term and not significant for the construction phases.

Material Assets and Land: The provision of SuDS surface water drainage system during operation stage will provide treatment to surface water runoff prior to discharge. The interaction is described as long term and imperceptible for the operational phase and neutral, short term and not significant for the construction phases.

## 9.13 Monitoring

A preliminary monitoring schedule has been prepared as part of the CEMP and will be finalised pending the appointment of the contractor. The site checklist must have the following information included as a minimum:

**Table 9.10 Summary of Demolition & Construction Stage Monitoring Measures**

| Aspect | Area of Inspection | Monitoring Required | Note/Checks | Frequency | Responsibility |
|---|---|---|---|---|---|
| Surface water Run-off | Weather Forecast | Met Éireann download | • Pre-determined rainfall trigger levels (e.g. 1 in 5-year storm event or heavy rainfall at >25mm/hr) | Every 24 hours minimum | Project Manager |
| Water quality monitoring | Excavations and Roadside attenuation drain | Visual inspection | •Colour, presents of silts | Daily | Environmental Manager |
| Roads | Site Entrance | Visual inspection | • Unacceptable level of sediment/silt on the road surface<br>• Presence of waste<br>• Surface condition | Daily | Project Manager |
| Temporary Site Compound Area | Fuel & Oil Storage areas | Visual inspection | • Damage to containers or ancillary equipment<br>• Leakages<br>• Unlocked storage container | Daily | Environmental Manager |
| | Construction Materials Storage Areas | Visual inspection | • Damage<br>• Untidiness | Daily | Environmental Manager |
| | Spoil Storage areas | Visual inspection | • Levels/Slippage<br>• Re-vegetation | Daily early/ weekly | Environmental Manager |

| | | | | | |
|---|---|---|---|---|---|
| | Waste Collection Areas | Visual inspection | • Damage<br>• Untidiness<br>• Full skips | Daily | Environmental Manager |
| | Concrete chute washout area | Visual inspection | • Damages<br>• Leakages<br>• Unacceptable level of concrete washings | Daily | Environmental Manager |
| Operation Control | Wastewater facilities | Visual inspection | • Portaloos requiring servicing | Weekly | Project Manager |
| | Hoarding and boundary fences | Visual inspection | • Signs of movement (i.e. not in a straight line)<br>• Damaged or fallen sections of fence | Weekly | Project Manager |
| | Concrete pours | Visual inspection | • Run-off / spills | To be scheduled with pours | Project Manager |
| | Dust generation | Visual inspection | • Cleanliness of roads and compound area<br>• Dust at stockpiles<br>• Dust from delivery vehicles | Daily | Project Manager |

## 9.14 Summary of Mitigation and Monitoring

The following Table summarises the Demolition and Construction Phase mitigation and monitoring measures.

**Table 9.11 Summary of Demolition & Construction Phase Mitigation and Monitoring**

| Character of potential impact | Mitigation Measure |
|---|---|
| Surface water runoff during the construction phase may contain increased silt levels or become polluted by construction activities | • A site-specific Construction & Environmental Management Plan will be developed and implemented during the construction phase. Implementation of the measures outlined in this plan will ensure that the potential impacts of the proposed development do not occur during the construction phase.<br>• Install any bunding and/or run-off controls where required such as |
| Discharge of rain water pumped from excavations may also contain increased silt levels | |
| Accidental spills and leaks associated with storage of oils and fuels, leaks from construction machinery | |
| Concrete runoff, particularly discharge of wash water from concrete trucks | |

| Character of potential impact | Mitigation Measure |
|---|---|
| Improper discharge of foul drainage from contractor's compound | installation of suitable protection (e.g., silt curtain) around the site boundaries to control and treat any run-off during the works<br>• Weather conditions and typical seasonal weather variations will be taken account of when planning stripping of topsoil and excavations.<br>• All oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area. Refuelling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any surface water inlets (where not possible to carry out such activities off site).<br>• Concrete batching will take place off site and wash down and wash out of concrete trucks will take place in the secure compound.<br>• The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tankered off site to a licensed facility until a connection to the public foul drainage network has been established. |

The following Table summarises the Operational Phase mitigation and monitoring measures.

**Table 9.12 Summary of Operational Phase Mitigation and Monitoring**

| Character of potential impact | Mitigation Measure |
|---|---|
| Increased impermeable surface area will reduce local ground water recharge and potentially increase surface water runoff | As surface water drainage design will be carried out in accordance with SuDS methodologies and implemented as part of a treatment train approach, there are no predicted impacts arising from the operational phase. |
| Change in water quality | |

## 9.15 Conclusion

During the construction and operation/maintenance phases of the proposed development, a number of activities will take place, some of which will have the potential to affect the hydrological and hydrogeological regime or water quality at the site or its vicinity.

Pollution control and other preventative measures have been incorporated into the project design to minimise adverse effects on water quality. Mitigation by design has been the principal means which will reduce suspended sediment run-off arising from construction activities. Preventative measures also include fuel, concrete, and waste management, which are incorporated into the project **CEMP**.

The implementation of the proposed mitigation measures will;

- Prevent a deterioration in status of bodies of surface and groundwater;
- Not jeopardise the attainment of good surface water chemical status;
- Not permanently exclude or compromise the achievement of the objectives of the WFD in other bodies of water within the same river basin district; and
- Is consistent with other Community Environmental legislation.

Due to the design of the project, and the mitigation and monitoring measures described which will be adopted, it is not likely that there will drawdown of groundwater, or that there will be a discharge of priority substances or priority hazardous substances from the proposed development. The proposed development alone or in combination with other developments is not likely to cause a deterioration in the quality of any body of surface water or groundwater, is not likely to alter the chemical status of any waters, is not likely to have a significant effect on any European site and is not likely to compromise the ability of any waters to meet the objectives of the Water Framework Directive and transposing legislation.

With implementation of the proposed mitigation measures, the construction of the Inis Cealtra Visitor Experience and associated activities alone or in combination with other projects will not have a significant adverse effect on the hydrology and hydrogeology of the site and surrounding area.

## 9.16 References and Sources

CIRIA, (2006a): Guidance on 'Control of Water Pollution from Linear Construction Projects' (CIRIA Report No. C648, 2006).

CIRIA, (2006b): Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors. CIRIA C532. London, 2006.

EPA, (2022): Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.

EPA, (2003): Advice Notes on Current Practice (in the preparation on Environmental Impact Statements) where relevant.

Forest Services (Draft, undated): Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures.

Forest Service, (2000): Forestry and Water Quality Guidelines. Forest Service, DAF, Johnstown Castle Estate, Co. Wexford.

GSI, (2016a): Establishment of Groundwater Zones of Contribution – Raheen Road Group Water Scheme, GSI/NFGWS/i.e. Engineering, January 2016.

GSI, (2016b): Establishment of Groundwater Zones of Contribution – Bodyke Group Water Scheme, GSI/NFGWS/i.e. Engineering, April 2016.

IFI, (2016): Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters, Inland Fisheries Ireland.

IGI, (2013): Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements, Institute of Geologists Ireland.

NRA, (2005): Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes, National Roads Authority.

PPG1 - General Guide to Prevention of Pollution (UK Guidance Note).

PPG5 – Works or Maintenance in or Near Watercourses (UK Guidance Note).

SNH, (2013): Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms. Scottish Natural Heritage report.

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 10
# BIODIVERSITY

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents

10 Biodiversity....10-6
10.1 Introduction....10-6
10.2 Expertise & Qualifications....10-6
10.3 Proposed Development....10-7
10.3.1 Aspects Relevant to this Assessment....10-8
10.4 Methodology....10-8
10.4.1 Relevant Legislation & Guidance....10-8
10.4.2 Scope....10-10
10.4.3 Study area....10-11
10.4.4 Zone of influence....10-13
10.4.5 Desk Study....10-16
10.4.6 Data requests....10-17
10.4.7 Site Surveys/Investigations....10-17
10.4.8 Assessment Criteria....10-30
10.5 Difficulties Encountered....10-33
10.6 Baseline Environment....10-33
10.6.1 Designated Sites....10-34
10.6.2 Habitats and Flora....10-41
10.6.3 Fauna....10-55
10.6.3.9.3 Bird Atlas Records and Distribution....10-68
10.7 Identification and Evaluation of Habitats, Flora and Fauna as Important Ecological Features (IEFs) 10-79
10.7.1 Selection of Designated Sites as IEFs....10-79
10.7.2 Selection of Habitats as IEFs....10-81
10.7.3 Selection of Flora and Fauna Species as IEFs....10-84
10.8 The 'Do Nothing' Scenario....10-88
10.9 Potential Significant Effects....10-89
10.9.1 Demolition Phase....10-90
10.9.2 Construction Phase....10-90
10.9.3 Operational Phase....10-103
10.9.4 Cumulative Effects....10-111
10.10 Mitigation(All measures provisional and subject to change following completion of the impact assessment)....10-113
10.10.1 Incorporated Design Mitigation....10-113
10.10.2 Mitigation by Management....10-114
10.11 Residual Impact Assessment....10-123
10.11.1 Demolition Phase....10-124

10.11.2 Construction Phase ..... 10-125
10.11.3 Summary of Operational Phase Effects Post Mitigation ..... 10-136
10.11.4 Cumulative Residual Effects ..... 10-142
10.12 Monitoring ..... 10-142
10.12.1 Alien Invasive Plant Species (IAPS) ..... 10-142
10.13 Enhancement ..... 10-142
10.13.1 Proposed Enhancement Measures for the Proposed Development Site ..... 10-142
10.13.2 Bird Box Scheme ..... 10-142
10.13.3 Bat Box Scheme ..... 10-142
10.13.4 Pollinator-friendly Management of the Site ..... 10-142
10.13.5 Biodiversity Signage ..... 10-143
10.13.6 Eradication of mink from Inis Cealtra ..... 10-143
10.14 Conclusion ..... 10-143
10.15 References and Sources ..... 10-144

## Table of Figures

Figure 10-1 Zone of potential influence of proposed development ..... 10-15
Figure 10-2 Locations on Inis Cealtra of deployed wildlife cameras and the four sites where aquatic surveys were completed. ..... 10-21
Figure 10-3 Trail camera and bat detector locations ..... 10-23
Figure 10-4 Bird survey locations ..... 10-27
Figure 10-5 Location of the study sites at Inis Cealtra, Co. Clare. ..... 10-29
Figure 10-6 Sites designated for nature conservation in the Mountshannon region ..... 10-40
Figure 10-7 Habitat map and invasive alien species locations for the mainland components of the proposed development ..... 10-46
Figure 10-8 Expansion of Woodland habitat on Inis Cealtra between 1880 and 2016 (from DE, 2016) ..... 10-47
Figure 10-9 Habitat Map of Inis Cealtra ..... 10-49
Figure 10-10 NPWS records of protected mammals in 10 km grid squares R68 and R78 (records = 0.5km accuracy) ..... 10-56
Figure 10-11 The Old Rectory is a bat roost. It was considered that bats can enter this building through small gaps in the facia board and (right). A dropping, potentially of a bat on a window board inside the rectory (inset picture on right) ..... 10-63
Figure 10-12 Potential bat tree roosts on Inis Cealtra ..... 10-66
Figure 10-13 Location of the Vertigo surveys undertaken in 2019 (Source: Brophy *et al.* 2019) ... 10-75

# Table of Tables

Table 10-1 Trail Cam locations on Inis Cealtra ..... 10-20

Table 10-2 Bat detector locations on Inis Cealtra ..... 10-22

Table 10-3: Summary of when the bird surveys were carried out. ..... 10-26

Table 10-4 Irish Transverse Mercator (ITM) grid coordinates for each of the four Aquatic Survey Sites (and as illustrated in Figure 10-5, below). ..... 10-29

Table 10-5 Determining ecologically significant effects Key Ecological Receptors (KERs) (adapted from CIEEM, 2018) ..... 10-31

Table 10-6 Criteria for assessing impacts based on CIEEM (2019) & (EPA, 2022) ..... 10-32

Table 10-7 Sites designated for nature conservation within the potential ZOI of the Proposed Development ..... 10-36

Table 10-8 NBDC invasive plant species records for the 2 km grid squares covering the mainland (R78D) and Inis Cealtra (R68X) components of the proposed development. ..... 10-41

Table 10-9 NBDC protected and invasive non-volant mammal species records for the 2 km grid squares covering the mainland (R78D) and Inis Cealtra (R68X) components of the proposed development. 10-55

Table 10-10 NBDC protected and invasive Reptiles and Amphibians species records for the 2 km grid squares covering the mainland (R78D) and Inis Cealtra (R68X) components of the proposed development. ..... 10-57

Table 10-11 Bat Conservation Ireland bat records for the 2 km grid squares covering the mainland (R78) and Inis Cealtra (R68) components of the proposed development ..... 10-59

Table 10-12 Bat Conservation Ireland Bat Habitat Suitability Index (BHSI) for the 2 km grid squares covering the mainland (R79D) and Inis Cealtra (R68X) components of the proposed development .10-61

Table 10-13 Bat preferred roost type for the 2 km grid squares covering the mainland (R79D) and Inis Cealtra (R68X) components of the proposed development ..... 10-61

Table 10-14 Trees with Potential to Support Roosting Bats ..... 10-65

Table 10-15 Summary of bat calls from PABS on Inis Cealtra during May 2021 ..... 10-67

Table 10-16: IBA sites within the ZoI of the site boundary. ..... 10-68

Table 10-17 Lepidoptera and Odonata recorded at Inis Cealtra in summer 2016. ..... 10-76

Table 10-18. Selection of habitats as IEFs for the Proposed Development ..... 10-81

Table 10-19. Evaluation of fauna as IEFs for the Proposed Development ..... 10-84

Table 10-20. Potential effects on habitats identified as IEFs and the significance of unmitigated effects ..... 10-90

Table 10-21. Potential effects on habitats identified as IEFs and the significance of unmitigated effects ..... 10-93

Table 10-22. Potential effects on mammals (excl. bats) identified as IEFs and the significance of unmitigated effects ..... 10-99

Table 10-23. Potential effects on bats identified as IEFs and the significance of unmitigated effects 10-100

Table 10-24. Potential effects on birds/avian groups identified as IEFs and the significance of unmitigated effects ..... 10-100

Table 10-25. Potential effects on terrestrial macro-invertebrate groups identified as IEFs and the significance of unmitigated effects ..... 10-101

Table 10-26. Potential effects on reptiles and amphibians identified as IEFs and the significance of unmitigated effects ..... 10-101

Table 10-27. Potential effects on freshwater macro-invertebrates identified as IEFs and the significance of unmitigated effects ..... 10-102

Table 10-28. Potential effects on water quality and the significance of unmitigated effects ..... 10-103

Table 10-29. Potential effects on habitats identified as IEFs and the significance of unmitigated effects ..... 10-104

Table 10-30 Potential effects on mammals (excl. bats) identified as IEFs and the significance of unmitigated effects ..... 10-106

Table 10-31. Potential effects on bats identified as IEFs and the significance of unmitigated effects 10-107

Table 10-32. Potential effects on bats identified as IEFs and the significance of unmitigated effects 10-108

Table 10-33. Potential effects on reptiles and amphibians identified as IEFs and the significance of unmitigated effects ..... 10-109

Table 10-34. Potential effects on freshwater macro-invertebrates and Freshwater aquatic species identified as IEFs and the significance of unmitigated effects ..... 10-110

Table 10-35. Potential effects on water quality and the significance of unmitigated effects ..... 10-111

Table 10-36 Summary of Demolition Phase Effects Post Mitigation ..... 10-124

Table 10-37 Summary of Construction Phase Effects Post Mitigation ..... 10-125

## List of Plates

Plate 10-1 Aerial view of Inis Cealtra from north on 26th May 2019 ..... 10-11

Plate 10-2 Proposed mooring location on the north east shore of Inis Cealtra ..... 10-12

Plate 10-3. Proposed Visitors Centre ..... 10-12

Plate 10-4. Proposed new car park. ..... 10-12

Plate 10-5. Mountshannon Harbour - Westward view from jetty (left), and north-facing view of existing Harbour car park (right). ..... 10-13

Plate 10-6 Photographic images from a site visit conducted on 5 June 2021 ..... 10-18

Plate 10-7 Surveying Inis Cealtra on 16th March 2021 and 5th May 2021 ..... 10-21

Plate 10-8 Passive automated bat detectors in place at Inis Cealtra ..... 10-22

Plate 10-9. View south eastwards from Knockaphort Pier to Inis Cealtra (left), and view of Mountshannon Bay from the jetty at Mountshannon Harbour (right). ..... 10-25

Plate 10-10 Improved agricultural grassland at the proposed new car park. ..... 10-42

Plate 10-11 Stone wall adjacent to the proposed car park entrance (left) and Japanese knotweed within the proposed parking area (right).....10-42

Plate 10-12 Driveway corresponds to 'Spoil and bare ground' with the lawn classified as 'Amenity grassland (left). Mixed broadleaved/Conifer woodland and ground flora, with three-cornered garlic and winter heliotrope in the foreground (right).....10-43

Plate 10-13 Winter heliotrope is an invasive plant associated with 'Stone walls' and woodland habitat at the site (left). 'Spoil and bare ground' and 'Buildings and artificial surfaces' habitat at the eastern extent of site (right). .....10-44

Plate 10-14 Rhododendron on the western side of the proposed visitor site .....10-44

Plate 10-15 Buildings and artificial surfaces at Mountshannon Harbour.....10-45

Plate 10-16 Wet grassland in the foreground and marsh in the background on the northern shore of Inis Cealtra (left). Improved agricultural grassland in the foreground with scrub and oak-ash-hazel woodland in the background (right). .....10-48

Plate 10-17 Amenity grassland and stonewalls and other stonework (buildings) on Inis Cealtra ..10-48

Plate 10-18 Shoreline at the location of the proposed new mooring. Lake substrate comprises mostly sand and boulders at the proposed mooring location. .....10-49

Plate 10-19. Well (left) and surface water associated with same (right) near the north-eastern shore of Inis Cealtra .....10-53

Plate 10-20 The northern shore of Inis Cealtra in May (left) and June (right) 2021.....10-54

Plate 10-21 Soft substrate associated with a stand of common clubrush (left) and rocky substrate (right) at the northern shore.....10-54

Plate 10-22 Evidence of deer resting (left) and deer droppings (right).....10-57

Plate 10-23 Mink with an eel captured on trailcam (left). Mink droppings on a boulder next to Lough Derg.....10-58

Plate 10-24 Mink and Otter resting location on a boulder at the shore of Inis Cealtra (left) with an eaten egg (right).....10-59

Plate 10-25 Trees and treeline/hedgerow habitat likely used by foraging/commuting bats.....10-62

Plate 10-26 Attic of Rectory with bat droppings.....10-63

Plate 10-27 St. Caiman's Church and tower (left) and interior of church (right).....10-64

Plate 10-28 Mature trees and scrub provide potential roosting and foraging habitat for bats.....10-64

Plate 10-29 Pheasant (left) and grey heron (right) near the southern shore of Inis Cealtra in January 2022. .....10-71

Plate 10-30 Carcass of a grey heron (left) and skull of a swan (right) found on Inis Cealtra on 22 March 2023. .....10-71

Plate 10-31 Three-spined stickleback and roach recorded during biological sampling (left). Male three-spined stickleback in a swan mussel shell (right).....10-73

Plate 10-32 *Ephemera danica* mayfly at Inis Cealtra: larvae (left) and spent adult (right). .....10-78

Plate 10-33 zebra mussel (left) and adult (aerial) stage of *Sialis* sp. (right). .....10-79

# 10 Biodiversity

## 10.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on biodiversity. It should be read in conjunction with the description of the proposed development and all associated project elements as provided in Chapter 2, the landscaping plan and the water and hydrology chapter (Chapter 9).

This assessment comprises:

- A review of the existing receiving environment
- Prediction and characterisation of likely impacts
- Evaluation of effects significance
- Consideration of mitigation measures, where appropriate.

For simplicity in this report, the project is considered under four main elements divided across the Mainland and Inis Cealtra:

**Mainland:**

- Car park (main car park north of main street)
- Rectory and Visitor Centre
- Harbour

**Island:**

- Inis Cealtra

Lough Derg will be used is as a navigation route between Mountshannon and Inis Cealtra. This waterbody is also described and assessed under the Island section of the report. A report for screening for Appropriate Assessment and a Natura Impact Statement (NIS) have also been prepared.

## 10.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Salona Reddy, an Ecologist (MSc, BSc) who has been working full-time with Malachy Walsh and Partners (MWP), Engineering and Environmental Consultants, since January 2024. Salona has a master's degree in Environmental Science and has over 8 years consultancy experience of undertaking and contributing to EIAR and Ecological reports for a variety of projects. Salona was involved in the survey stage for this report. She is familiar with various ecological survey methodologies including habitat/survey mapping and zoological surveys and has worked on research teams both in Ireland and abroad. She has undertaken assessments for a wide variety of projects and has authored many ecological reports including Screenings for Appropriate Assessment Reports (Stage 1), Natura Impact Statements (Stage 2), and Ecological Impact Assessments.

## 10.3 Proposed Development

A detailed description of the proposed development is contained within Chapter 2 of this EIAR and the Planning Statement that accompanies the application. The statutory notice should also be referenced. Following is a summary description of the development.

The Inis Cealtra Visitor Experience is to be developed on Inis Cealtra (Holy Island) and on the mainland, in two principal locations within Mountshannon Village. The project is comprised of different elements as set out below.

**Inis Cealtra**

- Demolition of an existing structure consisting of a concrete shelter (16 sq.m) adjacent to the existing pier at the north-west of the island to the north of St. Caimin's Church in the eastern part of the island.
- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp. The floating jetty will be 4m wide and will be held in position using 4 no. 800 mm diameter steel piles. The causeway, will be constructed over the existing concrete jetty (which will remain in place) on the shore of the island, comprises a concrete anchor platform, held in place by 4 no. 203mm H- piles, around which stone gabions are placed, built up to provide a 3m wide level surface which will be paved with stone.
- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.
- Provision of 3 staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff. The pods will be made up of two distinct elements: a lightweight, prefabricated timber exo-frame resting on mini-pile foundations and a timber-framed, timber-clad pod structure, which will sit into this frame. Their components will be prefabricated off-site and assembled on the island to minimise the impact of their construction and are designed to be dismantled and removed if required, with little trace left on the landscape. The WC Pod (16 sq.m) will contain 2 no. dry composting WCs that require no foul drainage or water supply. Sanitation gels will be used for hand hygiene. Given the relative complexity of removing waste off the island but recognising the need for such facilities, WCs will be for 'emergency' use only with the aim of ensuring that their use and disposal are appropriately managed.

**Mainland – Mountshannon**

- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building with a gross floor area (GFA) of 1,594 sq.m. The building will incorporate a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.
- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.
- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, coach parking facilities and bicycle parking facilities.

### 10.3.1 Aspects Relevant to this Assessment

The primary aspects of the proposed development, as relevant to biodiversity, are conversion agricultural greenfield areas to built ground (visitor centre, car park, pedestrian areas, island pods, new mooring point on island), greenfield areas to managed grassland (paths on island), and pier construction adjacent to Inis Cealtra in Lough Derg. There will be landscape management on the island, a drainage and attenuation strategy, increased boat activity on the lake, all of which have the potential to impact local biodiversity.

## 10.4 Methodology

### 10.4.1 Relevant Legislation & Guidance

The legislation underpinning biodiversity and nature conservation in Ireland includes the following:

- Irish Wildlife Act 1976 to 2022
- The European Communities (Birds and Natural Habitats) Regulations 2011-2021
- EU Habitats Directive (92/43/EC)
- EU Birds Directive (2009/147/EC)
- The EU Water Framework Directive (2000/60/EC)
- Flora (Protection) Order, 2015
- Planning and Development Act 2000 (as amended).

This assessment was undertaken with regard to the following publications:

- 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (EPA, 2022)
- 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine' (CIEEM[1], 2018)
- 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (NRA[2], 2009).

#### 10.4.1.1 National legislation

A diversity of flora and fauna, rare at a national level, are protected under the provisions of the Wildlife Act 1976, as amended, and the orders and regulations made thereunder, such as the Flora Protection Order (2015). The Habitats Directive 1992 has been transposed into Irish law, for the purposes of this application for permission by Part X10 of the Planning and Development Act 2000. In addition, certain other obligations of the Habitat Directive have been transposed by the European Communities (Birds and Natural Habitats) Regulations 2011, as amended.

Section 171 of the Fisheries (Consolidation) Act 1959 creates the offence of throwing, emptying, permitting or causing to fall onto any waters deleterious matter. Deleterious matter is defined as not only any substance that is liable to injure fish, but that is also liable to damage their spawning grounds or the food of any fish or to injure fish in their value as human food or to impair the usefulness of the

[1] Chartered Institute of Ecology and Environmental Management

[2] National Roads Authority, now known as Transport Infrastructure Ireland (TII)

bed and soil of any waters as spawning grounds or other capacity to produce the food of fish. Salmon, all lamprey species and their habitats are further protected under the EU Habitats Directive, 1992.

Under Section 3 of the Local Government (Water Pollution) Act, 1977 (as amended by Sections 3 and 24 of the 1990 Act), it is an offence to cause or permit any polluting matter to enter waters. Suspended solids would be a key parameter here. Likewise, any visual evidence of oil/fuel in the river would constitute an offence.

#### 10.4.1.2 Clare County Development Plan 2023–2029

Volume 1 of the Clare County Development Plan 2023–2029[3] notes that Clare is a "county that protects and enhances its unique natural heritage and biodiversity and recognises the potential for sustainable green infrastructure development, while promoting and developing its cultural, educational and eco-tourism potential in a sustainable manner".

The biodiversity chapter of the Clare County Development Plan presents the objectives required to promote County Clare as an environmentally sustainable county and to support the natural heritage of the county through the conservation, protection and enhancement of its natural resources. In accordance with the overall Vision of the Plan it is based on the following strategic aims:

- To conserve and protect sites which have been designated for their ecological or environmental sensitivity;
- To ensure the sustainable management and conservation of areas of natural and geological heritage within the County;
- To increase education about and awareness of our natural heritage and biodiversity;
- To promote sustainable development, in harmony with local biodiversity and, if possible, take steps to enhance the natural environment;
- To ensure compliance with the requirements of the EU Habitats Directive and Birds Directive; and
- To promote the creation of an integrated and coherent green infrastructure network throughout County Clare in order to enhance connectivity, social inclusion, sense of place and the creation of wildlife corridors.

In relation to European sites, it is stipulated in the plan that as a competent authority, the Council shall in the performance of its functions, take appropriate steps to avoid the deterioration of natural habitats and the habitats of species within these European sites[4], as well as the disturbance of the species for which the site has been designated, insofar as such disturbance could be significant in relation to the objectives of the Habitats Directive. In addition, the Council has duties as a public authority under Regulation 27 of the European Communities (Birds and Natural Habitats) Regulations 2011 relating to nature conservation.

The plan states that Environmental Impact Assessment (EIA) is a process that provides for the evaluation of the full environmental consequences and impacts of development actions in a systematic, holistic and multidisciplinary way and is a critical tool in managing and clarifying the complex interrelationships between development and the environment. Environmental assessments consider alternative development proposals, assess the impacts of these alternatives, propose

[3] https://clarecdp2023-2029.clarecoco.ie/stage3-amendments/adoption/volume-1-written-statement-clare-county-development-plan-2023-2029-51406.pdf

[4] 'European sites' are defined in Section 177R of Part XAB of the Planning and Development Act 2000 and include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) at all stages of designation.

measures to avoid, mitigate against or compensate for adverse impacts and in each case lead to the production of an Environmental Impact Assessment Report (EIAR).

With regard to Inland Waterways, it is an objective of Clare County Council:

- To work with all relevant stakeholders to protect from degradation and damage and manage inland waters, river corridors and their floodplains, turloughs, lakes, fens and other water bodies, and to recognise and promote them as natural assets and key elements in the green infrastructure network in the County;
- To work with all relevant stakeholders to protect and improve appropriate access to waterways and river corridors whilst ensuring their conservation and the protection of the resource and water quality;
- To encourage development proposals to improve appropriate access and compatible leisure activities;
- To protect the County's valuable inland fishery resource and support its sustainable development through the protection of water quality and facilitation of ancillary infrastructure at appropriate locations.

It is an objective of Clare County Council to complete the habitat mapping of the County (in accordance with A Guide to Habitats in Ireland – (The Heritage Council) in order to identify and record the different grasslands of the County at a detailed level and to use the collected data to ensure that the necessary protection is afforded to areas of importance.

It is an objective of the Development Plan to manage, enhance and protect the wetlands in County Clare. Wetlands include a wide range of habitats including watercourses and marshes. They support a variety of habitats and species, assist in the protection of water quality and flood control, contribute to climate resilience by functioning as carbon sinks, and provide open space and recreational opportunities.

This chapter considers and satisfies these components of the plan.

### 10.4.2 Scope

The objectives of the assessment were to:

- Identify and document protected habitats and species in the study area and extending away from it through desk top studies;
- Undertake baseline ecological surveys at the site and evaluate the nature conservation importance of the ecological resources identified using a scientifically robust and objective methodology based on current National and International best practice;
- Predict the potential direct, indirect and cumulative effects of the project on biodiversity; and
- Prescribe mitigation measures, to minimise potential effects on biodiversity.

There was no requirement to survey for amphibians for the current assessment because there are no water features in the study area that potentially support this aquatic group, noting that there are records of frog (*Rana temporaria*) (Irish National Frog Database in 1997) and smooth newt (*Lissotriton vulgaris*) (Reptiles and Amphibians Distribution Atlas 1978 (An Foras Forbartha) in 1960) in the wider study area[5].

[5] https://maps.biodiversityireland.ie/Map (Accessed 4 September 2024) Grid square R78D

Doherty Environmental (DE, 2016) carried out extensive surveys on Inis Cealtra across a range of animal groups over the 2015/16 period (most during 2016), including habitat, bat, bird and invertebrate surveys. The results of the habitat survey undertaken in 2021 to inform this report are comparable to the results obtained during the 2015/16 surveys, albeit more scrub habitat in the more recent survey. For this reason, results for animal groups recorded in the earlier survey were used to inform this assessment, given the only minor changes to the baseline environment.

### 10.4.3 Study area

The study areas for the desk review and field surveys were identified through considering the nature of the Proposed Development and the ecological features likely, or known, to be present. The experience gained from working on projects with similar characteristics was also used to determine that the study area chosen was both sufficiently sized and proportionate for the project.

The main study area for the project included all lands within the overall landholding boundary, which encompasses Inis Cealtra (**Plate 10-1; Figure 10-1** below) and the site of the proposed Visitor Centre (**Plate 10-3**), new car park (main road) (**Plate 10-4**) and upgraded harbour carpark (**Plate 10-5**).

**Plate 10-1 Aerial view of Inis Cealtra from north on 26th May 2019**

**Plate 10-2 Proposed mooring location on the north east shore of Inis Cealtra**

**Plate 10-3. Proposed Visitors Centre**

**Plate 10-4. Proposed new car park.**

**Plate 10-5. Mountshannon Harbour - Westward view from jetty (left), and north-facing view of existing Harbour car park (right).**

### 10.4.4 Zone of influence

The ZOI of the project is illustrated in **Figure 10-1**. The following were considered when identifying the potential Zone of Influence (ZOI) of the proposed development:

- The nature, size and location of the project
- Sensitive habitats and species
- Identification of suitable habitats for high conservation value species
- Ecological connectivity between the project and the wider landscape
- The sensitivities of the relevant key ecological receptors
- Identification of potential effect pathways to key ecological receptors
- Habitat connectivity and foraging ranges of fauna.

The ZOI for terrestrial areas encompasses the footprint of the proposed development the Inis Cealtra, areas extending 10m beyond (e.g. car parking and visitor centre at Mountshannon), and the full extent of lake waters within 5km of the proposed development, including the designated sites and features of interest within this zone. The scale and magnitude of water quality impacts within this zone, will diminish with distance from the proposed development, and considered to reduce to none beyond 5km. Bushy Island and Young's Island have been included in the ZOI because of increased boat activity due to the navigation route between Mountshannon and Inis Cealtra.

The proximity of the Slieve Aughty Mountains Special Protection Area (SPA Site code 004168) was also considered in defining the ZOI, this SPA having two special conservation interest species: hen harrier (*Circus cyaneus*) and merlin (*Falco columbarius*). The nearest component of the proposed development to this SPA is the proposed car parking area adjacent and to the north of the main street in Mountshannon, located ca. 270 m to the southwest of the SPA. Based on the urban character and human disturbance influence at the proposed parking location, a local road with dwelling houses in combination with the screening effect of treelines and hedgerows in the intervening terrain, this SPA is considered to be outside the ZOI. This takes account of the fact that when boundaries of Irish SPAs were established, they sought to include all lands of relevant habitats (heath/bog, rough grassland[6] and forestry) within 5km of breeding harriers, as identified in the first national survey of hen harrier.

[6] As set out in Moran & Wilson-Parr (2015), rough grasslands are fields of low intensity or evidently unmanaged grasslands that have more than 50% cover of rushes.

A 5km radius was applied around nest sites in order to define the SPA boundaries. As stated in the site synopsis for the Slieve Aughty Mountains SPA[7], hen harriers will forage up to c. 5 km from the nest site, utilising open bog and moorland, young conifer plantations and hill farmland, but the core foraging range for hen harrier is identified as 2km as per SNH (2016). Based on this rationale, the proposed development is well outside any likely hen harrier nesting location. The conservation attributes for hen harrier and merlin are set out in the Conservation Objectives for the Slieve Aughty Mountains SPA (NPWS, 2022) and none, including 'population size', 'productivity rate' and extent and condition of foraging habitats for either species would be adversely affected by the proposed development (See Section 4.4.2 of the AASR). Additionally, the bird surveys did not indicate any Merlin onsite with the exception of Hen harrier was only observed once during the Nov 2021 transect of the island.

The Lough Derg (Shannon) SPA is designated for a variety of water-dependant bird species and wetland habitat, and it is hydrologically connected to the proposed development, both directly and indirectly. Mountshannon harbour is situated on the shoreline of Lough Derg, and Inis Cealtra is situated within Lough Derg; therefore, both are directly connected to the SPA (See Section 4.4.1 of the AASR).

The Lower River Shannon SAC is designated for a variety of marine and freshwater aquatic habitats and species. There is a hydrological connection between the proposed development site and the Lower River Shannon SAC with an intervening distance between the two of approximately 15 km via the River Shannon (See Section 4.4.1 of the AASR).

The proposed development has no spatial overlap with the Lower River Shannon SAC however due to the proposal and in the absence of water quality protection mitigation measures, there is potential for significant impacts to the water quality Lough Derg and the River Shannon draining the lake, and the SAC located approximately 15 river kilometres downstream.

[7] https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004168.pdf

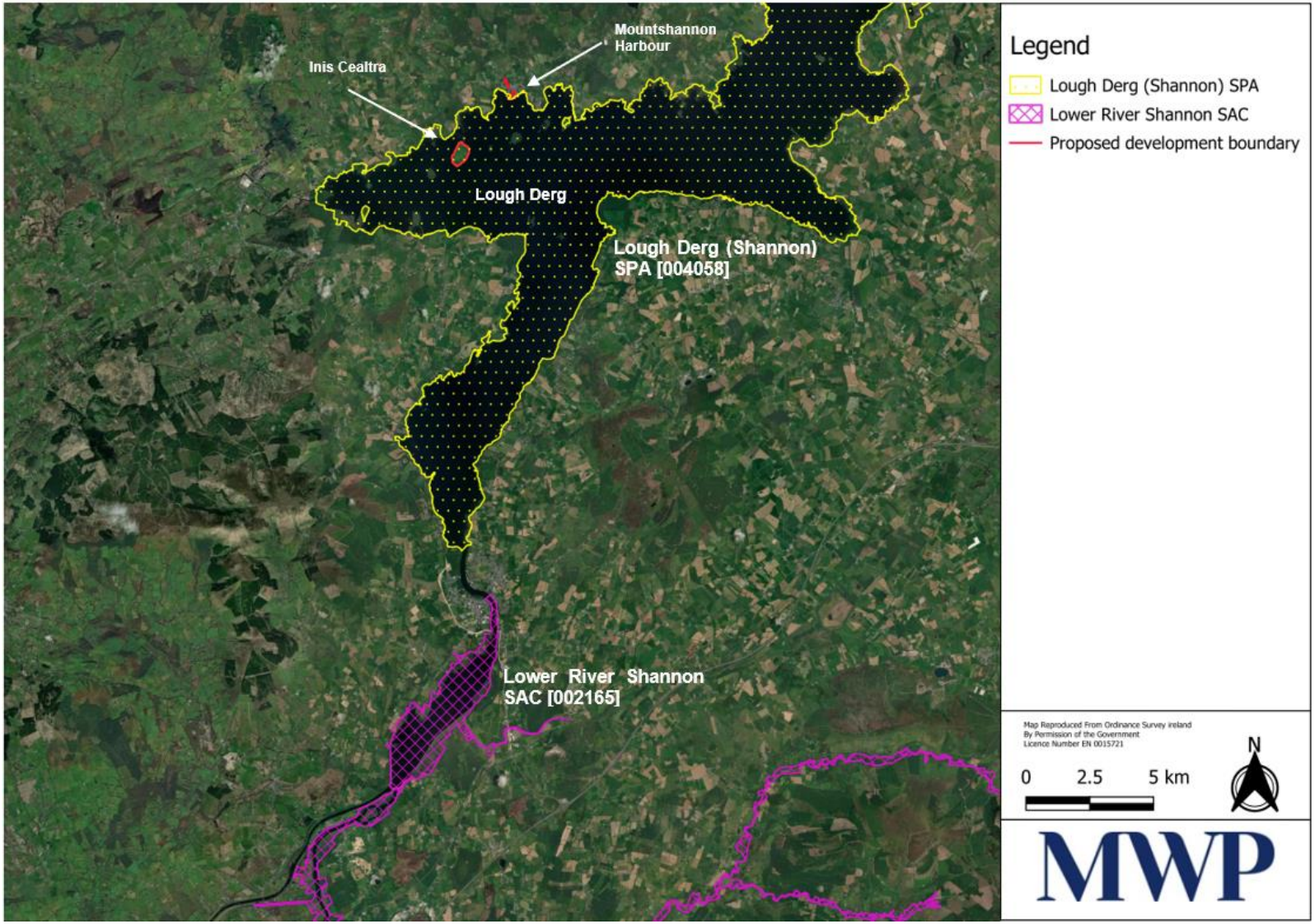



**Figure 10-1 Zone of potential influence of proposed development**

### 10.4.5 Desk Study

The desk study undertaken for this assessment included a review of available published data on sites designated for nature conservation, and other ecologically sensitive sites, habitats and species of interest in the vicinity of the study area. The available ecological data which were accessed included the following:

- OSI Aerial photography and 1:50,000 mapping, and other mapping sources (online)
- National Parks and Wildlife Service (NPWS) online mapping and datasets
- Heritage Maps online mapping
- National Biodiversity Data Centre (NBDC) online mapping and datasets
- Environmental Protection Agency (EPA) online mapping and datasets
- Geological Survey of Ireland (GSI) online mapping
- Draft Clare County Development Plan 2023 – 2029
- Clare Biodiversity Action Plan 2017 – 2023
- National Biodiversity Action Plan 2017-2021
- Threat Response Plan: Otter 2009-2011 (DEHLG, 2009)
- Bat Conservation Ireland – http://www.batconservationireland.org
- Invasive Species Ireland - http://www.invasivespeciesireland.com/
- Review of records of plant species protected under the Flora (Protection) Order (2022)
- Irish Red Data Book for Vascular Plants (Wyse *et. Al.* 2016)
- Inland Fisheries Ireland (IFI) fish sampling reports and fish data online
- Checklists of Protected and Threatened Species in Ireland. Version 3.0. (Nelson, et al., 2022)
- Botanical Society of Britain and Ireland online maps and data https://bsbi.org/maps
- Review of requested records from NPWS Rare and Protected Species database and BCI bat records/roost database
- All-Ireland Pollinator Plan 2021-2025
- Review of Bird Atlases: (Sharrock, 1976; Lack, 1986; Gibbons et al., 1993; Balmer et al., 2013)
- Review of Birds of Conservation Concern in Ireland (BoCCI) 2020-2026 (Gilbert et al., 2021)
- Review of BirdWatch Ireland I-WeBS (Irish Wetland Bird Surveys) site information
- General ornithological information (www.birdwatchireland.ie)
- Other information sources and reports footnoted or referenced.

The following information compiled by MWP ecologists was also reviewed:

- A Bird Desktop Study, Survey Methodology and Results (2022 – 2023), Co Clare report that presents the findings of bird surveys conducted during the period of March 2021 to March 2024. The report was informed by both desk-top and field studies in order to identify avian sensitivities to the proposed development. See Appendix 10-1.

- An aquatic ecology report (Appendix 10-2) prepared to document the findings of aquatic flora and fauna surveys undertaken along the lake shore at Inis Cealtra.

The following reports prepared by external consultants were reviewed:

- A Bat Survey of Mountshannon Rectory, Mountshannon, Co. Clare report (Appendix 10-3) prepared by Dr. Caroline Shiels
- A Habitat survey for Inis Cealtra prepared by Delichon Ecology (**Appendix 10-4**).

An Ecology Report for Inis Cealtra for Clare County Council, prepared by Doherty Environmental (DE, 2016) was also reviewed.

### 10.4.6 Data requests

An request was made to BirdWatch Ireland[8] on 4th September 2024 for Irish Wetland Bird Survey (IWeBS) count data for the following subsites in Lough Derg (IWeBS Site Code OJ011):

- 0J011: Lough Derg (Shannon) Aerial

Subsites:

- 0H077 West: Mountshannon-Scarrif (Aerial)
- 0H553 Southwest (Rinbarra Point - Rinnaman Point)
- 0H602 Scarriff Bay fields (SITE: Scarriff area)
- 0H090 West: Doorosbeg Pt - Scariff (Aerial)

A data request was made to NPWS on the 4th September 2024 for records of rare and/or protected species within the 10 km grid squares encompassing the study area (R68, R78).

Responses were received within two weeks of the request.

The NBDC website was used to compile a list of species records relevant to both hectads.

Information received via BirdWatch Ireland, NPWS and the NBDC in response to the data requests and database searches was used to help inform the baseline surveys and impact assessment in relation to the proposal.

### 10.4.7 Site Surveys/Investigations

The data collected during the 2021 and 2022 surveys remains relevant to the proposed development. The survey data gathered have shown stability over time, which is supported by external sources and longitudinal studies in related fields. This stability justifies the continued use of the existing data. The supplementation of the survey data with other up-to-date secondary data sources ensures that the findings are current and reflective of the present context. The initial site survey was conducted on 5 June 2021 (**Plate 10-6**).

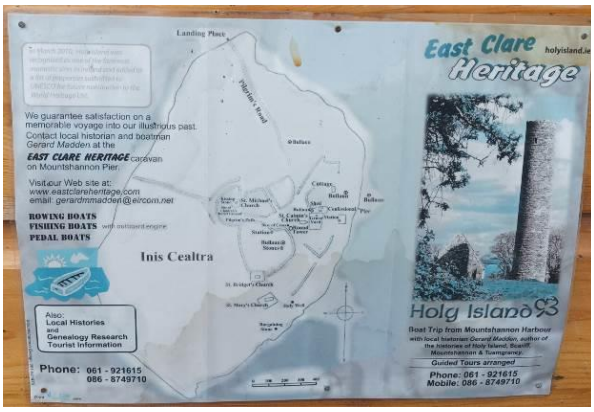
This report is accompanied by Appendix 10-1 Bird Survey, Appendix 10-2 Aquatic Survey, Appendix 10-3 Bat Survey and Appenidx 10-4 Habitat Survey.

[8] Data were supplied by the Irish Wetland Bird Survey (I-WeBS), a scheme coordinated by BirdWatch Ireland under contract to the National Parks and Wildlife Service of the Department of Housing, Local Government and Heritage.

A) View from Inis Cealtra

B) Mountshannon Harbour

C) Mountshannon Harbour



D) Mountshannon Harbour

**Plate 10-6 Photographic images from a site visit conducted on 5 June 2021**

### 10.4.7.1 Habitats and flora

Delichon Ecology (Appendix 10-4) undertook a habitat and flora survey on Inis Cealtra on 10th June 2021. A habitat survey was undertaken at the Visitor Centre Site (also known as the 'Old Rectory Site') and Harbour on 27th July 2021 and 10th May 2022. MWP ecologists undertook the habitat survey of the car parking area to the north of Mountshannon which was carried out on 30th May 2022.

Habitats were mapped according to the classification scheme outlined in the Heritage Council publication 'A Guide to Habitats in Ireland' (Fossitt, 2000) and following the guidelines contained in 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al. 2011).

Habitat surveys and mapping were considered when identifying ecological constraints during the early design stages of the project. Higher value habitats, particularly those with potential links to Annex I, were subsequently excluded from the developable area of the project.

In conjunction with the habitat surveys, botanical surveys were completed on the 10th of June 2021 within the study area and included a 'look-see' search methodology (NRA, 2009) within habitat features likely to support protected species. This aimed to confirm the presence of plant species considered to be rare in both a national and local context (Scannell and Synnott, 1987), but with particular emphasis on the following:

- The plant species listed in Annex II of the EU Habitats Directive
- Flora Protection Order species (FPO) (2022)
- Flora species listed in The Irish Red Data Book (Wyse Jackson *et al*. 2016)

Plant nomenclature for vascular plants followed 'New Flora of the British Isles' (Stace, C. 2019 Fourth Edition). Mosses and liverworts followed 'Mosses and Liverworts of Britain and Ireland: a field guide' (Atherton et al. 2010).

During habitat and flora surveys of the study area, any invasive plant species were recorded, with a focus on those species listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015). Any infestations encountered were recorded with regard to species, location and extent of infestation, and a photographic record made.

#### 10.4.7.2 Non-Volant Mammals

The scope of the non-volant mammal (land-based mammals that cannot fly) surveys were informed by the initial ecological surveys carried out on site in June 2021 and species previously recorded in the 10 km squares R68 and R78 encompassing the study area, as determined during the desktop study.

**General Non-Volant Mammal Surveys**

Non-volant mammal surveys were undertaken within the mainland study area, encompassing the proposed Visitor Centre ('Old Rectory Site') and Harbour on the 10th February 2021. A survey of the carpark area to the north of Mountshannon was carried out on 30th May 2022. A subsequent survey of the mainland study area, encompassing the proposed Visitor Centre ('Old Rectory Site') and Harbour, was undertaken on 7th April 2023.

Non-volant mammal surveys were undertaken on Inis Cealtra on the 31st January, 28th February and 16th March 2021 (**Plate 10-7**). Further general and targeted non-volant mammal surveys for the Island, apart from dedicated otter surveys, were completed in June and July 2021.

**Targeted Non-Volant Mammal Surveys**

The surveys on both the island and mainland for targeted species protected under the Wildlife Acts, species listed in Annex II, Annex IV and Annex V of the Habitats Directive, and Irish Red Listed species (Marnell et al. 2019). Particular focus was given to protected species such as Badger (Meles meles), Irish hare (Lepus timidus hibernicus), Pine marten (Martes martes), and Otter (*Lutra lutra*) given the type of habitat features present within the study area and the species records listed by the NBDC for hectads R68 and R78.

These surveys involved a comprehensive search for all mammal activity in the form of prints, scat, resting/breeding places, feeding signs, mammal trails and direct observations. These surveys had

regard to 'Ecological Surveying Techniques for Protected Flora and Fauna' (NRA, 2009) and 'Animal Tracks and Signs' (Bang and Dahlstrom, 2004).

In addition, 3 no. wildlife trail cameras were deployed on Inis Cealtra from 31st January to 28th February 2022. The locations of these cameras are outlined in **Table 10-1** below and can be seen in **Figure 10-2** and **Figure 10-3**.

In addition to the general non-volant mammal surveys, targeted surveys for badger, otter and pine marten were undertaken, as follows.

**Badger**

Evidence of activity by badgers including latrines, hair, foraging activity (snuffle holes), commuting movements (badger tracks), setts and bedding was searched for and recorded during a dedicated badger survey carried out on 31st January 2022 within the study area. Surveying for badgers followed methodology in 'Surveying for Badgers: Good Practice Guidelines' (Scottish Badgers, 2018).

**Otter**

Otter surveys were carried out with a particular focus given to the areas of lake shore encompassed within the study area at Mountshannon and on Inis Cealtra, were completed as part of the mammal surveys conducted in 31st January 2022. Survey methodology had regard to 'Monitoring the Otter *Lutra lutra*' (Chanin, 2003a) and 'Ecology of the European Otter' by Chanin (2003b). Otter signs searched for included spraints, footprints, tracks, couches and holts.

**Pine Marten**

Pine marten surveys were completed as part of the overall non-volant mammal surveys on 31st January 2022. Any evidence of pine marten activity in the form of scat and prints was recorded.

**Table 10-1 Trail Cam locations on Inis Cealtra**

| SP | Location | Easting | Northing |
|---|---|---|---|
| 1 | Eastern shore of island, approximately 92 m east of St. Caiman's Church | 569943 | 685086 |
| 2 | Eastern shore of island, approximately 80 m east of St. Caiman's Church | 569934 | 685087 |
| 3 | Western shore of island, approximately 265 m northwest of St. Mary's Church | 569522 | 684995 |

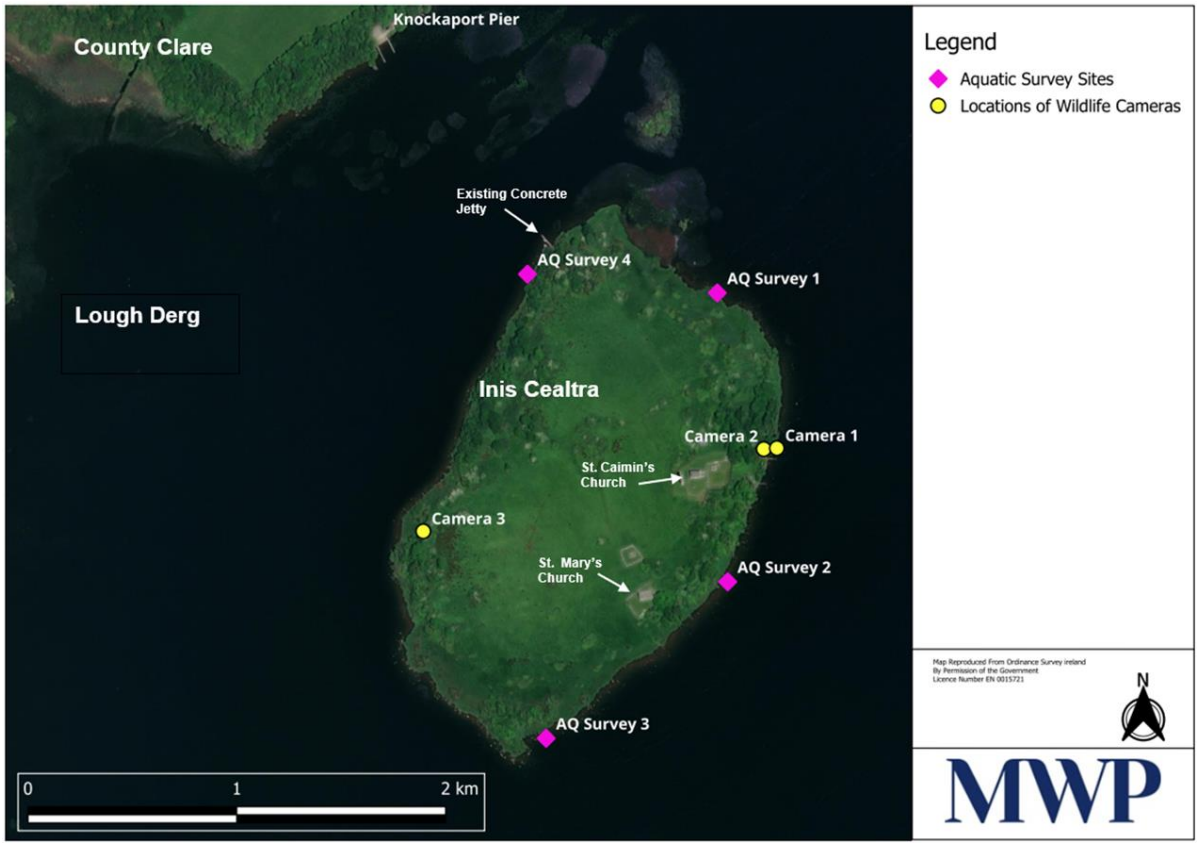



**Figure 10-2 Locations on Inis Cealtra of deployed wildlife cameras and the four sites where aquatic surveys were completed.**

**Plate 10-7 Surveying Inis Cealtra on 16th March 2021 and 5th May 2021**

10.4.7.3 Bats

Bat surveys had regard to best practice guidance for bat surveys in the Republic of Ireland at the time of survey, as follows:

- Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition) (Collins, 2016)

A variety of bat surveys were undertaken within the study area across 2020, 2021 and 2022 with regard to the Proposed Development, as follows:

**Inis Cealtra**

**Passive Automated Bat Surveys (PABS)**

Passive automated bat surveys (PABS) were conducted by MWP Ecologists at Inis Cealtra in May 2021 ($5^{th}$ – $27^{th}$). The surveys were designed to passively sample and record bat activity at 3 No. pre-selected sampling points (SPs) as indicated in **Table 10-2**, below and **Figure 10-3**, below and **Plate 10-8**, below. Song Meter Full Spectrum bio-acoustic recording units were deployed to achieve this. Trees were assessed as to their potential to support bats on Inis Cealtra on 10th June 2021. A bat emergence survey was conducted at St. Marys and St. Caimins on 12 and 13 August 2021.

**Table 10-2 Bat detector locations on Inis Cealtra**

| SP | Location | Easting | Northing |
|---|---|---|---|
| 1 | St. Caiman's Church | 569840 | 685060 |
| 2 | Eastern shore | 569842 | 684905 |
| 3 | Western shore | 569527 | 685002 |

**Plate 10-8 Passive automated bat detectors in place at Inis Cealtra**

**Figure 10-3 Trail camera and bat detector locations**

**Rectory Site**

Although this site is not part of the proposed construction site, its location and distance to the proposed visitor centre makes its survey data applicable. A daylight survey, where the building was inspected both internally and externally for bats or signs of bats during daylight hours, was undertaken on the 10th of May 2021. A dusk bat detector survey was conducted on 10th May 2021 from approximately 20 mins before sunset (Sunset 21.17) until 23.00. The dusk bat detector survey was conducted by two surveyors. A dawn bat detector survey was conducted on 11th May 2021 and ran from 1.5 hours before sunrise until sunrise at 05.42. The bat report for the 'Old Rectory Site' can be found in **Appendix 10-3.**

pace of the Old Rectory building was systematically searched for signs of bats in the form of live bats, bat droppings, urine stains, culled insect fragments or dead bats. Access to the main attic was gained

via a trapdoor on the upstairs landing. It was not possible to gain entry to a lower attic to the rear of the building as there was no trap door. The walls of the building were examined for evidence of bats using a high-powered torch (Maglite Rechargeable System), paying particular attention to gaps in the facias and slates. Windowsills and floors were inspected for possible accumulations of droppings. The rectory was resurveyed by Caroline Shiel on 25th and 26th May 2023. A static detector was placed in the attic overnight.

In addition to the PAB surveys on the island, a PAB survey was also undertaken at the former Rectory where a Songmeter 4 (Wildlife Acoustics) was set up in the attic space to record for a period of two weeks. This detector was set to record all bats calls during the night from 20 mins before sunset to 20 mins after sunset.

As well as the PAB surveys, a number of additional bat surveys were used to gather baseline bat data within the study area, as outlined hereunder.

**Preliminary Roost Assessments (PRAs)**

Preliminary Roost Assessments (PRAs) were carried out to gather information on and determine the presence of actual or potential bat roosting sites within the study area. The survey involved extensive daytime inspections of potential bat roosting sites such as structures and trees that would typically be used by bats for roosting.

Bat specialist Caroline Shiel undertook a bat survey of the former Rectory to determine the importance of the building for bats, assess the impact of the proposed renovation works on bats using the site and make recommendations in order to reduce the impact of renovation works on bats using the site.

**Presence/Absence Surveys**

Following the PRA surveys, presence/absence surveys, comprising dusk emergence activity surveys, were undertaken at those structures/trees located within the vicinity of the proposed development site identified as having the potential to contain roosting bats. This was undertaken on both the mainland and the island.

10.4.7.4 Avifauna

Bird surveys were conducted on a regular basis over a 3 year period comprising March 2021 to March 2024 with a total of 26 survey visits completed within the study area. These surveys included shorebird counts undertaken at 4 locations on the mainland and transect surveys completed on the Island. Shorebird counts were carried out in accordance with Birdwatch Ireland I-WeBS survey guidelines[9] from two vantage points on the mainland overlooking the island. These locations were at Mountshannon Harbour and Knockaport Pier (see **Figure 10-4,** below). Two fields in the hinterland were also checked for wintering swans and geese, particularly whooper swan (refer to Field 1 and Field 2 in **Figure 10-4**, **Plate 10-9**, below).

Informal waterfowl counts at different suitable locations on the County Clare mainland were carried out intermittently from March 2021 to September 2022 during the first half of the survey period. From October 2022 onwards, dedicated waterfowl counts were incorporated into the bird survey programme.

**Plate 10-9. View south eastwards from Knockaphort Pier to Inis Cealtra (left), and view of Mountshannon Bay from the jetty at Mountshannon Harbour (right).**

Counts were also carried out at two agricultural grassland locations – 'Field 1' and 'Field 2' - on the mainland that are known as traditional foraging sites for wintering swan and goose species. Field 1 is located within Meenross on the northern shore of Scarriff Bay adjacent to the Bow River, approximately 350 metres north of Lough Derg and 2.1 kilometres west of Inis Cealtra. Field 2 is situated on the opposite side of Scarriff Bay in Ballynagleragh between PicNic Carrowena and Aughinish Streams, approximately 860 metres south of Lough Derg and 2.7 kilometres south of Inis Cealtra. Refer to **Figure 10-4,** following.

A transect survey is a survey along a defined route within an area to ascertain and assesses the general distribution of birds throughout a site and to gather data on how birds use the site. Transects were undertaken on Inis Cealtra using a circular route around the island ,chosen to ensure habitats covered were representative of the island overall and to ensure areas of suitable avian breeding, roosting and/or foraging habitat were included in the survey. The transect route measured approximately 1.6 kilometres in length - refer to **Figure 10-4**.

Transect surveys were completed on Inis Cealtra on 26 separate occasions between March 2021 and March 2024, inclusive, and were based on the methodology of Bibby, et al (2000). The transect route was slowly walked once on each survey date and all bird species seen or heard on the island or within 500 metres of the shore in the surrounding lake waters were recorded.

The full bird desktop study, survey methodology and results can be found in Appendix 10-1. A total of 84 bird species were recorded onsite during this survey effort with 43 target species were recorded within the study area during ornithological surveys. Annex I species identified are as follows: Arctic

[9] https://birdwatchireland.ie/publications/i-webs-counter-manual/

Tern, Golden Plover, Hen Harrier, Jack Snipe, Common Tern, Kingfisher, Little Egret, White-tailed Eagle and Whooper Swan. .

**Table 10-3** below summarises when the bird surveys were carried out during this period. Each month marked below comprises completion of a transect on Inis Cealtra and shore counts on the mainland, except August and September 2022 when only island transects were carried out.

**Table 10-3: Summary of when the bird surveys were carried out.**

| | Breeding (Summer) | | | | | | Non-breeding (Winter) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | Mar |
| 2020/21 | X | X | X | X | X | X | X | X | X | X | X | TR |
| 2021/22 | - | TR | TR | - | - | - | - | TR | TR | TR | - | TR |
| 2022/23 | - | TR | TR | TR | TR | TR | TR K&H F1&2 | TR K&H F1&2 | TR K&H F1&2 | TR K&H F1&2 | TR K&H F1&2 | TR K&H F1&2 |
| 2023/24 | - | TR K&H | TR K&H | TR K&H | TR K&H | TR K&H | - | - | - | TR K&H F1&2 | TR K&H F1&2 | TR K&H F1&2 |

*__TR__ - Transect Survey on Inis Cealtra
__K&H__ –Knockaphort Pier and Mountshannon Harbour Counts
__F1&2__ – Field 1 and Field 2 Counts

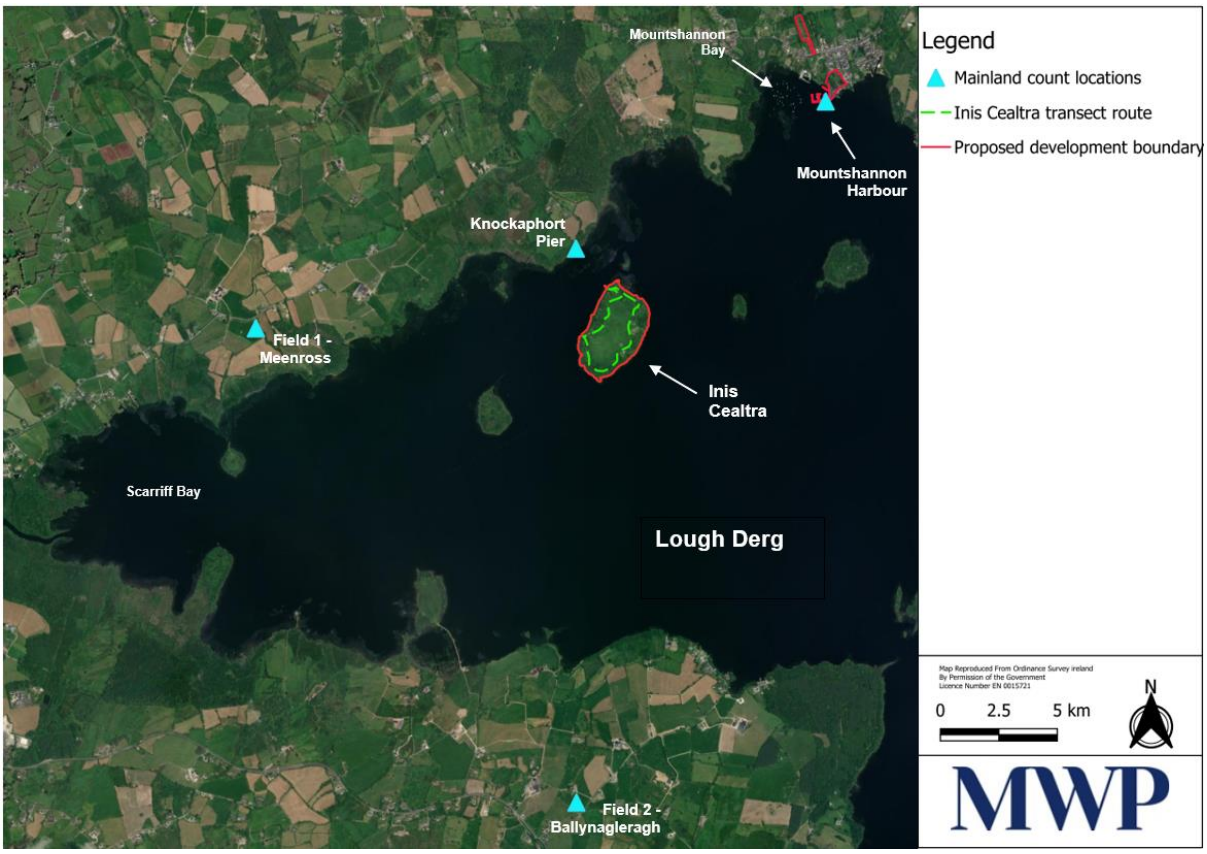



**Figure 10-4 Bird survey locations**

10.4.7.4.1 Identification of Target Species

Target species typically comprise those species which are afforded a higher level of legislative protection and should be restricted to those likely to be affected by the proposed development. Therefore, only red-listed species were included as target species, unless the species met one of the other target species selection criteria. Appendix 10-1 : Section 5.1.1 outlines those species for which past records exist and which meet one or more of the target species selection criteria. The conservation status/level of protection afforded to each species is also included.

However, to ensure other species which may potentially be sensitive to the proposed development were not missed during surveys, all other species were included as secondary species. Details on each survey carried out including survey date, and weather conditions can be found in Appendix 10-1.

10.4.7.5 Freshwater Aquatic Surveys

The lake shore around Inis Cealtra was surveyed on the 5th May and 3rd June 2021. The lake habitat was categorised according to the Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000). A qualitative assessment was made of substrate types with reference to particle size ranges in Fossitt (2000); topography; and plant species diversity and vegetation structure. The presence of Invasive Alien Species (terrestrial and aquatic) was noted.

The aquatic field surveys comprised aquatic assessment at four representative sites on the shore of Inis Cealtra (**Figure 10-5**). Submerged plants were photographed and identified using plant identification keys. General macroinvertebrate surveys were completed. A specific survey for white-clawed crayfish (*Austropotamobius pallipes*) was undertaken. The revised BMWP (Biological Monitoring Working Party) scheme was used to assign a biological water quality rating. Biosecurity

measures were used during all surveys according to 'Inland Fisheries Ireland Biosecurity Protocol for Field Survey Work' (IFI, 2010).

At Aquatic Survey Site 1 (see **Figure 10-5** and **Table 10-4,** below), a survey for littoral macroinvertebrates was carried out to a depth of one metre with reference to particle size ranges in Fossitt (2000) and the Environmental Protection Agency (EPA) manual 'Ecological assessment of Irish lakes' (Irvine et al., 2001).

Based on the methodology described in Murray-Bligh & Griffiths (2022), invertebrates were collected using a 'kick-sampling' method whereby the substratum was disturbed (kicked) and a hand net was passed through the water above the disturbed area. All habitats at Aquatic Survey Site 1 were sampled within a 3-minute period. A one-minute sweep was undertaken before kick-sampling to collect surface-dwelling invertebrates while a one-minute manual search was undertaken after the kick-sampling to capture any invertebrates attached to submerged plant stems, stones, logs or other solid surfaces.

All macroinvertebrates collected from Aquatic Survey Site 1 were combined and sorted from debris on a white tray and identified to at least family level with the aid of a hand lens and keys produced by the Freshwater Biological Association (see references section).

White-clawed crayfish (*Austropotamobius pallipes*) surveying was carried out on 5th May 2021 within littoral habitats at the four Aquatic Survey Sites around Inis Cealtra as shown in **Figure 10-5**, and as summarised in **Table 10-4**, below. Prior to survey commencement, a survey licence for the species was obtained from NPWS under Licence Number C144/2021. Surveying for white-clawed crayfish was done via two methods – searching the lakebed by hand and setting refuge traps for the species.

Surveying by hand was carried out during bright weather and calm conditions on 5th May 2021 using methodology outlined in 'Monitoring the White-clawed Crayfish *Austropotamobius pallipes*' (Peay, 2003) and 'A technical manual for monitoring of the White-clawed Crayfish *Austropotamobius pallipes* in Irish lakes' (Reynolds et al. 2010). Crayfish refuge traps were placed beside boulders or larger substrate aggregations on 5th May 2021 and were retrieved on 3rd June 2021 before being examined for the presence of invertebrates.

**Table 10-4 Irish Transverse Mercator (ITM) grid coordinates for each of the four Aquatic Survey Sites (and as illustrated in Figure 10-5, below).**

| Aquatic Survey Site | Location | ITM Grid Coordinates | |
|---|---|---|---|
| | | X | Y |
| 1 | Northern shore at proposed new mooring point | 569874 | 685275 |
| 2 | Northeastern shore | 569890 | 684930 |
| 3 | Near southern end of island | 569666 | 684747 |
| 4 | Approximately 80 m south of pier on northwest shore | 569647 | 685300 |

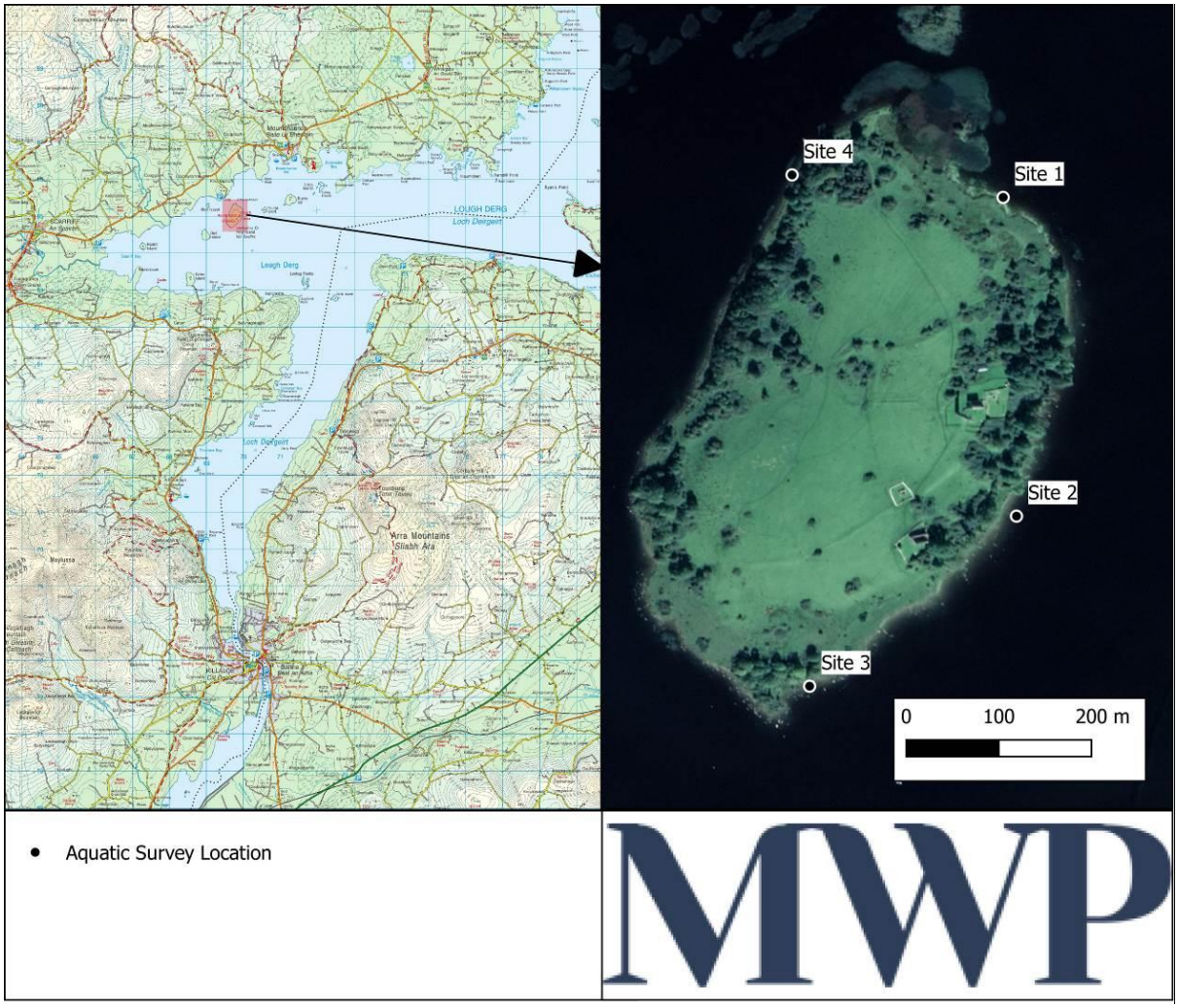



**Figure 10-5 Location of the study sites at Inis Cealtra, Co. Clare.**

### 10.4.8 Assessment Criteria

This section outlines the criteria upon which evaluations of the importance of ecological features and the assessments of the ecological impact of the project on these features are made, referring to relevant legislation and guidelines.

#### 10.4.8.1 Evaluation

Guidance on Ecological Impact Assessment (CIEEM, 2018) recommends categories of nature conservation value that relate to a geographical framework (International, through to Local). The evaluation set out in this chapter and the assessment of the effects of the Proposed Development follows methodologies set out in *'Guidelines for Assessment of Ecological Impacts of National Roads Schemes*' (NRA, 2009). The guidelines set out the context for the determination of value on a geographic basis with a hierarchy assigned based on the importance of any particular ecological receptor. The guidelines provide a basis for determination of whether any particular site, habitat, or species is of importance on the following scales:

- International
- National
- County
- Local Importance (higher value) and
- Local Importance (lower value)

The NRA Ecological Impact Guidelines (2009) clearly sets out the criteria by which each geographic level of importance can be assigned. Locally Important (lower value) receptors contain habitats and species that are widespread and of low ecological significance and of any importance only in the local area. Internationally Important sites are either designated for conservation as part of the European Sites Network (SAC or SPA) or provide the best examples of habitats or internationally important populations of protected flora and fauna.

The value of habitats is assessed based on its condition, size, rarity, conservation and legal status. The value of fauna is assessed on its biodiversity value, legal status and conservation status. Biodiversity value is based on its national distribution, abundance or rarity, and associated trends.

All ecological receptors determined to be of Local Importance (higher value) or greater are considered to comprise Important Ecological Features (IEFs) of the Proposed Development.

#### 10.4.8.2 Significance

Significance is a concept related to the weight that should be attached to effects when decisions are made. For the purpose of EcIA, a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for IEFS or for biodiversity in general.

The significance of an effect is determined by way of professional judgement and the use of EPA criteria for assessing impact EPA (2022). The criteria for assessing quality of impacts and significance of effects are set out in **Table 10-5** and **Table 10-6** below.

**Table 10-5 Determining ecologically significant effects Key Ecological Receptors (KERs) (adapted from CIEEM, 2018)**

| IEF | Determining ecologically significant effects | Consideration should be given to whether: | Notes |
|---|---|---|---|
| Sites Designated for Nature Conservation | Is the project and associated activities likely to undermine the conservation objectives of the site, or positively or negatively affect the conservation status of species or habitats for which the site is designated, or may it have positive or negative effects on the condition of the site or its interest/qualifying features? | • any processes or key characteristics will be removed or changed<br>• there will be an effect on the nature, extent, structure and function of component habitats<br>• there is an effect on the average population size and viability of component species. | • Consideration of functions and processes acting outside the formal boundary of a designated site is required, particularly where a site falls within a wider ecosystem e.g. groundwater dependent terrestrial ecosystems can be damaged where the proposed activity impacts on the quantity or quality of groundwater that feeds these habitats. Predictions should always consider wider ecosystem processes.<br>• Many ecosystems have a degree of resilience to perturbation that allows them to tolerate some biophysical change. Ecological effects should be considered in the light of any information available or reasonably obtainable about the capacity of ecosystems to accommodate change. |
| Habitats | Consideration of conservation status is important for evaluating the effects of impacts on individual habitats and species and assessing their significance | Conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area | • In many cases (e.g. for species and habitats of principal importance for biodiversity), there may be an existing statement of the conservation status of a feature and objectives and targets against which the effect can be judged. However, not all species or habitats will be described in this way and the conservation status of each feature being assessed may need to be agreed with the relevant statutory nature conservation body and set out in the EcIA. The conservation status of a habitat or species will vary depending on the geographical frame of reference. |
| Species | | Conservation status is determined by the sum of influences acting on the<br>species concerned that may affect its abundance and distribution within a given geographical area. | • When assessing potential effects on conservation status, the known or likely background trends and variations in status should be taken into account. The level of ecological resilience or likely level of ecological conditions that would allow the population of a species or area of habitat to continue to exist at a given level, or continue to increase along an existing trend or reduce a decreasing trend, should also be estimated. |

**Table 10-6 Criteria for assessing impacts based on CIEEM (2019) & (EPA, 2022)**

| Parameter | Description | |
|---|---|---|
| Direction (Quality) | Positive: A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities). | |
| | Neutral: No impacts or impact that are imperceptible, within normal bounds of variation or within the margin of forecasting error. | |
| | Negative: A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance). | |
| Magnitude | Imperceptible | An effect capable of measurement but without significant consequences. |
| | Not significant | An effect which causes noticeable changes in the character of the environment but without significant consequences. |
| | Slight | An effect which causes noticeable changes in the character of the environment without affecting its sensitivities. |
| | Moderate | An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. |
| | Significant | An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment. |
| | Very Significant | An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment. |
| | Profound | An effect which obliterates sensitive characteristics |
| Extent | The area over which an impact occurs. | |
| Duration | Momentary – effects lasting from seconds to minutes<br>Brief – effects lasting less than a day<br>Temporary – effects lasting less than a year<br>Short-term – effects lasting 1 to 7 years<br>Medium term – effects lasting 7 to 15 years<br>Long term – effects lasting 15 to 60 years<br>Permanent – effects lasting over 60 years | |
| Reversibility | Irreversible impacts: permanent changes from which recovery is not possible within a reasonable time scale or for which there is no reasonable chance of action being taken to reverse it.<br>Reversible impact: temporary changes in which spontaneous recovery is possible or for which effective mitigation (avoidance/cancellation/reduction of effect) or compensation (offset/recompense/offer benefit) is possible. | |
| Frequency and timing | Frequency – How often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually) | |

Where potential impacts on ecological receptors of Local Importance (higher value) or greater have been assessed to result in likely significant effects, mitigation measures were incorporated into the design of the Proposed Development, additionally, taking into account the mitigation measures for the construction phase. The Proposed Development has been designed to specifically avoid, reduce and minimise impacts on IEFs Where potential impacts on IEFs are predicted, mitigation has been prescribed to avoid, reduce and abate those impacts.

#### 10.4.8.3 Cumulative Effects

Potential cumulative impacts of the Proposed Development in combination with other developments and activities also need to be assessed. A cumulative impact arises from incremental changes caused by other past, present or reasonably foreseeable actions together with the Proposed Development. The list of other developments considered in the EIAR can be found in Appendix 1-1.

## 10.5 Difficulties Encountered

All areas directly affected could be accessed. It is considered that there were no constraints to the surveys, as the surveys were coordinated, carried out in suitable weather conditions and focused on areas of potentially suitable habitat for protected flora and fauna species.

The habitat surveys undertaken at the Visitor Centre Site and Harbour during February 2021 and April 2023 which fall within the acceptable time for such a survey. The recognised optimum period for vegetation surveys/habitat mapping is April to September (Smith *et al*. 2011). The habitats in these areas are of no particular ecological value however and all areas could be classified according to Fossitt (2000).

Three trail cameras specifically targeting terrestrial species, including invasive faunal species, that were deployed on the Island in 2021 were stolen. This restricted deployment of cameras to parts of the island subject to less human activity. Some parts of the island have dense impenetrable scrub that limited access, such as areas of scrub associated with the woodland near the shore of Inis Cealtra. Evidence of mammals in the form of trails etc were not recorded in this area so this is not considered to have comprised a significant survey constraint.

The assessment is based on the project details that were made available at the time of writing.

## 10.6 Baseline Environment

Inis Cealtra is a small island located towards the southwest of Lough Derg. It is located approximately 300m from Mountshannon. The island is renowned for its ecclesiastical heritage and the remaining areas of this built heritage are located towards the east of the island.

Until 2015, all lands occurring outside the ecclesiastical monuments were held in private ownership by the O'Brien family, who used the island as grazing pasture for cattle. The O'Brien family had been farming the island since 1927. Cattle were traditionally put out to grazing in the spring and were left on the island until autumn. The continuous use of the island as pasture has prevented the development of woodland habitats and there is a distinct contrast between the vegetation cover on Inis Cealtra when compared to other nearby islands such as Bushy Island or Red Island (both of which are entirely wooded). In 2015, ownership of the island was transferred to Clare County Council. However, cattle grazing continued through the spring to winter period of 2016.

Inis Cealtra is a low-lying island with its highest point towards the centre of the island rising to approximately 50m OD Malin. The island is approximately ca. 20 ha (50 acre)[10] in size. The bedrock geology of the island is Dinantian lower impure limestone while the subsoils consist of limestone till. The superficial soils consist of basic brown earths. A spring occurs adjacent to St Mary's Church in the east of the island.

[10] Volume 1: Inis Cealtra Visitor Management and Sustainable Tourism Development Plan.

### 10.6.1 Designated Sites

Sites designated for nature conservation in the Mountshannon region are illustrated in **Table 10-5.** Sites designated for nature conservation within the ZOI of the Proposed Development are listed in **Table 10-7**, along with their qualifying features and distance from the Proposed Development. The designated sites are discussed below under relevant European sites and other designated conservation areas.

#### 10.6.1.1 European Sites

The Habitats Directive[11] provides legal protection for habitats and species of European importance. The overall aim of the Habitats Directive is to maintain or restore the "favourable conservation status" of habitats and species of European Community Interest. These habitats and species are listed in the Habitats and Birds Directives (Council Directive 2009/147/EC on the conservation of wild birds) with Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated to afford protection to the most vulnerable of them. These two designations are collectively known as European sites (also known as European sites).

Special Areas of Conservation (SAC) are designated under the Conservation of Natural Habitats and of Wild Fauna and Flora Directive 92/43/EEC ("Habitats Directive"). Special Protection Areas (SPA) are classified under Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds ("Birds Directive"). The European Communities (Birds and Natural Habitats Regulations 2011 (S. I. No. 477 of 2011) transpose the Habitats Directive and the Birds Directive.

The Proposed Development site is largely encompassed within the Lough Derg (Shannon) SPA. The site synopsis notes that Lough Derg (Shannon) SPA is of high ornithological importance as it supports nationally important breeding populations of cormorant and common tern. In winter, it has nationally important populations of tufted duck and goldeneye, as well as a range of other species including whooper swan (*Cygnus cygnus*). The presence of whooper swan, Greenland white-fronted goose (*Anser albifrons*), Greylags goose (*Anser answer*), Hen harrier and common tern is of particular note as these are listed on Annex I of the E.U. Birds Directive.

The E.U. Birds Directive[12] 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. Parts of Lough Derg (Shannon) SPA are a Wildfowl Sanctuary. Hen Harrier are also known to roost in the reedbeds on the margins of the site during the winter.

The Conservation Objectives for the Natura sites within the potential ZOI of the proposed development states that the sites are of conservation interest for the following species/habitats listed in **Table 10-7.**

#### 10.6.1.2 Other Designated Conservation Areas

Sites of National Importance in the Republic of Ireland are Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA). Proposed NHA (pNHA) were published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. Prior to statutory designation, pNHA are subject to limited protection while under the Wildlife Amendment Act (2000) NHA are legally protected from damage from the date they are formally proposed for designation.

[11] European Union Habitats (Lower River Shannon Special Area Of Conservation 002165) Regulations 2023

[12] European Union Conservation Of Wild Birds (Lough Derg (Shannon) Special Protection Area 004058) Regulations 2019

Lough Derg pNHA (site code 000011) is the only site of National importance in the ZOI of the Proposed Development. Cloonamirran Wood (site code 001686) lies ca. 1.25 km east of the Proposed Development but this site, selected for woodland habitat, is outside the ZOI (**Figure 10-6; Table 10-7**).

Lough Derg (River Shannon) is an Important Bird Area (IBA code IE130), as is the Slieve Aughty Mountains (no code available). The Important Bird Areas (IBA) Program is a global initiative of BirdLife International. The IBA program identifies and aims to conserve areas that are vital to birds and other biodiversity.

No RAMSAR sites have been identified in the ZOI due to the nature of the Proposed Development and the separation distance. For example, the nearest RAMSAR Site is Coole Lough & Garryland Wood (RAMSAR code 473) within the SPA of the same name, located ca. 32 km north-west of the Proposed Development.

There are no Nature Reserves within the ZOI. The nearest such site is Derrycrag Wood Nature Reserve, which contain stands of oak and ash with an understorey of holly and hazel and a rich ground flora, located ca. 12.5 north north-east of the Proposed Developmen

**Table 10-7 Sites designated for nature conservation within the potential ZOI of the Proposed Development**

| Designated site and code | Qualifying Interest's (QI's) | Proximity of designated site to nearest point of proposed development site | Hydrological/ Ecological Connection | Within potential ZOI |
|---|---|---|---|---|
| Lough Derg (Shannon) SPA (004058) | • Cormorant (*Phalacrocorax carbo*) [A017]<br>• Tufted Duck (*Aythya fuligula*) [A061]<br>• Goldeneye (*Bucephala clangula*) [A067]<br>• Common Tern (*Sterna hirundo*) [A193]<br>• Wetland and Waterbirds [A999] | Island proposed developments are largely within the footprint of the SPA however the mainland elements are not within the SPA. | Hydrological connection: Inis Cealtra lies within the SPA. Mountshannon Harbour borders the SPA. | **Yes** |
| Lough Derg, North-east Shore SAC (002241) | • *Juniperus communis* formations on heaths or calcareous grasslands [5130]<br>• Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]<br>• Alkaline fens [7230]<br>• Limestone pavements [8240]<br>• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]<br>• *Taxus baccata* woods of the British Isles [91J0] | 11.9 km north of Inis Cealtra.<br>10.3 km north of Mountshannon Harbour. | No viable connection: The SAC includes the northern shore of Lough Derg and overlaps with the Lough Derg (Shannon) SPA. This hydrological connection is not considered a viable pathway due to the SAC being upstream/upgradient from proposed development.<br>Additionally, this SAC has no mobile QI's that could be potentially impacted by the proposed development. | No |
| Slieve Aughty Mountains SPA (004168) | • Hen Harrier (*Circus cyaneus*) [A082]<br>• Merlin (*Falco columbarius*) [A098] | 1.65 km north of Inis Cealtra.<br>0.6 km north of Mountshannon Harbour. | No viable connection: Several watercourses flow into Lough Derg from the SPA. This hydrological connection is not considered a viable pathway due to the SPA being | No |

| Designated site and code | Qualifying Interest's (QI's) | Proximity of designated site to nearest point of proposed development site | Hydrological/ Ecological Connection | Within potential ZOI |
|---|---|---|---|---|
| | | | upstream/upgradient from proposed development.<br><br>Additionally, the development site is not considered important habitat for merlin (*Falco columbarius*) and hen harrier for which the SPA is designated | |
| Lower River Shannon SAC (002165) | • Habitats:<br>• Sandbanks which are slightly covered by sea water all the time [1110]<br>• Estuaries [1130]<br>• Mudflats and sandflats not covered by seawater at low tide [1140]<br>• Coastal lagoons [1150]<br>• Large shallow inlets and bays [1160]<br>• Reefs [1170]<br>• Perennial vegetation of stony banks [1220]<br>• Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]<br>• Salicornia and other annuals colonising mud and sand [1310]<br>• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]<br>• Mediterranean salt meadows (*Juncetalia maritimi*) [1410]<br>• Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]<br>• Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]<br>• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]<br>• Species:<br>• Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1029]<br>• Sea Lamprey (*Petromyzon marinus*) [1095] | 14.6 river km south of Inis Cealtra.<br><br>14.9 river km south of Mountshannon Harbour. | Hydrological connection via the River Shannon which flows south from Lough Derg and drains into the SAC. | **Yes** |

| Designated site and code | Qualifying Interest's (QI's) | Proximity of designated site to nearest point of proposed development site | Hydrological/ Ecological Connection | Within potential ZOI |
|---|---|---|---|---|
| | • Brook Lamprey (*Lampetra planeri*) [1096]<br>• River Lamprey (*Lampetra fluviatilis*) [1099]<br>• Salmon (*Salmo salar*) [1106]<br>• Common Bottlenose Dolphin (*Tursiops truncatus*) [1349]<br>• Otter (*Lutra lutra*) [1355] | | | |
| River Shannon and River Fergus Estuaries SPA (004077) | • Cormorant (*Phalacrocorax carbo*) [A017]<br>• Whooper Swan (*Cygnus cygnus*) [A038]<br>• Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]<br>• Shelduck (*Tadorna tadorna*) [A048]<br>• Wigeon (*Anas penelope*) [A050]<br>• Teal (*Anas crecca*) [A052]<br>• Pintail (*Anas acuta*) [A054]<br>• Shoveler (*Anas clypeata*) [A056]<br>• Scaup (*Aythya marila*) [A062]<br>• Ringed Plover (*Charadrius hiaticula*) [A137]<br>• Golden Plover (*Pluvialis apricaria*) [A140]<br>• Grey Plover (*Pluvialis squatarola*) [A141]<br>• Lapwing (*Vanellus vanellus*) [A142]<br>• Knot (*Calidris canutus*) [A143]<br>• Dunlin (*Calidris alpina*) [A149]<br>• Black-tailed Godwit (*Limosa limosa*) [A156]<br>• Bar-tailed Godwit (*Limosa lapponica*) [A157]<br>• Curlew (*Numenius arquata*) [A160]<br>• Redshank (*Tringa totanus*) [A162]<br>• Greenshank (*Tringa nebularia*) [A164]<br>• Black-headed Gull (*Chroicocephalus ridibundus*) [A179]<br>• Wetland and Waterbirds [A999] | 44.6 km south of Inis Cealtra.<br>46.4 km south of Mountshannon Harbour. | Hydrological connection via the River Shannon which flows south from Lough Derg and drains into the SPA | **Yes** |
| Lough Derg pNHA (000011) | • Cormorant (Phalacrocorax carbo) [A017]<br>• Tufted Duck (Aythya fuligula) [A061]<br>• Goldeneye (Bucephala clangula) [A067] | Within the footprint of the SPA | Hydrological connection: Inis Cealtra lies within the SPA. Mountshannon Harbour borders the SPA. | **Yes** |

| Designated site and code | Qualifying Interest's (QI's) | Proximity of designated site to nearest point of proposed development site | Hydrological/ Ecological Connection | Within potential ZOI |
|---|---|---|---|---|
| | • Common Tern (Sterna hirundo) [A193]<br>• Wetland and Waterbirds [A999] | | | |

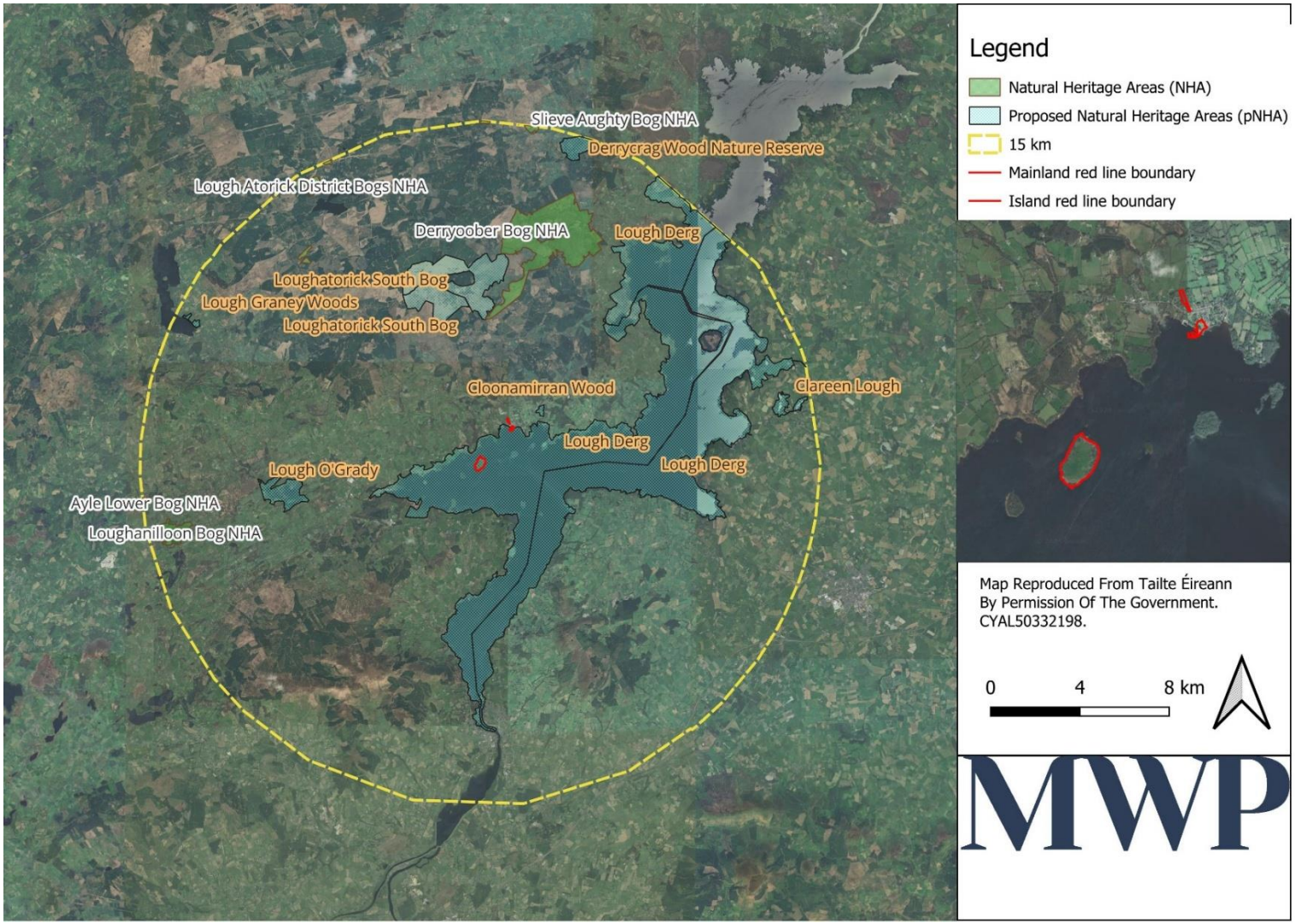



**Figure 10-6 Sites designated for nature conservation in the Mountshannon region**

### 10.6.2 Habitats and Flora

Habitats and flora are discussed below under the various elements of the Proposed Development. Habitat maps are provided below in **Figure 10-7 and Figure 10-9**.

The mainland components of the proposed development are in the 2 km grid square R78D and Inis Cealtra is in the 2 km grid square R68X. No existing records of protected flora are held by the NBDC or BSBI databases for Inis Cealtra 2km grid square (R68X). No records of rare or protected flora species occur in the 2 km grid square R78D which contains the remainder of the Proposed Development. There are records of fiddle dock (*Rumex pulcher*) from R78D, a threatened flowering plant species. This plant usually occurs on dry coastal pastures, slightly disturbed grassland and waste ground. It was previously a very rare casual in Ireland but has become naturalised in some sites[13].

No rare or protected flora species were recorded during the habitat and botanical surveys completed in 2021 by DE (2016). The only rare plant identified in the surrounding area was blue-eyed grass (*Sisyrinchium bermudiana*). This species is not considered to be threatened in the Republic of Ireland but is protected in Northern Ireland. This species was not recorded on Inis Cealtra during field surveys.

Documented records of floral and faunal invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended) exist within the hectad R88. The following aquatic Third Schedule species are known from Lough Derg; Canadian waterweed (*Elodea canadensis*), Nuttall's waterweed (*Elodea nuttallii*) and curly-leaved waterweed (*Lagarosiphon major*)[14]. **Table 10-8** lists the NBDC invasive plant species records for the relevant 2 km grid squares, outlined above.

**Table 10-8 NBDC invasive plant species records for the 2 km grid squares covering the mainland (R78D) and Inis Cealtra (R68X) components of the proposed development[15].**

| Species | Date of last record | Designation | R78D | R68X |
|---|---|---|---|---|
| Least Duckweed (*Lemna minuta*) | 31/12/1999 | Medium Impact Invasive Species | | ✓ |
| Common Broomrape (*Orobanche minor*) | 07/07/2008 | Medium Impact Invasive Species | ✓ | |
| Japanese Knotweed (*Fallopia japonica*) | 25/08/2018 | Medium Impact Invasive Species | ✓ | ✓ |
| Rhododendron (Rhododendron ponticum) | 07/07/2008 | High Impact Invasive Species Regulation S.I. 477 (Ireland) | ✓ | |
| Sycamore (Acer pseudoplatanus) | 07/07/2008 | Medium Impact Invasive Species | ✓ | |

[13] https://www.irishwildflowers.ie/pages/849a.html

[14] https://maps.biodiversityireland.ie/Map; https://clarechampion.ie/lough-derg-in-invasional-meltdown-from-alien-species/; https://invasives.ie/species-alerts/quagga-mussel/; https://invasives.ie/species-alerts/asian-clam/ Accessed 13-06-2024

[15] Accessed on 19/9/2023

#### 10.6.2.1 Main Street Carpark

The habitat at the proposed new car park is dominated by 'improved agricultural grassland (GA1)' of low ecological value (see **Plate 10-10** below). This habitat is maintained and of low species diversity. The grassland habitat is bordered on the north, east and west by a 'treeline (WL2)' mostly comprising sycamore (*Acer pseudoplatanus*) and ash (*Fraxinus excelsior*). There is a maintained 'hedgerow (WL1)' running roughly north-south through the centre of the site. This linear habitat features mostly whitethorn (*Cratageus monogyna*) and willow (*Salix* sp.) with some elder (*Sambucus nigra*). Both of these linear features had frequent bramble (*Rubus fruticosa* agg.) and occasional honeysuckle (*Lonicera periclymenum*) (**Figure 10-7**).

The southern boundary of the proposed car park is a 'stone wall (BL1)' which adjoins the regional road through Mountshannon. There was a stand of non-native invasive species Japanese knotweed (*Fallopia japonica*) at the south-western corner of the proposed car park site (see Plate 10-11, **Plate 10-11**, below).

**Plate 10-10 Improved agricultural grassland at the proposed new car park.**

**Plate 10-11 Stone wall adjacent to the proposed car park entrance (left) and Japanese knotweed within the proposed parking area (right).**

#### 10.6.2.2 Visitor Centre

The dominant habitat at the site is 'amenity grassland (GA2)'. This habitat is represented by a maintained lawn that occurs either side of a driveway from Harbour Road to the Old Rectory. The plant assemblage in this area comprises mainly rye-grasses (*Lolium* spp.) with some soft rush (*Juncus effusus*) colonising a wet patch at the north-eastern corner of the site. This grassland habitat forms a mosaic with 'spoil and bare ground (ED2)' along the driveway, around the Rectory and adjacent to an area of cut/shredded trees at the north-eastern corner of the site. A patch of 'grassy verges (GS2)' habitat occurs next to the southeastern wall that bounds the site, an area that is not subject to regular maintenance.

The driveway consists of crushed limestone with a very low degree of vegetative cover and corresponds to 'spoil and bare ground (ED2)' habitat. The area of cut/shredded trees at the north-western corner of the site is also classified as 'spoil and bare ground (ED2)'. The Old Rectory corresponds to 'buildings and artificial surfaces (BL3)' habitat, a former dwelling house in reasonable condition constructed of brick and natural slate roof. 'Stone walls (BL1)' form the southern and western boundaries of the site. 'Mixed broadleaved/conifer woodland (WD2)' occurs along the south western boundary of the site, with fir (*Abies* sp.), beech (*Fagus sylvatica*), ash (*Fraxinus excelsior*), holly (*Ilex aquifolium*) and sycamore (*Acer pseudoplanatus*) among the mix. The flora of the understorey was mainly of ivy (*Hedera helix*) and lesser celandine (*Ficaria verna*) (**Plate 10-12; Plate 10-13, Plate 10-14**).

**Plate 10-12 Driveway corresponds to 'Spoil and bare ground' with the lawn classified as 'Amenity grassland (left). Mixed broadleaved/Conifer woodland and ground flora, with three-cornered garlic and winter heliotrope in the foreground (right).**

**Plate 10-13 Winter heliotrope is an invasive plant associated with 'Stone walls' and woodland habitat at the site (left). 'Spoil and bare ground' and 'Buildings and artificial surfaces' habitat at the eastern extent of site (right).**

**Plate 10-14 Rhododendron on the western side of the proposed visitor site**

The non-native invasive plants montbretia (*Crocosmia x crocosmiiflora*), three-cornered leek (*Allium triquetrum*), winter heliotrope (*Petasites fragrans*) and snowberry (*Symphoricarpos albus*) were recorded within the site. Three-cornered leek cover was extensive within the woodland floor, this species is listed on the Third Schedule of the European Communities (Birds and Habitats Regulations 2011 (S.I. 477/2011). Restrictions are set out regarding its introduction or dispersal. The other non-native plants are less damaging to ecology: montbretia was occasional at various locations in the woodland; winter heliotrope within the woodland and also associated with the stone wall along the southern boundary of the site; and a small stand of snowberry at the western extent of the site.

A short 'treeline (WL2)' comprising non-native species occurs at the eastern boundary of the site, this habitat of low ecological value regarding its limited extent, isolated aspect and species composition. 'Hedgerow (WL1)' comprising of beech occurs in association with 'stone wall (BL1)' habitat along the southern boundary of the site, west of the entrance; these habitats are considered to be of low ecological value. The extent of the site to the south of the Rectory could also be considered as 'scattered trees and parkland (WD5)'.

#### 10.6.2.3 Harbour

The habitat at the entire harbour area is classified as 'buildings and artificial surfaces (BL1)' (**Plate 10-15).** This habitat comprises asphalt, kerbing and various other synthetic materials such as plastic recycling vessels. The harbour is bordered on the south by Lough Derg.

**Plate 10-15 Buildings and artificial surfaces at Mountshannon Harbour**

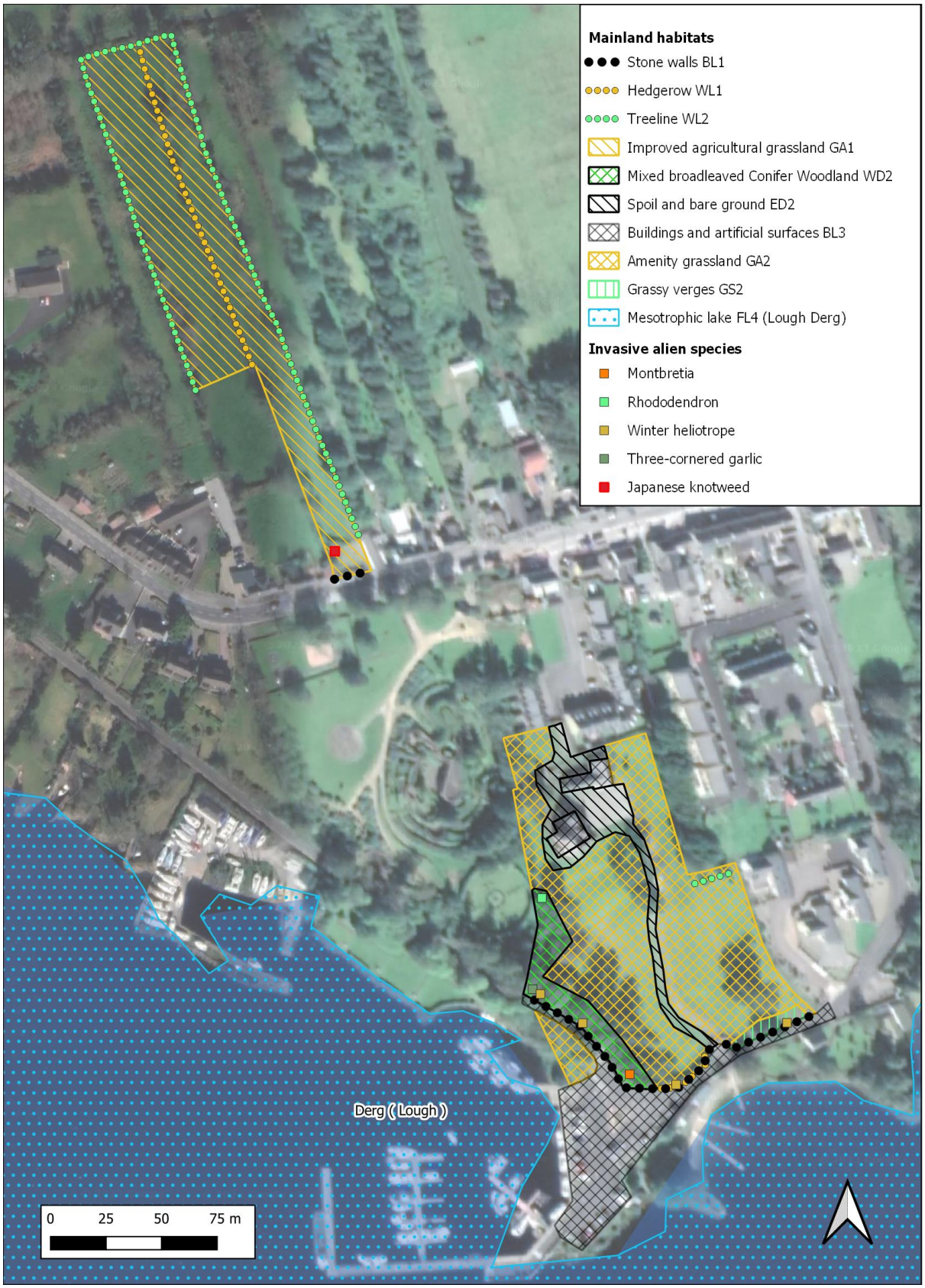



**Figure 10-7 Habitat map and invasive alien species locations for the mainland components of the proposed development**

#### 10.6.2.4 Inis Cealtra

According to research carried out by DE (2016), the three primary stands of woodland occurring on the island are of recent origin and are not representative of a climax woodland habitat. Historical maps suggest that these areas of woodland have developed from treelines that surrounded much of the island perimeter in the late 1800's/early 1900's. Historic 6" maps, completed between 1837 and 1842, do not indicate the presence of any woodland habitat (be it woodland, scrub or treelines) on the island at this time.

**Figure 10-8** shows the extent of woodland habitats on the island and the ongoing expansion of both woodland and scrub habitats. The historic 25" map, completed between 1888 and 1913, indicates the presence of a treeline, as well as a block of woodland to the north of St. Caiman's Church. Historical orthophotography from 1995 and 2005 indicates the presence of both woodland and scrub habitat. An examination of **Figure 10-8** suggests that the woodland habitat has expanded around the areas of original treeline habitat mapped in the historic 25" map. **Figure 10-8** also shows a consolidation of woodland habitat along the eastern habitat.

Based on historical maps, and with the natural succession observed, it is likely that scrub will continue to expand where it already occurs, and this will lead way to development of woodland. Eventually, in the do-nothing scenario, the entire island would be covered by a mosaic of scrub and woodland.

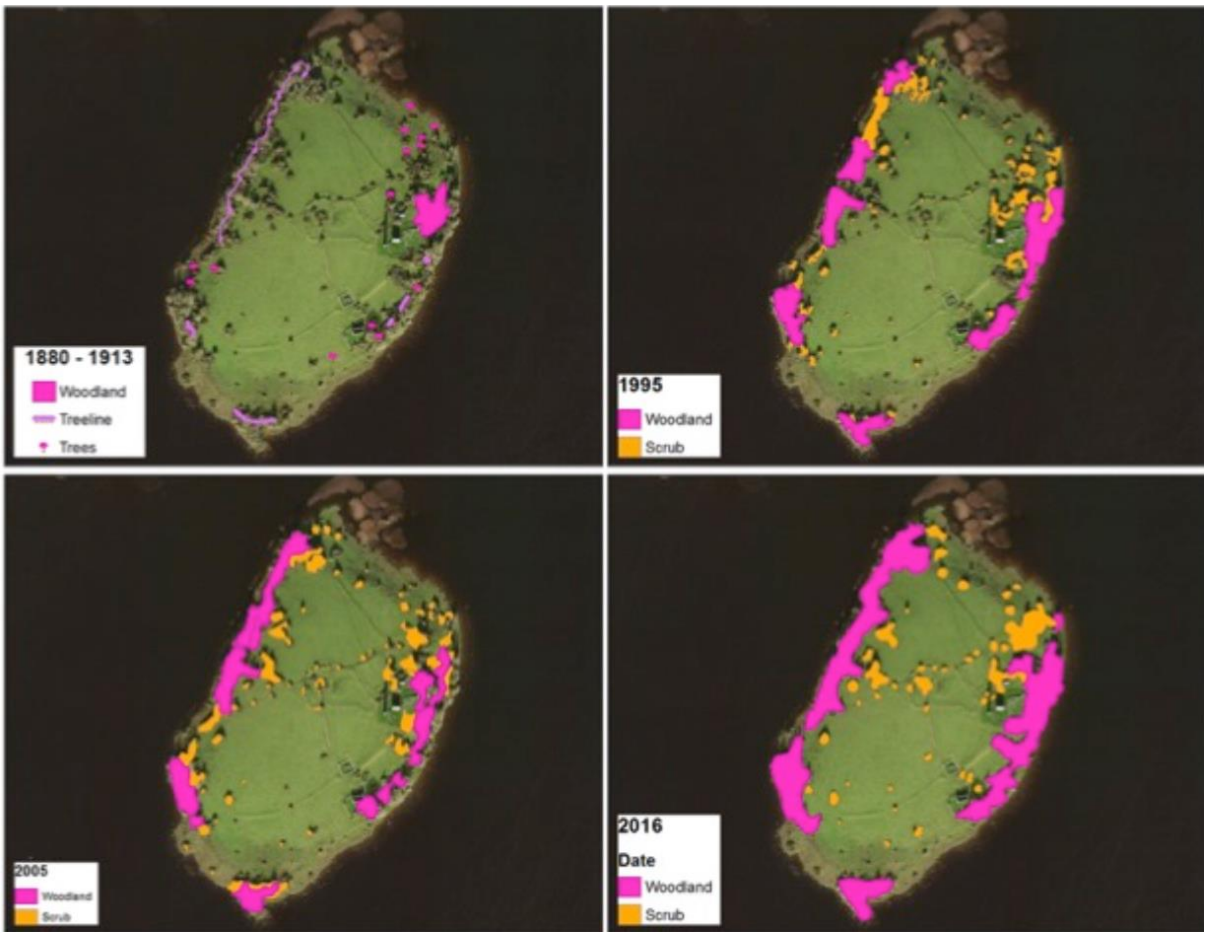



**Figure 10-8 Expansion of Woodland habitat on Inis Cealtra between 1880 and 2016 (from DE, 2016)**

Inis Cealtra is influenced by grazing livestock which maintain the elevated centre areas of the island as improved and semi-improved grassland habitats. The lower lying margins of the island are influenced by the rising and receding waters of Lough Derg and consequently support extensive but narrow areas of marsh, that in turn are adjoined by wet grassland. The island margins also support dry young woodland, characterised by semi-mature ash trees. If grazing was discontinued on the island, it is likely that the in-situ pastoral grassland habitats would evolve into rough grassland to scrub and eventually to young woodland. Inis Cealtra also supports extant ecclesiastical monuments, including a round tower, church and dry stone wall network near the eastern half of the island. **Figure 10-9** illustrates the habitats at Inis Cealtra.

Descriptions of habitats identified at Inis Cealtra are provided below(**Plate 10-16; Plate 10-17; Plate 10-18**).

**Plate 10-16 Wet grassland in the foreground and marsh in the background on the northern shore of Inis Cealtra (left). Improved agricultural grassland in the foreground with scrub and oak-ash-hazel woodland in the background (right).**

**Plate 10-17 Amenity grassland and stonewalls and other stonework (buildings) on Inis Cealtra**

**Plate 10-18 Shoreline at the location of the proposed new mooring. Lake substrate comprises mostly sand and boulders at the proposed mooring location.**

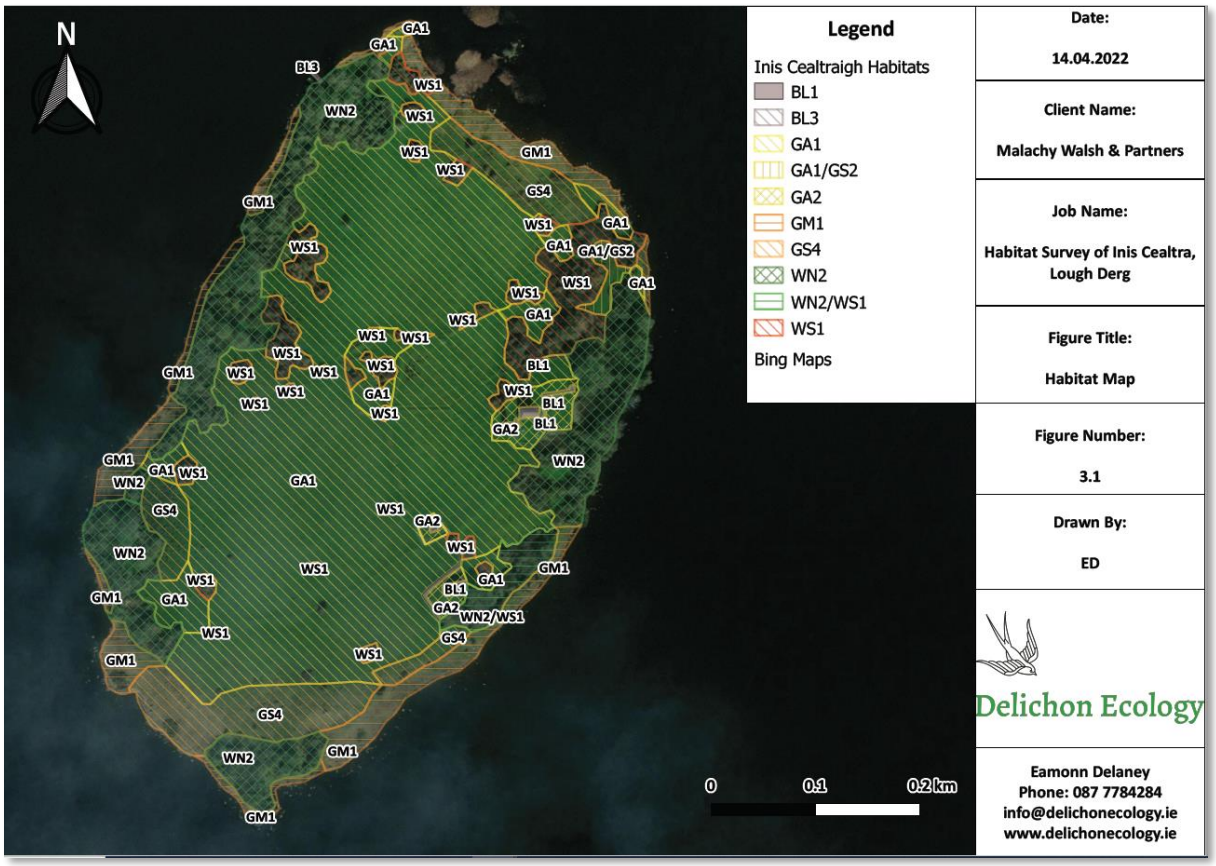



**Figure 10-9 Habitat Map of Inis Cealtra**

#### 10.6.2.4.1 Improved Agricultural Grassland (GA1)

Semi-improved grassland comprises the majority of Inis Cealtra. Its location is confined to the central section of the island on its higher reaches. This grassland is maintained through livestock grazing. There is no indication of ongoing improvement through fertilisation or reseeding. To that end, the sward supports a moderate diversity of grasses and forbs, including sweet vernal grass (*Anthoxanthum odoratum*), red fescue (*Festuca rubra*), perennial rye grass (*Lolium perenne*), common sorrel (*Rumex acetosa*), creeping thistle (*Cirsium arvense*), common mouse-ear (*Cerastium fontanum*), creeping bent

(*Agrostis stolonifera*), germander speedwell (*Veronica chamaedrys*) and localised occurrences of common rush (*Juncus effusus*).

#### 10.6.2.4.2 Amenity Grassland (GA2)

The areas surrounding the ecclesiastical buildings are maintained as amenity grassland. These areas support a shortened sward, maintained by frequent cutting / strimming. Plant species composition includes perennial rye grass, red fescue, sweet vernal grass, white clover (*Trifolium repens*), selfheal (*Prunella vulgaris*) and the mosses *Rhytidiadelphus squarrosus* and *Calliergonella cuspidata*.

#### 10.6.2.4.3 Dry Meadows and Grassy Verge Grassland (GS2)

This habitat occurs in mosaic with improved grassland and has developed due to the recent absence of mowing and grazing. Plant species composition includes rank and overgrown red fescue and cock's-foot (*Dactylis glomerata*) and meadow foxtail (*Alopecurus pratensis*).

#### 10.6.2.4.4 Wet Grassland (GS4)

Wet grassland occurs locally on the island, the greatest extent of which is located near the southern boundary of the island. In other areas, wet grassland forms narrow transitionary strips between the extensive marsh habitats on the island margins and the higher drier areas of improved grassland near the centre of the island. Plant species composition within this grassland habitat is characterised by tall stands of common rush and yellow iris (*Iris pseudacorus*). Plant species composition within the wet grassland habitats included compact rush (*Juncus conglomeratus*), common rush, yellow iris, brown sedge (*Carex disticha*), sweet vernal grass, marsh pennywort (*Hydrocotyle vulgaris*), common spotted orchid (*Dactylorhiza fuchsii*), water mint (*Mentha aquatica*), water parsnip (*Berula erecta*), hard rush (*Juncus inflexus*), carnation sedge (*Carex panicea*), common spike rush (*Eleocharis palustris*), marsh thistle (*Cirsium palustre*), greater bird's foot trefoil (*Lotus pedunculatus*), hairy sedge (*Carex hirta*), cuckooflower (*Cardamine pratensis*) and tall fescue (*Schedonorus arundinaceus*).

Where yellow iris cover is reduced, the wet grassland habitat supported localised abundances of sharp flowered rush (*Juncus articulatus*) with occasional to locally frequent meadowsweet (*Filipendula ulmaria*), brown sedge, marsh bedstraw (*Galium palustre*), crested dog's tail (*Cynosurus cristatus*) and lesser stitchwort (*Stellaria graminea*).

Another strip of yellow iris abundant wet grassland habitat occurs near the northern boundary of the site on sloping ground.

#### 10.6.2.4.5 Marsh (GM1)

Extensive but narrow fringes areas of marsh occur along the south-eastern, western and northern fringes of the island. This habitat is located on shoreline rocks and loosely stabilised, open substrate further inland. The marsh habitats are of the greatest botanical diversity on the island. Where this habitat occurs along the northern and eastern fringes of the island, it is characterised by localised abundances of yellow iris. Where yellow iris cover is reduced, the following broadleaved herbs and graminoids occur; hemlock water dropwort (*Oenanthe crocata*), creeping buttercup, greater bird's foot trefoil (*Lotus pedunculatus*), water mint (*Mentha aquatica*), gypsywort (*Lycopus europaeus*), brown sedge, lesser water parsnip (*Berula erecta*), meadowsweet, water horsetail (*Equisetum fluviatile*), curled dock (*Rumex crispus*), sneezewort (*Achillea ptarmica*), water forget-me-not (*Myosotis scorpioides*), tall fescue, tufted vetch (*Vicia cracca*), silverweed (*Potentilla anserina*), hard rush, brooklime (*Veronica beccabunga*), common fleabane (*Pulicaria dysenterica*), locally frequent common sedge (*Carex nigra*), marsh pennywort, ragged robin (*Silene flos-cuculi*), carnation sedge, marsh marigold (*Caltha palustris*), lesser spearwort (*Ranunculus flammula*), angelica (*Angelica sylvestris*), yellow pimpernel (*Lysimachia nemorum*), and occasional bogbean (*Menyanthes trifoliata*).

Bryophyte species within this habitat included *Pseudoscleropodium purum*, *Calliergonella cuspidata*, *Cratoneuron filicinum*, *Brachythecium rutabulum* and *Climacium dendroides*. Species composition changes slightly where this habitat is in transition to drier grassland habitat at higher elevations (as seen in the marsh near the southern boundary of the site), with noted reductions in broadleaved herb cover and the occurrence of hard rush, red fescue, bird's foot trefoil (*Lotus corniculatus*), occasional quaking grass (*Briza media*), locally frequent carnation sedge as well as common spotted orchid, meadowsweet, water mint and greater bird's foot trefoil. Openings of marsh habitats occur near the south-western and western island fringe. These areas are again characterised by yellow iris, with meadowsweet, hemlock water dropwort, angelica, greater tussock sedge (*Carex paniculata*), tall fescue, bogbean, water horsetail, water mint, yellow pimpernel and lesser water parsnip. A locally flushed area near the south-western corner of the island supports a noted reduction in large herb cover and the occurrence of occasional black bog rush (*Schoenus nigricans*) in addition to water cress (*Nasturtium officinale* agg.), meadowsweet, marsh pennywort, carnation sedge, common valerian (*Valeriana officinalis*), water mint, marsh speedwell (*Veronica scutellata*) and marsh thistle. Locally elevated areas of outcropping rock support quaking grass, hairy sedge (*Carex hirta*), ladies bedstraw (*Galium verum*), red fescue, crested dog's tail, square stalked St John's wort (*Hypericum perforatum*), yellow rattle (*Rhinanthus minor*) and bugle (*Ajuga reptans*).

Results of habitat and botanical surveys undertaken by Delichon Ecology (2022) determined that the Marsh (GM1) habitat occurring on the island corresponds to the EU Annex I habitat 'Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430)'.

#### 10.6.2.4.6 Scrub (WS1)

Areas of scrub occur throughout the island, mostly along the interface between the woodland habitats on the islands edge and the higher drier areas of improved grassland near the centre of the island. Plant species composition includes extensive bramble (*Rubus fruticosus* agg.) scrub with co-occurring and spreading nettle (*Urtica dioica*) and cleavers (*Galium aparine*). These areas of scrub also support localised occurrences of elder (*Sambucus nigra*) and blackthorn (*Prunus spinosa*).

#### 10.6.2.4.7 Oak-ash-hazel woodland (WN2)

The island margins support young woodland cover near the east/ north-east, west and south-east fringes. Most of these woodland habitats have recently established and comprise tall thin ash (*Fraxinus excelsior*) trees.

The woodland near the north-east is poorly developed and is characteristic of an area of scrub transitioning to young woodland. The woodland canopy is relatively open or poorly defined. The structure comprises ash and locally frequent sycamore (*Acer pseudoplatanus*) trees overtopping elder, hawthorn (*Crataegus monogyna*), bramble and nettle. The ground layer is mostly dry, and the species composition supports extensive spread of nettle and bramble in addition to the localised occurrences of cowslip (*Primula veris*), bush vetch (*Vicia sepium*), wood dock (*Rumex sanguineus*), cleavers, ground ivy (*Glechoma hederacea*), herb Robert (*Geranium robertianum*), broad buckler fern (*Dryopteris dilatata*) and hart's tongue fern (*Asplenium scolopendrium*). The shoreline fringe of this woodland habitat supports a strip of yellow iris and occasional hemlock water dropwort growing on shoreline rocks.

Another area of emerging and establishing oak-ash-hazel woodland occurs near the southern margins of the island. The woodland canopy is again poorly formed and supports young ash trees overtopping extensive bramble with frequent and dense growing blackthorn, hawthorn, elder and buckthorn (*Rhamnus cathartica*) in the shrub layer.

The western margins of the island support the largest area of oak-ash-hazel woodland occurring. This woodland is larger and is structurally more well established, evidenced by the almost continuous canopy cover of young, semi-mature ash trees and the initial development of woodland ground layer species. The woodland vegetation composition is similar to those previously described, comprising maturing ash overtopping sycamore, grey willow (*Salix cinerea* subsp. *oelifolia*) and goat willow (*Salix caprea*) trees. Alder occurs occasionally near the lakeshore margins with locally frequent buckthorn. The understorey shrub layer is open and is somewhat disturbed by cattle grazing and poaching. The shrub layer supports occasional hawthorn and elder, in addition to localised spreading of nettle and bramble in the understorey, particularly near the drier margins along the eastern boundary. Much of the ground layer is poorly developed, but localised occurrence of woodland ground layer species occur and include wood avens (*Geum urbanum*), lord's and ladies (*Arum maculatum*), wood dock (*Rumex sanguineus*), butterbur (*Petasites hybridus*), nettle, ground ivy, herb Robert (*Geranium robertianum*), rough meadow grass (*Poa trivialis*), germander speedwell, sanicle (*Sanicula europaeus*), wood sedge (*Carex sylvatica*), bluebell (*Hyacinthoides non-scripta*), bush vetch, cleavers (*Galium aparine*), creeping buttercup, common chickweed (*Stellaria media*), broad buckler fern and wood speedwell (*Veronica montana*). Sycamore regeneration was noted in parts of the woodland ground layer.

#### 10.6.2.4.8 Stone walls and other stonework (BL1)

This habitat includes the ecclesiastical buildings and stone walls. Plant species cover is sparse and restricted to epiphytes and bryophytes including rustyback (*Ceterach officinarum*), wall rue (*Asplenium ruta-muraria*), hart's tongue (*Asplenium scolopendrium*), red fescue, dandelion (*Taraxacum* agg.), herb Robert (*Geranium robertianum*) and bryophyte species including *Brachythecium rutabulum*, *Thamnobryum alopecurus* and *Tortula muralis*.

#### 10.6.2.4.9 Buildings and Artificial Surfaces (BL3)

This habitat relates to the pier located near the north-western corner of the island. The pier is a man made structure, comprising in-situ cast concrete subject to wave action of the lake.

There are no significant surface water features on Inis Cealtra. This is because of the free draining nature of the ground coupled with the small size of the land mass. The only permanent surface water feature is a well, an artificial feature that is inset into the ground near the northeastern shore. This well had a growth of duckweed (*Lemna* sp.). During and for relatively short periods after heavy rainfall, some parts of the island of relatively low gradient become saturated and this leads to the formation of small flashes of surface water, but these features are ephemeral and considered only seasonal.

#### 10.6.2.4.10 Calcareous Spring (FP1)

St Mary's Well, located adjacent to the curtilage of St Mary's ecclesiastical monument is associated with a calcareous spring. The spring rises at the well and seeps towards the east downslope to the lake margin. Other seepage zones occur a short distance to the northeast of the well. The vegetation occurring at the well and spring is dominated by *Apium nodiflorum,* duckweed *Lemna* sp. *and Nasturtium officinale.* Other species occurring at the spring include *Lysimachia vulgaris, Berula erecta, Succisa pratensis, Cardamine pratensis, Myosotis secunda, Myosotis laxa, Epilobium palustre, Plagiomnium elatum, Plagiomnium undulatum, Calliergonella cuspidate* and *Dichodontium pelluedium* (**Plate 10-19**).

**Plate 10-19. Well (left) and surface water associated with same (right) near the north-eastern shore of Inis Cealtra**

10.6.2.5 Lough Derg

10.6.2.5.1 Limestone-marl lakes (FL3)

Lough Derg is classified as a 'Limestone-marl lakes (FL3)'. This habitat has a relationship with the EU Annex I habitat 'Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. (3140)'. The 2016-2021 ecological status of Lough Derg was assigned as Moderate under the Water Framework Directive's hierarchy for waterbody ecological status. This hierarchy ranks waterbodies from Bad to Poor to Moderate to Good to High.

The emergent plants common reed (*Phragmites australis*), water lily (*Nuphar lutea*), water horsetail (*Equisetum fluviatile*), common club-rush (*Schoenoplectus lacustris*) and bottle sedge (*Carex rostrata*) were recorded at Inis Cealtra and can be expected to occur along the shores of the mainland. Stands of *Potamogeton pectinatus* occur submerged in shallow water along the western shore of the island while *Potamogeton crispus* and *Potamogeton natans* were also noted around the island (Doherty Environmental, 2016). *Elodea* sp., a submerged non-native invasive plant was recorded during the aquatic assessment at Inis Cealtra.

Some random massive boulders are strewn along the shores of Inis Cealtra, providing some shelter from wave action. During the course of surveys carried out on the shores of Inis Cealtra, substrates were found to have a significant cover of a marl material. The composition of this material was considered a combination of precipitated calcium carbonate, organic (diatomaceous complex) and inorganic (silt) components.

Yellow iris *(Iris pseudacorus),* marsh horsetail (*E. palustre*), meadowsweet (*Filipendula ulmaria*), marsh marigold *(Caltha palustris)* and hemlock water-dropwort *(Oenanthe crocata)* were the main components of the shoreside plant community. The terrestrial plant community as well as the aerial portion of emergent aquatic plants of Lough Derg are important resting and breeding sites for the terrestrial life stages of aquatic insects.

10.6.2.5.2 Reed and Large Sedge Swamp (FS1)

'Reed and large sedge swamp' (FS1) habitat and occurs at the northern end of the island between Inis Cealtra and Illaunaskirtaun within the lake itself (**Plate 10-20**; **Plate 10-21**). Larger examples of this habitat also occur between Inis Cealtra and Knockaphort within the lake. This habitat is dominated

throughout by Schoenoplectus lacustris. In shallower areas nearer the shoreline *Iris pseudacorus* is occasional to frequent, while *Equisetum fluviatile* is rare to occasional.

**Plate 10-20 The northern shore of Inis Cealtra in May (left) and June (right) 2021.**

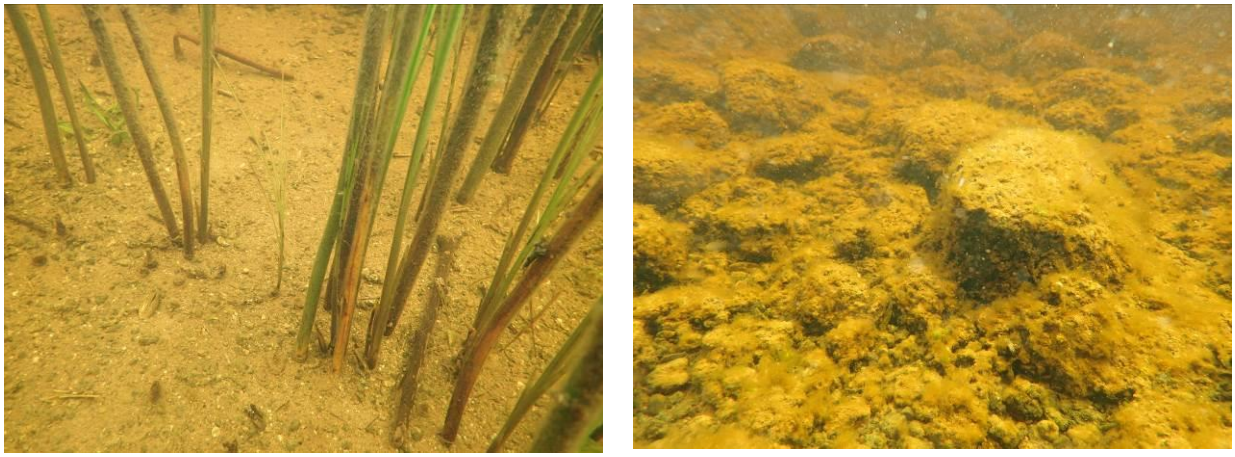


**Plate 10-21 Soft substrate associated with a stand of common clubrush (left) and rocky substrate (right) at the northern shore.**

10.6.2.5.3 Invasive plants

Least Duckweed (*Lemna minuta)* has been recorded in the 1 km square R6985 between Inis Cealtra and Knockaphort. It can form dense floating mats in a short space of time and can out-compete other native aquatic species as well as result in changes to the structure of aquatic habitats by reducing light penetration/availability to submerged macrophyte plants.

Nuttall's pondweed (*Elodea nuttallii*) was found for the first time in Lough Derg in 2005, in the southern part of the Lough. It is a highly invasive plant undergoing rapid expansion within Lough Derg. It now occurs in most harbours and in some shallow isolated bays to a maximum depth of 3.2m (determined by light levels). The plant is a nuisance species because it grows prolifically and can clog sheltered shallow areas. The plants may grow to the surface and spread to form tangled masses that impede boat traffic. Chopped strands can accumulate on beaches and foul bathing areas. This species reproduces vegetatively and fragmentation provides the only basis for range extension. Dispersion is through drifting fragments. In wintertime, coots and swans feed on this pondweed. This results in further fragmentation as not all of the retrieved plant matter is consumed. In summertime, during the plants vertical growth phase, boat propellers cut plants and result in significant fragmentation. These

fragments, together with those that have been produced by natural means can concentrate on bathing beaches to form foul smelling accumulations. Nuttall's pondweed forms sufficiently dense stands to arrest propeller driven outboard craft and encumber all other power driven craft. Anglers who have fished for many years on Lough Derg stated that 2006 was the first year that some areas could not be fished on account of the extent of the weed present (Lough Derg Science Group 2007)

Canadian Waterweed (*Elodea canadensis*), a perennial submerged plant found in mesotrophic and eutrophic still and slow flowing waters, is also known from Lough Derg (Lough Derg Site Synopsis). It can occupy a wide range of water depths from shallow margins to waters over 3 m deep where it develops large dominant stands. It prefers high levels of silt but can tolerate a range of mineral conditions and can persist in anaerobic substrates. The pathways for its spread include the horticultural and aquarium trade, boating, angling and other water activities, natural spread from habitats where already present especially when seasonal flooding occurs (Milane & Caffrey, 2014). Fragments have high survival rates, which allow them to be dispersed over long distances, therefore increasing their invasion capabilities.

### 10.6.3 Fauna

#### 10.6.3.1 Non-volant mammals

The protected and invasive non-volant mammals previously recorded in the study area are presented in **Table 10-9.**

**Table 10-9 NBDC protected and invasive non-volant mammal species records for the 2 km grid squares covering the mainland (R78D) and Inis Cealtra (R68X) components of the proposed development[16].**

| Species | Designation | R78D | R68X |
|---|---|---|---|
| Eurasian badger (*Meles meles*) | Protected Species: Wildlife Acts | ✓ | ✓ |
| European otter (*Lutra lutra*) | Protected Species: EU Habitats Directive Annex II and V<br>Wildlife Acts | ✓ | |
| Eurasian red squirrel (*Sciurus vulgaris*) | Protected Species: Wildlife Acts | ✓ | |
| Pine marten (*Martes martes*) | Protected Species: EU Habitats Directive Annex V<br>Wildlife Acts | ✓ | |
| West European hedgehog (*Erinaceus europaeus*) | Protected Species: Wildlife Acts | ✓ | |
| American mink (*Mustela vison*) | High Impact Invasive Species<br>Regulation S.I. 477 (Ireland) | ✓ | |
| Greater white-toothed shrew (*Crocidura russula*) | Medium Impact Invasive Species | ✓ | |

NPWS supplied data on protected and threatened species in the 10 km grid squares R68 and R78 which overlap the proposed development, as illustrated in **Figure 10-10**. Within this area are records of:

- Otter, along the shore of Lough Derg and at/near watercourses that flow into the lake
- Badger at Mountshannon and at southern extents of R68 and R78

[16] Accessed on 19/9/2023

- Fallow deer (*Dama dama*) widespread within study area
- Pygmy shrew near Knockaphort Pier north of Inis Cealtra
- Irish hare in the Ogonelloe areamore than 5km sout west of Inis Cealtra
- Rare incidence of stoat (*Mustela erminia*)
- Pine marten (*Martes martes*) more than 10 km south west of Inis Cealtra
- Red deer (*Cervus elaphus*) ca. 5 km south of Inis Cealtra and
- Hedgehog at one location near Knockaphort Pier north of Inis Cealtra

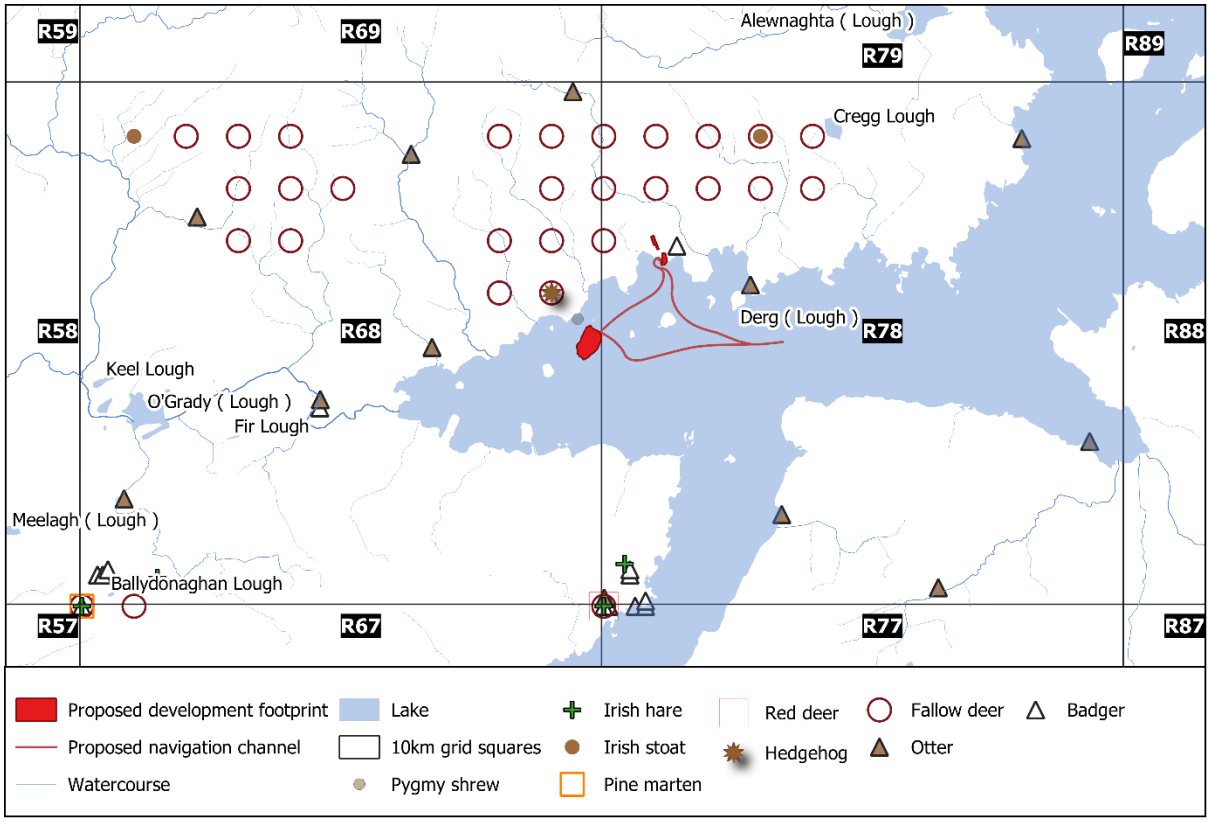



**Figure 10-10 NPWS records of protected mammals in 10 km grid squares R68 and R78 (records = 0.5km accuracy)**

### 10.6.3.2 Reptiles and Amphibians

The protected reptiles and amphibians previously recorded in the study area are presented in

**Table 10-10.**

**Table 10-10 NBDC protected and invasive Reptiles and Amphibians species records for the 2 km grid squares covering the mainland (R78D) and Inis Cealtra (R68X) components of the proposed development[17].**

| Species | Designation | R78D | R68X |
|---|---|---|---|
| Common frog (Rana temporaria) | Protected Species: EU Habitats Directive Annex V<br>Wildlife Acts | ✓ | |
| Smooth newt (Lissotriton vulgaris) | Protected Species: Wildlife Acts | ✓ | |
| Common lizard (*Zootoca vivipara*) | Protected Species: Wildlife Acts | ✓ | |

### 10.6.3.3 Carpark

There was evidence of deer using the site, with droppings and a possible deer resting site found (**Plate 10-22**). No other evidence of large mammals such as badger or otter were found. There is a potential that otter may commute through this area however it is unlikely that this species would utilize it as a preferred habitat choice. The hedgerow and treeline features likely support small mammals such as wood mouse, shrew and perhaps hedgehog.

**Plate 10-22 Evidence of deer resting (left) and deer droppings (right).**

### 10.6.3.4 Visitor Center

There was no evidence of large mammals such as badger or otter. The woodland at the western side of the site is likely used by small mammals such as wood mouse, shrew and perhaps hedgehog.

[17] Accessed on 19/9/2023

#### 10.6.3.5 Harbour

The artificial character of the habitat at the harbour provides limited cover or feeding opportunities for wildlife. No signs of fauna, other than birds, were detected at the harbour

#### 10.6.3.6 Inis Cealtra

There were no signs of protected mammalian fauna on Inis Cealtra during walkover surveys, nor were any recorded by trailcams. There was much evidence of mink in the form of droppings, resting areas on boulders and still images captured on trailcam of a mink preying on eel (**Plate 10-23; Plate 10-24**).

The mink is a small, semi-aquatic mammal, which occupies both freshwater and saltwater habitats and follows waterways, lake edges and coasts. According to Scottish Natural Heritage[18]:

- Mink are largely solitary and will hold their own territory
- An average mink territory along a linear waterway is 1-3km for a female, male territories are larger up to 5km and may overlap several female territories
- Mink are carnivores and eat a wide variety of prey including rabbits, water voles, rats, birds, eggs, fish and domestic fowl
- They are an opportunistic hunter taking whatever prey is available at the time.

The presence of mink on Inis Ceatlra is considered to significantly impact wildlife on the island, with evidence of feeding on European eel (*Anguilla anguilla*) which is classified as Critically Endangered (Population decreasing)[19] and other fish from Lough Derg, eggs from a birds nest and possibly a heron from the shore of the lake.

**Plate 10-23 Mink with an eel captured on trailcam (left). Mink droppings on a boulder next to Lough Derg.**

[18] https://www.invasivespecies.scot/american-mink-0#:~:text=Mink%20are%20effective%20predators%2C%20eating,at%20risk%20from%20mink%20predation.

[19] IUCN

**Plate 10-24 Mink and Otter resting location on a boulder at the shore of Inis Cealtra (left) with an eaten egg (right).**

#### 10.6.3.7 Lough Derg

Baseline surveys of otter populations supported by Lough Derg have been completed on four occasions between 1980 and 2011 as part of the national otter surveys of Ireland (Reid *et al,* 2013). A comparison of these surveys shows that the incidence of otters appeared to decline from 100% occurrence during the National Survey in 1980/81 (n=67) to 54.1% during the Rapid Assessment Survey in 2009 (n=109). However, despite a 45.9% decline in recorded occurrence there was no statistically significant change in occurrence between the 2004/05 and 2010/11 National Surveys. Only one Rapid Assessment Survey was completed in 2010 when otter occurrence was 54.1% (n=109).

On the 16th March 2021, an otter spraint was seen on a boulder, used as a couch near the east side of the island. One otter spraint and the signs indicating the presence of a couch site was noted to the south of the island during a previous survey (DE, 2016). It is noted that cattle had encroached on this area later during the season, with the marginal grassland community being heavily trampled by the October. One otter spraint was noted on a rock on the northern side of the island in October 2016 (DE, 2016).

#### 10.6.3.8 Bats

BCI has records for bats in the 2 km grid squares covering the mainland (R78) and Inis Cealtra (R68) components of the proposed development, as per **Table 10-11**.

**Table 10-11 Bat Conservation Ireland bat records for the 2 km grid squares covering the mainland (R78) and Inis Cealtra (R68) components of the proposed development**

| | Daubenton's bat | Natterer's bat | Leisler's bat | Soprano pipistrelle | Brown long-eared bat |
|---|---|---|---|---|---|
| R78 | | | ✓ | ✓ | |
| R68 | ✓ | ✓ | ✓ | ✓ | ✓ |

The National Biodiversity Data Centre's online mapper[20] includes a Bat Habitat Suitability Index (BHSI) layer derived from an analysis of the habitat and landscape associations of Irish bats compiled in Lundy *et al.* (2011). The index evaluation ratings range from 0 to 100 with 0 being the least favourable, and 100 the most favourable, for bats. Index evaluations are available for each species and an overall rating is also available for all species in combination. As the ratings are mapped to a 2.5 km grid square resolution, multiple ratings are available for any search area that extends beyond this 2.5 km scope. In order to ensure that the BHSI ratings for the proposed development site and its surroundings are fully described, the reference area, to which the ratings listed in **Table 10-12** relate, comprises the area that encompasses the proposed development site and lands immediately adjacent i.e. the mainland components in R78D and Inis Cealtra in R68X. It can be seen from the ratings listed that the overall BHSI rating for all bat species is moderate.

As can be seen from this data, the area encompassed within the 2 km grid squares listed is of best value for Natterer's bat (*Myotis nattereri*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and brown long-eared bat (*Plecotus auritus*), all having ratings over 50 across both the 2 km grid squares. Ratings for Daubenton's bat (*Myotis daubentonii*), Leisler's bat (*Nyctalus leisleri*) and lesser horseshoe bat (*Rhinolophus hipposideros*) are all below 50. These ratings, while not predictive, provide meaningful metrics that characterise the probable value of the area within and surrounding the proposed development to bat species. They are an indicator as to the likelihood that different bat species are, or are not, likely to, typically, be a significant presence in the area within and around the proposed development. This likelihood then, in turn, indicates the probability that bats may use the proposed development site.

The following foraging information is from BCI:

- Natterer's bat likes woodland, mature hedgerow and pasture habitats
- Brown long-eared bats prefer to forage in woodland flying amongst the foliage, picking moths and other insects off leaves.
- Leisler's bats forage over open spaces such as parks and fields
- Daubenton's bat forages over lakes, slow-moving rivers and canals in search of caddisflies, mayflies and midges

The proposed development site has a low rating for lesser horseshoe bat and there are no records of this species in the 10km grid squares covering the proposed development site. The proposed development is located within the range of the species but outside the distribution of the species (NPWS, 2019).

[20] https://maps.biodiversityireland.ie/Map

**Table 10-12 Bat Conservation Ireland Bat Habitat Suitability Index (BHSI) for the 2 km grid squares covering the mainland (R79D) and Inis Cealtra (R68X) components of the proposed development**

| | All bats | Daubenton's bat | Natterer's bat | Leisler's bat | Common pipistrelle | Soprano pipistrelle | Brown long-eared bat | Lesser horseshoe bat |
|---|---|---|---|---|---|---|---|---|
| Mainland (R79D) | 41.11 | 45 | 61 | 48 | 54 | 52 | 53 | 10 |
| Inis Cealtra (R68X) | 38.22 | 36 | 52 | 44 | 45 | 47 | 50 | 14 |

**Table 10-13 Bat preferred roost type for the 2 km grid squares covering the mainland (R79D) and Inis Cealtra (R68X) components of the proposed development**

| | All bats | Daubenton's bat | Natterer's bat | Leisler's bat | Common pipistrelle | Soprano pipistrelle | Brown long-eared bat |
|---|---|---|---|---|---|---|---|
| Preferred roost type[21] | | Under stone bridges, in ruins, canal tunnels, trees and damp caves | Tree holes, old stone buildings such as churches and barns, and under bridges | Buildings although 13% of its roosts recorded in Ireland have been in trees | Behind hanging tiles and soffit boards or between roofing felt and roof tiles<br>Tree holes | Buildings such as houses with large attic spaces, churches, outbuildings and in tree holes | Roofs of old houses or in outhouses, stables or old cottages. In winter this species hibernates in caves, disused cellars, mines and souterrains. |

10.6.3.8.1 Carpark

There are no buildings at the proposed car park site. Some of the larger trees had some ivy cover however, so these trees could perhaps be used as night roosts for bats between foraging bouts during the summer season. It is likely that bats utilise the site for foraging during the active season (**Plate 10-25**).

[21] From Bat Conservation Ireland: https://www.batconservationireland.org/irish-bats/species

**Plate 10-25 Trees and treeline/hedgerow habitat likely used by foraging/commuting bats**

10.6.3.8.2 Visitor Center

Bat surveys in May 2021 revealed that the attic of the Old Rectory building (**Figure 10-11; Plate 10-26**) was being used occasionally by brown long-eared bats (most likely a single bat). A small number of soprano pipistrelles were also observed returning to the roost at dawn. A second emergence count was conducted in July 2021. No bats were recorded emerging from the damaged fascia at the rear of the building where 4 soprano pipistrelles were recorded re- entering in May. Four pipistrelles emerged from the front of the building at roof height, but the exact location of the exit was not identified. This second count confirmed that there was no maternity roost present.

The Old Rectory was resurveyed on Thursday 25th and Friday 26th May 2023. There were a few new droppings found in the attic since the previous visit – all in the roof space on the western side of the building. Some were brown long-eared droppings and another small accumulation were either pipistrelle or a small *Myotis* such as whiskered bat. A static detector was placed in the attic overnight but there were no bat calls recorded. Two soprano pipistrelles emerged from different places on the rear western side of the building. These bats returned to roost in the same places at dawn.

It is concluded that while some bats roost in the Rectory, it is not a maternity roost.

The trees at the site had limited potential to harbour bats in terms of crevices or holes that would provide cover. Some of the larger trees had some ivy cover however, so these trees could perhaps be used as night roosts for bats between foraging bouts during the summer season. It is likely that bats utilise the site and adjacent lake for foraging during their active season.

**Figure 10-11 The Old Rectory is a bat roost. It was considered that bats can enter this building through small gaps in the facia board and (right). A dropping, potentially of a bat on a window board inside the rectory (inset picture on right).**

**Plate 10-26 Attic of Rectory with bat droppings**

10.6.3.8.3 Harbour

The artificial character of the habitat at the harbour provides limited cover or feeding opportunities for wildlife. No potential bat roost habitat occurs at the harbour.

10.6.3.8.4 Inis Cealtra

St. Caiman's Church was inspected in March, May and July 2016 for field signs indicating the presence of roosting bats (DE, 2016). During each of these surveys, small amounts of bat droppings were noted near the eastern gable end of the church, on the northern elevation. A small number of droppings were also noted at the western gable end, beneath the roof ridge during the July survey.

High light levels occur within the church during the daytime, reducing the potential of this building as a bat roost, but nonetheless, it is otherwise considered to provide good roosting conditions (**Plate 10-27).** The round tower features deep crevices and cavities in the masonry throughout, these are considered to provide suitable roosting opportunities for bats. St Mary's Church is an open masonry structure with some bat roost potential in cavities. No evidence of roosting bats was noted within the OPW hut when examined both internally and externally on 16th June 2023.

A shed at the west pier consists of a low flat roof, which is heavily shaded by woodland growing over and around it. This shed represents a structure of low bat roost potential. No evidence indicating the

presence of roosting bats was identified during an inspection survey of a shed at the west pier on 16th June 2023.

Woodland and scrub that occurs in places around the perimeter of the island is considered to provide good foraging habitat for bats. Similarly, pockets of scrub away from the lake are deemed to provide good foraging for bats. Mature trees with ivy cover, especially some of the larger ash trees on the island could be used by roosting bats (**Plate 10-28**).

**Plate 10-27 St. Caiman's Church and tower (left) and interior of church (right)**

**Plate 10-28 Mature trees and scrub provide potential roosting and foraging habitat for bats.**

As part of the DE (2016) bat habitat assessment survey, the roost potential of trees on Inis Cealtra was graded according to the BCT tree roost grading system (Hundt, 2012) which includes five categories as follows:

- Known or confirmed tree roost
- Category 1* tree roost which supports multiple features capable of supporting large roosts
- Category 1 tree roost with definite bat potential but supports fewer features than Category 1*
- Category 2 tree roosts although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited potential to support bats and
- Category 3 tree roosts which are trees with no potential to support bats.

Eleven mature trees surrounding the island were identified as having potential to support bats. These trees range from Category 2 trees to Category 1* trees. A description of each of the trees, numbered 1 to 11, is provided in **Table 10-14** below. The features occurring on these trees that have the potential -to support roosting bats range from dense ivy cover, crack limbs and loose bark to deep crevices in rotten trunks and limbs. Trees supporting only dense ivy cover have been rated as Category 2 trees, those supporting dense ivy cover and other features such as loose bark and cracked limbs have been rated as Category 1 trees, while those supporting dense ivy cover and an abundance of loose bark, cracks, sheltered crevices and hollows have been rated as Category 1* tree. The locations of all potential bat tree roosts on the island are shown on **Figure 10-12**.

**Table 10-14 Trees with Potential to Support Roosting Bats**

| Tree No. | Tree Roost Category | Tree No. |
|---|---|---|
| 1 | 1 | Mature ash with dense ivy cover. Gaps in bark also present |
| 2 | 2 | Mature ash with dense ivy cover. |
| 3 | 1* | Mature ash with dense ivy cover, loose bark and cracks in limbs. Alongside this tree is the remaining stump of a mature ash. This is hollowed and provides sheltered roosting opportunities for bats. |
| 4 | 1 | Mature ash with bat roost potential. Dense ivy cover and cracks in the bark occur. |
| 5 | 2 | Mature ash with dense ivy cover |
| 6 | 2 | Mature ash with dense ivy cover |
| 7 | 2 | Mature ash with dense ivy cover |
| 8 | 2 | Mature ash with dense ivy cover |
| 9 | 1 | Mature ash with dense ivy cover and gaps in the bark |
| 10 | 2 | Mature whitethorn thickly clad with ivy cover. |
| 11 | 2 | Mature ash with low level of ivy cover. Possible presence of gaps in the tree at height. |

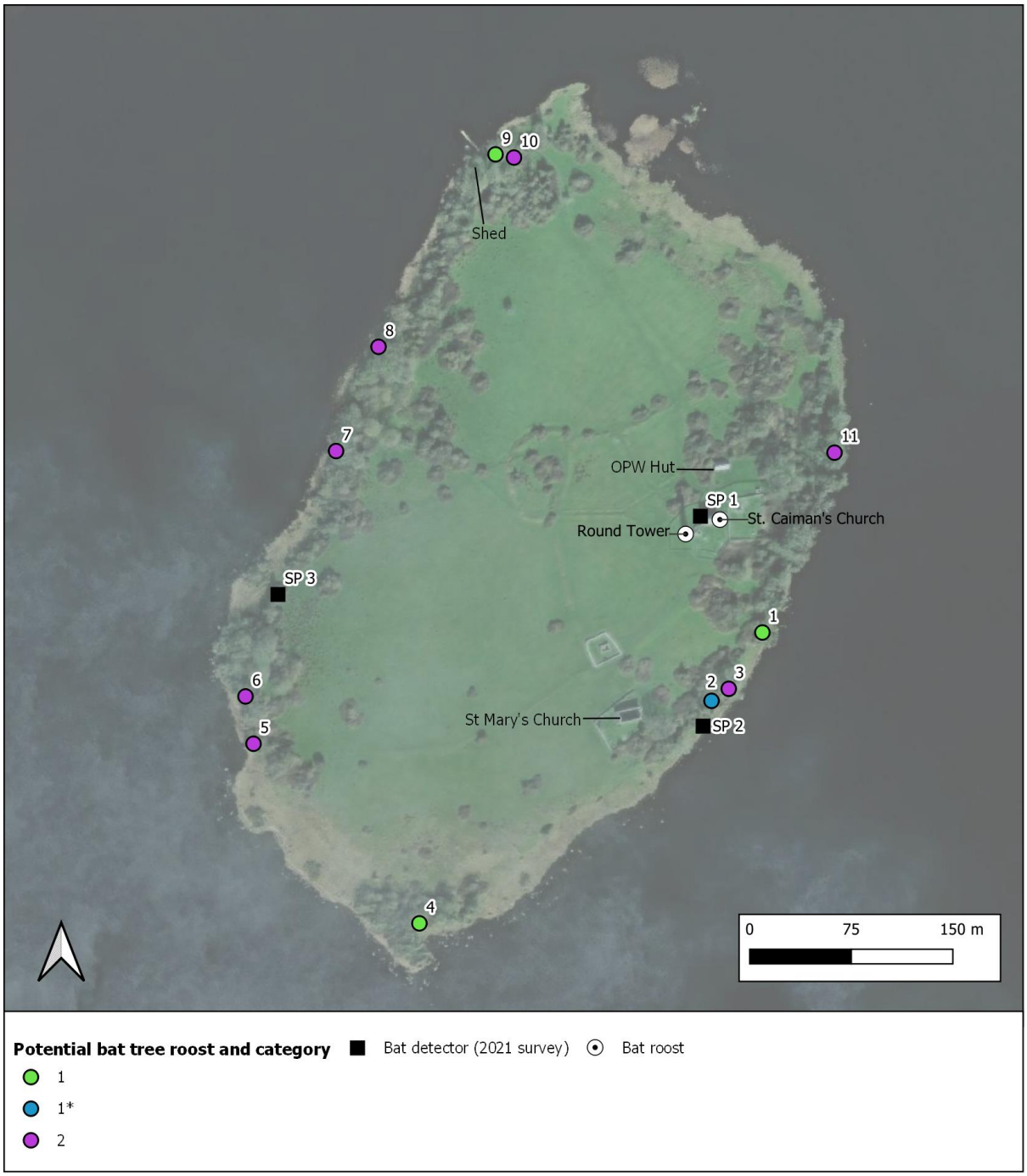



**Figure 10-12 Potential bat tree roosts on Inis Cealtra**

**Table 10-15** provides a summary of bat calls from PABS on Inis Cealtra during May 2021. Activity levels at SP1, coupled with the timing of the first soprano pipistrelles (within 20 minutes after sunset) and the timing of the last passes (less than 30 minutes before sunrise) suggest pipistrelle bats roost at St. Caimin's Church and/or the Round Tower. The results of an emergence and pre-dawn survey of St. Caimin's Church or the Round Tower in August 2015 and October 2016 indicated that the church and tower were being used as a roost site by low numbers of soprano pipistrelle bats, and the numbers recorded during the survey were not indicative of a maternity colony at these structures (DE, 2016).

It is considered that bats use at least some of the trees for roosting, noting that all the species recorded are known to use trees for roosting, with the exception of lesser horseshoe bat. It is likely that lesser horseshoe bat and brown long-eared bat roost in St. Caiman's Church, based on these species'

roosting preferences (as per Marnell et al, 2022) and the fact that they generally do not fly in open spaces.

For example, lesser horseshoe bat is reluctant to cross open ground and will follow hedgerows, treelines and stone walls when moving between roosts and foraging areas, while brown long-eared bat keeps within the foliage (Marnell et al, 2022).

Daubenton's bat activity utilise the lake margins for hunting, as depicted by activity level sat SP 2. It is considered that the lake and woodland along the shoreline provide ideal habitat for Daubenton's bat, with both foraging and roosting opportunities here.

Activity levels at SP3 on the western side of the island were comparatively low with respect to SP1 and SP2 on the eastern side. It is considered that the north and northeastern aspects of the island are most important for bats owing to the combination of scrub, mature trees, shelter and buildings. This statement is substantiated by the results of foraging transect surveys undertaken in August and October 2015 and May 2016 (DE, 2016). No bats were observed flying off in a westerly direction towards Knockaphort during a pre-dawn transect survey along the northern side of the island between the northwestern and northeastern piers was undertaken on the morning of the 5th August 2016 (DE, 2016). This indicates that the foraging bats recorded on the island were roosting on the island. At its closest, Inis Cealtra (north western pier) is ca. 300m from the mainland (Knockaphort Pier).

**Table 10-15 Summary of bat calls from PABS on Inis Cealtra during May 2021**

| SP | Location | Daubenton's bat | Myotis spp. | Natterer's bat | Leisler's bat | Common pipistrelle | Soprano pipistrelle | Brown long-eared bat | Lesser horseshoe bat | No ID |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | St. Caiman's Church | 6 | 6 | 16 | 66 | 688 | 10,088 | 58 | 4 | 10 |
| 2 | Eastern shore | 24 | 1 | 126 | 37 | 1,764 | 6,553 | 277 | 2 | 57 |
| 3 | Western shore | 4 | 0 | 1 | 4 | 28 | 11 | 2 | 0 | 0 |

10.6.3.8.5 Lough Derg

Daubenton's bat and Leisler's bat forage over Lough Derg as it is an important source of insect life. Other bat species likely forage along the shores of the lake.

#### 10.6.3.9 Birds

##### 10.6.3.9.1 Ramsar Sites/Important Bird and Biodiversity Areas (IBAs)

The Convention on Wetlands, also known as the Ramsar Convention, is an intergovernmental treaty which aims to conserve and protect wetlands and their resources around the world[22]. It was ratified by Ireland in 1984 and came into force on 15th March 1985. While this convention is not legislation, it is an international treaty. Ireland presently has 45 sites designated as Wetlands of International Importance, with a surface area of 66,994 hectares. The desk-top review concluded that there are no Ramsar sites within the ZoI of the site boundary.

The Important Bird and Biodiversity Areas (IBAs) Programme, overseen by Birdlife International, aims to identify, conserve and protect those areas throughout the world considered to be of the greatest significance to bird populations[23]. The desk-top review concluded that there are two IBA sites within 20 km of the site boundary (see **Table 10-16** below).

**Table 10-16: IBA sites within the ZoI of the site boundary.**

| Site Name & Code | Distance from IBA to proposed site | IBA Trigger Species |
|---|---|---|
| Lough Derg (River Shannon)[24] | The footprint of the works is within the boundary of the SPA | Mute Swan (*Cygnus olor*) |
| Slieve Aughty Mountains[25] | approximately 1.6 km west/north west of the proposed development | Hen Harrier (*Circus cyaneus*) |

##### 10.6.3.9.2 I-WeBS Sites

The I-WeBS site, Lough Derg (Shannon) (0J008), lies within the potential ZoI of the proposed development. A review of the site count data available on the BirdWatch Ireland website for this site (which covers the count period up until 2020/21) determined that a wide range of species are known to utilise Lough Derg.

Within this large site, there are several smaller I-WeBS sub-sites encompassed within the area of the lake in the vicinity of the proposed development site. I-WeBS data was requested for the nearby sub-sites within Lough Derg. BirdWatch Ireland indicated that recent aerial I-WeBS surveys of the requested sub-sites have not been carried out. I-Webs ground-counted data from the wider Lough Derg area were however received and reviewed. This listed a wide range of wader and water birds recorded within Lough Derg.

##### 10.6.3.9.3 Bird Atlas Records and Distribution

Bird Atlas 2007-11: The breeding and wintering birds of Britain and Ireland' (Balmer et al., 2013) is the most recent comprehensive work on wintering and breeding birds in Ireland. Previous Bird Atlases

[22] http://www.ramsar.org/

[23] http://www.birdlife.org/worldwide/programmes/important-bird-and-biodiversity-areas-ibas

[24] http://datazone.birdlife.org/site/factsheet/621

[25] http://datazone.birdlife.org/site/factsheet/27156

have been the primary source of information on the distribution and abundance of British and Irish birds prior to Bird Atlas 2007–11. The three previously published atlases were:

- Sharrock, J.T.R. (1976) The atlas of breeding birds in Britain and Ireland.
- Lack, P.C. (1986) The atlas of wintering birds in Britain and Ireland.
- Gibbons, D.W., Reid, J.B. & Chapman, R.A. (1993) The new atlas of breeding birds in Britain and Ireland: 1988-1991.

The proposed development lies within the hectads of R68 and R78. Appendix 10-1 presents Wintering and Breeding Bird Atlas data (2007 – 2011) of potential target species recorded within this hectad.

#### 10.6.3.9.4 Bird survey results

The birds recorded during the mainland surveys included eighty four (84) species of which forty three (43) target species were identified. Of the identified 43 target species, five (5) of these species were only observed on the mainland and not on the island. These species included the Arctic Tern; Kestrel; Lapwing; Pintail and Pochard.

Summer season

During the summer season observations species such as Arctic tern and common tern are only summer visitors to Ireland and do not overwinter here. Arctic tern was only recorded during summer season mainland surveys, with a total count of 10 sightings recorded over the survey period. Arctic tern was not recorded during any of the surveys on Inis Cealtra. During surveys, common tern was frequently recorded in the summer during both Inis Cealtra and mainland surveys, although it is not breeding on Inis Cealtra. The total number of sightings for this species across the overall survey period was 59. Both Shoveler and Whimbrel were also both observed on the mainland. Shoveler has a localised breeding distribution in Ireland, centred around Lough Neagh and the mid-Shannon basin. Shoveler was very rarely recorded (May 2023 only), when a family group was recorded. Whimbrel is a non-breeding species in Ireland, occurring as a passage migrant in spring and autumn. Although whimbrel may winter in Ireland, their main wintering range is outside of Ireland. Whimbrel was very rarely recorded (one record on the island, May 2021). This species was not recorded during any of the mainland counts.

Winter season

During the winter season observations eleven species were identified of which Golden plover, Herring gull, Jack snipe, Red-breasted merganser, Redshank, Whooper swan and Wigeon were observed on the island and Herring gull, Lapwing, Pintail and Pochard were observed on the mainland and finally the Goldeneye was observed on both the island and mainland. The Golden Plover, Goldeneye, Herring Gull, Jack Snipe, Lapwing, Pintail, Pochard, Red-breasted Merganser, Redshank, Whooper Swan, and Wigeon. Species, such as the Whooper Swan, Wigeon, Golden Plover, and Lapwing, are migratory birds that come to Ireland during the winter. They breed in northern regions (such as Iceland, Scandinavia, and the Arctic) and move to Ireland in winter to take advantage of the milder climate and abundant wetlands. Birds, such as the Jack Snipe, Redshank, and Pintail, either migrate fully or are part of a population that remains year-round but is augmented by winter visitors. Most of the observed species, such as the Whooper Swan, Goldeneye, and Red-breasted Merganser, breed in northern Europe, particularly in Iceland, Scandinavia, and parts of Russia. They travel to Ireland in winter for the milder climate, making them primarily non-breeding visitors to Ireland. Lapwing and Golden Plover breed in upland areas of Ireland but are also joined by large flocks from northern Europe during the winter. These birds generally prefer wetlands, coastal areas, and large open spaces during winter. Whooper Swans, Wigeons, and Pintails are common in flooded fields, lakes, and estuaries. Golden Plover and Lapwing are frequently found in farmland, bogs, and mudflats, often forming large

flocks. Herring Gulls, Goldeneye, and Red-breasted Mergansers are often seen along coasts, estuaries, and lakes, favoring both inland and coastal water bodies. Inis Cealtra and the surrounding Lough Derg area provide ideal habitats for many of the bird species observed during winter. These species rely on the region's wetlands, lakes, and grasslands for foraging, resting, and roosting. The birds' breeding ranges are generally outside of Ireland in northern regions, but during the winter, they are widely distributed across suitable areas in Ireland, with Lough Derg acting as an important wintering ground for species such as the Whooper Swan and Wigeon.

Summer and Winter Season

During the summer and winter season observations seventeen species were identified such as Black-headed Gull, Common Gull, Coot, Cormorant, Curlew, Great Black-backed Gull, Great Crested Grebe, Grey Heron, Greylag Geese, Lesser Black-backed Gull, Little Egret, Little Grebe, Mallard, Moorhen, Mute Swan, Teal, and Tufted Duck. Species observed on both the mainland and the island include Great black-backed gull, Great crested grebe, Grey heron, Greylag geese, Lesser black-backed gull, Little egret, Little grebe, Mallard, Moorhen and Tufted duck in both winter and summer whereas the Coot and Teal was only observed during winter and Kingfisher only in summer. Species such as Cormorant and Mute swan observed on the island and Common gull and Curlew observed on the mainland all in both winter and summer. Species, such as the Mallard, Moorhen, Mute Swan, Coot, and Great Crested Grebe, are year-round residents in Ireland and breed locally, including around Lough Derg and Inis Cealtra. These species utilize the lake and surrounding wetlands for nesting in the summer and remain in the area through winter.

Grey Heron, Little Egret, and Little Grebe also breed in Ireland, with habitats like lakes, rivers, and wetlands around Inis Cealtra providing ample food resources and nesting sites. Herons and Egrets often nest in colonies known as heronries, which are commonly found near large bodies of water. Cormorants are year-round residents that breed in colonies on cliffs, islands, or trees near water. They fish in both freshwater and marine environments, making Lough Derg an ideal habitat. The species observed around Inis Cealtra and Lough Derg exhibit a combination of resident breeding populations and migratory winter visitors. The area provides ideal habitats for breeding in the summer, with wetlands, reedbeds, and open water supporting a variety of bird species. In winter, the lake and its surroundings become an important refuge for both resident and migratory birds, with large flocks of ducks, geese, and gulls using the area for feeding and resting. The ecological richness of Lough Derg makes it a crucial habitat for these bird species throughout the year.

Non-wader and non-waterbirds

Non-wader and non-waterbirds observed included Buzzard, Hen harrier, Meadow Pipit, Redwing, Sparrowhawk, Swift, Kestrel and White-tailed eagle. Species such as Buzzard, Hen harrier, Meadow Pipit, Redwing, Sparrowhawk and Kestrel were observed in winter. Swift and Buzzard were observed in summer, whereas White-tailed eagle was observed in winter and summer. These non-wader and non-waterbird species exhibit a combination of resident breeding populations and migratory visitors. Raptors such as the Buzzard, Sparrowhawk, Kestrel, and White-tailed Eagle use the area year-round, while species like the Hen Harrier and Redwing are primarily winter visitors. Meadow Pipits are found throughout the year, and Swifts are summer breeders. The diverse habitats around Inis Cealtra and Lough Derg—woodlands, open grasslands, and wetlands—make it an ideal location for these birds, providing hunting, nesting, and foraging opportunities during both summer and winter.

#### 10.6.3.9.4.1 Mainland

The tree and hedgerow features at the village carpark at the site provide good nesting opportunities for birds. The woodland at the west side of the visitors centre site provides some nesting opportunities for birds. The artificial character of the habitat at the harbour provides limited cover or feeding

opportunities for wildlife with no potential bird nesting habitat at the harbour. Birds such as Arctic Tern, Kestrel, Lapwing, Pintail and Pochard were observed on the Mainland (Appendix 10-1**: Section 5.1**).

#### 10.6.3.9.4.2 Inis Cealtra

During the island surveys thirty eight (38) species were observed of which fourteen (14) species were observed only on the island and not on the mainland. These species included the Curlew, Golden Plover, Grey Wagtail, Hen Harrier, Jack snipe, Meadow Pipit, Red-breasted Merganser, Redshank, Redwing, Snipe, Sparrowhawk, Swift, Whimbrel and Wigeon (**Plate 10-29; Plate 10-30,Appendix 10-1 : Section 5.1**).

For both the Mainland and Island, **Section 5** of Appendix 10-1 indicates all 43 species with their observation number during the survey period, peak count and their observation location.

**Plate 10-29 Pheasant (left) and grey heron (right) near the southern shore of Inis Cealtra in January 2022.**

**Plate 10-30 Carcass of a grey heron (left) and skull of a swan (right) found on Inis Cealtra on 22 March 2023.**

#### 10.6.3.9.4.3 Lough Derg

The role the entire lake plays in supporting wetland bird species has been recently reviewed by McCarthy, Keville O'Sullivan (2015), who compiled data on waterbirds supported by Lough Derg and sourced this information from records of gulls and terns from Reynolds (1990); the Common Scoter Survey of Lough Derg (Collins & Heery, 1995), Crowe (2005) and Boland & Crowe (2007). A review of

this information suggests that Lough Derg is nationally important for wintering mute swans and three waterfowl species, namely goldeneye, mallard, tufted duck and teal (Appendix 10-1) It is highlighted that the lake is designated as an SPA for the presence of resident tufted duck and wintering goldeneye as well as resident cormorant and breeding common tern.

Waders and Waterbirds

During the waders and waterbirds observations thirty four wader and waterbird species recorded during the overall survey period and only four were only recorded in the summer season. These include Arctic tern, common tern, shoveler and whimbrel. Eleven were only recorded in the winter season, namely golden plover, goldeneye, herring gull, jack snipe, lapwing, pintail, pochard, red-breasted merganser, redshank, whooper swan and wigeon. The remainder nineteen were recorded in both summer and winter seasons.

#### 10.6.3.9.5 Fish

There are no surface water receptors at the proposed Main Street car park location, Visitor Center site or Mountshannon Harbour.

##### 10.6.3.9.5.1 Lough Derg

Lough Derg is a mixed fishery, with salmon (*Salmo salar*), trout (*Salmo trutta*), pollan (*Coregonus autumnalis*), perch (*Perca fluviatilis*), roach (Rutilus rutilus), bream (*Abramis brama*), tench (*Tinca tinca*), hybrids and pike (*Esox lucis*) present (O' Reilly, 2007) (**Plate 10-31**). Historically it was one of the great brown trout fisheries, though angling was mainly concentrated on the mayfly season. In the 1980s the fishing for brown trout dropped off considerably particularly in the northern half of the lake, due to a deterioration in water clarity and increasing eutrophication (O' Reilly, 1987). Nevertheless it is still a popular brown trout angling destination, especially during mayfly season, when average trout weights are close to 1kg and fish up to 5kg can be taken (O' Reilly, 2007). The lake is also a popular coarse fish and pike angling destination.

Pollan, which is listed on Annex V of the EU Habitats Directive is present in Lough Derg; one of only five lakes in Ireland (RoI and NI) (Lough Neagh, Lower Lough Erne, Lough Ree and Lough Derg and Lough Allen) where it is currently known to reside (NPWS, 2004; Harrison et al., 2010). This limited distribution in tandem with their sensitivity to anthropogenic changes makes them vulnerable to extinction (Harrod et al., 2001). They are considered a pelagic species and are an important part of Ireland's native biodiversity. They are completely unique to Ireland and represent the only known lacustrine Arctic cisco (*Coregonus autumnalis Pallas*) population in the world; therefore they are of high conservation value (Maitland, 2004). The coregonids are a cold-water group and, in Ireland, the species is at the southern limit of the range for coregonids or whitefish (King et al, 2011). According to King et al (2011), there are no population estimates from the Shannon lakes, but numbers thought to be very low. Enrichment of these lakes, combined with thermal stratification, can lead to depletion of oxygen in the deep waters of the hypolimnion. If this occurs, pollan are squeezed between warmer surface water areas and deeper areas which, though cooler, may have reduced oxygen concentrations. The species feeds on a mix of plankton, insect larvae and some benthic food items, depending on site (King et al, 2011).

**Plate 10-31 Three-spined stickleback and roach recorded during biological sampling (left). Male three-spined stickleback in a swan mussel shell (right).**

The lake was previously surveyed to assess the status of its fish stocks in June/July 2009 and June 2012 by Inland Fisheries Ireland as part of the Water Framework Directive surveillance monitoring programme (Kelly et al., 2010 and 2013). During both of these surveys, perch were determined to be the dominant species present in the lake. Roach, roach x bream hybrids, bream, brown trout, tench, pike and eel (*Anguilla anguilla*) were also captured during the surveys.

European eel is listed as 'Critically endangered' and is now 'Red Listed' according to 'Red List No. 5: Amphibians, Reptiles & Freshwater Fish' (King et al., 2011). The Shannon scheme and associated fish passage difficulties is likely affecting the abundance of eel in the Shannon system, as young eels cannot pass the dam at Ardnacrusha.

Lampreys, listed under Annex II of the E.U. Habitats Directive, are known to occur and the lake contains an apparently self-sustaining landlocked population of sea lamprey (*Petromyzon marinus*). A landlocked population, where the fish are feeding and not completing a seaward migration, is unique in an Irish context, though there are several such populations in the U.S. and one is known from Loch Lomond in Scotland. Brook lamprey (*Lampetra planeri*) is known to be common in the lower Shannon catchment where all three lamprey species breed.

A multi-method fish stock survey was undertaken on Lough Derg over 11 nights between the 13th of June and the 5th of July 2016. A total of eight fish species and one type of hybrid were recorded. Roach was the most common fish species recorded, followed by perch, roach x bream hybrids, brown trout, pike, eels, bream, pollan, and tench (Appendix 10-1).

#### 10.6.3.9.6 Invertebrates

There are numerous records of aquatic and terrestrial invertebrates from the km grid squares that overlap the proposed development. These include the holly blue (*Celastrina argiolus*) and small tortoiseshell (*Aglais urticae*) butterflies and ash bud (*Prays fraxinella*), brimstone (*Opisthograptis luteolata*), canary-shouldered thorn (*Ennomos alniaria*), common marbled carpet (*Chloroclysta truncata*), Fox Moth (*Macrothylacia rubi*) and common wave (*Cabera exanthemata*) moths. Aquatic invertebrates recorded include the caddisflies *Athripsodes commutatus, Lepidostoma hirtum, Limnephilus flavicornis, Polycentropus flavomaculatus, Sericostoma personatum* and *Phryganea bipunctata*, the mayfly *Ephemera danica* and the brown hawker dragonfly (*Aeshna grandis*).

There are no particularly valuable habitats for invertebrates associated with the habitats at the proposed car park location, Visitor Center or Harbour.

The mainland components of the proposed development are in the 2 km grid square R78D and Inis Cealtra is in the 2 km grid square R68X.

Documented records of invertebrate invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended) exist within the hectad R88. The following aquatic Third Schedule species are known from Lough Derg is the zebra mussel (*Dreissena polymorpha*), Asian clam (*Corbicula fluminea*) and quagga mussel (*Dreissena rostriformis bugensis*)[26].

#### 10.6.3.9.6.1 Inis Cealtra

BEC carried out a survey for *Vertigo moulinsiana* on Inis Cealtra in 2019 (Brophy, 2019). The study area for this survey comprised the shoreline of Inis Cealtra. Areas considered in the baseline survey to have habitat with potential to support *V. moulinsiana* were identified and targeted for survey. Fifteen locations were sampled around the island following the methodology in Long and Brophy (2019). No *V. moulinsiana* were recorded on Inis Cealtra during the survey.

Based on the habitat present, Brophy (2019) (**Figure 10-13**) considered the species highly unlikely to occur on the island. Plant species that could be associated with optimal *V. moulinsiana* habitat, such as branched bur-reed and yellow iris, were recorded; however, optimal habitat for *V. moulinsiana* requires not only the presence of dense tall plant species, such as branched bur-reed, common reed (*Phragmites australis*), great fen-sedge (*Cladium mariscus*) or tall sedges (*Carex* spp.), but also a stable hydrological regime. While the ground wetness levels of many of the sample locations at the time of survey were suitable for *V. moulinsiana* habitat, it was considered that this was likely to have been due to recent wet weather rather than to represent typical ground wetness levels. The shoreline of Inis Cealtra is dominated by wet grassland and is subject to fluctuating water levels associated with seasonal changes to Lough Derg as it is managed by the ESB[27]. Lough Derg has a typical annual water level fluctuation of 0.3 m (Pociecha & McCarthy, 2011) and so according to Brophy (2019) most of the vegetated shore of Inis Cealtra would be too dry at times of lowered water levels and low rainfall to support the vegetation required by *V. moulinsiana*.

Another Vertigo species, the Marsh whorl snail (*V. antivertigo*) was recorded at nine of the fifteen sample locations, with a second species, the Common whorl snail (*V. pygmaea*) recorded at one location. Neither of the two species recorded in the course of the survey are listed under any Annex of the Habitats Directive or protected under the Wildlife Acts 1979-2012. *V. antivertigo* is found across Ireland in mainly lowland wetland areas, such as marshes, fens, lake shores, riverbanks, swamps and flushes (Kerney, 1999; Byrne *et al.*, 2009). While being widespread in Ireland, it has seen some decline since the 1980s, most likely due to the loss of wet grasslands and undrained pastures and is listed as IUCN Vulnerable on the Irish Red List (Byrne *et al*., 2009). *V. pygmaea* is also widespread, being mostly found in dry, base-rich areas, though can be found in wetlands along with *V. antivertigo* in western areas (Kerney, 1999). Due to declines since the 1980s, it is considered IUCN Near Threatened on the Irish Red List (Bryne *et al*., 2009).

[26] https://maps.biodiversityireland.ie/Map; https://clarechampion.ie/lough-derg-in-invasional-meltdown-from-alien-species/; https://invasives.ie/species-alerts/quagga-mussel/; https://invasives.ie/species-alerts/asian-clam/ Accessed 13-06-2024

[27] https://rivershannongroup.ie/management-of-water-levels/

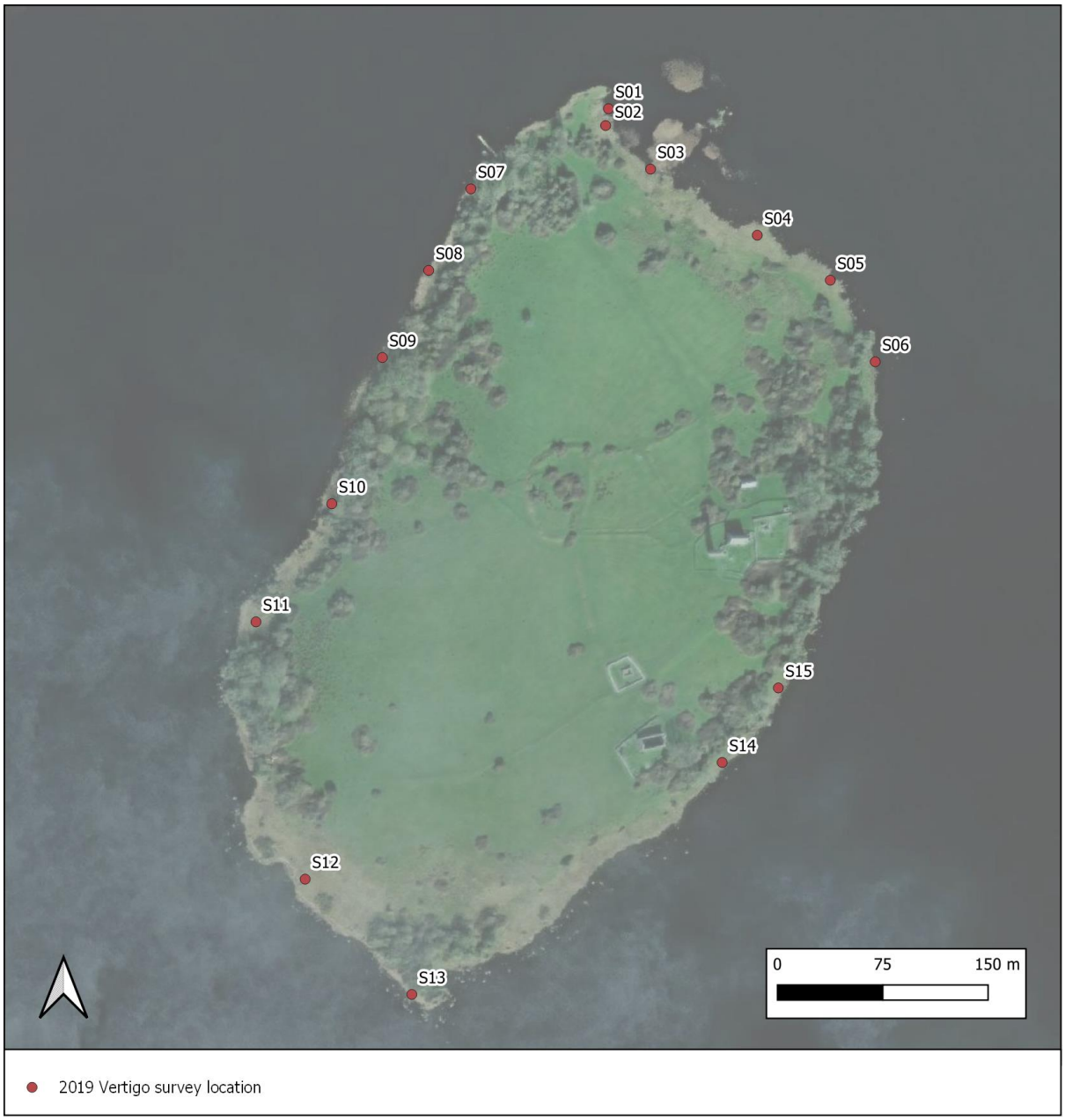



**Figure 10-13 Location of the Vertigo surveys undertaken in 2019 (Source: Brophy *et al.* 2019)**

Transects were walked through woodland and fringing marsh habitat in May, June and August 2016 to record Lepidoptera and Odonata species (DE, 2016). Species and abundance were recorded as per **Table 10-17**.

**Table 10-17 Lepidoptera and Odonata recorded at Inis Cealtra in summer 2016.**

| English | Latin | Abundance* |
|---|---|---|
| Large White | Pieris brassicae | Occasional |
| Green-veined white | Pieris napi | Rare |
| Orange tip | Anthocharis cardamines | Occasional |
| Meadow brown | Maniola jurtina | Rare |
| Painted Lady | Vanessa cardui | Rare |
| Common blue | Polyommatus icarus | Frequent |
| Small Heath | Coenonympha pamphilus | Rare |
| Brimstone | Gonepteryx rhamni | Occasional |
| Speckled wood | Pararge aegeria | Occasional |
| Ringlet | Aphantopus hyperantus | Rare |
| Variable damselfly | Coenagrion pulchellum | Rare |
| Azure damselfly | Coenagrion puella | Rare |
| Common blue damselfly | Enallagma cyathigerum | Rare |
| Beautiful Demoiselle | Calopteryx virgo | Rare |
| Brown hawker | Aeshna grandis | Occasional |
| Black-tailed skimmer | Orthetrum cancellatum | Rare |

*Frequent =>20; Occasional = >10; rare <10 species found throughout the site area

#### 10.6.3.9.6.2 Lough Derg

The mesotrophic and calcium rich conditions of Lough Derg represents a productive body of water with reference to molluscs which require calcium for shell growth. The combination of a variety of substrates and depths provides habitat for a range of aquatic macroinvertebrates.

Inis Cealtra and the south-western extents of Lough Derg are outside the mapped range of white-clawed crayfish *Austropotamobius pallipes* (NPWS 2019). Lough Derg was surveyed by hand searching and sweep netting at two locations on the northern shore of Lough Derg during June 2007 (O'Connor *et al*. 2007). No crayfish were recorded however. During a personal communication with Waterways Ireland in 2021, it was reported that white-clawed crayfish were seen by divers in some of the western bays of the lake, so it is likely that the species does occur in at least low densities. Surveying for white-clawed crayfish was carried out in littoral habitats at four locations around Inis Cealtra during May 2021. The species was not recorded during hand searches involving 400 potential refuges and deployment of 4 crayfish traps. If crayfish occur in the study area, densities are expected to be very low.

Zebra mussel *Dreissena polymorpha* were first found in Lough Derg in 1997 (McCarthy et al. 1998) and had colonised the entire lake by 1998 (Minchin and Moriarty 1998, 1999). It is likely to have been introduced to Ireland on the hulls of pleasure craft between 1993 and 1994 (Minchin *et al.* 2002) and has now spread throughout the Shannon system and is found in all parts of Lough Derg to depths of 18m.

Transmission vectors include hulls of pleasure craft, wet nets (angling keep nets, landing nets, eel fyke nets etc) angling boats and boat engine cooling water. Zebra mussel populations create a number of biological problems for fish species: they colonise lake shorelines and spawning substrates that could be used by certain fish species and their presence results in changes to the nutrient dynamics in standing and slowly moving water bodies and changes to littoral substrates, with consequent alterations in the associated macroinvertebrate community and food availability for fish (Fitzsimons and Igoe 2004).

Zebra mussels are ubiquitous in Lough Derg and have major environmental impacts that include the extirpation of Unionid species, particularly the previously widely distributed *Anodonta anatina*, of which there are no known surviving specimens in the lough. Unionids were no longer present in Lough Derg by 2007 but were abundant prior to the establishment of zebra mussels. Water transparency has increased as a result of the filtration capacity of the zebra mussel population and the lake sediments have been enriched from the deposition of wastes from mussels. These factors have enabled macrophytes to extend their range in the lake to depths of 3.5m and to form extensive beds within some shallow sheltered bays. Minchin and Zaiko (2013) noted that Nuttall's pondweed and the water violet (*Hottonia palustris*) have become abundant locally in Laugh Derg, and their spread may have been facilitated by the establishment of zebra mussels in the lake.

The presence of zebra mussel was confirmed in the lower lake in 1997 (Minchin *et al*., 2002). This confirmation of the plankton feeding zebra mussel coincided with a significant increase in water clarity (NPWS, 2004). More recently the invasive Asian clam (*Corbicula fluminea*) was recorded in Lough Derg in 2011 (Invasive Species Ireland, 2011).

The invasive freshwater shrimps *Gammurus tigrinus*, Northern River Crangonyctid (*Crangonyx pseudogracilis*) and Bloody Red Shrimp (*Hemimysis anomala*) have all been recorded in Lough Derg. Bloody Red Shrimp was first found in Lough Derg in 2008. This shrimp, which is native to the Black Sea, can form dense swarms of up to 6000 $m^3$. This species high biomass and its overlap with native shrimp species of Lough Derg is a cause for concern.

The release of the oriental eel *Anguilla japonica* in Europe ultimately led to the spread of the eel swim bladder nematode parasite *Anguillicola crassus*, which has become established in Ireland, where it was first discovered in 1997. In 1999 it was first recorded in the Lower River Shannon and Lough Derg. This nematode worm causes extensive damage to the air bladder and other organs of the freshwater eel. Adult eels that descend to sea as silver eels are believed to spawn in the south-eastern region of the North Atlantic and this requires an ability to swim mid-water. The parasite can compromise this ability. The North Atlantic eel stock has declined since 1970's and this has been attributed to climate change, reduced habitat and exploitation. There are concerns that the nematode parasite may reduce eel stocks further (Lough Derg Science Group 2007).

A broad diversity of aquatic macroinvertebrates was recorded in Lough Derg at Inis Ceatlra during May 2021 (Appendix 10-2). The macroinvertebrate assemblage was dominated by less tolerant and pollution tolerant taxa. The only pollution sensitive (Group A) species recorded was the mayfly *Ephemera danica* **(Plate 10-32**). This species was numerous at larval stage and there was a considerable hatch of the species on the afternoon of the 5th May 2021 at the time of the current survey. *E. danica* is a widely distributed species occurring in lakes and the slow-flowing sections of rivers where bottom substrates support its burrowing habit. The nymphs are particularly common in alkaline waters perhaps because of the occurrence of marl in the substratum. The species is sensitive to organic pollution/eutrophication but is moderately tolerant of sedimentation (Kelly-Quinn & Regan, 2012). The only other ephmereopterna recorded was *Caenis* sp. (few). The caenid mayfly recorded was deemed either *C. horaria or C. luctuosa*, species generally associated with silty, depositing habitats. They are widely distributed in Ireland especially in lakes, ponds and slow flowing sections of large river and is relatively tolerant of the effects of organic pollution/eutrophication and siltation of its habitat (Kelly-Quinn & Regan, 2012).

Cased caddisfly at larval stage (Limnephilidae, Athripsodes sp.) and Molluscs (*Lymnaea peregra*, *L. stagnalis, Planorbis carinatus* and *P. planorbis*, *Bithynia tentaculata*, and *Theodoxus fluviatilis*) were well represented. Zebra mussel (*Dreissena polymorpha*) was numerous, while only shells of another bivalve, the swan mussel were recorded (**Plate 10-33**). The crustaceans *Gammarus duebeni* and *Asellus aquaticus* were the most frequently occurring species. The bugs *Aphelocheirus aestivalis* and Corixidae, water mite (Order Hydracarina), aquatic earthworm (Lumbriculidae), flatworm (Planaridae) and alderfly larvae (*Sialis* sp.) were among the other macroinvertebrates recorded.

**Plate 10-32 *Ephemera danica* mayfly at Inis Cealtra: larvae (left) and spent adult (right).**

**Plate 10-33 zebra mussel (left) and adult (aerial) stage of *Sialis* sp. (right).**

## 10.7 Identification and Evaluation of Habitats, Flora and Fauna as Important Ecological Features (IEFs)

The habitats and associated flora, fauna and other ecological features or resources identified in **Sections 10.6**, above, will now be evaluated based on their local, national and international conservation importance using the evaluation criteria.

Following these evaluations, an assessment will then be made as to which of these habitats, species, designated sites and/or other ecological features/resources are considered to be IEFs that may be impacted upon by the project i.e., which features/resources have the potential to be significantly impacted during the construction or operational phase of the proposed works.

### 10.7.1 Selection of Designated Sites as IEFs

A screening for AA report was undertaken by MWP to determine whether the project, alone or in combination with other plans or projects, is likely to result in significant effects on European sites, in view of the sites Conservation Objectives. A total of five European sites were identified within the potential ZOI of the proposal, as listed in **Section 10.6.1** above. The screening for AA report concluded that likely significant effects on two of the five sites (the Lough Derg (Shannon) SPA (004058) and the Lower River Shannon SAC (002165)) are considered likely to occur or could not be ruled out. Therefore, a Natura Impact Statement (NIS) was prepared to assess the potential for adverse effects on the integrity of these sites as a result of the Proposed Development. The NIS concluded that, with the implementation of mitigation measures, it was determined that adverse effects on the integrity of both the Lough Derg (Shannon) SPA and the Lower River Shannon SAC could be ruled out. On this basis, neither the Lough Derg (Shannon) SPA, the Lower River Shannon SAC or any other Natura 2000 Sites are considered to comprise IEFs in relation to the project and thus will not be considered further in this evaluation. Refer to the screening for Appropriate Assessment report and NIS report (MWP, 2024) which accompany the planning application for the Proposed Development for more information.

Due to the fact that two of the proposed nationally designated sites identified to be within the potential ZOI of the proposal, namely Lough Derg NHA and the Lough Derg (River Shannon) IBA, spatially overlap with European sites, as outlined in **Section 10.6.1** above, it is considered that potential impacts on these nationally designated sites arising from the project have been fully considered as part of the screening for Appropriate Assessment and NIS reports. Significant effects on these nature conservation sites are therefore not envisaged. Therefore, these sites will not be considered further in this evaluation.

With regard to the remaining nationally designated site identified to be within the potential ZOI of the proposal, namely the Lough Derg pNHA[28], which overlaps with the Lough Derg (Shannon) SPA, , it is considered that potential impacts on these sites arising from the project have been fully considered as part of the screening for Appropriate Assessment report. Significant effects on these pNHA is therefore not envisaged. Therefore, this site will not be considered further in this evaluation.

Therefore, no designated sites within the potential ZOI of the Proposed Development are considered to comprise IEFs, and designated sites will not be considered further in this chapter.

[28] Site code: 000011

### 10.7.2 Selection of Habitats as IEFs

The habitat types within the study area are evaluated in **Table 10-18** below for their conservation importance in line with the ecological evaluation scheme outlined in **Section 10.7** above. Those habitats identified as being of 'Local importance (higher value)' or higher and which are likely to be impacted by the Proposed Development are selected as IEFs.

**Table 10-18. Selection of habitats as IEFs for the Proposed Development**

| Habitat Type | Extent/Location within study area | Ecological value in context of study area (NRA, 2009) | Approx Area of Loss (Ha/Km) | Rationale | IEF (Yes/No) |
|---|---|---|---|---|---|
| *Improved agricultural grassland (GA1) | This habitat is maintained and of low species diversity dominating the main street carpark. | Local importance (lower value) | 0.6144 Ha | Semi-improved habitat grazed by livestock. Highly modified species poor habitat which is of some limited value for local wildlife. | **No** |
| | Semi-improved grassland comprises the majority of Inis Cealtra. Its location is confined to the central section of the island on its higher reaches. This grassland is maintained through livestock grazing. There is no indication of ongoing improvement through fertilisation or reseeding on the Island. | International importance* | WC pod (0.0016 Ha; Island paths 0.0180 Ha | Overlap with the SPA. | **Yes** |
| Treeline (WL2) | Occurs along the border on the north, east and west of the main carpark. | Local importance (higher value) | N/A will be retained | Generally present in a discontinuous form lacking the extensive, structurally diverse, linear characteristics that provides nesting and foraging habitat for passerine species or as a means of navigation or foraging for bats. In addition, the shelter and cover provided to ground mammals is very limited. Precautionary principle. | **Yes** |
| | A short treeline comprising non-native species occurs at the eastern boundary of the visitors centre, this habitat of low ecological value regarding its limited extent, isolated aspect and species composition. | | N/A will be retained | | |
| Hedgerow (WL1) | A maintained hedgerow running roughly north-south through the centre of the main carpark. | Local importance (higher value) | 0.0396 Ha | Treeline of native botanical diversity, comprising of native species which are utilized by fauna for foraging and shelter. | **Yes** |
| | Hedgerow comprises of beech the southern boundary of the visitors centre. | | N/A will be retained | | |
| *Stonewalls and other stonework (BL1) | The southern boundary of the proposed main car park is a stone wall which adjoins the regional road through Mountshannon. | Local importance (lower value) | N/A will be retained | Remnant field boundaries with localised plant cover. Of limited value to fauna. | No |
| | Stone wall habitat occurs along the southern boundary of the visitors centre. | Local importance (lower value) | N/A will be retained | Remnant field boundaries with localised plant cover. Of limited value to fauna. | |
| | The entire harbour area is classified as buildings and artificial surfaces. | Local importance (lower value) | N/A will be retained | Remnant field boundaries with localised plant cover. Of limited value to fauna. | |

| Habitat Type | Extent/Location within study area | Ecological value in context of study area (NRA, 2009) | Approx Area of Loss (Ha/Km) | Rationale | IEF (Yes/No) |
|---|---|---|---|---|---|
| | This habitat includes the ecclesiastical buildings and stone walls scattered along the island. | International importance* | N/A will be retained | Overlap with the SPA. | Yes |
| *Amenity grassland (GA2) | The dominant habitat at the visitors centre is amenity grassland. | Local importance (lower value) | 0.1020 Ha | Species-poor habitat located outside the Site. | No |
| | The areas surrounding the ecclesiastical buildings are maintained as amenity grassland on the island. | International importance* | N/A will be retained | Overlap with the SPA. | Yes |
| Spoil and bare ground (ED2) | The area proposed for the visitors centre currently comprises of spoil and bare ground. | Local importance (lower value) | 0.0740 Ha | No value to fauna. | No |
| *Dry Meadows and Grassy Verge Grassland (GS2) | A patch of grassy verges habitat occurs next to the south eastern wall that bounds the visitors centre, an area that is not subject to regular maintenance. | Local importance (lower value) | N/A will be retained | Semi-improved habitat grazed by livestock and mowed. Localised areas of relatively higher species diversity associated with the wet grassland component of this habitat mosaic. Of value to fauna, including birds, invertebrates and small mammals. | No |
| | This habitat occurs in mosaic with improved grassland and has developed due to the recent absence of mowing and grazing on the island. | International importance* | 0.6144 Ha | Overlap with the SPA. | Yes |
| *Buildings and artificial surfaces (BL3) | The Old Rectory corresponds to buildings and artificial surfaces habitat, a former dwelling house in reasonable condition constructed of brick and natural slate roof in the vicinity of the visitors centre. | Local importance (lower value) | n/a | Habitat of negligible botanical diversity or value. | No |
| | This habitat relates to the pier located near the north-western corner of the island. The pier is a man made structure, comprising cast in place concrete subject to the wave action of the lake water. | International importance* | | Overlap with the SPA. | Yes |
| Mixed broadleaved/conifer woodland (WD2) | Occurs along the south western boundary of the visitors centre. | Local importance (lower value) to Local importance (higher value) | 0.1044 Ha | A mix of native botanical diversity, comprising of native species which are utilized by fauna for foraging and shelter. | Yes |
| Scattered trees and parkland (WD5) | The extent of the site to the south of the Rectory in the vicinity of the visitors centre consists of this habitat. | Local importance (higher value) | 0.0356 Ha | A mix of native botanical diversity, comprising of native species which are utilized by fauna for foraging and shelter. | Yes |
| *Wet Grassland (GS4) | Occurs locally on the island, the greatest extent of which is located near the southern boundary of the island will be utilized for foorpaths. | International importance* | 0.0308 Ha | Wet grassland forms narrow transitionary strips between the extensive marsh habitats on the island margins and the higher drier areas of improved grassland near the centre of the island for faunal movement and foraging. | Yes |

| Habitat Type | Extent/Location within study area | Ecological value in context of study area (NRA, 2009) | Approx Area of Loss (Ha/Km) | Rationale | IEF (Yes/No) |
|---|---|---|---|---|---|
| *Marsh (GM1) | Extensive but narrow fringe areas of marsh occur along the south-eastern, western and northern fringes of the island. This habitat is located on shoreline rocks and loosely stabilised, open substrate further inland. Part of the marsh will be taken to accommodate for the footpaths. | International importance* | 0.0066 Ha | Provides provide a habitat for a range of specialist species that are adapted to wetter, nutrient-poor conditions. Corresponds to the Annex I habitat Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430). | Yes |
| *Scrub (WS1) | Areas of scrub occur throughout the island, mostly along the interface between the woodland habitats on the islands edge and the higher drier areas of improved grassland near the centre of the island. | International importance* | 0.0583 Ha | Scrub habitats provide a diverse structural environment that supports a wide range of plant and animal species. The mix of shrubs, herbaceous plants, and brambles creates a multilayered habitat with a variety of niches, benefiting many wildlife species. | Yes |
| *Oak-ash-hazel woodland (WN2) | The island margins support young woodland cover near the east/ north-east, west and south-east fringes. | International importance* | weather shelter (23 m2); staff pod (23 m2); 0.0040 Ha footpath | The woodland represents a rich and diverse ecosystem, providing habitats for a wide range of species. | Yes |
| *Calcareous Spring (FP1) | St Mary's Well, located adjacent to the curtilage of St Mary's ecclesiastical monument is associated with a calcareous spring. The spring rises at the well and seeps towards the east downslope to the lake margin. | International importance* | n/a | No overlap with the development footprint. | No |
| * Limestone-marl lakes (FL3) (Lough Derg) | Habitat occurs at the southern area of the harbour and surrounds the island of Inis Cealtra. | International importance* | Max. 0.0305 Ha | This habitat has a relationship with the EU Annex I habitat 'Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. (3140)'. The Habitat will be utilized for transportation between the Mountshannon Harbour and the Inis Cealtra. | Yes |
| *Reed and Large Sedge Swamp (FS1) | This habitat is dominated throughout by *Schoenoplectus lacustris*. In shallower areas nearer the shoreline Iris pseudacorus is occasional to frequent, while Equisetum fluviatile is rare to occasional. Habitat and occurs at the northern end of the island between Inis Cealtra and Illaunaskirtaun. | International importance* | Approx.. 0.001 Ha | This habitat overlaps with the SPA. | Yes |

* Categorised as habitat of 'International importance' where the habitat overlaps with a European Site, namely the Lough Derg (Shannon) SPA [004058].

### 10.7.3 Selection of Flora and Fauna Species as IEFs

In relation to rare and protected flora, there are no desktop records for rare and/or protected plant species within the study area. There are records of fiddle dock (*Rumex pulcher*) from R78D, a threatened flowering plant species. On a highly precautionary basis, due to its occurrence, the plant species fiddle dock is considered to be an IEF. In relation to the other remaining rare and/or protected species outlined in **Section 10.6.3** above, none of these species were recorded during ecological surveys of the study area. These species are not considered to comprise IEFs for the project, and therefore these species will not be considered further in this evaluation.

The following table (**Table 10-19**) presents an evaluation of the ecological value of the floral and faunal species or species groups identified within the receiving environment of the proposed development and rationale for inclusion, or, exclusion as IEFs. As for habitats, species identified as being of 'Local importance (higher value)' or higher and which are likely to be impacted by the Proposed Development are selected as IEFs.

**Table 10-19. Evaluation of fauna as IEFs for the Proposed Development**

| Ecological receptor | Legislative protection | Ecological Value in Context of Study Area | Rationale | Important Ecological Feature |
|---|---|---|---|---|
| Rare and/or Protected Flora | | | | |
| Fiddle dock (*Rumex pulcher*) | N/A | Local importance (higher value) | Not recorded on sites; however, recorded in south of the harbour area at Campsite, Mountshannon. Co. Clare. Suitable habitat exists. Precautionary principle. | Yes |
| Mammals (excl. bats) | | | | |
| Hedgehog (*Erinaceus europaeus*) | Wildlife Act, 1976 (as amended) | Local importance (higher value) | Not recorded on sites; however, suitable habitat exists on Mountshannon and there are desktop records in the greater area. Precautionary principle. | Yes |
| Badger (*Meles meles*) | Wildlife Act, 1976 (as amended) | Local importance (higher value) | Not recorded on sites; however, suitable habitat exists and there are desktop records in the area. Precautionary principle. | Yes |
| Pygmy Shrew (*Sorex minutus*) | Wildlife Act, 1976 (as amended) | Local importance (higher value) | Not recorded during ecological surveys. Closest record is >5km from Mount Shannon but suitable habitat occurs. Precautionary principle. | Yes |
| Irish hare (*Lepus timidus hibernicus*) | Annex V EU Habitats Directive,<br>Wildlife Act, 1976 (as amended) | Local Importance (higher level) | No record on the island. Closest record is >5km to the east and west of Mountshannon. Precautionary principle. | Yes |
| Irish stoat (*Mustela erminea Hibernica)* | Wildlife Act, 1976 (as amended) | Local Importance (higher level) | Not recorded during ecological surveys. Closest record is >5km at Whitegate but suitable habitat occurs. Precautionary principle. | Yes |

| Ecological receptor | Legislative protection | Ecological Value in Context of Study Area | Rationale | Important Ecological Feature |
|---|---|---|---|---|
| Otter (*Lutra lutra*) | Annex II, IV EU Habitats Directive,<br>Wildlife Act, 1976 (as amended) | Local importance (higher level) | Not recorded on-site but surrounding shoreline comprises suitable foraging/commuting habitat. Otter spraint recorded <1km from the visitors centre site in 2009. Precautionary principle. | Yes |
| Pine marten (*Martes martes*) | Annex V EU Habitats Directive,<br>Wildlife Act, 1976 (as amended) | Local importance (higher level) | No record of pine marten was confirmed during surveys, however the closest record is <1km from the visitors centre site. Precautionary principle. | Yes |
| Red deer (*Cervus elaphus*) | Wildlife Act, 1976 (as amended) | Local importance (higher level) | A record of deer dropping were observed during the survey at the visitors centre. | Yes |
| Fallow deer (*Dama dama*) | | | A record of deer dropping were observed during the survey at the visitors centre. | Yes |
| Red Squirrel (*Sciurus vulgaris*) | Wildlife Act, 1976 (as amended) | Local importance (higher level) | Not recorded during ecological surveys but suitable habitat occurs. Precautionary principle. | Yes |
| **Bats** | | | | |
| All bat species | Annex IV of EU Habitats Directive; lesser horseshoe bat also listed in Annex II;<br>Wildlife Act, 1976 (as amended) | Local Importance (higher level)[29] | Multiple bat species recorded within the study area, using the site for foraging and commuting. A bat roosting sites identified within the Rectory and on the island. Bat roosts for common pipistrelle and *Myotis* sp. categorised as being of 'Moderate significance' and for soprano pipistrelle of 'Low significance' recorded[30]. | Yes |
| **Birds** | | | | |
| Passerines | Wildlife Act, 1976 (as amended) | Local Importance (higher level) | Passerines were observed during the various surveys and habitat loss for suitable habitat may occur. Precautionary principle. | Yes |
| Raptors (e.g. buzzard, hen harrier, kestrel, sparrowhawk, white-tailed eagle) | Annex IV of EU Habitats Directive; Wildlife Act, 1976 (as amended) | Local Importance (higher level) | Raptors were observed during the various surveys and habitat disturbance for suitable habitat may occur. Precautionary principle. | Yes |

[29] The ecological value which has been assigned to brown long-eared bat is 'Negligible' in the context of the study area; however, it is included here and brought forward for impact assessment on a highly precautionary basis. All other bat species are considered to be of 'Local Importance (higher value)' at the Site.

[30] With regard to Marnell *et al*., (2022). See Appendix 10-3 of the 'Bat Survey Report'.

| Ecological receptor | Legislative protection | Ecological Value in Context of Study Area | Rationale | Important Ecological Feature |
|---|---|---|---|---|
| Wader and other Waterbirds (37 birds) | Annex IV of EU Habitats Directive; Wildlife Act, 1976 (as amended) | Local Importance (higher level) | Waders were observed during the various surveys and habitat disturbance for suitable habitat may occur. Precautionary principle. | **Yes** |
| Shorebirds | Wildlife Act, 1976 (as amended) | Local Importance (higher level) | Shorebirds were observed during the various surveys and habitat disturbance for suitable habitat may occur. Precautionary principle. | **Yes** |
| Game birds (pheasants) | Wildlife Act, 1976 (as amended) | Local Importance (higher level) | Game birds were observed during the various surveys and habitat loss and disturbance for suitable habitat may occur. Precautionary principle. | **Yes** |
| Reptiles & Amphibians | | | | |
| Common frog (*Rana temporaria*) | Annex V of the Habitats Directive<br>Wildlife Act, 1976 (as amended) | Local Importance (lower value) | No records during surveys as there are no water features in the study area that potentially support this species. | No |
| Smooth newt (*Lissotriton vulgaris*) | Wildlife Act, 1976 (as amended) | Local Importance (lower value) | No records during surveys and the closest record was east of Mountshannon in 1960 and there are no water features in the study area that potentially support this species. . | No |
| Common lizard (*Zootoca vivipara*) | Wildlife Act, 1976 (as amended) | Local Importance (higher value) | No were records during surveys and the closest record was east of Mountshannon in 1960. Suitable habitat exists. Precautionary principle. | **Yes** |
| | | | | |
| Freshwater aquatic species | | | | |
| European eel | N/a | Local importance (lower value) | There are no watercourses within the Site. The only aquatic features comprise drainage ditches which are regularly maintained and either do not comprise suitable habitat or are sub-optimal habitat. | **Yes** |
| Freshwater White-clawed crayfish (*Austropotamobius pallipes*) | Annex II and Annex V of EU Habitats Directive,<br>Wildlife Act, 1976 (as amended) | Local importance (lower value) | Not identified during site surveys. Habitats not considered suitable. Outside species known distribution. Closest record is >12 km to the east of the site at Ballyartella Bridge. River/Lake: Nenagh . Catchment: Shannon 25C. Precautionary principle. | **Yes** |
| Freshwater Pearl Mussel (*Margaritifera margaritifera*) | Annex II and Annex V of EU Habitats Directive, Wildlife Act, 1976 (as amended) | Local importance (lower value) | Not identified during site surveys. Habitats not considered suitable. Outside species known distribution. Closest record is >40km southeast of the site in the Nore River. | No |

| Ecological receptor | Legislative protection | Ecological Value in Context of Study Area | Rationale | Important Ecological Feature |
|---|---|---|---|---|
| Other aquatic macro-invertebrates (aquatic snails, water beetles and other aquatic insects) | N/a | Local Importance (higher value) | Molluscs such as Ear Pond Snail (*Radix auricularia*), Glutinous Snail (*Myxas glutinosa*), Heath Snail (*Helicella itala*), Tree Snail (*Balea (Balea) perversa*), Whirlpool Ramshorn and (*Anisus* (*Disculifer) vortex*) present the possibility of occurring within Lough Derg. | Yes |
| Terrestrial Macro-Invertebrates | | | | |
| Marsh Fritillary (*Euphydryas aurinia*) | Annex II on EU Habitats Directive | Local importance (lower value) | The species was not recorded on-site during field surveys. No suitable habitat was recorded within the Site. Closest record >10km northwest of the site. | No |
| Other terrestrial macro-invertebrates (bees, butterflies etc.) | N/a | Local importance (higher value) | Terrestrial invertebrates have an important role at the lower level of ecosystem food chains, for example, essential prey resource for small mammals, bats and birds. A variety of species were recorded on-site during surveys. | Yes |

## 10.8 The 'Do Nothing' Scenario

The approach of the 'do nothing scenario' evaluates the implications of not proceeding with the proposed development. It helps stakeholders understand what would happen if no action is taken, including potential environmental benefits like preserving habitats, reducing pollution, and maintaining natural landscapes. It also allows for comparison against other project options, ensuring informed decision-making about development versus conservation.

The proposed lands encompassed within the Mainland are not subject to any form of formal nature designation and are under private ownership; however, the harbour and Island is largely surrounded by the Lough Derg SPA. Should the 'do nothing scenario' be considered for the proposed main street carpark, visitors centre, harbour, Inis Cealtra and the Lough Derg Lake it is to be assumed that the character of the landscape and its landuse will remain much as it is at present. The existing habitats on the site will remain unaltered; however, this is dependent on the continuation of the current habitat management regime. It is also anticipated that the structures on-site will continue to fall into dereliction (concrete shelter adjacent to the existing pier).

#### 10.8.1.1.1.1 Main Street Carpark

The area proposed for the village carpark comprises of habitats discussed in **Section 10.6.2.1**. These are 'improved agricultural grassland (GA1)' as of low ecological value[31] and low species diversity, 'treeline (WL2)', a maintained 'hedgerow (WL1) and 'stone wall (BL1)' which adjoins the regional road through Mountshannon. Both of the linear features had frequent bramble (*Rubus fruticosa* agg.) and occasional honeysuckle (*Lonicera periclymenum*) whereas a stand of non-native invasive species Japanese knotweed (*Fallopia japonica*) at the south-western corner of the proposed car park site near the stone wall was present. Should the 'do nothing scenario' be considered for both temporary (less than 1 year) and short-term (1–7 years) situations at the Main Street carpark, the area would remain unaltered. This, combined with ongoing disturbance, is likely to support the continued presence of invasive species.

#### 10.8.1.1.1.2 Visitor Center

The area proposed for the visitors centre currently comprises of 'amenity grassland (GA2)', 'spoil and bare ground (ED2)', 'grassy verges (GS2)', 'buildings and artificial surfaces (BL3)' and 'Stone walls (BL1)' all of which are classified as low ecological value[32]. Construction of the Visitors Centre will directly impact 'amenity grassland (GA2)', some areas of 'spoil and bare ground (ED2)' along the driveway, a patch of 'grassy verges (GS2)' and 'mixed broadleaved/conifer woodland (WD2)' which will result in habitat loss due to construction. Should the 'do nothing scenario' for both temporary (less than 1 year) and short term (1-7 years) scenarios be considered for the Visitors Centre apart from the area remaining unaltered where the mixed broadleaved/conifer woodland will continue to exist and the site will continue to be disturbed anthropogenically and will accommodate the presence of invasive species.

[31] National Roads Authority, 2009 (Accessed 18 September 2024)

[32] National Roads Authority, 2009 (Accessed 18 September 2024)

#### 10.8.1.1.1.3 Harbour

The habitat at the entire harbour area is classified as 'buildings and artificial surfaces (BL1)' hence should the 'do nothing scenario' for both temporary (less than 1 year) and short term (1-7 years) scenarios be considered this area will remain unregulated and open for use.

#### 10.8.1.1.1.4 Inis Cealtra

The habitat on the island presently consists of various habitats ranging from 'improved agricultural grassland (GA1)' to 'Oak-ash-hazel woodland (WN2)'. Presently the Island is not regulated and allows movement within all the habitats mentioned in **Section 10.6.2.4**. Should the 'do nothing scenario' for both temporary (less than 1 year) and short term (1-7 years) scenarios be considered this area will remain unregulated and open for public use. This could lead to an increase in informal pathways being established in sensitive habitats, an increase in the soil compaction, erosion and de-vegetation along the banks.

The trends indicated that there approximately 10,000 visitors currently visit Inis Cealtra on paid boat trips with a further unknown number visiting by private means[33]. This will be a continued increase in the numbers of visitors which is resulting from the growth trend in the Irish tourist sector in tandem with the ongoing marketing. Without the appropriate mitigation measures for establishing a defined trail network with appropriate visitor management measures being put in place, a continuing decline in habitat quality as a result of visitor footfall is anticipated.

#### 10.8.1.1.1.5 Lough Derg

Lough Derg is classified as a 'Limestone-marl lakes (FL3)' and areas of 'Reed and large sedge swamp (FS1)' habitat. As previously stated it is expected that the visitor numbers will continue to increase hence should the 'do nothing scenario' for both temporary (less than 1 year) and short term (1-7 years) scenarios be considered the area will remain unregulated and may result in the increase of Zebra mussel (*Dreissena polymorpha*).

## 10.9 Potential Significant Effects

A significant ecological effect is an effect that undermines biodiversity in general and in broad terms impacts on the structure and function of designated sites, habitats or ecosystems. A significant effect is one that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project (CIEEM, 2019). The significance of potential effects of the proposed development at the Old Rectory on ecology was determined with regard to the following guidance together with professional judgement:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (EPA, 2022)
- Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2019).

[33] The Financial Business Case for purchase of the old Rectory at Mountshannon to accommodate a Visitor Centre for Inis Cealtra/Holy Island, Artemis Consulting Ltd (2021).

### 10.9.1 Demolition Phase

Habitats

The proposed demolition of the concrete shelter has the potential to result in alteration of higher-value habitat features within the site such as the surrounding 'Oak-ash-hazel woodland (WN2)' (**Table 10-20**). Habitat alteration will/could occur via the movement of workers during the demolition work and side-casting of materials. Potential habitat alteration/disturbance effects for these IEFs during the demolition phase are assessed as **Temporary, Likely, Not significant, Negative effects**.

**Table 10-20. Potential effects on habitats identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **DEMOLITION PHASE** | | | | | | |
| Habitat Loss | | | | | | |
| Buildings and artificial Surfaces (BL3) | Negative | Not significant | Localised | Temporary | Indirect | Likely |
| Habitat alteration/disturbance | | | | | | |
| Oak-ash-hazel woodland (WN2) | Negative | Not significant | Localised | Temporary | Indirect | Likely |
| Improved agricultural grassland (GA1) | Negative | Not significant | Localised | Temporary | Indirect | Likely |
| Scrub (WS1) | Negative | Not significant | Localised | Temporary | Indirect | Likely |

### 10.9.2 Construction Phase

#### 10.9.2.1 Designated Sites

Lough Derg pNHA lies adjacent to the southern part of Harbour Road and the island, it broadly overlaps the SPA though it appears to encompass more lakeshore habitat along its full extent. The project is confined to the existing Harbour and the island with the exception of the upgrade to the pier and jetty which is within the SPA.

The main risk to water quality during the construction phase arises from potential runoff of silt laden rainwaters associated with site excavations (pier upgrade) including the harbour upgrades, hard surfaces (parking), installation of welfare pods on the island and installation of services on Mountshannon. In the case of the Main carpark it is likely that any resulting such waters will go to ground in the vicinity of the excavations or runoff onto the surrounding grassland or stormwater drain. The potential exists for runoff from the site to flow onto the site entrance/access road and onto the public road. An attenuation drain leading to a temporary sump will be installed at the site entrance at the early part of the construction stage, the purpose of which is to ensure water or soil is prevented from flowing onto the public road, as required under law[34]. This is standard best construction practice,

[34] Roads Act 1993, Part VI (Drainage, etc), Section 76(5)(b): The owner or occupier of any land adjacent to a public road shall take all reasonable steps to ensure that water, soil or other material is prevented from flowing or falling onto a public road from his land.

which will capture any sediment laden waters and ensure they do not exit the site onto the public road. Therefore, all such waters will be retained on site and will not enter the lake either directly or indirectly. Works connecting the new water main and foul drainage to the existing systems on Harbour Road are considered minor works that will take a few days to complete and as typical of such works would take place during dry weather conditions and are not expected to pose a significant water quality risk to Lough Derg.

Other sources of pollutants include fuels, oils, concrete and chemicals. The management of these will be subject to best construction practice relating to storage and use and any risk of accidental spillage is low. If a spillage does occur, it is likely to be localised, and will be dealt with by the contractor using best construction practice. A Construction Environmental Management Plan (CEMP) has been prepared which outlines construction works, and best practice construction measures to reduce environmental risks with response procedures in the event of incidents/spillages.

The project may result in a negative effect on water quality to the nearby Lough Derg pNHA and may result in an indirect habitat loss through the alteration of habitats that might occur with reduced water quality. Thus, the significance of the effect of the project on Lough Derg pNHA Limestone-marl lakes (FL3) (Lough Derg) and Reed and Large Sedge Swamp (FS1) is a **Permanent, Slight, Not significant, Negative, Effect**.

#### 10.9.2.2 Habitats and Flora

The Proposed Development has been designed to avoid/minimise the loss of higher-value habitat features within the Site.

Habitat loss and/or alteration will/could occur via construction of the temporary site compound, vegetation clearance, general construction activity including groundworks, excavations, movement of plant and machinery, storage of construction materials and spoil, potential encroachment from works areas, side-casting of materials, construction of new hardstanding areas, car parking, installation of services and site landscaping.

Construction activity also generally poses a risk of spread/introduction of invasive species to Site (through soil disturbance, vegetation disturbance and general construction activity and movement of plant/machinery). Plant, machinery, tools/equipment, workers clothing/footwear and imported building and other materials including soil and fill can all potentially be contaminated with IAPS infested soil, viable seed or other IAPS material and therefore pose a risk of introduction of IAPS to the Site.

Early infestations of Japanese knotweed were identified within the Site during baseline surveys in **Section 10.6.2.1**. All of the infestations were very minor in extent and highly localised. Treatment/management of invasive species has potential for inadvertent habitat/flora impacts through potential use of chemical herbicides and risk to surrounding flora and/or water quality, and/or risk of spread within the site where physical treatments are employed or use of plant and machinery within or near infestations is required.

##### 10.9.2.2.1 Carpark

The Proposed Development will require the direct loss of the following locally important habitats: 'Improved agricultural grassland (GA1)' (0.6144 Ha), 'Hedgerow (WL1)' (0.0369 Ha), Treeline (WL2) and Stonewalls and other stone works (BL1). The proposed development on the treeline (WL2) may also result in a potential habitat alteration during the construction phase. Direct habitat loss effects for these IEFs during the construction phase are assessed as **Permanent, Likely, Not significant, Negative effects**. Potential habitat alteration/disturbance effects for these IEFs during the

construction phase are assessed as **Temporary to Short-term, Likely, Not significant, Negative effects**.

#### 10.9.2.2.2 Visitor Center

The proposed visitors centre will require the direct loss of the following locally important habitats: 'Amenity grassland (GA2)' (0.1020 Ha), 'Scattered trees and parkland (WD5)' (0.0356 Ha) and 'Mixed broadleaved/conifer woodland (WD2)' (0.1044 Ha). While there will be no reduction in area of 'Buildings and artificial surfaces (BL3)' and 'Spoil and bare ground (ED2)' within the site, some elements of this habitat (comprising parts of the buildings and existing hard standing areas) will be removed and parts upgraded, hence a loss is anticipated. Direct habitat loss effects for these IEFs during the construction phase are assessed as **Permanent, Likely, Not significant, Negative effects**. Potential habitat alteration/disturbance effects for these IEFs during the construction phase are assessed as **Temporary to Short-term, Likely, Not significant, Negative effects**.

#### 10.9.2.2.3 Harbour

While there will be no reduction in area of 'Buildings and artificial surfaces (BL3)' within the Site, some elements of this habitat (comprising parts of the building and existing hard standing areas) will be removed, so there will be a degree of loss. Direct habitat loss effects for these IEFs during the construction phase are assessed as **Permanent, Likely, Not significant, Neutral effects**. Potential habitat alteration/disturbance effects for these IEFs during the construction phase are assessed as **Temporary to Short-term, Likely, Not significant, Negative effects**.

#### 10.9.2.2.4 Inis Cealtra

The proposed development will require the direct loss of the following locally important habitat which overlaps with the SPA: Improved Agricultural Grassland (GA1), and Dry Meadows and Grassy Verge Grassland (GS2) require a habitat loss of 0.6144 ha for the pods and footpaths. The Wet Grassland (GS4) (0.0308 ha), Marsh (GM1) (0.066 ha) and Scrub (WS1) (0.0583 ha) will require a habitat loss of for footpaths. The 'Oak-ash-hazel woodland (WN2)' habitat will also encounter potential habitat alteration whereby the proposed pods will be placed (**Table 10-21**). No reduction in area of the 'Stonewall and other stonework (BL1)' is anticipated. Direct habitat loss effects for these IEFs during the construction phase are assessed as **Permanent, Likely, Not significant, Negative effects**. Potential habitat alteration/disturbance effects for these IEFs during the construction phase are assessed as **Temporary to Short-term, Likely, Not significant, Negative effects**.

#### 10.9.2.2.5 Lough Derg

The proposed development will require the direct loss of the following locally important habitats: 'Limestone-marl lakes (FL3)' and 'Reed and large sedge swamp (FS1)' whereby the new jetty is L-shaped, extending out approximately 55m into the lake from Inis Cealtra. Both the causeway and floating jetty will pass through the Limestone-marl lakes (FL3) causing direct habitat loss. The Reed and large sedge swamp' (FS1) may be susceptible to habitat alteration (**Table 10-21**). The proposed development will require loss of approximately 0.0305 ha of Lough Derg. Direct habitat loss effects for these IEFs during the construction phase are assessed as **Permanent, Likely, Not significant, Negative effects**. Potential habitat alteration/disturbance effects for these IEFs during the construction phase are assessed as **Temporary to Short-term, Likely, Not significant, Negative effects**.

**Table 10-21. Potential effects on habitats identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| CONSTRUCTION PHASE | | | | | | |
| Habitat Loss | | | | | | |
| Improved agricultural grassland (GA1) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Treeline (WL2) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Hedgerow (WL1) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Stonewalls and other stone work (BL1) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Amenity grassland (GA2) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Dry Meadows and Grassy Verge Grassland (GS2) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Buildings and artificial surfaces (BL3) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Mixed broadleaved/conifer woodland (WD2) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Scattered trees and parkland (WD5) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Wet Grassland (GS4) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Marsh (GM1) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Scrub (WS1) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Limestone-marl lakes (FL3) (Lough Derg) | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Habitat Alteration/Disturbance | | | | | | |
| Improved agricultural grassland (GA1) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Treeline (WL2) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| Hedgerow (WL1) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Stonewalls (BL1) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Amenity grassland (GA2) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Dry Meadows and Grassy Verge Grassland (GS2) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Buildings and artificial surfaces (BL3) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Mixed broadleaved/conifer woodland (WD2) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Scattered trees and parkland (WD5) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Wet Grassland (GS4) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Marsh (GM1) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Scrub (WS1) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Oak-ash-hazel woodland (WN2) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Limestone-marl lakes (FL3) (Lough Derg) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Reed and Large Sedge Swamp (FS1) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Presence of IAPS | | | | | | |
| Habitats | Negative | Moderate | Localised | Medium-term | Indirect | Likely |
| Presence of Rare and/or Protected Flora | | | | | | |
| Habitat Loss | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Habitat Alteration/Disturbance | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |

#### 10.9.2.3 Fauna

Direct species disturbance/displacement could occur to mammal IEFs (excluding bats) during the construction phase via increased human presence/activity. This has the potential to occur during those periods in which the construction site is open and active throughout the extended construction phase of the project (phased over 12 months for phase 1 and 24 months for phase 2). Direct and indirect species disturbance/displacement impacts could also occur via increased noise/vibration/lighting or use of chemicals associated with construction works, or due to physical disturbance of individuals, such as through inadvertent injury or mortality during works. Indirect species disturbance/displacement could occur via indirect water quality effects, loss/fragmentation or direct or indirect alteration of foraging, commuting, breeding or resting habitat, or via impacts on prey biomass.

##### 10.9.2.3.1 Carpark

###### 10.9.2.3.1.1 Mammals

Habitats which will be lost provide potential foraging and resting habitat for IEFs such as deer, lizard, hedgehog, badger, pygmy shrew, Irish stoat, Irish hare, Pine marten, Red squirrel. Some of the lost habitat with larger trees had ivy cover which could be used as roosts for bats between foraging bouts during the summer season along with nesting opportunities for birds. These habitat types are common and widespread in the greater area. Habitat loss effects on these IEFs during the construction phase are assessed as **Short-term, Likely, Not Significant to Slight, Negative Effects**.

Disturbance and/or displacement effects could arise on IEFs such deer as a result of increased noise and human activity during the construction phase. Disturbance and/or displacement effects on these IEFs are assessed as **Temporary to Short-term, Likely, Not significant to Slight, Negative Effects**.

###### 10.9.2.3.1.2 Bats

There will be an increased human presence on-site throughout the construction phase, scheduled to take place in phases over a period of 12 months. This is expected to be at its greatest level during the initial phase, in which time the main construction activity, associated with carpark, will take place, after which noise emissions will reduce for subsequent phases.

During the construction phase, there will be an increase in the level of lighting on-site; however, use of lighting will be temporary as it will mainly be associated with works during standard construction hours and is expected to be localised within the Site, corresponding to the area of works active at any one time. Development of the Site during the construction phase will result in the loss/modification/fragmentation or alteration of foraging/commuting habitats (either physically or indirectly e.g., through lighting). The Site does not contain any high-value foraging/commuting habitats for bats, but the proposal will result in the loss/modification of approximately 0.0396 Ha of hedgerow which have some value to foraging bats. Effects on all bat species associated with loss of foraging/commuting habitat during construction are assessed as Permanent, Likely, Slight, Negative effects.

###### 10.9.2.3.1.3 Reptiles

The habitats which will be lost provide potential foraging and resting habitat for Common lizard. These habitat types are common and widespread in the greater area. Habitat loss/alteration effects on this IEF is assessed as **Short-term, Likely, Not significant to Slight, Negative Effects.**

Direct disturbance and/or displacement effects on this IEF could potentially ensue as a result of increased noise and human activity. Direct disturbance and/or displacement effects on this IEF is assessed as **Temporary to Short-term, Not significant to Slight, Negative Effects.** Indirect disturbance and/or displacement effects on this IEF is assessed as **Temporary to Short-term, Moderate, Negative Effects** (**Table 10-26**)**.**

#### 10.9.2.3.2 Visitor Center

##### 10.9.2.3.2.1 Mammals

Habitats which will be lost due to the proposed visitors centre provide potential foraging and resting habitat for IEFs such as lizard, hedgehog, badger, pygmy shrew, Irish stoat, Irish hare, Pine marten, Red squirrel. These habitat types are common and widespread in the greater area. Habitat loss effects on these IEFs during the construction phase are assessed as **Short-term, Likely, Not Significant to Slight, Negative Effects**.

Disturbance and/or displacement effects could arise on IEFs such as hedgehog, badger, pygmy shrew, Irish stoat, Irish hare and pine marten as a result of increased noise and human activity during the construction phase. Disturbance and/or displacement effects on these IEFs are assessed as **Temporary to Short-term, Likely, Not significant to Slight, Negative Effects.**

##### 10.9.2.3.2.2 Bats

There will be an increased human presence on-site throughout the construction phase, scheduled to take place in phases over a period of 18 months. This is expected to be at its greatest level during the initial phase, in which time the main construction activity, associated with the visitors centre, will take place, after which noise emissions will reduce for subsequent phases. The use of machinery and general construction activity will still result in an increase in fugitive noise emissions considerably over and above current baseline conditions for a sustained period.

During the construction phase, there will be an increase in the level of lighting on-site; however, use of lighting will be temporary as it will mainly be associated with works during standard construction hours and is expected to be localised within the Site, corresponding to the area of works active at any one time. Development of the Site during the construction phase will result in the loss/modification/fragmentation or alteration of foraging/commuting habitats (either physically or indirectly e.g., through lighting). The Site does not contain any high-value foraging/commuting habitats for bats, but the proposal will result in the loss/modification of approximately 0.1044 Ha of Mixed broadleaved/conifer woodland and 0.0356 Ha of Scattered trees and parkland which have some value to foraging bats.

Effects on common pipistrelle associated with loss/disturbance of lower conservation significance roosts (day/night roosts) are assessed as **Permanent, Likely, Slight, Negative effects** and for moderate conservation significance roosts (potential summer/maternity/hibernation roost) **Permanent, Likely, Moderate, Negative effects**. Effects on soprano pipistrelle associated with loss/disturbance of lower conservation significance roosts (day/night roosts) are assessed as **Permanent, Likely, Slight, Negative effects.**

Effects on all bat species associated with construction-related disturbance/displacement as a result of increased noise and lighting are assessed as **Short-term, Likely, Slight to Moderate, Negative effects**. Effects on all bat species associated with loss of foraging/commuting habitat during construction are assessed as **Permanent, Likely, Slight, Negative effects.**

#### 10.9.2.3.2.3 Reptiles

The habitats which will be lost provide potential foraging and resting habitat for Common lizard. These habitat types are common and widespread in the greater area. Habitat loss/alteration effects on these IEFs are assessed as **Short-term, Likely, Not significant to Slight, Negative Effects.**

Direct disturbance and/or displacement effects on these IEFs could potentially ensue as a result of increased noise and human activity. Direct disturbance and/or displacement effects on these IEFs are assessed as **Temporary to Short-term, Not significant to Slight, Negative Effects.** Indirect disturbance and/or displacement effects on these IEFs are assessed as **Temporary to Short-term, Moderate, Negative Effects** (**Table 10-26**)**.**

### 10.9.2.3.3 Harbour

The artificial nature of the harbour leaves not habitat loss that has the potential to significantly effect any fauna. Habitat loss effects on these IEFs during the construction phase are assessed as **Short-term, Unlikely, Not Significant to Slight, Neutral Effects**.

### 10.9.2.3.4 Inis Cealtra

#### 10.9.2.3.4.1 Mammals

There will be no loss of suitable habitat for otter, freshwater fish (lampreys, Atlantic salmon), European eel and other aquatic macro-invertebrates (aquatic snails, water beetles and other aquatic insects) during the construction phase. Disturbance and/or displacement effects on otter could arise as a result of increased noise, human activity or water quality impacts during the construction phase. Disturbance and/or displacement effects on the aforementioned aquatic fauna during construction are assessed as **Temporary to Short-term, Likely, Not significant, Negative Effects**. Construction phase disturbance and/or displacement effects on freshwater fish (lampreys, Atlantic salmon), European eel and other aquatic macro-invertebrates are not anticipated; however, on a precautionary basis, it is considered that there is, albeit limited, potential for effects as a result of potential water quality impacts during the construction phase. Disturbance and/or displacement effects on cetaceans during construction are assessed as **Temporary to Short-term, Unlikely, Not significant, Negative Effects** (**Table 10-22**).

#### 10.9.2.3.4.2 Bats

During the construction phase, there will be an increase in the level of lighting on-site; however, use of lighting will be temporary as it will mainly be associated with works during standard construction hours and is expected to be localised within the Site, corresponding to the area of works active at any one time. Development of the Site during the construction phase will result in the loss/modification/fragmentation or alteration of foraging/commuting habitats (either physically or indirectly e.g., through lighting). The Site does not contain any high-value foraging/commuting habitats for bats, but the proposal will result in the loss/modification of approximately xx Ha of Scrub (WS1) and (0.0046 Ha) Oak-ash-hazel woodland (WN2) which have some value to foraging bats.

Effects on all bat species associated with construction-related disturbance/displacement as a result of increased noise and lighting are assessed as **Short-term, Likely, Slight to Moderate, Negative effects**. Effects on all bat species associated with loss of foraging/commuting habitat during construction are assessed as **Permanent, Likely, Slight, Negative effects** (**Table 10-23**).

#### 10.9.2.3.4.3 Birds

Direct species disturbance/displacement of avian IEFs could occur during the construction phase via increased human presence/activity and pilling. This has the potential to occur during those periods in which the construction site is open and active throughout the extended construction phase of the project (phased over 12 months). Direct species disturbance/displacement could also occur via increased noise/vibration/lighting and use of chemicals associated with construction works, or due to physical disturbance of individuals, such as through injury or mortality during works. Indirect species disturbance/displacement could occur via indirect water quality effects, loss/fragmentation or direct or indirect alteration of foraging, commuting, breeding or resting habitat, or via impacts on prey biomass.

The scrub habitat which will be lost (0.0583 Ha) provides foraging habitat for the birds. Foraging habitat loss effects on birds during construction are assessed as **Medium-term, Likely, Slight, Negative Effects**. Disturbance/displacement effects on the birds could arise as a result of increased noise and human activity during the construction phase; however, these sources of potential disturbance will be localised within the Site and will occur as part of a phased programme of works. Disturbance and/or displacement effects on birds during construction are assessed as **Temporary to Short-term, Likely, Slight, Negative Effects.**

The grassland habitats which will be lost provide foraging/resting habitat for a variety of gulls and raptors. Surveys indicate that the Site does not support any significant populations of these species. The habitats which will be lost provide primarily foraging, and in some instances breeding habitats for corvids and passerines. The habitat types are common and widespread in the surrounding area. Foraging/resting habitat loss effects on Passerines, Raptors, Wader and other Waterbirds, Shorebirds and Game birds species during construction are assessed as **Short-term, Likely, Not Significant, Negative Effects**. Breeding habitat loss effects are assessed as **Short-term, Likely, Slight to Moderate, Negative Effects**. Disturbance/displacement effects on Passerines, Raptors, Wader and other Waterbirds, Shorebirds and Game birds within and around the Site could arise as a result of increased noise, human activity and/or water quality impacts during the construction phase. Disturbance and/or displacement effects on these IEFs are assessed as **Temporary to Short-term, Likely, Not significant to Slight, Negative Effects** (**Table 10-24**).

#### 10.9.2.3.4.4 Terrestrial Macro-invertebrates

Direct species disturbance/displacement of terrestrial macro invertebrate IEFs could occur during the construction phase via increased human presence/activity. This has the potential to occur during those periods in which the construction site is open and active throughout the extended construction phase of the project (phased over 12 months). Direct species disturbance/displacement could also occur via increased noise/vibration/lighting and use of chemicals associated with construction works, or due to physical disturbance of individuals, such as through injury or mortality during works. Indirect species disturbance/displacement could occur via indirect loss/fragmentation or direct or indirect alteration of foraging, commuting habitat.

The scrub and grassland habitat which will be lost provides foraging habitat for the macro-invertebrates. Foraging habitat loss effects on birds during construction are assessed as **Medium-term, Likely, Slight, Negative Effects**. Disturbance/displacement effects on the macro-invertebrates could arise as a result of increased noise and human activity during the construction phase; however, these sources of potential disturbance will be localised within the Site and will occur as part of a phased programme of works. Disturbance and/or displacement effects on macro-invertebrates during construction are assessed as **Temporary to Short-term, Likely, Slight, Negative Effects** (**Table 10-25**).

**Table 10-22. Potential effects on mammals (excl. bats) identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **CONSTRUCTION PHASE** | | | | | | |
| Habitat Loss | | | | | | |
| Hedgehog | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Badger | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Pygmy shrew | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Irish hare | Negative | Slight | Localised | Short-term | Direct | Likely |
| Irish stoat | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Otter | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Pine marten | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Red deer | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Fallow Deer | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Red Squirrel | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Disturbance/Displacement | | | | | | |
| Hedgehog | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |
| Badger | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |
| Pygmy shrew | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |
| Irish stoat | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |
| Irish hare | Negative | Slight | Localised | Temporary to Short-term | Direct | Likely |
| Otter | Negative | Not significant to Slight | Localised | Temporary to Short-term | Direct and indirect | Likely |
| Pine marten | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |
| Red deer | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |
| Fallow Deer | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |
| Red Squirrel | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |

**Table 10-23. Potential effects on bats identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **CONSTRUCTION PHASE** | | | | | | |
| Disturbance/Displacement (noise, human activity, lighting) | | | | | | |
| All bats | Negative | Slight to Moderate | Localised | Short-term | Direct and Indirect | Likely |
| Habitat Loss/Fragmentation | | | | | | |
| All bats | Negative | Slight | Localised | Permanent | Direct and Indirect | Likely |

**Table 10-24. Potential effects on birds/avian groups identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **CONSTRUCTION PHASE** | | | | | | |
| Loss of Foraging/Resting Habitat | | | | | | |
| Passerines | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Raptors (e.g. buzzard, hen harrier, kestrel, sparrowhawk, white-tailed eagle) | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Wader and other Waterbirds (37 birds) | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Shorebirds | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Game birds (pheasants) | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Disturbance/Displacement (noise/ human activity/water quality) | | | | | | |
| Passerines | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Raptors (e.g. buzzard, hen harrier, kestrel, sparrowhawk, white-tailed eagle) | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Wader and other Waterbirds (37 birds) | Negative | Slight | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Shorebirds | Negative | Slight | Localised | Temporary to Short-term | Direct | Likely |
| Game birds (pheasants) | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |

**Table 10-25. Potential effects on terrestrial macro-invertebrate groups identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **CONSTRUCTION PHASE** | | | | | | |
| Loss of Foraging Habitat | | | | | | |
| Other terrestrial macro-invertebrates (bees, butterflies etc.) | Negative | Not significant | Localised | Short-term | Direct | Likely |

**Table 10-26. Potential effects on reptiles and amphibians identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **CONSTRUCTION PHASE** | | | | | | |
| Habitat Loss/Alteration | | | | | | |
| Common lizard | Negative | Not significant | Localised | Short-term | Direct | Likely |
| Disturbance/Displacement (noise/ human activity) | | | | | | |
| Common lizard | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |

#### 10.9.2.3.5 Lough Derg

##### 10.9.2.3.5.1 Birds

The Oak-ash-hazel woodland and scrub habitats which will be lost (weather shelter (23 $m^2$); staff pod (23 $m^2$); 0.0040 Ha footpath) provide foraging/resting habitat for a variety of birds which were found to be associated with woodland and scrub within the Site. Waders were found to be associated with the Site during surveys particularly in the summer. The habitat types are common and widespread in the surrounding area. Foraging/resting habitat loss effects during construction on wader species associated with the Site are assessed as **Short-term, Likely, Not Significant, Negative Effects**. Surveys indicate that the Site does not contain suitable habitat for and/or support any significant populations of other wader species. There will be no loss of suitable wader habitat other than the improved grassland habitats encompassed within the Site. Habitat loss effects on other waders are assessed as **Short-term, Likely, Not Significant, Negative Effects**. Disturbance/displacement effects on waders within the Site or in the area surrounding the Site could arise as a result of increased noise, human activity or water quality impacts during the construction phase. Disturbance and/or displacement effects on waders during construction are assessed as **Temporary to Short-term, Likely, Slight, Negative Effects**.

The habitats which will be lost do not comprise suitable/typical foraging/resting habitat for waterbirds. Surveys indicate that the Site does not support any significant populations of these species. The habitat types are common and widespread in the surrounding area. Habitat loss effects on waterbirds are assessed as **Short-term, Likely, Not Significant, Negative Effects**. Disturbance/displacement effects on waders and other waterbirds in the surrounding area could arise during construction as a result of increased noise and human activity. Disturbance and/or displacement effects on water and other waterbirds are assessed as **Temporary to Short-term, Likely, Not significant to Slight, Negative Effects**.

#### 10.9.2.3.5.2 Freshwater Macro-invertebrates

The proposed development will require loss of approximately 0.0305 ha of Lough Derg. Habitat loss effects on aquatic species such as fish and invertebrates during construction are assessed as **Short-term, Likely, Not significant Negative effects**. Potential water quality impacts in the existing drainage network could result in indirect alteration of habitat and indirect disturbance/displacement of aquatic macroinvertebrate species. Indirect disturbance and/or displacement effects on aquatic macro-invertebrates during construction are assessed as **Temporary to Short-term, Likely, Slight, Negative Effects** (**Table 10-27**).

**Table 10-27. Potential effects on freshwater macro-invertebrates identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **CONSTRUCTION PHASE** | | | | | | |
| Habitat Loss/Alteration | | | | | | |
| European eel | Negative | Not significant | Localised | Short-term | Direct and Indirect | Likely |
| Freshwater White-clawed crayfish (Austropotamobius pallipes) | Negative | Not significant | Localised | Short-term | Direct and Indirect | Likely |
| Freshwater Pearl Mussel (Margaritifera margaritifera) | Negative | Not significant | Localised | Short-term | Direct and Indirect | Likely |
| Other aquatic macro-invertebrates (aquatic snails, water beetles and other aquatic insects) | Negative | Not significant | Localised | Short-term | Direct and Indirect | Likely |
| Disturbance/Displacement | | | | | | |
| European eel | Negative | Slight | Localised | Temporary to Short-term | Indirect | Likely |
| Freshwater Pearl Mussel (Margaritifera margaritifera) | Negative | Slight | Localised | Temporary to Short-term | Indirect | Likely |
| Other aquatic macro-invertebrates (aquatic snails, water beetles and other aquatic insects) | Negative | Slight | Localised | Temporary to Short-term | Indirect | Likely |
| Freshwater White-clawed crayfish (Austropotamobius pallipes) | Negative | Slight | Localised | Temporary to Short-term | Indirect | Likely |

### 10.9.2.4 Water Quality

Improper management during the construction phase of the development has the potential to lead to excessive runoff of silt, nutrients, and organic matter during heavy rainfall or substances such as fuels, oil and other pollutants to the aquatic environment. As the existing drainage network outfalls to the nearby shoreline, it is considered that existing drains provide a direct pathway between the Site and Lough Derg. Uncontrolled leaching of fuels/oils or cementitious material to ground in the event of

accidental spillage also poses a potential risk to groundwater quality. Consequently, in the absence of mitigation, construction on site has the potential to affect surface water quality within the field drainage network and potentially within the surrounding aquatic area, as well as groundwater.

The potential effects of the construction phase to water quality within the existing drainage network are assessed as **Temporary to Short-term, Likely, Moderate, Negative effects** due to the potential for increased sediment load and/or ingress of pollutants to local drainage features within the Site as a result of the Proposed Development.

Although less likely to occur, and with due regard to the diluting effect of the lake in the event of such an impact occurring, it is considered that the potential effects of the construction phase to Lough Derg water quality are assessed as **Temporary, Unlikely, Moderate, Negative effects** due to the potential for conveyance of sediment and/or pollutants to the shoreline via the local drainage network within the Site as a result of the Proposed Development. It is considered that water quality during construction can be protected with appropriate mitigation (**Table 10-28**).

**Table 10-28. Potential effects on water quality and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **CONSTRUCTION PHASE** | | | | | | |
| Construction Activity (run-off or ingress of silt, pollutants, nutrients etc) | | | | | | |
| Surface water quality (existing drainage network) | Negative | Moderate | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Lough Derg water quality | Negative | Moderate | Localised | Temporary | Direct and Indirect | Unlikely |

### 10.9.3 Operational Phase

#### 10.9.3.1 Habitats and Flora

During the operational phase of the Proposed Development, significant effects on habitats are not anticipated. Once the construction phase has ceased large scale excavation will no longer be required. No additional habitat loss is required as part of the operational phase. During site reinstatement, any bare areas of ground at the Site will be planted as part of landscaping proposals, reducing the potential for encroachment of invasive and ruderal species, and also reducing any potential for run of from the Site.

There will be a substantial increase in human activity at the Site as a result of the Proposed Development and the enhanced visitor facilities which will be available to both visitors and the general public. This increased human presence can be expected to encompass the existing members of the local community and members of Lough Derg Anglers which often utilize the island.

Increased human presence in the general area has the potential to result in indirect alteration of habitat and disturbance of associated flora through increased trampling and/or erosion effects. This impact will be of greater significance in those areas where more sensitive and/or botanically diverse habitats occur on the outer edge of the island or areas of 'Scrub (WS1)' which occur along the interface between the woodland habitats on the islands edge and the higher drier areas of improved grassland near the centre of the island. Increased human presence in the area also has the potential to result in indirect alteration of habitat via potential for increased litter within and around the Site. It is noted that these areas are publicly accessible and already form part of the local recreational amenity resource.

The potential effects on terrestrial habitats and associated flora, identified as IEFs in **Section 10.7; Table 10-18** above, during the operational phase of the Proposed Development are assessed as **Long-term, Likely, Not significant to Slight, Negative Effects**.

In **Table 10-29** below, the relevant rating for each of the types of criteria pre mitigation is provided for these effects on habitats. The criteria, their explanations and the effect rating methodology outlined in the EIAR have been used to assess these effect.

**Table 10-29. Potential effects on habitats identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **OPERATIONAL PHASE** | | | | | | |
| **Habitat Alteration/Disturbance** | | | | | | |
| Improved agricultural grassland (GA1) | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Treeline (WL2) | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Hedgerow (WL1) | Neutral | N/a | Localised | Permanent | N/a | Likely |
| Stonewalls (BL1) | Negative | Slight | Localised | Long-term | Direct and Indirect | Likely |
| Amenity grassland (GA2) | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Dry Meadows and Grassy Verge Grassland (GS2) | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Buildings and artificial surfaces (BL3) | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Mixed broadleaved/conifer woodland (WD2) | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Scattered trees and parkland (WD5) | Negative | Not significant | Localised | Long-term | Indirect | Likely |
| Marsh (GM1) | Negative | Not significant | Localised | Long-term | Indirect | Likely |
| Scrub (WS1) | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Oak-ash-hazel woodland (WN2) | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Calcareous Spring (FP1) | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Limestone-marl lakes (FL3) (Lough Derg) | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Reed and Large Sedge Swamp (FS1) | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Presence of Rare and/or Protected Flora Habitat Alteration/Disturbance | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |

#### 10.9.3.2 Fauna

##### 10.9.3.2.1 Mammal

No significant disturbance and/or displacement impacts are expected to protected mammals (excluding bats) selected as IEFs, outlined in **Table 10-19, Section 10.7**, above.

Once the construction phase of the Proposed Development has been completed, individuals of smaller species such as hedgehog and pygmy shrew that may have been temporarily displaced owing to construction activity, and considered to comprise species that can occupy more disturbed/active environmental settings such as within urban areas, are expected to utilise the habitats within and adjacent to the Site within a short period of time as they are more likely to be more tolerant of the higher levels of human activity and noise emissions which are anticipated with regard to the day-to-day running of the development. Potential disturbance/displacement impacts on fauna such as badger, Irish hare, Irish stoat, otter and pine marten are expected to be somewhat greater, as these species are considered less likely to tolerate higher levels of human activity/fugitive noise emissions, in particular those anticipated during peak times of operation.

With regard to increased human presence on-site during operation, it is considered that people be encouraged to remain only on the footpaths on the island and not stray. Human activity is expected to be concentrated within the Site and the immediate area. It is further expected that human activity will be greatest during the day with low to none at night, during which time many mammal species are more active. The level of human activity and noise which may result in potential disturbance/displacement impacts on faunal IEFs will therefore fluctuate throughout the year and will decrease with distance from the Site. Notwithstanding the above, there will be an increase in human activity within and around the Site once the development is operational. Increases in human activity and noise emissions can be expected to similar or slightly increased to current conditions. While this is primarily anticipated during the facility's expected peak period of between March and September each year on both the mainland and island, it is noted that the facility may ultimately be accessible year-round, depending for private users. Therefore, a year-round scenario is used to inform the assessment of potential disturbance/displacement impacts and effects on non-volant mammal IEFs with regard to human activity and noise.

There will be a considerable increase in artificial light levels within the Site on the mainland in the context of current baseline conditions to facilitate the Proposed Development. Increased lighting has the potential to result in disturbance/displacement impacts on some terrestrial mammal species, in particular those which are typically more active at night, such as badger and hedgehog. Although there will be an increase in traffic movement on the local road servicing the Site and within the Site itself as a result of the Proposed Development, vehicle speed will be limited and controlled for H&S which will reduce the risk of potential impacts to terrestrial mammal species.

It is noted that very little terrestrial mammal activity was recorded on-site during surveys. Direct operational phase effects which may arise as a result of potential disturbance/displacement impacts on mammals (excluding bats) identified as IEFs (badger, otter, hedgehog, pygmy shrew, Irish hare, Irish stoat, pine marten as a result of increased noise and human activity are assessed as **Long term, Likely, Not significant to Slight, Negative Effects**.

With regard to the potential for indirect disturbance/displacement of aquatic mammal IEFs, such as otter as a result of stormwater management, standard Sustainable Drainage Systems (SuDS) measures form part of the proposed drainage plan for the development. These aspects of the operational phase are discussed further in relation to general water quality **Section 10.9.3.3** below. Indirect operational phase effects which may arise as a result of potential disturbance/displacement impacts on aquatic mammals identified as IEFs as a result of proposed management of stormwater and wastewater are assessed as **Long term, Likely, Imperceptible, Negative Effects**.

In **Table 10-30** below, the relevant rating for each of the types of criteria pre mitigation is provided for these effects on mammals (excluding bats). The criteria, their explanations and the effect rating methodology outlined in Chapter 1 of the EIAR have been used to assess these effect.

**Table 10-30 Potential effects on mammals (excl. bats) identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **OPERATIONAL PHASE** | | | | | | |
| Disturbance/Displacement | | | | | | |
| Hedgehog | Negative | Not significant | Localised | Long-term | Direct | Likely |
| Badger | Negative | Not significant | Localised | Long-term | Direct | Likely |
| Pygmy shrew | Negative | Not significant | Localised | Long-term | Direct | Likely |
| Irish hare | Negative | Not significant | Localised | Long-term | Direct | Likely |
| Irish stoat | Negative | Slight | Localised | Long-term | Direct | Likely |
| Otter | Negative | Not significant to Slight | Localised | Long-term | Direct and Indirect | Likely |
| Pine marten | Negative | Not significant | Localised | Long-term | Direct | Likely |
| Red deer | Negative | Not significant | Localised | Long-term | Direct | Likely |
| Fallow Deer | Negative | Not significant | Localised | Long-term | Direct | Likely |
| Red Squirrel | Negative | Not significant | Localised | Long-term | Direct | Likely |

#### 10.9.3.2.2 Bats

Human activity is expected to be concentrated within the Site and the immediate area. It is further expected that human activity will be greatest during the day with relatively low levels at night, during which time bats can be expected to be active. The level of human activity and noise which may result in potential disturbance/displacement impacts on bats will therefore fluctuate throughout the year and will decrease with distance from the Site. Notwithstanding the above, there will be a considerable increase in human activity within and around the Site once the development is operational. Increases in human activity and fugitive noise emissions can be expected to be significantly over and above current baseline conditions. While this is primarily anticipated during the facility's expected peak period of between May and September each year, it is noted that the facility may ultimately open year-round, depending on demand. Therefore, a year-round scenario is used to inform the assessment of potential disturbance/displacement impacts and effects on bats.

During the operational phase, there will be a permanent and significant increase in the level of artificial lighting across the site. Use of artificial lighting during this phase in particular is expected to have the most potential to result in impacts on bats. Artificial lighting can impact on bats in several ways. Artificial lighting has the potential to result in loss, modification/alteration or fragmentation of bat foraging/commuting/roosting habitats, or impact on the prey biomass available to bats. The extent to which lighting may affect bats depends on individual species sensitivity to light. Lighting attracts insect

prey, resulting in concentrations of prey in potentially less suitable areas and a corresponding reduction in prey availability in more suitable foraging areas. For light sensitive species, such as lesser horseshoe bat, lighting can therefore reduce the area of foraging habitat available and can fragment the landscape and cause barriers to movement.

In summary, direct/indirect disturbance and/or displacement effects on bats could arise as a result primarily as a result of operational-related lighting, and to a lesser extent noise and human activity. Effects associated with operational-related disturbance/displacement impacts on bats (all species) due to artificial lighting are assessed as **Long-term, Likely, Moderate to Significant, Negative effects**. Effects associated with operational-related disturbance/displacement impacts on bats (all species) due to noise and human activity are assessed as **Long-term, Likely, Slight, Negative effects**.

In **Table 10-31** below, the relevant rating for each of the types of criteria pre mitigation is provided for these effects on bats. The criteria, their explanations and the effect rating methodology outlined in **Chapter 1** of the **EIAR** have been used to assess these effect.

**Table 10-31. Potential effects on bats identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **OPERATIONAL PHASE** | | | | | | |
| Disturbance/Displacement (noise/human activity) | | | | | | |
| All bats | Negative | Slight | Localised | Long-term | Direct and Indirect | Likely |
| Disturbance/Displacement (lighting) | | | | | | |
| All bats | Negative | Moderate to Significant | Localised | Long-term | Direct and Indirect | Likely |

10.9.3.2.3 Birds

While potential disturbance/displacement impacts on certain species groups, such as waders, which were recorded utilising the Lough Derg navigation route in low numbers and which were identified as IEFs, are expected to be relatively greater, as these species are more prone to disturbance impacts and less likely to tolerate the expected higher levels of human activity/fugitive noise emissions relative to these water bird species, in particular those anticipated during peak times of operation, it is considered that any foraging/roosting waders displaced from the Site would temporarily re-locate to alternative areas, which are readily available in the surrounding area, comprising the shoreline of Lough Derg. It should be noted that the existing disturbance is ongoing and the operational phase anticipates an increase in boat trips and number of visitors in the summer months.

It is considered that avian species occupying the general area are likely to be already tolerant of a degree of disturbance, given the predominant surrounding agricultural and recreational amenity land-uses within and in the vicinity of the Site. This includes the mainland, island and Lough Derg.

It is noted that, once operational, the development will have a peak season encompassing only certain months of the year (expected May to September). The level of human activity and noise which may result in potential disturbance/displacement impacts on avian IEFs will therefore fluctuate throughout the year and will decrease with distance from the Site.

With regard to potential disturbance/displacement effects on the waders which were recorded using the Site and immediate environs, and in the context of the degree of usage of the Site by these IEFs,

operational phase effects which may arise as a result of increased human activity and noise are assessed as **Long term, Likely, Slight, Negative Effects.**

Once the construction phase of the Proposed Development has been completed, passerine species that may have been temporarily displaced owing to construction activity are expected to utilise the habitats within and adjacent to the Site within a short period of time as such species are expected to be tolerant of some degree of human activity and noise emissions as will be associated with the day-to-day running of the development. With regard to other avian IEFs identified (Passerines, Raptors, Wader and other Waterbirds, Shorebirds and Game birds), and in the context of the degree of usage of the Site by these IEFs, operational phase effects which may arise as a result of increased human activity and noise are assessed as **Long term, Likely, Not significant, Negative Effects.**

There will be an increase in artificial light levels on the mainland particularly within the carpark area in the context of current baseline conditions to facilitate the Proposed Development. It should however be noted that the proposed carpark and visitors centre is set in an urban area. Increased lighting has the potential to result in disturbance/displacement impacts on some avian species which migrate, forage or are otherwise active at night/during low light conditions, such as Gadwall and Lesser Black-backed Gull. Operational phase effects which may arise as a result of potential disturbance/displacement impacts on avian species identified as IEFs as a result of increased lighting are assessed as Long term, Likely, Slight to Moderate, Negative Effects.

Operational phase effects which may arise as a result of potential disturbance/displacement impacts on aquatic species identified as IEFs, such as waders and other waterbirds, and other avian IEFs as a result of proposed management of stormwater and wastewater on-site are assessed as **Long term, Likely, Imperceptible, Negative Effects**.

In **Table 10-32** below, the relevant rating for each of the types of criteria pre mitigation is provided for these effects on birds. The criteria, their explanations and the effect rating methodology outlined in **Chapter 1** of the **EIAR** have been used to assess these effect.

**Table 10-32. Potential effects on bats identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **OPERATIONAL PHASE** | | | | | | |
| Disturbance/Displacement (noise/human activity) | | | | | | |
| Passerines | Negative | Slight | Localised | Long-term | Direct and Indirect | Likely |
| Raptors (e.g. buzzard, hen harrier, kestrel, sparrowhawk, white-tailed eagle) | Negative | Slight | Localised | Long-term | Direct and Indirect | Likely |
| Wader and other Waterbirds (37 birds) | Negative | Slight | Localised | Long-term | Direct and Indirect | Likely |
| Shorebirds | Negative | Slight | Localised | Long-term | Direct and Indirect | Likely |
| Game birds (pheasants) | Negative | Slight | Localised | Long-term | Direct and Indirect | Likely |

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| Disturbance/Displacement (lighting) | | | | | | |
| Passerines | Negative | Moderate to Significant | Localised | Long-term | Direct and Indirect | Likely |
| Raptors (e.g. buzzard, hen harrier, kestrel, sparrowhawk, white-tailed eagle) | Negative | Moderate to Significant | Localised | Long-term | Direct and Indirect | Likely |
| Wader and other Waterbirds (37 birds) | Negative | Moderate to Significant | Localised | Long-term | Direct and Indirect | Likely |
| Shorebirds | Negative | Moderate to Significant | Localised | Long-term | Direct and Indirect | Likely |
| Game birds (pheasants) | Negative | Moderate to Significant | Localised | Long-term | Direct and Indirect | Likely |

#### 10.9.3.2.4 Reptiles & Amphibians

No significant disturbance and/or displacement impacts are expected to reptile and amphibian species selected as IEFs, outlined in **Section 10.7.3** above. Once the construction phase of the Proposed Development has been completed, individuals that may have been temporarily displaced owing to construction activity are expected to utilise the habitats within and adjacent to the Site within a short period of time. Human activity is expected to be concentrated within the Site and the immediate area and will be at its highest levels during peak operational periods. Potential disturbance/displacement impacts on reptile and amphibian IEFs will be greatest within the immediate environs of the Site and will decrease with distance. It is noted that very little to no reptile and amphibian activity was recorded on-site during surveys.

Operational phase effects which may arise as a result of potential disturbance/displacement impacts on reptile and amphibian species identified as IEFs (Common lizard) as a result of increased noise, lighting, human activity and vehicle traffic, are assessed as **Long term, Likely, Not significant, Negative Effects**.

In **Table 10-33** below, the relevant rating for each of the types of criteria pre mitigation is provided for these effects on amphibians and reptiles. The criteria, their explanations and the effect rating methodology outlined in **Chapter 1** of the **EIAR** have been used to assess these effect.

**Table 10-33. Potential effects on reptiles and amphibians identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| OPERATIONAL PHASE | | | | | | |
| Disturbance/Displacement (noise/ lighting/human activity) | | | | | | |
| Common lizard | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |

#### 10.9.3.2.5 Freshwater Macro-invertebrates and Freshwater aquatic species

Once the construction phase has been completed, it is expected that any freshwater macroinvertebrate species that may have been temporarily affected or displaced due to construction activity would utilise the habitats within and adjacent to the Site, including remaining drainage features within the Site, within a short period of time. With regard to the potential for indirect disturbance/displacement of freshwater macro-invertebrates and Freshwater aquatic species, the proposed management of stormwater during operation will avoid release of sediment, silt and hydrocarbons to the existing drainage network. Operational phase effects which may arise as a result of potential disturbance/displacement impacts on freshwater macro-invertebrate species identified as IEFs are assessed as **Long term, Likely, Not significant, Negative Effects**.

In **Table 10-34** below, the relevant rating for each of the types of criteria pre mitigation is provided for these effects on freshwater macro-invertebrates. The criteria, their explanations and the effect rating methodology outlined in Chapter 1 of the EIAR have been used to assess these effect.

**Table 10-34. Potential effects on freshwater macro-invertebrates and Freshwater aquatic species identified as IEFs and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **OPERATIONAL PHASE** | | | | | | |
| Disturbance/Displacement (water quality) | Negative | Not significant | Localised | Long-term | Indirect | Likely |

#### 10.9.3.3 Water Quality

Sources of potential surface or ground water quality impacts associated with the operational phase include ingress of sediment, silt, nutrients or chemical pollution to the aquatic environment via either run-off, or release. Management and disposal of stormwater and wastewater on-site could lead to secondary effects such as alteration of aquatic habitats and disturbance/displacement of species.

Though there are no watercourses within the mainland or island, there is potential for the release of silt, sediment and other pollutants to enter the existing drainage network via run-off or direct discharge from the proposed stormwater network and from there enter Lough Derg. However, the implementation of standard measures of Sustainable Drainage Systems (SuDS) including hydrocarbon interceptors will avoid the potential for significant adverse effects on either freshwater or marine water quality. All surface water drainage will pass through two petrol interceptors before discharging to existing drains.

The potential effects on water quality within any part of the retained drainage network and the surrounding the mainland and Lough Derg during the operational phase of the Proposed Development due to management of stormwater are assessed as **Long-term, Likely, Imperceptible, Negative Effects**.

With regard to proposed management of wastewater, an on-site dry toilet system is implemented to overcome the logistical challenges of removing solids and liquids. Deposited waste will be separated into liquid and solid form. This waste will then be stored in a holding container as part of the dry toilet set-up. A contractor will be appointed to manage the maintenance of the foul system and waste removal from the island. The designated maintenance contractor will ensure that the waste is delivered to the appropriate Uisce Éireann treatment facility, where it will be processed in accordance with Uisce Éireann standards. Uisce Éireann has advised that the effluent collected will likely be taken

by an authorised and licenced tankard wastewater haulier to Bunlicky Wastewater Treatment Plant (WWTP) in Limerick City.

The potential effects on water quality within the existing drainage network and the surrounding Lough Derg during the operational phase of the Proposed Development due to management of the wastewater are assessed as **Long-term, Unlikely Effects, Not significant, Negative Effects**.

In **Table 10-35** below, the relevant rating for each of the types of criteria pre mitigation is provided for these effects on water quality. The criteria, their explanations and the effect rating methodology outlined in Chapter 1 of the EIAR have been used to assess these effect.

**Table 10-35. Potential effects on water quality and the significance of unmitigated effects**

| Impact | Quality of Effect | Significance | Spatial Extent | Duration | Other Relevant Criteria | Likelihood |
|---|---|---|---|---|---|---|
| **OPERATIONAL PHASE** | | | | | | |
| Management of Stormwater | Negative | Imperceptible | Localised | Long-term | Direct and Indirect | Likely |
| Management of Wastewater | | | | | | |
| Surface water quality (existing retained drainage network) | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Lough Derg water quality | Negative | Not significant | Localised | Long-term | Direct and Indirect | Unikely |

### 10.9.4 Cumulative Effects

As well as singular effects, the potential for cumulative effects also needs to be considered. A cumulative impact arises from incremental changes caused by other past, present, or reasonably foreseeable activities interacting synergistically with the impacts generated by the Proposed Development in a manner that has the potential to cause effects on the receiving environment. According to EPA (2022), cumulative effects can be described as 'the addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects'.

The plans, projects activities and pressures identified as plausible sources of impacts to be assessed for their potential to generate cumulative effects are discussed in **Sections 10.9.4.1** to **10.9.4.4**, below.

#### 10.9.4.1 Plans

Published in July 2017, the Inis Cealtra Visitor Management and Sustainable Tourism Development Plan[35], was commissioned by Clare County Council to ensure the long-term conservation of Inis Cealtra as a profoundly significant historic and cultural site whilst simultaneously establishing the island as a successful yet sustainable tourist destination.

Additionally, a Tourism Masterplan for the Shannon (2020–2030) entitled '*The Shannon Mighty River of Ireland: Reimagining the River Shannon and Shannon Erne Waterway*'[36], commissioned by Waterways Ireland in strategic partnership with Fáilte Ireland, sets out an integrated framework for sustainable tourism development along the entire Shannon River. Geographically well-positioned and easily accessed by motorway and national roads, Inis Cealtra and Mountshannon feature prominently within the Masterplan as attractive and interesting touristic destinations. Developed in parallel with

[35] Inis Cealtra: Volume 1: Visitor Management and Sustainable Tourism Development Plan Accessed:2nd November 2024

[36] Tourism-Masterplan-for-the-Shannon 2020-30.pdf Accessed: 2nd November 2024

the Masterplan, the Lough Derg Visitor Experience Plan (2020-2024)[37] frames Inis Cealtra as the focal point within a series of interconnected water and land trails that link to 'a necklace of historic lakeside villages and harbours' on both western and eastern shores of Lough Derg.

Other plans relevant to the proposed Inis Cealtra Visitor Experience development are the Clare County Development Plan (2023-2029)[38] and the Clare Biodiversity Action Plan (2024-2030)[39] currently in the latter stages of preparation.

#### 10.9.4.2 Permitted and Proposed Developments

A search of the Department of Housing, Local Government and Heritage planning database was undertaken for relevant granted or on-going planning applications within the last 5 years that have the potential for in-combinations effects with the proposed development on nearby European sites, and three such applications were identified. (See Appendix 2 for further details on the aforementioned projects).

Clare County Council are applicants for two of the three applications to be considered for in-combination effects. Permission was granted for application No. 218000 on 27/05/2021 and No. 238001 on 10/07/2023 consisting of modifications and partial change of use of the Old Rectory (Protected structure RPS No. 464), located at the north site boundary. It is expected that the development will commence upon receipt of planning permission and that the duration of the build will be approximately 12 months[40]. It is therefore unlikely that the construction phases of this development and the Inis Cealtra Visitor Centre will coincide given the estimated completion date of Q3 2042 for the visitor centre. Permission was also granted for application No. 22269 to Inis Housing Association CLG for a residential development located approximately 450 m northeast of the proposed development.

#### 10.9.4.3 EPA Licenced Facilities

The closest EPA Licensed premises to the proposed development is Fair Green Environmental Limited located in Scarriff, more than 5.5 <6km to the west of Inis Cealtra and 7.5 km southwest of Mountshannon Harbour . This industrial plant produces paper and board and other primary wood products (such as chipboard, fibreboard and plywood) with a production capacity of 20 tonnes per day. According to the EPA all waste products from this plant are transferred to Germany and the Netherlands . Emissions emitted by this plant are ammonia via air. An additional IEL facility Molloy Woodcrafts Limited is located approximately 5.1 km southwest of Inis Cealtra.

It is considered construction and operational phase water quality effects coupled with the abovementioned wastes and emissions are unlikely to undermine the conservation objectives for the qualifying features of the Lough Derg (Shannon) SPA.

[37] Lough Derg Visitor Experience Development Plan 2020_191120.pdf Accessed: 2nd November 2024

[38] Clare County Development Plan 2023-2029 | Planning, heritage and conservation | Services | Clare County Council (clarecoco.ie) Accessed: 12th December 2023

[39] clare-biodiversity-action-plan-2024-2030-issues-paper-54864.pdf Accessed: 2nd November 2024

[40] https://clarecoco.eplanning.ie/iDocsWebDPSS/ViewFiles.aspx?docid=665335&format=djvu [Accessed 30/09/2024]

#### 10.9.4.4 Existing Land-use and On-going Activities

Existing land-use within the proposed development site is tourism, leisure, boat-docking (Mountshannon Harbour), and agriculture. Lough Derg is a popular tourism and leisure destination, where activities including angling, boating, sailing and water sports take place.

Agriculture is the most significant activity impacting the Lower Shannon (Lough Derg) catchment surface waterbodies, including waterbodies at the proposed development site. The main impacts of farming are the loss of excess nutrients (phosphate, ammonia, nitrogen) and sediment to water.

Forestry has been identified as a significant pressure in 13 river waterbodies and one lake waterbody within the Lower Shannon (25C) Catchment (EPA, 2021a) and 3 river waterbodies within the Lower Shannon (25D) Catchment (EPA, 2021b). Poorly managed and inappropriately sited forestry operations can adversely affect water quality and aquatic habitats and species. The release of sediment and nutrients and the impacts of acidification are the most common water quality issues arising from forestry.

Within the Lower Shannon (25C) Catchment domestic wastewater has been identified as a significant pressure. Pollution from diffuse urban run-off can also exert significant pressure on the integrity of waterbodies.

## 10.10 Mitigation(All measures provisional and subject to change following completion of the impact assessment)

Lough Derg (Shannon) SPA encompasses sensitive ecosystems and habitats that support a variety of plant and animal species. Mitigation measures help safeguard these habitats from disturbance and degradation. By minimizing potential impacts the help of preservation of the rich biodiversity of the SPA, including rare and protected species that rely on these habitats for survival. The below mitigation measure should be considered during the various phases of the project.

### 10.10.1 Incorporated Design Mitigation

Consultation between the design team (Project Manager, Project Engineers, Project Architects and Project Ecologists) and the Applicant was conducted on an ongoing basis during the design phase in order to formulate a project design which would avoid, prevent and/or minimise any significant adverse ecological impacts, in so much as was practicably possible. Site design was carried out with cognisance to more sensitive ecological features to minimise the impact of the Proposed Development on Biodiversity and minimise the footprint of the Proposed Development on more ecologically sensitive habitats.

A number of potential options were considered with regard to location of the proposed island jetty. Due to the presence of marsh habitat at some potential locations, identified to comprise EU Annex I Marsh (GM1) habitat during baseline ecological surveys, the final proposed location selected for the new floating access jetty was at the location of the existing concrete landing point in the northwest of the island. Selection of a location for the proposed jetty has therefore taken the occurrence of existing sensitive habitats into account to avoid/reduce ecological impacts on habitats and species.

Similarly, the route selected for the proposed seeded/mown gravel paths on the island has been selected to avoid more ecologically sensitive habitats and will be located in Improved Agricultural Grassland (GA1) and Amenity Grassland (GA2) habitat.

New staff and public welfare facility ‘pods’ are lightweight, freestanding, timber pavilions, raised on timber legs so that their contact with the ground will be minimal, reducing the risk of disturbing sensitive archaeology on the island.

### 10.10.2 Mitigation by Management

#### 10.10.2.1 Demolition Phase Mitigation

Demolition work generally poses a risk of spread/introduction of invasive species to Site (through soil disturbance, vegetation disturbance and general construction activity). Machinery, tools/equipment, workers clothing/footwear can all potentially be contaminated with Invasive Alien Plants (IAPs) infested soil, viable seed or other IAPs material and therefore poses a risk of introduction of IAPs to the Site. A similar mitigation as discussed in **Section 10.10.2.2.7** should be implemented.

##### 10.10.2.1.1 Protection of Habitats

The extent of construction works area, encompassing all demolition areas, within the development site boundary is to be clearly marked out using temporary stakes and high-visibility tape/bunting such that the construction zone, including extent of access for all construction plant and machinery, site compound and materials storage areas, is defined and is clearly visible to all contractor staff and machine operators. Ensure that all workers and contractors are briefed on the location and purpose of the no-go zones, emphasizing the importance of avoiding disturbance to these areas. All operatives and new personnel visiting site will be made aware of the sensitive nature of the works/site through toolbox talks, to be given by the Ecologist/Ecological Clerk of Works (ECoW), which will explain the location of the development site within a protected area (Lough Derg (Shannon) SPA), and in particular the immediate proximity of more ecologically sensitive woodland habitats, comprising oak-ash-hazel woodland and scrub, to the extent of the construction works area. Movement of construction plant/construction vehicles is to be restricted as much as is practicably possible to within the extent of works footprint within the development site boundary.

There is to be strictly no encroachment into any area of woodland habitat for any aspect of the works/construction activity, in particular the woodland adjoining the southern and south-eastern boundary of the proposed development site

#### 10.10.2.2 Construction Phase

##### 10.10.2.2.1 Construction and Environmental Management Plan (CEMP)

A preliminary Construction Environmental Management Plan (CEMP) has been prepared to accompany the planning application (EIAR Volume III). A detailed CEMP will be developed by the appointed contractor prior to construction works commencing. This will detail construction practices and environmental management measures which will be implemented to ensure that best practice measures are adhered to, with minimum impact on the surrounding environment. The contractor's detailed CEMP will ensure that the Proposed Development will be carried out in accordance with any planning conditions applicable.

All mitigation measures outlined in this document are to be incorporated into the final CEMP and implemented on-site. The CEMP will be submitted to the Planning Authority for agreement and approval prior to the commencement of any construction activity.

##### 10.10.2.2.2 Project Ecologist/Ecological Clerk of Works (ECoW)

A suitably qualified and experienced Project Ecologist/ECoW will be employed during the construction phase of the project. Duties will include the review of all method statements, delivery of toolbox talks, undertaking of all required pre-construction surveys for protected species and monitoring of works throughout the construction phase to ensure that works are taking place in compliance with the CEMP and that the requirements of the Conditions of Planning and all environmental controls and EIAR

mitigation is implemented in full. As part of toolbox talks, contractor staff and other site personnel, as relevant, will be made aware of the procedure to follow if a protected species or their resting or breeding site is encountered.

The appointed ECoW will be awarded a level of authority and will be allowed to stop construction activity if there is potential for adverse environmental effects other than those predicted and mitigated for in the EIAR. The appointed ECoW will have demonstrated professional experience in managing construction works affecting ecological receptors identified within the EIAR.

10.10.2.2.3 General Protection of Water Quality

10.10.2.2.3.1 Temporary Site Compound/Parking

- Parking will only take place within designated parking areas on the mainland.
- The site compound including designated parking areas will be located at least 50 m from any watercourse/waterbody.

10.10.2.2.3.2 Construction Runoff and Sediment Control

Best practice mitigation measures will be implemented with regard to runoff and sediment control as follows:

- Erosion and sediment controls are to be implemented prior to any site clearance works commencing.
- Clean water runoff will be intercepted and diverted away from construction site runoff to avoid cross-contamination of clean water with soiled water.
- All topsoil stripping close to sensitive areas will be carried out during periods of dry weather and all stockpiling will be kept as far as possible from surface water features.
- The area of exposed ground will be minimised.
- The amount of material excavated is to be kept to a minimum. Excavations will only be carried out following installation of appropriate sediment controls measures.

10.10.2.2.3.3 Pilling in stream works

- A qualified Ecological Clerk of Works (ECoW) will be appointed to ensure the effective implementation of environmental control measures.
- Silt Curtain Installation: A continuous silt curtain will be assembled and installed around the works area. The silt curtain will include:
    - A 100 mm diameter MDPE flexible watermain float
    - A solvent-weldable EPDM curtain
    - A continuous chain sinker integrated into the hem
- The curtain will be constructed as a single, joint-free length and secured using concrete blocks and ropes. The chain sinker will rest on the bed, effectively containing any silty water generated during the works.
- Electrofishing: The silt curtain will completely enclose the works area, leaving no gaps. Electrofishing will be conducted within the silt-curtained area before any works commence. Electrofishing will be undertaken under the appropriate licence.
- Excavation and Slipway Preparation: Once the silt curtain is installed and electrofishing is completed, a long-reach excavator will be cleaned in accordance with the Biosecurity

Protocol. The excavator will then construct an access area slightly larger than the slipway footprint by:

  - Removing soft material from the water and replacing it with clean quarry-run rock fill (free of fines)
  - Trimming the rock along the slipway's right-hand edge to match the slipway formation
  - Trimming the bed on both sides and in front of the slipway to prevent material from falling into the slipway footprint
  - The fill material for access construction will be compacted using the excavator.

- Handling Soft Material and Minimizing Liquid: To minimize liquid content when removing soft material to the rock level:
  - The excavator bucket will tip water out at water level before removing soft material
  - Soft material will be left to dry and loaded onto lorries in a bunded area to reduce silt levels
  - Runoff will be contained within the bunded area, and water turbidity will be monitored throughout the works
- Turbidity and pH Monitoring: Handheld monitors will be used to measure turbidity and pH. Key actions include:
  - Taking and recording three readings daily in a project spreadsheet
  - Conducting visual inspections a minimum of three times daily, supported by photographs of the area inside and outside the silt curtain
  - Stopping works immediately to address any discolouration observed outside the silt curtain
- Monitoring Locations
  - Turbidity readings will be taken both inside and outside the silt curtain.
- Additional Monitoring: Outside the silt curtain, readings can be taken along the existing pontoon and from a boat to monitor further locations.
- Pre- and Ongoing Monitoring: Turbidity and pH readings will be recorded daily prior to the commencement of works and continued throughout the project.

#### 10.10.2.2.3.4 Management of Fuel/Oil etc

The management of fuel/oil and other chemicals on site will have regard to the following elements on the mainland:

- Chemicals will be bunded and where applicable, stored within double-skinned tanks/containers with the capacity to hold 110% of the volume of chemical contents. Bunds will be located on flat ground a minimum distance of 50 m from any watercourse or other water- conducting features, in a designated, secure, impermeable storage area on the mainland.
- Measures will be implemented throughout the construction stage to prevent contamination of the soil from oil and/or petrol leakages.
- All plant will be regularly inspected for leaks to ensure it is fit for purpose on the mainland.

- Where required, refuelling of plant on-site will only be carried out at a designated area within the site compound on the mainland.
- Rigid and articulated vehicles will be fuelled off site as will all site vehicles (jeeps, cars and vans).
- Controls will be regularly inspected and maintained.
- Procedures and contingency plans will be set up to deal with emergency accidents or spill

10.10.2.2.3.5 Management of Concrete on the mainland

- Only trained operators, experienced in working with concrete, will be employed during the concrete pouring phase. There shall be no pouring of concrete during extreme/prolonged rainfall.
- Washout of concrete trucks will not occur at the site. Washout of plant is to be carried out in designated, contained, impermeable areas.

10.10.2.2.4 Management of Construction Waste

- Appropriate storage of all non-hazardous and hazardous wastes on-site will be undertaken to minimise potential for environmental impacts.
- Dedicated bunded storage containers will be provided for hazardous wastes which may arise such as batteries, paints, oils, chemicals etc, if required.
- In the event that any buried waste or potentially contaminated material is encountered, this will be segregated from clean, inert material, and then tested and classified.
- In the unlikely event of hazardous material being encountered, it will be transported for treatment/recovery or disposal in suitable facilities.
- All wastes are to be removed from site by appropriate licenced waste contractors to suitable waste facilities.

10.10.2.2.5 Storage of Materials

The storage of materials, spoil, containers, stockpiles and waste, however temporary, should follow best practice at all times and be restricted to designated areas only. Material stockpiles should be kept to a minimum size, and be located on impermeable bases, where necessary. Storage of materials will be located away from any temporary drains and moving plant, machinery and vehicles.

10.10.2.2.6 Bio-security

The following measures are recommended in relation to Site bio-security and reducing the risk of introduction or spread of invasive species within the area.

- Prior to being brought to Site, validation should be provided by all suppliers that construction plant, machinery and vehicles are free from invasive species. Similarly, certification is to be obtained from suppliers that all raw materials to be imported to Site including soil, fill, sand, gravel and landscaping materials are free from invasive species.
- All vehicles, machinery and equipment/tools are to arrive to site clean and steam washed. Visual inspections are to take place. All Personal Protective Equipment (PPE) brought to site is to be clean and dry with any attached vegetation or debris removed.
- Where there is a requirement for IAPS control areas, all vehicles, equipment/tools, footwear etc used in these areas will be thoroughly cleaned in a designated area once works in that area are complete to prevent spread of IAPS. The use of tracked machinery within IAPS

infested areas is to be prohibited. The use of tracked machinery within close proximity of IAPS infested areas is to be strictly controlled. This should be undertaken with direction from the ECoW.

**Zebra Mussel (*Dreissena polymorpha*)**

Biosecurity measures are required to be in place pre (before bringing materials and machinery onsite) and post works (before removing plant off site heading to another location) for all plant, equipment, PPE and machinery, regardless of whether it will enter the water or not. All material imported onto site will be free of invasive plant material. A "Boot-Bath" with a Virkon Solution should also be in place at the entrance to the site and all those entering and leaving the site should dip their boots into the disinfectant Virkon Solution, which should be replenished each week.

The Check Clean (Disinfect) and Dry Guidelines are to be adhered to:

- Check all plant before arriving on site for invasive species and carefully remove and dispose. A visual inspection of all machinery shall be carried out and any debris removed.
- Clean all equipment using power washers ideally steam clean at above 60°C before arrival to site and before removal off site.
- Disinfect all external PPE and Machinery with Virkon aquatic 1% solution.
- If feasible, allow all equipment, PPE, boots etc to dry out thoroughly for +48hours.

10.10.2.2.7 Management of Alien Invasive Plant Species (IAPS)

- A pre-construction survey for IAPS is to take place in advance of the commencement of site works.
- A construction-stage IAPS management plan will be prepared.
- A schedule of regular site inspections for invasive species is to be prepared and undertaken for the duration of the construction works. These inspections are to encompass the IAPS growing season for the duration of the construction works programme to monitor existing IAPS growth, identify any new IAPS stands, inspect materials storage areas and monitor implementation of IAPS management measures on-site, where required e.g., fencing, signage etc.
- Where any IAPS is identified within/adjacent to the works footprint, fencing and/or advisory signage is to be erected around stands (minimum 7 m buffer in the case of Japanese knotweed).
- No non-essential ground maintenance or any other ground disturbance should take place within IAPS fenced areas.
- Where works are required within/adjacent to infested areas, the appointed contractor is to develop and implement an appropriate method statement with regard to managing IAPS on-site and ensuring bio-security compliance. This should be done in consultation with a suitably qualified specialist.
- Where application of herbicides is required to treat IAPS on-site, the proximity of ecological receptors is to be taken into account. Herbicide use is to be minimised as much as possible and targeted to the specific IAPS. Where use of herbicides is required, non-residual, aquatic approved herbicides are to be used. Herbicides are to be applied strictly in accordance with the manufacturer's recommendations and by competent, experienced and licenced personnel registered as a Professional Pesticides User.

- All management and control measures implemented on-site during the construction phase are to be carried out in accordance with best practice guidance as set out in '*The Management of Invasive Alien Plant Species on National Roads (GE-ENV-01104)'* TII (2020), '*The Management of Noxious Weeds and Non-native Invasive Species on National Roads*' NRA (2010), '*Best Practice Management Guidelines Rhododendron Rhododendron ponticum and Cherry Laurel Prunus laurocerasus'* Maguire, *et al*., (2008), '*Best Practice Management Guidelines Japanese Knotweed Fallopia japonica*' Kelly, *et al*., (2015) and '*Managing Japanese Knotweed on Development Sites: the Knotweed Code of Practice*' UK Environment Agency (2006).

10.10.2.2.8 General Protection of Habitats

- The area of proposed works will be kept to the minimum necessary to minimise disturbance to habitats and flora. Vegetation removal within the Site is to be minimised and be restricted to those areas of vegetation which have been identified for removal (to be clearly marked by contractor staff prior to removal). Removal of vegetation from anywhere outside of marked areas will not be permitted.
- Once the construction phase has ceased large scale excavation will no longer be required. No additional habitat loss is required as part of the operational phase. During site reinstatement, any bare areas of ground at the Site will be planted as part of the landscape and management plan, reducing the potential for encroachment of invasive and ruderal species, and also reducing any potential for run of from the Site.

10.10.2.2.9 General Protection of Fauna

- Disturbance of fauna generally will be reduced by controlling the movement of construction vehicles and personnel.
- Construction materials and wastes are to be kept in designated areas to reduce risk of accidental injury/entrapment of any wildlife on-site.
- In accordance with Section 40 of the Wildlife Acts, vegetation removal, including tree removal, will be conducted outside of the restricted bird nesting period (March 1st to 31st August, inclusive). This will not only protect nesting birds, but a range of biodiversity.
- Where areas of tall vegetation are to be removed, the ECoW will be present to oversee removal of vegetation and ensure any necessary mitigation measures are in place in the event that a previously unknown breeding or resting site of any protected species is encountered during the works.
- Mammals and birds are mobile and so are expected to disperse from the area; however, young or hibernating animals are vulnerable to impacts during vegetation clearance. Prior to any vegetation clearance, the area will be checked by the ECoW to check for the presence of young or hibernating animals.
- Should any resting or breeding place of any protected species be discovered within the Site during the pre-construction or construction phases, the ECoW is to be informed immediately and the advice of NPWS sought. Any works in the area are to cease immediately and the area is to be cordoned off until the ECoW has authorised recommencement of works.
- All temporary construction lighting is to be switched off outside daylight hours. Construction lighting is to be directed inwards into the Site to reduce indirect alteration of adjacent habitats outside the Site and minimise nocturnal impacts on faunal species.

10.10.2.2.10 Protection of Birds

10.10.2.2.10.1 Pre-construction Surveys

A pre-construction bird survey of the Site will be conducted by the ECoW in advance of any works to identify any breeding sites. In the event that any bird nesting sites are identified, best-practice mitigation will be recommended by the appointed ecologist in consultation with the Planning Authority/NPWS.

10.10.2.2.10.2 Recommended Timing of Works

It is recommended that, if possible, works are conducted in early autumn or late spring to avoid the main breeding and wintering periods for bird activity. Pushing out works to later in the breeding season will reduce the likelihood of an overlap between construction activity and breeding activity on the island. Typically, this would be from April to July. The summer season had more sightings of waders and other waterbirds compared to the winter season hence it is important to not schedule construction during peak breeding periods.

10.10.2.2.11 Protection of Bats

10.10.2.2.11.1 Pre-construction Surveys

Pre-construction surveys of any structures/trees to be modified and/or removed and considered to have any potential to accommodate roosting bats are to be carried out at the Site in advance of construction commencing.

In the event that bat roosts are identified within the Site, best-practice mitigation will be recommended by the appointed ecologist in consultation with the Planning Authority/NPWS.

10.10.2.2.11.2 Construction Lighting

Appropriate lighting will be employed during the construction phase to minimise impacts on local bat populations. Use of lighting will be minimised and avoided, where possible. Construction lighting will be targeted to minimise/avoid light spill to enable the retention of dark-corridor connectivity within the landscape for commuting bats.

Construction phase lighting for the proposed development is to conform to the following guidelines which are to be strictly implemented throughout the construction phase:

- Bat Conservation Trust (2023). Guidance Note GN08/23. Bats and Artificial Lighting at Night. Bat Conservation Trust and Institution of Lighting Professionals.
- Bats & Lighting. Guidance Notes for: Planners, engineers, architects and developers (BCI, 2010).

Luminaire design is extremely important to achieve an appropriate lighting regime. Luminaires come in a myriad of different styles, applications and specifications which a lighting professional can help to select. The BCT Lighting Guidelines (BCT, 2023) are to be followed with regard to the selection and use of luminaires. All temporary lighting used throughout the Site, other than any lighting required for Health and Safety (H&S), will be switched off after construction hours as a means of reducing light pollution/ensuring that there is no unnecessary residual lighting during hours of darkness. Any external security lighting will be set on motion-sensors and short (1 min) timers. The H&S lighting will be cowled towards the centre of compound areas. Light spillage onto retained perimeter hedgerows/treelines is to be avoided. Lighting will be reviewed and audited for implementation throughout the construction period by the appointed Ecologist.

10.10.2.2.12 Protection of Otter

A pre-construction survey for otter should be undertaken prior to the commencement of any works as per best-practice guidance set out in NRA (2008) in relation to construction works and otter. The

purpose of the pre-construction survey is to identify any changes within the Site. The survey should be undertaken no more than 10-12 months in advance of construction. The survey should be supplemented by an additional survey immediately prior to site works commencing if more than four weeks have elapsed since the initial pre-construction survey.

In the event of an otter breeding/resting place being discovered within or in proximity of the Site, all construction activity and site works will be undertaken in accordance with NRA (2008). Implementation of best-practice guidelines for otter will be overseen by the appointed ECoW.

#### 10.10.2.2.13 Protection of Badger

A pre-construction survey for badger should be undertaken prior to the commencement of any works as per best-practice guidance set out in NRA (2006b) in relation to construction works and badger. The purpose of the pre-construction survey is to identify any changes within the Site. The survey should be undertaken no more than 10-12 months in advance of construction. The survey should be supplemented by an additional survey immediately prior to site works commencing if more than four weeks have elapsed since the initial pre-construction survey.

In the event of a badger breeding/resting place being discovered within or in proximity of the Site, all construction activity and site works will be undertaken in accordance with NRA (2006b). Implementation of best-practice guidelines for badger will be overseen by the appointed ECoW.

### 10.10.2.3 Operational Phase

The following operational phase mitigation measures are recommended with regard to the Proposed Development.

#### 10.10.2.3.1 Protection of Bats (Lighting Plan)

Bats (and other species, such as some birds) are sensitive to lighting, and vary in their degree of tolerance of artificial light. Any operational lighting proposal must be sensitive to bats and other fauna. Use of artificial light is to be minimised to minimise impacts on bats. Potential impacts to bats and other fauna have been taken into consideration at design stage with regard to the operational phase Lighting Plan which is proposed for the development.

Specific measures to avoid unnecessary external artificial lighting and minimise the incidence of light spill from the Proposed Development onto adjacent areas once operational have been incorporated into the proposed Lighting Plan to reduce potential impacts.

The following guidelines, taken from the Bat Conservation Trust 2023 ‘Guidance Note 08/23’, have been incorporated into the proposed Lighting Plan for the development. The Lighting Plan is to follow these guidelines.

- LED luminaires to be used due to the fact that they are highly directional, sharp cut-off, lower intensity, good colour rendition and dimming capability.
- All luminaires used to lack UV elements to reduce impact. Metal halide, compact fluorescent sources should not be used.
- A warm white light source (<2700 Kelvins) is to be adopted to reduce the blue light component).
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Internal luminaires can be recessed (as opposed to using a pendant fitting) where installed in proximity to windows to reduce glare and light spill.

- Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges.
- Column heights will be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards. The shortest column height allowed will be used where possible.
- Only luminaires with a negligible or zero upward light ratio and with good optical control will be used.
- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt.
- Where appropriate, external security lighting should be set on motion sensors and set to as short a possible a timer.
- The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output and increased upward light scatter from surfaces. Therefore, they should only be considered in specific cases where these issues can be resolved.
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.

#### 10.10.2.3.2 Biodiversity Signage

Signage is to be erected at various locations to include along the Island and mainland Visitors Centre to highlight the presence of more sensitive habitats, including scrub, oak-hazel woodland, reed and large sedge swamp and marsh') which occur along the island paths. Signage will also be erected in relation to fauna, including species of conservation interest which could or are likely to occur in the vicinity of the development, such as waders and other waterbirds. The purpose of this signage is to encourage visitors to the area to be cognisant of the sensitive nature of these habitats to impacts, such as from trampling and erosion, which can negatively impact upon these habitats and flora. Signage should also educate visitors as to the sensitivity of bird species to disturbance, in particular during certain periods, such as breeding, or when foraging or roosting on-land. Signage will direct visitors to the area to keep dogs on leads and follow 'Leave No Trace' principles.

#### 10.10.2.3.3 Protection of Water Quality during Operation

##### ***10.10.2.3.3.1*** Surface and Foul Water Network

For the SuDS strategy to work as designed it is important that the entire drainage system is well maintained. It will be the responsibility of the site management team to ensure the drainage system is maintained. The recommended programme of maintenance for the proposed storm water network and foul water network will be adhered to.

#### 10.10.2.3.4 Visitor Toilets

- The toilet composting system is be monitored on a daily basis to ensure that the tank is emptied at the intervals necessary to ensure that the system functions correctly.

- There is to be no disposal of wastes on the island.
- Wastes are to be removed and stored in fully-sealed plastic containers for removal from the island by boat. These waste containers are to be secured adequately during transport to reduce risk of accidental spillage.
- Wastes are to be disposed of appropriately at a suitably-licensed facility on the mainland.
- It is recommended that signage be erected at the location of the toilets to inform members of the public of the presence of breeding birds in the general area and requesting that people do not linger or gather unnecessarily at the location to reduce any potential disturbance to breeding birds.

## 10.11 Residual Impact Assessment

Residual impacts are impacts that remain once mitigation has been implemented or impacts that cannot be mitigated. Provided that the ecological mitigation measures outlined in **Section 10.10** above are implemented in full, it is considered that the effects on IEFs from potential demolition, construction and operational impacts would be avoided, reduced and mitigated sufficiently to ensure that no likely significant residual effects remain. It is considered that the receiving environment within the Proposed Development site has the capacity to accommodate the Proposed Development without significant effects on habitats and faunal features discussed in this chapter. A summary of the unmitigated effects of the demolition, construction and operational phases, including mitigation and residual effects, of the Proposed Development are detailed in **Table 10-36** and **Table 10-37** below.

### 10.11.1 Demolition Phase

The following Table summarises the identified likely residual effects during the demolition phase of the proposed development following the application of mitigation measures where relevant.

**Table 10-36 Summary of Demolition Phase Effects Post Mitigation**

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| **Habitats** | | | | | | | | |
| **Habitat Alteration** | | | | | | | | |
| Oak-ash-hazel woodland (WN2) | Negative, Not significant, Localised, Temporary, Indirect, Likely | Section 10.10.3.2.1 | Negative | Not significant | Localised | Temporary | Direct | Likely |
| Improved agricultural grassland (GA1) | Negative, Not significant, Localised, Temporary, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Temporary | Direct | Likely |
| Scrub (WS1) | Negative, Not significant, Localised, Temporary, Direct, Likely | Section 10.10.3.2.1 | Negative | Not significant | Localised | Temporary | Direct | Likely |

### 10.11.2 Construction Phase

The following Table summarises the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

**Table 10-37 Summary of Construction Phase Effects Post Mitigation**

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| **Habitats** | | | | | | | | |
| **Habitat Loss** | | | | | | | | |
| Improved agricultural grassland (GA1) | Negative, Not significant, Localised, Permanent, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Treeline (WL2) | Negative, Not significant, Localised, Permanent, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Hedgerow (WL1) | Negative, Not significant, Localised, Permanent, Direct, Likely | Section 10.10.2.2.8 | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Stonewalls (BL1) | Negative, Not significant, Localised, Permanent, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Amenity grassland (GA2) | Negative, Not significant, Localised, Permanent, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Dry Meadows and Grassy Verge Grassland (GS2) | Negative, Not significant, Localised, Permanent, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Permanent | Direct | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| Buildings and artificial surfaces (BL3) | Negative, Not significant, Localised, Permanent, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Mixed broadleaved/conifer woodland (WD2) | Negative, Not significant, Localised, Permanent, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Scattered trees and parkland (WD5) | Negative, Not significant, Localised, Permanent, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Wet Grassland (GS4) | Negative, Not significant, Localised, Permanent, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Marsh (GM1) | Negative, Not significant, Localised, Permanent, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Scrub (WS1) | Negative, Not significant, Localised, Permanent, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Permanent | Direct | Likely |
| Limestone-marl lakes (FL3) (Lough Derg) | Negative, Not significant, Localised, Permanent, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Permanent | Direct | Likely |
| **Habitat Alteration/Disturbance** | | | | | | | | |
| **Improved agricultural grassland (GA1)** | Negative, Not significant, Localised, Temporary to Short- | Sections 10.10.2.2.6, | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| | term, Direct and Indirect, Likely | 10.10.2.2.7, 10.10.2.2.8 | | | | | | |
| **Treeline (WL2)** | Negative, Not significant, Localised, Temporary to Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Hedgerow (WL1)** | Negative, Not significant, Localised, Temporary to Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Stonewalls (BL1)** | Negative, Not significant, Localised, Temporary to Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Amenity grassland (GA2)** | Negative, Not significant, Localised, Temporary to Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Spoil and bare ground (ED2)** | Negative, Not significant, Localised, Temporary to Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Dry Meadows and Grassy Verge Grassland (GS2)** | Negative, Not significant, Localised, Temporary to Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| **Buildings and artificial surfaces (BL3)** | Negative, Not significant, Localised, Temporary to Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Mixed broadleaved/conifer woodland (WD2)** | Negative, Not significant, Localised, Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Not significant | Localised | Short-term | Direct and Indirect | Likely |
| **Scattered trees and parkland (WD5)** | Negative, Not significant, Localised, Temporary to Short-term, Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Wet Grassland (GS4)** | Negative, Not significant, Localised, Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Marsh (GM1)** | Negative, Not significant, Localised, Temporary to Short-term, Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Scrub (WS1)** | Negative, Not significant, Localised, Temporary to Short-term, Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Oak-ash-hazel woodland (WN2)** | Negative, Not significant, Localised, Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Limestone-marl lakes (FL3) (Lough Derg)** | Negative, Not significant, Localised, Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.3, 10.10.2.2.3.4, 10.10.2.2.3.5, | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| | | 10.10.2.2.5, 10.10.2.2.6 | | | | | | |
| **Reed and Large Sedge Swamp (FS1)** | Negative, Not significant, Localised, Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.3, 10.10.2.2.3.4, 10.10.2.2.3.5, 10.10.2.2.5, 10.10.2.2.6 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Presence of IAPS** | | | | | | | | |
| **Habitats** | Negative, Moderate, Localised, Medium-term, Indirect, Likely | Sections 10.10.2.2.6, 10.10.2.2.7, 10.10.2.2.8 | Negative | Not significant | Localised | Medium-term | Indirect | Likely |
| **Presence of Rare and/or Protected Flora Habitat Alteration/Disturbance** | Negative, Not significant, Localised, Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.3.4, 10.10.2.2.3.5, 10.10.2.2.5 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Mammals (excl. bats)** | | | | | | | | |
| **Habitat Loss** | | | | | | | | |
| **Hedgehog** | Negative, Not significant, Localised, Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Short-term | Direct | Likely |
| **Badger** | Negative, Not significant, Localised, Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9, 10.10.2.2.13 | Negative | Imperceptible | Localised | Short-term | Direct | Likely |
| **Pygmy shrew** | Negative, Not significant, Localised, Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Short-term | Direct | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| **Irish hare** | Negative, Slight, Localised, Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Not significant | Localised | Short-term | Direct | Likely |
| **Irish stoat** | Negative, Not significant, Localised, Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Short-term | Direct | Likely |
| **Otter** | Negative, Not significant, Localised, Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9, 10.10.2.2.12 | Negative | Imperceptible | Localised | Short-term | Direct | Likely |
| **Pine marten** | Negative, Not significant, Localised, Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Short-term | Direct | Likely |
| **Red deer** | Negative, Not significant, Localised, Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Short-term | Direct | Likely |
| **Fallow deer** | Negative, Not significant, Localised, Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Short-term | Direct | Likely |
| **Red Squirrel** | Negative, Not significant, Localised, Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Short-term | Direct | Likely |
| Disturbance/Displacement | | | | | | | | |
| **Hedgehog** | Negative, Not significant, Localised, Temporary to Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| **Badger** | Negative, Not significant, Localised, Temporary to Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9, 10.10.2.2.13 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct | Likely |
| **Pygmy shrew** | Negative, Not significant, Localised, Temporary to Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct | Likely |
| **Irish hare** | Negative, Slight, Localised, Temporary to Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |
| **Irish stoat** | Negative, Not significant, Localised, Temporary to Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct | Likely |
| **Otter** | Negative, Not significant to Slight, Localised, Temporary to Short-term, Direct and Indirect, Likely | Section 10.10.2.2.3, 10.10.2.2.8, 10.10.2.2.9, 10.10.2.2.12 | Negative | Imperceptible to Not significant | Localised | Temporary to Short-term | Direct and indirect | Likely |
| **Pine marten** | Negative, Not significant, Localised, Temporary to Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct | Likely |
| **Red deer** | Negative, Not significant, Localised, Temporary to Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct | Likely |
| **Fallow deer** | Negative, Not significant, Localised, Temporary to Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| **Red Squirrel** | Negative, Not significant, Localised, Temporary to Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct | Likely |
| **Bats** | | | | | | | | |
| **Disturbance/Displacement (noise, human activity, lighting)** | | | | | | | | |
| **All bats** | Negative, Slight to Moderate, Localised, Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.11 | Negative | Imperceptible to Slight | Localised | Short-term | Direct and Indirect | Likely |
| **Habitat Loss/Fragmentation** | | | | | | | | |
| **All bats** | Negative, Slight, Localised, Permanent, Direct and Indirect, Likely | Sections 10.10.2.2.11 | Positive | Slight | Localised | Permanent | Direct and Indirect | Likely |
| **Birds** | | | | | | | | |
| **Loss of Foraging/Resting Habitat** | | | | | | | | |
| Passerines | Negative, Significant, Localised and Regional, Medium-term, Direct, Likely | Section 10.10.2.2.10 | Negative | Slight | Localised and Regional | Medium-term | Direct | Likely |
| Raptors (e.g. buzzard, hen harrier, kestrel, sparrowhawk, white-tailed eagle) | Negative, Moderate, Localised and Regional, Medium-term, Direct, Likely | Section 10.10.2.2.10 | Negative | Slight | Localised and Regional | Medium-term | Direct | Likely |
| Wader and other Waterbirds (37 birds) | Negative, Significant, Localised and Regional, Medium-term, Direct, Likely | Section 10.10.2.2.10 | Negative | Slight | Localised and Regional | Medium-term | Direct | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| Shorebirds | Negative, Moderate, Localised and Regional, Medium-term, Direct, Likely | Section 10.10.2.2.10 | Negative | Slight | Localised and Regional | Medium-term | Direct | Likely |
| Game birds (pheasants) | Negative, Significant, Localised and Regional, Medium-term, Direct, Likely | Section 10.10.2.2.10 | Negative | Slight | Localised and Regional | Medium-term | Direct | Likely |
| **Disturbance/Displacement (noise/human presence/water quality)** | | | | | | | | |
| Passerines | Negative, Slight, Localised, Temporary to Short-term, Direct, Likely | Section 10.10.2.2.9, 10.10.2.2.10 | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |
| Raptors (e.g. buzzard, hen harrier, kestrel, sparrowhawk, white-tailed eagle) | Negative, Slight, Localised, Temporary to Short-term, Direct and Indirect, Likely | Section 10.10.2.2.9, 10.10.2.2.10 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Wader and other Waterbirds (37 birds) | Negative, Slight, Localised, Temporary to Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.3, 10.10.2.2.9 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Shorebirds | Negative, Not significant to Slight, Localised, Temporary to Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.3, 10.10.2.2.9 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Game birds (pheasants) | Negative, Not significant, Localised, Temporary to Short-term, Direct, Likely | Section 10.10.2.2.9, 10.10.2.2.10 | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |
| **Reptiles and Amphibians** | | | | | | | | |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| **Habitat Loss/Alteration** | | | | | | | | |
| **Common lizard** | Negative, Not significant, Localised, Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Short-term | Direct | Likely |
| **Disturbance/Displacement (noise/human activity)** | | | | | | | | |
| **Common lizard** | Negative, Not significant, Localised, Temporary to Short-term, Direct, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Not significant | Localised | Temporary to Short-term | Direct | Likely |
| **Terrestrial macro-invertebrates** | | | | | | | | |
| **Habitat Loss/Alteration** | Negative, Not significant, Localised, Temporary, Direct and Indirect, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary | Direct and Indirect | Likely |
| **Disturbance/Displacement** | Negative, Not significant, Localised, Temporary to Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Freshwater aquatic species | | | | | | | | |
| **Habitat Loss/Alteration** | | | | | | | | |
| European eel | Negative, Not significant, Localised, Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary | Direct and Indirect | Likely |
| Freshwater White-clawed crayfish (Austropotamobius pallipes) | Negative, Not significant, Localised, Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary | Direct and Indirect | Likely |
| Freshwater Pearl Mussel (Margaritifera margaritifera) | Negative, Not significant, Localised, Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary | Direct and Indirect | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| Other aquatic macro-invertebrates (aquatic snails, water beetles and other aquatic insects) | Negative, Not significant, Localised, Short-term, Direct and Indirect, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary | Direct and Indirect | Likely |
| **Disturbance/Displacement** | | | | | | | | |
| European eel | Negative, Slight, Localised, Temporary to Short-term, Indirect, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Freshwater White-clawed crayfish (Austropotamobius pallipes) | Negative, Slight, Localised, Temporary to Short-term, Indirect, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Freshwater Pearl Mussel (Margaritifera margaritifera) | Negative, Slight, Localised, Temporary to Short-term, Indirect, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| Other aquatic macro-invertebrates (aquatic snails, water beetles and other aquatic insects) | Negative, Slight, Localised, Temporary to Short-term, Indirect, Likely | Sections 10.10.2.2.8, 10.10.2.2.9 | Negative | Imperceptible | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Water Quality** | | | | | | | | |
| **Construction Activity (run-off or ingress of silt, pollutants, nutrients etc)** | | | | | | | | |
| **Surface water quality (existing drainage network)** | Negative, Moderate, Localised, Temporary to Short-term, Direct and Indirect, Likely | Section 10.10.2.2.3 to 10.10.2.2.5 | Negative | Not significant | Localised | Temporary to Short-term | Direct and Indirect | Likely |
| **Lake water quality** | Negative, Moderate, Localised, Temporary, Direct and Indirect, Unlikely | Section 10.10.2.2.3 to 10.10.2.2.5 | Negative | Not significant | Localised | Temporary | Direct and Indirect | Unlikely |

### 10.11.3 Summary of Operational Phase Effects Post Mitigation

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| Habitats | | | | | | | | |
| Habitat Alteration/Disturbance | | | | | | | | |
| Improved agricultural grassland (GA1)/ | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Treeline (WL2) | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Hedgerow (WL1) | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Stonewalls (BL1) | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Amenity grassland (GA2) | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Dry Meadows and Grassy Verge Grassland (GS2) | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| Buildings and artificial surfaces (BL3) | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| **Mixed broadleaved/conifer woodland (WD2)** | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| **Scattered trees and parkland (WD5)** | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | Section 10.10.2.3.2 | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| **Wet Grassland (GS4)** | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| **Marsh (GM1)** | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| **Scrub (WS1)** | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| **Oak-ash-hazel woodland (WN2)** | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely | Negative |
| **Calcareous Spring (FP1)** | Negative, Not significant, Localised, Long-term, Indirect, Likely | Negative | Not significant | Localised | Long-term | Indirect | Likely | Negative |
| **Limestone-marl lakes (FL3) (Lough Derg)** | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely | Negative |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| **Reed and Large Sedge Swamp (FS1)** | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely | Negative |
| **Mammals (excl. bats)** | | | | | | | | |
| | | | | | | | | |
| **Disturbance/Displacement** | | | | | | | | |
| **Hedgehog** | Negative, Not significant, Localised, Long-term, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct | Likely |
| **Badger** | Negative, Not significant, Localised, Long-term, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct | Likely |
| **Pygmy shrew** | Negative, Not significant, Localised, Long-term, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct | Likely |
| **Irish hare** | Negative, Slight, Localised, Long-term, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct | Likely |
| **Irish stoat** | Negative, Not significant, Localised, Long-term, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct | Likely |
| **Otter** | Negative, Not significant to Slight, Localised, Long-term, | Sec 10.10.2.2.12 | Negative | Imperceptible | Localised | Long-term | Direct and Indirect | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| | Direct and Indirect, Likely | | | | | | | |
| **Pine marten** | Negative, Not significant, Localised, Long-term, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct | Likely |
| **Red deer** | | No mitigation needed. | | | | | | |
| **Fallow deer** | Negative, Not significant to Imperceptible, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Imperceptible | Localised | Long-term | Direct and Indirect | Likely |
| **Red Squirrel** | Negative, Imperceptible, Localised, Long-term, Indirect, Likely | No mitigation needed. | Negative | Imperceptible | Localised | Long-term | Indirect | Likely |
| **Bats** | | | | | | | | |
| | | | | | | | | |
| **Disturbance/Displacement (noise/human activity)** | | | | | | | | |
| **All bats** | Negative, Slight, Localised, Long-term, Direct and Indirect, Likely | Section 10.10.2.3.1 | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |
| **Disturbance/Displacement (lighting)** | | | | | | | | |
| **All bats** | Negative, Moderate to Significant, Localised, | Section 10.10.2.3.1 | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| | Long-term, Direct and Indirect, Likely | | | | | | | |
| **Birds** | | | | | | | | |
| | | | | | | | | |
| **Disturbance/Displacement (noise and human activity)** | | | | | | | | |
| Passerines | Negative, Slight, Localised, Long-term, Direct, Likely | Section 10.10.2.3.2 | Negative | Slight | Localised | Long-term | Direct | Likely |
| Raptors (e.g. buzzard, hen harrier, kestrel, sparrowhawk, white-tailed eagle) | Negative, Slight, Localised, Long-term, Direct, Likely | Section 10.10.2.3.2 | Negative | Slight | Localised | Long-term | Direct | Likely |
| Wader and other Waterbirds (37 birds) | Negative, Not significant, Localised, Long-term, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct | Likely |
| Shorebirds | Negative, Not significant, Localised, Long-term, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct | Likely |
| Game birds (pheasants) | Negative, Not significant, Localised, Long-term, Direct, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct | Likely |
| **Reptiles and Amphibians** | | | | | | | | |
| | | | | | | | | |
| **Disturbance/Displacement (noise/lighting/human activity)** | | | | | | | | |
| **Common lizard** | Negative, Not significant, Localised, Long-term Direct and Indirect, Likely | No mitigation needed. | Negative | Not significant | Localised | Long-term | Direct and Indirect | Likely |

| EFFECT (PRE-MITIGATION) | PRE-MITIGATION RATING | MITIGATION MEASURES | RESIDUAL EFFECT (POST-MITIGATION) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QUALITY OF EFFECT | SIGNIFICANCE | SPATIAL EXTENT | DURATION | OTHER RELEVANT CRITERIA | LIKELIHOOD |
| **Freshwater macro-invertebrates and Freshwater aquatic** | | | | | | | | |
| | | | | | | | | |
| **Disturbance/Displacement (water quality)** | Negative, Not significant, Long-term, Indirect, Likely | Sections 10.11.3.3 | Negative | Imperceptible | Localised | Long-term | Indirect | Likely |
| **Terrestrial macro-invertebrates** | | | | | | | | |
| | | | | | | | | |
| **Disturbance/Displacement** | Negative, Imperceptible, Localised, Long-term, Direct and Indirect, Likely | No mitigation needed. | Negative | Imperceptible | Localised | Long-term | Direct and Indirect | Likely |
| **Water Quality** | | | | | | | | |
| | | | | | | | | |
| **Management of Stormwater** | Negative, Imperceptible, Localised, Long-term, Direct and Indirect, Likely | Section 10.10.2.3.3 | Negative | Imperceptible | Localised | Long-term | Direct and Indirect | Likely |
| **Management of Wastewater** | | | | | | | | |
| **Surface water quality (existing drainage network)** | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | Section 10.10.2.3.3 | Negative | Imperceptible | Localised | Long-term | Direct and Indirect | Likely |
| **Lake water quality** | Negative, Not significant, Localised, Long-term, Direct and Indirect, Likely | Section 10.10.2.3.3 | Negative | Imperceptible | Localised | Long-term | Direct and Indirect | Likely |

### 10.11.4 Cumulative Residual Effects

No significant Cumulative effects have been identified as per section 10.9.4 hence no significant residual effects are envisaged.

## 10.12 Monitoring

### 10.12.1 Alien Invasive Plant Species (IAPS)

Invasive species will continue to be monitored, and where required, managed throughout the operational phase, in accordance with the construction-stage IAPS management plan, until they are eradicated from site.

## 10.13 Enhancement

### 10.13.1 Proposed Enhancement Measures for the Proposed Development Site

This section outlines the proposed biodiversity enhancement measures in relation to the Site.

### 10.13.2 Bird Box Scheme

To further enhance the Site for birds, a bird box scheme comprising artificial nest boxes will be installed to provide additional nesting habitat for birds. Different bird box designs are available to accommodate a wide variety of species such as swift, swallow, starling, blue tit (Cyanistes caeruleus), great tit (Parus major) and robin (Erithacus rubecula). It is proposed that a minimum of 10 No. bird boxes are installed within the Site on structures and trees, as appropriate. Installation of the nest box scheme, including the final number and location of boxes to be installed, is to be undertaken under the direction of the appointed ECoW.

### 10.13.3 Bat Box Scheme

To enhance the Site for bats, bat boxes will be erected on suitable trees within the Site. The scheme will comprise a mix of bat-box designs to attract a variety of bat species such as common pipistrelle, soprano pipistrelle, Leisler's bat and brown long-eared bat, all of which were recorded within the Site during baseline surveys. A minimum of 20 no. bat boxes are to be installed. Design and installation of the bat box scheme will be overseen by the appointed ecologist and will follow BCIreland guidance .

### 10.13.4 Pollinator-friendly Management of the Site

Pollinator-friendly management of green spaces and other managed areas will be implemented at the Site during the operational phase of the Proposed Development. This should have regard to 'All-Ireland Pollinator Plan' guidance[41].

[41] AIPP-Business-Guide-2023-WEB-1.pdf (pollinators.ie)

### 10.13.5 Biodiversity Signage

Informative biodiversity signage will be erected in suitable locations throughout the Site where the public can easily access them, such as within amenity/landscaped areas or at various points around the mainland and island. These should provide information to readers about the wildlife-friendly habitat management practices which are being implemented on the Site to enhance the biodiversity value of the area, such as the bird box scheme and use of pollinator-friendly planting. The NBDC has various signage available e.g., 'Managed for Wildlife', 'Pollinator-friendly Zone' etc, which can be installed at appropriate locations.

Signage should also describe the general biodiversity of the Site and surrounding area, including Inis Cealtra and the other islands, with illustrations and background information on key species, floral or faunal groups. Signage could include information on, for example, the bird and marine life of the bay, highlighting species of interest in the locality, to promote knowledge-sharing and appreciation of biodiversity and the local environment amongst visitors to the area.

### 10.13.6 Eradication of mink from Inis Cealtra

Surveys and monitoring programs help guide eradication efforts by providing critical information on mink distribution and behaviour. Using camera traps, track surveys, and other methods to assess their presence and distribution. The National Parks and Wildlife Service (NPWS) and local conservation groups use live trapping to manage mink populations in various regions. This method is effective for targeted removal and helps monitor mink numbers . Managing and modifying habitats can help reduce mink populations. This includes removing potential food sources, such as domestic animals and livestock, and eliminating mink shelters like abandoned buildings or dense vegetation. Conservation projects often incorporate habitat management as part of a broader strategy to reduce mink populations and protect native species . Raising awareness and educating the public about the impacts of mink and the importance of controlling invasive species can help gain community support and encourage reporting of sightings. Conservation organizations often run campaigns to inform the public about the negative effects of mink and how they can assist in eradication efforts.

## 10.14 Conclusion

Provided that the Proposed Development is constructed and operated in accordance with the design, best practice and mitigation measures stipulated, significant residual effects on biodiversity are not anticipated on any Important Ecological Feature (IEF) at any scale.

The application of mitigation and protection measures throughout the construction and operational phases will ensure that no significant residual impacts will arise from the project, either alone or in combination with other plans or projects.

The Applicant is committed to the mitigation, monitoring and enhancement measures set out in this assessment.

## 10.15 References and Sources


Brophy, J.T. (2019) Inis Cealtra Vertigo moulinsiana Survey. Unpublished Report by BEC Consultants Ltd. Doherty Environmental (2016) Inis Cealtra Ecology Report. Prepared for Clare County Council.

Byrne, A., Moorkens, E.A., Anderson, R., Killeen, I.J. and Regan, E.C. (2009) Ireland Red List No. 2 – Non-Marine Molluscs. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

Fossitt (2000) A Guide to Habitats in Ireland. The Heritage Council.

Gillespie, B. S. (2006) Bat Surveys: Surveying Buildings (Including Bat Identification) Developed on behalf of the Bat Conservation Trust.

Harrison, A.J., Kelly, F.L., Rosell, R.S., Champ, T.W.S., Connor, L. and Girvan, J.R. (2010) First record and initial hydroacoustic stock assessment of pollan *Coregonus autumnalis* Pallas in Lough Allen, Ireland. Biology and Environment: Proceedings of the Royal Irish Academy, 110B, 69-74.

Harrod C, Griffiths D, Mc Carthy TK, Rosell R. (2001) The Irish pollan*, Coregonus autumnalis*: options for its conservation. Journal of Fish Biology, 59, 339–355.

IFI (2010) IFI Biosecurity Protocol for Field Survey Work. Inland Fisheries Ireland. 3044 Lake Drive, Citywest Business Campus Co. Dublin.

Invasive Species Ireland. (2011) www.invasivespeciesireland.com

Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Kelly, F., Connor, L., Matson, R., Feeney, R., Morrissey, E., Wogerbauer, C. and Rocks, K. 2013. Sampling Fish for the Water Framework Directive – Summary Report 2012. Inland Fisheries Ireland.

Kelly, F., Harrison A., Connor, L., Matson, R., Morrissey, E., O'Callaghan, R., Wogerbauer, C., Feeney, R., Hanna, G. and Rocks, K. (2010) Sampling Fish for the Water Framework Directive – Summary Report 2009. The Central and Regional Fisheries Boards.

Kelly, F.L., Connor, L., Morrissey, E., McLoone, P., Kelly, K., Delanty, K., Coyne, J., Corcoran, W., Cierpial, D., Matson, R., Gordon, P., O' Briain, R., Rocks, K., O' Reilly, S., Kelly K., Puttharee, D., McWeeney, D., Robson S. and Buckley, S. (2017) Fish Stock Survey of Lough Derg, June 2016. National Research Survey Programme, Inland Fisheries Ireland, 3044 Lake Drive, Citywest Business Campus, Dublin 24.

Kerney, M. (1999) Atlas of the Land and Freshwater Molluscs of Britain and Ireland. Harley Books, Colchester, England.

Long, M.P. and Brophy, J.T. (2019) Monitoring of sites and habitat for three Annex II species of whorl snail (Vertigo). Irish Wildlife Manuals, No. 104. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

Lough Derg Science Group (2007). Investigation in to the distribution and abundance of alien biota in Lough Derg: and assessments of impacts, 2005-6. A report to the Shannon River Basin District Steering Group.

Marnell, F., Kelleher, C. & Mullen, E. (2022) Bat mitigation guidelines for Ireland v2. *Irish Wildlife Manuals*, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

McCarthy, T. K., Fitzgerald, J. & O'Connor, W., 1998. The ocurrence of the zebra mussel Dreissena polymorpha (Pallas. 1771), an introduced biofouling freshwater bivalve in Ireland. Irish Naturalists' Journal. Vol 25(11/12): 413-415.

Milane, M & Caffrey, J. (2014). Risk Assessment of Lagarosiphon minor. Inland Fisheries Ireland, National Biodiversity Data Centre.

Minchin D, Zaiko A (2013) Variability of the zebra mussel (Dreissena polymorpha) impacts in the Shannon River system. Chapter 37. In: Nalepa T, Schlosser D (eds), Quagga and zebra mussels: Biology, Impacts and Control. Second Edition. CRC Press, pp 587–598, http://dx.doi.org/10.1201/ b15437-45.

Minchin D., Lucy F., and Sullivan M. (2002) Monitoring of zebra mussels in the Shannon-Boyle navigation, other navigable regions and principal Irish lakes, 2000 & 2001. Marine Institute, Abbotstown, Dublin 15. ISSN: 1649-0053

Moran, P. & Wilson-Parr, R. (2015) Hen Harrier Special Protection Area (SPA) Habitat Mapping Project 2014. Irish Wildlife Manuals, No. 83. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland

National Parks and Wildlife Service (2014). Lough Derg Site Synopsis.

NPWS (2004) Site Synopsis: Lough Derg (Shannon) SPA. Site Code: 004058. Site Synopsis report, National Parks and Wildlife Service.

NPWS (2013) The Status of Protected EU Habitats and Species in Ireland. Overview Volume 1. Unpublished Report, National Parks & Wildlife Services, Dublin, Ireland.

NPWS (2019) The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished National Parks and Wildlife Service report. National Parks and Wildlife Service, Dublin, Ireland.

NPWS (2019) The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill. National Parks and Wildlife Service, Dublin, Ireland.

NPWS (2022) Conservation Objectives: Slieve Aughty Mountains SPA 004168. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage

Pociecha, A. and McCarthy, T.K. (2011) Has zooplankton 24 hour vertical distribution pattern in Lough Derg (Ireland) been changed over the period of ~90 years International Journal of Oceanography and Hydrobiology 40(3): 28-35.

Reid, N., Hayden, B., Lundy, M.G., Pietravalle, S., McDonald, R.A. & Montgomery, W.I. (2013) National Otter Survey of Ireland 2010/12. Irish Wildlife Manuals No. 76. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Smith, G., O'Donoghue, P., O'Hora, K. & Delaney, E., 2011. *Best Practice Guidance for Habitat Survey and Mapping,* Kilkenny, Ireland: The Heritage Council.

TII (2010) 'Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads' Revision 1. National Roads Authority, St Martin's House, Waterloo Road, Dublin 4.

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 11
# NOISE & VIBRATION

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


11 Noise & Vibration ..... 11-4
11.1 Introduction ..... 11-4
11.2 Expertise & Qualifications ..... 11-4
11.3 Fundamentals of Noise ..... 11-4
11.4 Proposed Development ..... 11-6
11.4.1 Aspects Relevant to this Assessment ..... 11-7
11.5 Methodology ..... 11-8
11.5.1 Relevant Legislation & Guidance ..... 11-8
11.5.2 Site Surveys/Investigations ..... 11-9
11.5.3 Assessment Criteria ..... 11-9
11.6 Difficulties Encountered ..... 11-14
11.7 Consultation ..... 11-14
11.8 Baseline Environment ..... 11-15
11.8.1 Baseline Survey ..... 11-15
11.9 Characteristics of the Proposed Development ..... 11-22
11.10 The 'Do Nothing' Scenario ..... 11-23
11.11 Potential Significant Effects ..... 11-24
11.11.1 Phase 1 Demolition Effects ..... 11-24
11.11.2 Phase 1 Construction Effects ..... 11-25
11.11.3 Phase 1 Operational Effects ..... 11-34
11.11.4 Phase 2 Demolition Effects ..... 11-37
11.11.5 Phase 2 Construction Effects ..... 11-38
11.11.6 Phase 2 Operational Effects ..... 11-42
11.11.7 Cumulative Effects ..... 11-45
11.11.8 Worst-case scenario ..... 11-46
11.11.9 Summary ..... 11-47
11.12 Mitigation ..... 11-50
11.12.1 Incorporated Design Mitigation ..... 11-50
11.12.2 Demolition Phase Mitigation ..... 11-50
11.12.3 Construction Phase Mitigation ..... 11-50
11.12.4 Operational Phase Mitigation ..... 11-52
11.13 Residual Impact Assessment ..... 11-52
11.13.1 Demolition Phase ..... 11-52
11.13.2 Construction Phase ..... 11-53
11.13.3 Operational Phase ..... 11-53
11.13.4 Summary of Post-mitigation Effects ..... 11-54

11.14 Interactions ..... 11-56
11.15 Monitoring ..... 11-56
11.15.1 Demolition Phase Noise Monitoring ..... 11-56
11.15.2 Construction Phase Noise Monitoring ..... 11-56
11.15.3 Operational Phase Noise Monitoring ..... 11-57
11.16 Summary of Mitigation and Monitoring ..... 11-57
11.17 Conclusion ..... 11-58
11.18 References and Sources ..... 11-59

## Table of Figures

Figure 11-1 The Level of Typical Common Sounds on the dB(A) Scale ..... 11-5
Figure 11-2 Noise Sensitive Locations (NSLs) ..... 11-15
Figure 11-3 Noise Monitoring Locations (NMLs) and Noise Sensitive Receptors (NSRs) ..... 11-16

## Table of Tables

Table 11-1 Construction Phase Noise Assessment Criteria ..... 11-9
Table 11-2 Construction Noise Significance Ratings ..... 11-10
Table 11-3 Magnitude of Impact – Construction Phase Traffic ..... 11-11
Table 11-4 Magnitude of Impact – Operational Phase Traffic Noise ..... 11-12
Table 11-5 Noise Monitoring Locations (NMLs) and Noise Sensitive Locations (NSLs) ..... 11-16
Table 11-6 Noise Monitoring Equipment ..... 11-17
Table 11-7 NML1 Baseline Noise Monitoring Results ..... 11-19
Table 11-8 NML2 Baseline Noise Monitoring Results ..... 11-19
Table 11-9 NML3 Baseline Noise Monitoring Results ..... 11-19
Table 11-10 NML4 Baseline Noise Monitoring Results ..... 11-20
Table 11-11 Phases of Development ..... 11-23
Table 11-12 Typical Plant and Machinery and associated noise levels for Phase 1 Construction at Inis Cealtra Island ..... 11-27
Table 11-13 Typical Plant and Machinery and associated noise levels for Phase 1 Construction at car park at Mountshannon Village Car Park ..... 11-30
Table 11-14 Typical Plant and Machinery and associated noise levels for Phase 1 Construction Tree Felling at Mountshannon Village Car Park ..... 11-31
Table 11-15 Predicted Peak Phase 1 Construction Vehicles ..... 11-33
Table 11-16 Predicted 2032 Weekday and Weekend Peak Hour Link Traffic Volumes With Peak Season Phase 1 Operational Development With Peak Capacity Daily Visitors ..... 11-36
Table 11-17 Typical Plant and Machinery and associated noise levels for Phase 2 Construction Visitor Centre and Harbour Car Park Construction Works Noise ..... 11-39

Table 11-18 Predicted 2032 Weekday and Weekend Peak Hour Link Traffic Volumes With Peak Season Phase 1 Operational Development With Peak Capacity Daily Visitors ..... 11-41
Table 11-19 Predicted 2046 Weekday and Weekend Peak Hour Link Traffic Volumes With Phase 2 High Season Operational Development ..... 11-44
Table 11-20 Planned and permitted developments in proximity to the proposed development .. 11-45
Table 11-21 Summary of Demolition Phase Likely Significant Effects without Mitigation ..... 11-47
Table 11-22 Summary of Construction Phase Likely Significant Effects without Mitigation ..... 11-47
Table 11-23 Summary of Operational Phase Likely Significant Effects without Mitigation ..... 11-49
Table 11-24 Demolition Phase Post Mitigation Effects ..... 11-54
Table 11-25 Construction Phase Post Mitigation Effects ..... 11-54
Table 11-26 Operational Phase Post Mitigation Effects ..... 11-55
Table 11-27 Summary of Mitigation and Monitoring Measures ..... 11-57

# 11 Noise & Vibration

## 11.1 Introduction

This chapter considers the potential effects on noise and vibration sensitive receptors arising from the proposed development. A full description of the proposed development is provided in Chapter 2 of this EIAR. The **nature and probability of** effects on noise and vibration sensitive receptors arising from the overall project have been assessed herein.

## 11.2 Expertise & Qualifications

The assessment has been prepared by Kieran Barry of MWP.

Kieran Barry (BEng. PgDip. MIEnvSc) is an experienced environmental consultant and has completed the Institute of Acoustics (IOA) Certificate of Competence in Environmental Noise Measurement course and is currently completing a Post Grad Diploma in Acoustics and Noise Control from the IOA. Kieran undertook the baseline noise surveys and prepared this chapter. Kieran has completed numerous baseline noise surveys and assessments for a variety of projects nationwide.

## 11.3 Fundamentals of Noise

Fundamentally, noise is vibrations of the air which are detectable by the ear. Sound waves radiate out spherically from a sound source in three dimensions. The human ear can detect a very wide range of pressure variations. In order to cope with this wide range, a logarithmic scale (decibel (dB) scale) is used to translate pressure values into manageable numbers from 0dB to 140 dB. 0 dB is the threshold of hearing and 120 dB is the threshold of pain.

Measuring in decibels means that a 3 dB increase is equivalent to a doubling of the sound energy and a 10 dB increase in a tenfold increase in energy. For broadband sounds which are very similar in all but magnitude, a change or difference in noise level of 1 dB is just perceptible under laboratory conditions, 3 dB is perceptible under most normal conditions and a 10 dB increase generally appears twice as loud. A healthy human ear is also sensitive to a large range of frequencies (approximately 20 Hz to 20,000 Hz) and varies in sensitivity depending on the frequency. The human ear is not equally sensitive to sound at all frequencies and is less sensitive to sound at low frequencies and high frequencies. A -weighting (dB A) is the main way of adjusting measured sound pressure levels (noise) to take account of the uneven human response to frequencies. **Figure 11-1** illustrates some everyday sounds on the dB(A) scale. A quiet bedroom is around 35 dB(A), a busy office around 60dB(A) and a rock concert around 100 dB(A).

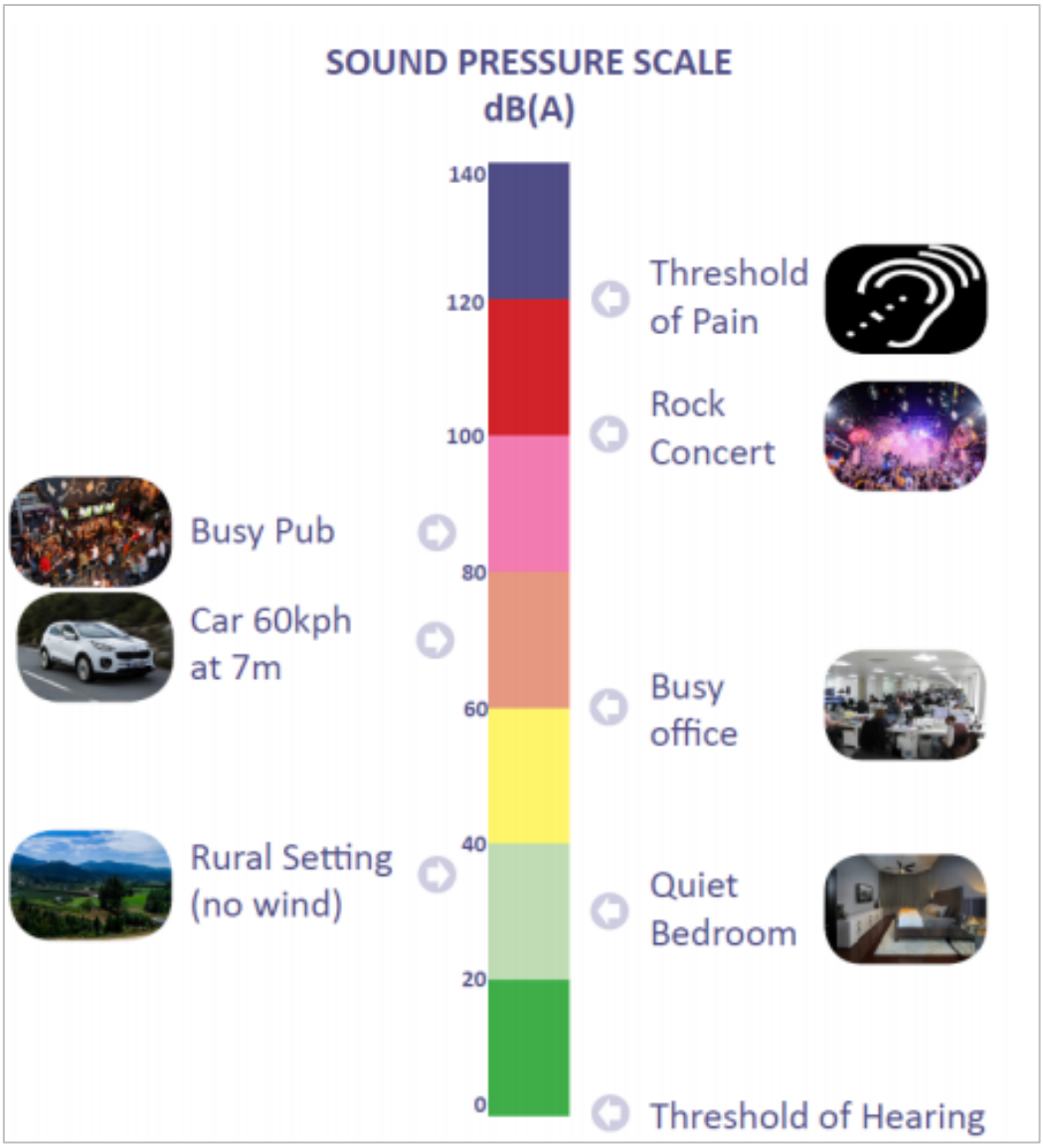



**Figure 11-1 The Level of Typical Common Sounds on the dB(A) Scale**

## 11.4 Proposed Development

The full description of the proposed development is outlined in Chapter 2 'Development Description' of this EIAR. The development consists of the following main elements:

**Inis Cealtra Island**

- Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island.
- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp.
- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.
- Provision of three staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

**Mainland – Mountshannon**

- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, together with coach parking and bicycle parking facilities.
- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building incorporating a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.
- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.

### 11.4.1 Aspects Relevant to this Assessment

Temporary to short-term term noise and vibration exposure during the construction phase must be managed and controlled to acceptable levels. On the mainland area of the proposed development, there are a number of existing residential noise sensitive locations located in proximity to the development site boundary.

On Inis Cealtra Island the main sensitive receptors considered in this assessment are ecological receptors as these are the closest noise sensitive receptors. The effects of noise to ecological receptors are also assessed in **Chapter 10 Biodiversity** of this **EIAR** and effects from this chapter have been considered throughout this assessment also. Residential noise sensitive locations are sufficient distance from the Island and therefore will not be adversely affected by this area of proposed development.

It is fundamental that the proposed development or any aspect of the proposed development does not adversely impact the existing noise levels experienced at these receptors during both the temporary to short-term construction phase and the long-term operational phase.

There will be demolition required during the development however these are small-scale in nature, temporary and unlikely to give rise to high noise or vibration effects.

The main construction elements which will give rise to noise and vibration are construction plant and traffic associated with construction.

During the operational phase of the proposed development, the main elements which will give rise to noise are the following:

- Increased vehicular traffic from visitors to Visitor Centre, Harbour Car Park and Mountshannon Village Car Park.
- Car park noise from Mountshannon Village Car Park and Harbour Car Park.
- Increased boat traffic travelling between Harbour Area and Inis Cealtra Island.
- Building services plant items (electrical and mechanical) required to serve the operations.

During the operational phase of the proposed development, there will be no significant sources of vibration.

## 11.5 Methodology

The methodology consisted of the following activities:

- Baseline noise monitoring has been undertaken in the vicinity of the proposed development in order to characterise the existing noise environment;
- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction, demolition and operational phases of the proposed development;
- Predictive calculations have been performed for the construction phase of the project at the nearest sensitive locations to the development site;
- The noise emissions from the operational phase of the project have been reviewed and assessed against the existing baseline
- A schedule of mitigation measures has been proposed to reduce where necessary, the identified potential outward impacts relating to noise and vibration from the proposed development.

### 11.5.1 Relevant Legislation & Guidance

This chapter has been prepared with cognisance to the following best practice and guidance documents related to noise and vibration impact assessment:

- BS 4142: 2014: Methods for Rating and Assessing Industrial and Commercial Sound.
- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise.
- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2 – Vibration.
- BS 6472 Guide to evaluation of human exposure to vibration in buildings (2008): Part 1 - Vibration sources other than blasting.
- BS 7385-2:1993 Evaluation and measurement for vibration in buildings. Guide to damage levels from ground borne vibration.
- BS 8233: 2014 Guidance on sound insulation and noise reduction for buildings
- Good Practice Guide for the Treatment of Noise during the Planning of National Road Schemes (NRA, 2014).
- Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities (EPA, 2016).
- Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2 (DMRB, 2020)
- Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment, (IEMA 2014).

- ISO 1996: 2017: Acoustics – Description, measurement, and assessment of environmental noise.

In addition to the above the assessment methodology had regard to the following EIA guidelines:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports EIAR (EPA 2022)

### 11.5.2 Site Surveys/Investigations

A noise monitoring survey was undertaken on the site of the proposed development on 25th February 2022 and 1st August 2024, refer to **Section 11.8.1**.

### 11.5.3 Assessment Criteria

#### 11.5.3.1 Construction Phase – Noise Effects

There is no statutory guidance in Ireland relating to the maximum noise levels permitted during construction works, and in the absence of statutory guidance or other specific limits prescribed by local authorities, the thresholds outlined in the British Standard 5228-12009+A1:2009, Code of Practice for Noise and Vibration Control on Construction and Open Sites - Noise has been adopted in this assessment.

**Table 11-1 Construction Phase Noise Assessment Criteria**

| Assessment category and threshold value period (T) | Threshold values LAeqT dB | | |
|---|---|---|---|
| | Category A Note A | Category B Note B | Category C Note C |
| Night-time (23:00 to 07:00hrs) | 45 | 50 | 55 |
| Evening and Weekends Note D | 55 | 60 | 65 |
| Daytime (07:00 – 19:00hrs) and Saturdays (07:00 -13:00hrs) | 65 | 70 | 75 |

**Note A**: Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

**Note B**: Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

**Note C**: Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

**Note D**: 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

The noise levels measured during the baseline noise survey (refer to **Section 11.8.1**), determined that noise sensitive locations (NSLs) closest to NML1, NSL1/NSL2 will be afforded a Category B designation for the daytime and Category C for evening periods. Construction works at NSLs (NSL3/NSL4) in proximity of NML2 to NML3 will be afforded a Category A designation. It should be noted however that construction will be limited to daytime hours and therefore evening and night-time limits will not be impacted. If the predicted Daytime construction noise exceeds Category B threshold values (70 dB $L_{Aeq}$) at NSL1/NSL2 then this is assessed as a significant effect. If the predicted Daytime construction noise exceeds Category A threshold values (65 dB $L_{Aeq}$) at NSL3/NSL4 then this is assessed as a significant effect.

Construction and Demolition works at Inis Cealtra Island are considered significant distance from residential NSLs and therefore baseline monitoring to set criteria at this area was not considered necessary.

**Significance Ratings relative to the Construction Noise Thresholds (CNT)**

In order to assist with interpretation of significance relative to calculated construction noise level (CNL) compared to the CNTs, **Table 11.2** includes guidance as to the likely magnitude of impact associated with construction activities, relative to the CNT. This guidance is derived from Table 3.16 of LA 111 Noise and Vibration (DMRB 2020) and adapted to include the relevant significance effects from the EPA guidelines (EPA 2022).

In accordance with LA111 Noise and Vibration (DMRB 2020), construction noise and construction traffic noise impacts shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration of exceeding:

- Ten or more days or night in any 15 consecutive day or nights; and
- A total number of days exceeding 40 in any six consecutive months.

**Table 11-2 Construction Noise Significance Ratings**

| Guidelines for Noise Impact Significance | CNL per Period | EPA EIAR Significance Effects | Determination |
|---|---|---|---|
| Negligible | Below or equal to baseline noise level | Not Significant | Depending on CNT, duration & baseline noise level |
| Minor | Above baseline and below or equal to CNT | Slight to Moderate | |
| Moderate | Above CNT and below or equal to CNT +5dB | Moderate to Significant | |
| Major | Above CNT +5 dB | Significant to Very Significant | |

**Construction Phase - Additional Vehicular Activity on Public Roads**

There are no specific Irish guidance or limits relating to existing local traffic sources along the local or surrounding road network. As traffic from the proposed development will make use of these existing roads already carrying traffic volumes it is appropriate to assess the calculated increase in traffic noise levels that will arise because of vehicular movements associated with the development.

In order to assess the potential impact of construction traffic, the following two guidelines are referenced:

- Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

**Table 11-3** offers guidance on the likely impact associated with any particular change in traffic noise level.

**Table 11-3 Magnitude of Impact – Construction Phase Traffic**

| Change in Sound Level (dB) | DMRB Magnitude of Impact | EPA Significance of Effect |
|---|---|---|
| Greater than or equal to 5.0 | Major | Significant |
| Greater than or equal to 3.0 and less than 5.0 | Moderate | Moderate |
| Greater than or equal to 1.0 and less than 3.0 | Minor | Not Significant – Slight |
| Less than 1.0 | Negligible | Imperceptible |

**Construction Phase - Additional Boat Activity on Lough Derg**

There are no specific guidelines on noise from additional boat traffic therefore rating impacts of impacts will be determined using a similar method as is used for increased traffic.

### 11.5.3.2 Construction Phase – Vibration Effects

According to NRA's 2014 Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, there are two separate considerations for vibration during the construction phase namely 1) that which affects human comfort and 2) that which affects cosmetic or structural damage to buildings.

The guidelines suggest that human tolerance for daytime blasting and piling, two of the primary sources of construction vibration, limits vibration levels to a peak particle velocity (ppv) of 12mm/s and 2.5mm/s respectively. Blasting and piling is not required during this project.

To avoid the risk of even cosmetic damage to buildings, the guidelines suggest that vibration levels should be limited to 8mm/s at frequencies of less than 10Hz, to 12.5mm/s for frequencies of 10 to 50Hz, and to 20mm/s at frequencies of 50Hz and above.

Note that the above thresholds are specified for transient or intermittent vibrations. Some construction activities may give rise to continuous vibrations. In these instances, the guidance recommends that the previously defined thresholds are reduced by at least 50%.

#### 11.5.3.3 Operational Phase – Noise Effects

There are no specific Irish guidance or limits relating to the operation of the proposed development. Operational sources of associated with the proposed development include:

- Road traffic including changes to traffic flows on the existing road network as a result of the proposed development.
- Building services plant items (electrical and mechanical) required to serve the operations.

The above sources are expected to be the prominent noise sources with the potential to affect nearby receptors.

**Operational Phase - Additional Vehicular Activity on Public Roads**

**Table 11-4** relates to changes in traffic noise level to impacts, for the operational phase of the proposed development and is based on guidance below:

- Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

**Table 11-4 Magnitude of Impact – Operational Phase Traffic Noise**

| Change in Sound Level (dB) | DMRB Magnitude of Impact | EPA Significance of Effect |
|---|---|---|
| 0 | No Impact | No Impact |
| 0.1 – 2.9 | Negligible | Negligible |
| 3.0 to 4.9 | Minor | Minor |
| 5 - 9.9 | Moderate | Moderate |
| 10+ | Major | Major |

There are no specific guidelines or limits relating to existing local traffic sources along the local or surrounding road network. As traffic from the proposed development will make use of these existing roads already carrying traffic volumes it is appropriate to assess the calculated increase in traffic noise levels that will arise because of vehicular movements associated with the development.

**Operational Phase – Mountshannon Village Car Park and Mountshannon Harbour Car Park Noise**

The typical noise level 10m beyond the boundary of a typical busy commercial car park, as referenced in example noise assessments, has been of the order 48 dB $L_{Aeq}$,T[1]. For the purposes of this assessment, this figure will be used to calculate predicted noise to the nearest receptor.

[1] https://www.pleanala.ie/publicaccess/EIAR-NIS/300745/CH11-%20Noise%20&%20Vibration.pdf?r=564911

**Operational Phase - Additional Boat Activity on Lough Derg**

There are no specific guidelines on noise from additional boat traffic therefore rating impacts of impacts will be determined using a similar method as is used for increased road traffic.

**Operational Phase – Mechanical Plant and Services**

Once the Visitor Centre becomes fully operational, a variety of electrical and mechanical plant will be required to service the development. Most of this plant will be capable of generating noise to some degree. Noisy plant with a direct line-of-sight to noise sensitive properties would potentially have the greatest impact. Plant contained within plantrooms has the least potential for impact once consideration is given to appropriate design of the space.

The most appropriate standard used to set operational noise limits relating to fixed item of plant to noise sensitive areas is BS 4142: 2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound. This standard describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in this standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

For an appropriate BS 4142 assessment it is necessary to compare the measured external background noise level (i.e. the LA90,T level measured in the absence of plant items) to the rating level (LAr,T) of the various plant items, when operational. Where noise emissions are found to be tonal, impulsive in nature or irregular enough to attract attention, BS 4142 also advises that a penalty be applied to the specific level to arrive at the rating level.

The subjective method for applying a penalty for tonal noise characteristics outlined in BS 4142 recommends the application of a 2dB penalty for a tone which is just perceptible at the noise receptor, 4dB where it is clearly perceptible, and 6dB where it is highly perceptible.

The following definitions as discussed in BS 4142 are summarised below:

"ambient noise level, LAeq,T" is the noise level produced by all sources including the sources of concern, i.e. the residual noise level plus the specific noise of mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].

"residual noise level, LAeq,T" is the noise level produced by all sources excluding the sources of concern, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].

"specific noise level, LAeq, T" is the sound level associated with the sources of concern, i.e. noise emissions solely from the mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].

"rating level, LAr,T" is the specific sound level plus any adjustments for the characteristic features of the sound (e.g. tonal, impulsive or irregular components);

"background noise level, LA90,T" is the sound pressure level of the residual noise that is exceeded for 90% of the time period T.

If the rated plant noise level is +10 dB or more above the pre-existing background noise level, then this indicates that complaints are likely to occur and that there will be a significant adverse impact. A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

#### 11.5.3.4 Operational Phase – Vibration Effects

There are no sources of vibration associated with the operational phase of the development.

## 11.6 Difficulties Encountered

The assessment is based on the project details that were made available at the time of writing.

## 11.7 Consultation

This Chapter did not require direct consultation with Statutory or Non-Statutory bodies.

The guidelines referenced in this chapter provide sufficient direction to complete the chapter.

## 11.8 Baseline Environment

### 11.8.1 Baseline Survey

#### 11.8.1.1 Noise Monitoring Locations and Noise Sensitive Locations

In the first instance it is considered appropriate to define a noise sensitive location (NSL). The Environmental Protection Agency (EPA) which states the following in terms of defining an NSL:

**"NSL – any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity for which its proper enjoyment requires the absence of noise at nuisance levels. "**

**Figure 11-2** shows the closest NSLs to the mainland area of proposed development. For the purposes of this assessment, the NSLs are residential.

Residential NSLs are a significant distance from Inis Cealtra and therefore the mainland NSLs are considered most sensitive for the purposes of this assessment. Effects on ecological receptors are also assessed throughout chapter.

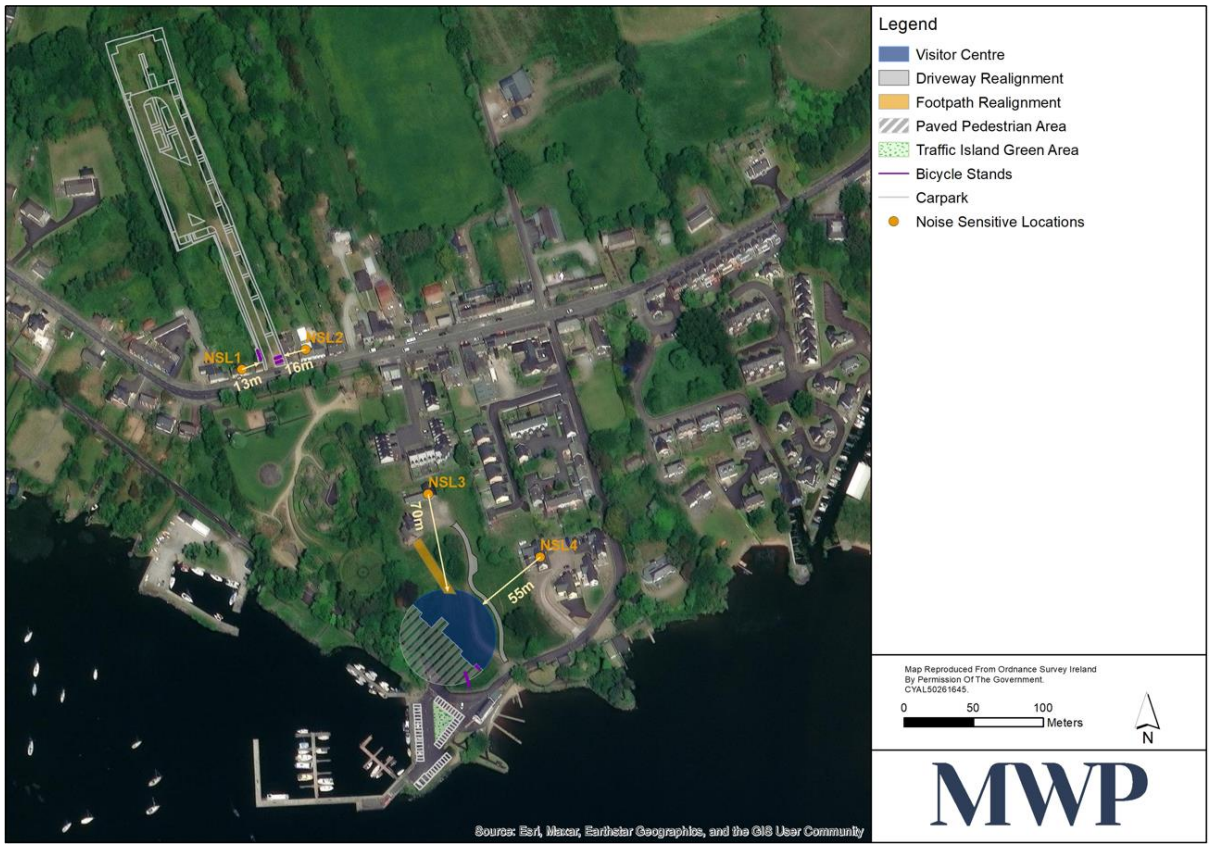



**Figure 11-2 Noise Sensitive Locations (NSLs)**

The noise measurement locations (NMLs) were chosen to represent the nearest NSLs to the proposed development boundary. Readings were taken at NML4 to summarise existing noise at area of proposed Visitor Centre and Harbour Area.

During the noise monitoring survey, the noise meter was set up at the NMLs, see **Figure 11-3**. The noise monitoring data at the chosen NMLs represents the baseline noise levels at the closest NSLs, refer to **Figure 11-3** and **Table 11-5.**

Photos of each NML are included in **Appendix 11.1.**

**Figure 11-3 Noise Monitoring Locations (NMLs) and Noise Sensitive Receptors (NSRs)**

**Table 11-5 Noise Monitoring Locations (NMLs) and Noise Sensitive Locations (NSLs)**

| NMLs | NSLs |
|---|---|
| NML1 | Representative of residential NSLs closest to Mountshannon Car Park works (NSL1/NSL2) |
| NML2 | Representative of residential NSLs north of Rectory (NSL3) |
| NML3 | Representative of residential NSLs closest to Propose Visitor Centre and Harbour Area (NSL4) |
| NML4 | Representative of existing noise at area of proposed Visitor Centre and Harbour Area |

#### 11.8.1.2 Survey Period

For the purposes of gathering baseline data closest to the Rectory, Mountshannon Harbour and Visitor Centre aspects of the proposed development, an attended noise survey was conducted at NML2, NML3 and NML4 on 25th February 2022 between 11.00am and 19.43pm. Sample periods for the noise measurements were 15 minutes at each location with each location sampled four times, three during the daytime hours (7am to 7pm) and one during the evening hours(7pm to 11pm).

For the purposes of gathering baseline noise data close to the car park aspect of the proposed development, an attended noise survey was conducted at NML1 on 1st August 2024 between 17.35am and 19.31pm.

#### 11.8.1.3 Personnel and Instrumentation

The noise monitoring was undertaken by Kieran Barry of MWP. Details of equipment used to carry out the survey are detailed in **Table 11-6**. All equipment is fully traceable and in calibration.

A Bruel & Kjaer 2250, Type 1 Sound Level Meter, was used for monitoring on 25th February 2022 and a Larson Davis 831, Type 1 Sound Level Meter, was used for monitoring on 1st August 2024. Both noise meters were located away from reflective surfaces, in open ground. The microphones were each at a height of 1.3 m above the ground.

**Table 11-6 Noise Monitoring Equipment**

| Manufacturer | Equipment Model | Serial Number | Microphone | Calibration Date |
|---|---|---|---|---|
| Brüel & Kjaer | 2250L | 2654709 | ½" Type 4950 S/N 2657422 | 26th August 2020 |
| Larson Davis | 831 | 0003826 | PCB-PCB377B02 | 9th May 2024 |

Each noise meter was protected with a windshield. Before and after the survey the Larson Davis noise meter apparatus was check calibrated using a Larson Davis CAL200 Sound Level Calibrator Serial Number 11262.The Bruel & Kjaer noise meter was calibrated using a Bruel & Kjaer Type 4231 Sound Level Calibrator and the Larson Davis Noise Meter was calibrated using a Larson Davis CAL200 Sound Leve Calibrator.

The calibration certificates are attached as **Appendix 11.2**.

#### 11.8.1.4 Procedure

Measurements were conducted on a cyclical basis at the locations noted above. Sample periods for the noise measurements were 15 minutes at each location with each location sampled four times, three during the daytime hours and one during the evening hours. The results were noted onto an Environmental Noise Survey Record Sheet immediately following each sample, and were also saved to the instrument memory for later analysis where required. Survey personnel noted the primary noise sources contributing to noise build up.

#### 11.8.1.5 Weather

Weather conditions during noise monitoring on 25th February 2022 were noted as mostly dry and cloudy with a light to moderate breeze. There was occasional light showers throughout the day however measurements were only taken during dry periods.

Weather conditions during noise monitoring on 1st August 2024 were calm, warm and sunny.

#### 11.8.1.6 Measurement Parameters

The noise survey results are presented in terms of the following five parameters:

**LAeq** is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period. This parameter is representative of the specific noise from plant when plant is the dominant noise source, i.e. there is no extraneous noise from sources such as traffic.

**LAmax** is the instantaneous maximum sound level measured during the sample period.

**LAmin** is the instantaneous minimum sound level measured during the sample period.

**LAeq** is the sound level that is exceeded for 10% of the sample period. It is typically used as a descriptor for traffic noise.

**LA90** is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The "A" suffix denotes the fact that the sound levels have been "A-weighted" to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2x10-5 Pa. A summary of the acoustic terminology used in this report is included **Appendix 11.3.**

### 11.8.1.7 Noise Survey Results and Discussion

The results of the monitoring survey are summarised in **Table 11-7 to 11-10.**

**Table 11-7 NML1 Baseline Noise Monitoring Results**

| Period | Date | Start Time | Measured Noise Levels (dB-re. 2 x $10^{-5}$ PA) | | | | |
|---|---|---|---|---|---|---|---|
| | | | LAeq | LAFmax | LAmin | LA10 | LA90 |
| Daytime | 01/08/24 | 17.35 | 63 | 95 | 30 | 66 | 35 |
| | 01/08/24 | 17.53 | 63 | 94 | 27 | 65 | 33 |
| | 01/08/24 | 18.10 | 62 | 96 | 30 | 65 | 38 |
| | **Average** | | **63** | **95** | **29** | **65** | **35** |
| Evening | 01/08/24 | 19.01 | 59 | 91 | 28 | 64 | 33 |

**Table 11-8 NML2 Baseline Noise Monitoring Results**

| Period | Date | Start Time | Measured Noise Levels (dB-re. 2 x $10^{-5}$ PA) | | | | |
|---|---|---|---|---|---|---|---|
| | | | LAeq | LAFmax | LAmin | LA10 | LA90 |
| Daytime | 25/02/22 | 11.00 | 42 | 62 | 35 | 45 | 37 |
| | 25/02/22 | 13.05 | 47 | 67 | 36 | 47 | 40 |
| | 25/02/22 | 15.32 | 46 | 61 | 39 | 48 | 43 |
| | **Average** | | **45** | **63** | **37** | **47** | **40** |
| Evening | 25/02/22 | 19.43 | 42 | 49 | 37 | 44 | 38 |

**Table 11-9 NML3 Baseline Noise Monitoring Results**

| Period | Date | Start Time | Measured Noise Levels (dB-re. 2 x $10^{-5}$ PA) | | | | |
|---|---|---|---|---|---|---|---|
| | | | LAeq | LAFmax | LAmin | LA10 | LA90 |
| Daytime | 25/02/22 | 11.20 | 45 | 63 | 41 | 46 | 42 |
| | 25/02/22 | 13.23 | 49 | 74 | 41 | 49 | 43 |
| | 25/02/22 | 15.50 | 47 | 57 | 44 | 49 | 46 |
| | **Average** | | **47** | **65** | **42** | **48** | **44** |
| Evening | 25/02/22 | 19.09 | 48.9 | 56.5 | 45 | 51 | 46 |

**Table 11-10 NML4 Baseline Noise Monitoring Results**

| Period | Date | Start Time | Measured Noise Levels (dB-re. 2 x $10^{-5}$ PA) | | | | |
|---|---|---|---|---|---|---|---|
| | | | LAeq | LAFmax | LAmin | LA10 | LA90 |
| Daytime | 25/02/22 | 11.37 | 46 | 61 | 42 | 47 | 44 |
| | 25/02/22 | 13.42 | 51 | 67 | 46 | 54 | 49 |
| | 25/02/22 | 16.07 | 51 | 64 | 46 | 53 | 48 |
| | **Average** | | **49** | **64** | **45** | **51** | **47** |
| Evening | 25/02/22 | 19.26 | 59 | 72 | 52 | 62 | 55 |

The noise during daytime and evening monitoring periods at NML1 consisted mainly of traffic noise from the R352 road in to Mountshannon.

Measured noise levels at NML1 during the daytime period were in the range 61 to 63 dB $L_{Aeq}$, 15 min with an average value of 62dB $L_{Aeq}$, 15 min. The average background noise level recorded at NML1 during daytime hours was 35 dB $L_{A90}$, 15 min.

The measured noise level at NML1 during the evening period was 59 dB $L_{Aeq}$, 15 min. The background noise level recorded at NML1 during evening hours was 32 dB $L_{A90}$, 15 min.

During the daytime noise monitoring period at NML2, the main continuous source of noise was birdsong and the rustle of trees from a light breeze. The noise from the Lough Derg water, lapping on the shore was faintly audible in the background. There was also intermittent noise of cars occasionally passing the adjacent local road which leads to the harbour. Measured noise levels at NML2 during the daytime period were in the range 42 to 47 dB $L_{Aeq}$, 15 min with an average value of 45 dB $L_{Aeq}$, 15 min. The average background noise level recorded at NML1 during daytime hours was 40 dB $L_{A90}$, 15 min.

During the evening period at NML2, the main continuous noise source was light breeze and rustling of trees. The noise from the Lough Derg water was faintly audible in the background. There was intermittent noise from cars occasionally passing the adjacent local road which leads to the harbour. There was intermittent noise from a dog barking in the background. The measured noise level at NML2 during the evening was 42 dB $L_{Aeq}$, 15 min. The background noise level recorded during the evening reading was 38 dB $L_{A90}$, 15 min.

During the daytime period at NML3, light to moderate breeze noise and light rustle of trees were the main consistent contributing noise. There was intermittent noise from vehicles occasionally passing the local road beside the harbour. Other contributing sounds included, faint noise of people talking and gathering at harbour area, occasional dog barking and the light sound of Lough Derg water. A boat could be heard docking during the 15.50 reading. Measured noise levels at NML3 during the daytime period were in the range 45 to 49 dB $L_{Aeq}$, 15 min with an average value of 47 dB $L_{Aeq}$, 15 min. The average background noise level recorded at the site was 44 dB $L_{Aeq}$, 15 min.

During the evening period at NML3, the main contributing sounds were light breeze, rustling of trees and light sound of Lough Derg water. No cars passed during noise monitoring. The measured noise level at NML3 during the evening period was 49 dB $L_{Aeq}$, 15 min. The background noise level recorded during the evening reading was 46 dB $L_{A90}$, 15 min.

During the daytime period at NML4, the main constant contributors of noise was breeze, rustling of trees and light sound of water at Lough Derg. Some occasional traffic passed local road by harbour throughout monitoring. A boat engine at the harbour was noted running during the 13.42 reading. Other contributing noise included people occasionally talking and gathering at the harbour. Measured noise levels at NML4 during the daytime period were in the range 46 to 51 dB $L_{Aeq}$, 15 min with an average value of 49 dB $L_{Aeq}$, 15 min. The average background noise level recorded at the location was 47 dB $L_{A90}$, 15 min.

During the evening period at NML4, the main continued source of noise throughout was sound of wind, rustling of large trees close to NML and sound of water at Lough Derg. 2 cars passed local road at 19.39. The measured noise level at NML3 during the evening period was 59 dB $L_{Aeq}$, 15 min. The background noise level recorded during the evening reading was 55 dB $L_{A90}$ , 15 min.

## 11.9 Characteristics of the Proposed Development

A full description of the proposed development is presented in **Chapter 2** of this **EIAR**. Briefly the proposed development consists of the following main elements:

**Inis Cealtra Island**

Demolition of a concrete shelter (16 sq.m) adjacent to the existing pier at the north-west of the island.

Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty and a stone and concrete causeway connected by a steel access ramp.

Provision of new mown grass pedestrian paths on the island coincident with the original pilgrimage route. The paths will allow for enhanced access to the main monuments and natural landscape on the island.

Provision of 3 staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

**Mainland – Mountshannon**

A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building with a gross floor area (GFA) of 1,606 sq.m. The building incorporates a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.

Reconfiguration of the existing Mountshannon Harbour Car Park, providing for 49 total car parking spaces and public realm enhancements.

Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, coach parking facilities and bicycle parking facilities.

The current indicative phasing strategy suggests that the project will be split over 2 phases, refer to **Table 11-11**.

**Table 11-11 Phases of Development**

| Phase | Project Element / Proposed Works | Duration of Works | Anticipated Completion |
|---|---|---|---|
| 1 | (a) Works at Inis Cealtra island including:<br>• Mooring point<br>• Demolition of existing visitor shelter<br>• Network of pedestrian pathways<br>• Welfare Pods<br>(b) New Car Park in Mountshannon Village | 12 months | Q1 of 2028 |
| 2 | (a) Visitor Centre, Mountshannon<br>(b) Reconfiguration of Mountshannon Harbour car park | 18 months<br>6 months | Q3 of 2042 |

When considering a development of this nature, the potential noise and vibration impact on the surroundings is considered for each of three distinct stages:

- Construction Phase
- Operational Phase; and
- Demolition Phase

The highest potential noise impact will arise from demolition works and construction works.

The primary sources of outward noise in the operational context will be from traffic movements to site using the existing road network and also from building service plant noise within the Visitor Centre.

## 11.10 The 'Do Nothing' Scenario

In the absence of the proposed development being constructed, the noise environment at the nearest noise sensitive locations and within the development site will remain largely unchanged resulting in a neutral impact in the long-term.

## 11.11 Potential Significant Effects

### 11.11.1 Phase 1 Demolition Effects

#### 11.11.1.1Noise

**Phase 1 Demolition Phase - Inis Cealtra Island Demolition Works Noise**

Phase 1 of the proposed development on Inis Cealtra Island includes demolition of an existing structure consisting of a concrete shelter (16 sq.m) adjacent to the existing pier at the north-west of the island. The structure is simple in its construction being of mass concrete walls and floor with a flat roof and a single window and door. The principal dimensions of the structure are 4.830m width, 3.244m length and 2.57m height. It has a gross floor area (GFA) of 16 sq.m.

The existing shelter will be dismantled from the top down using hand tools to break the existing concrete and timber into sections that can be manually handled. Dismantling will start with removal of the roof, followed by the removal of the window and door, taking down of the walls, breaking out of the floor slab and removal of foundations (if any). The material will be sorted into waste for disposal/ recycling and then removed off the island by boat where it will be disposed of by a licensed waste contractor.

The demolition primarily involves use of hand tools and will cause considerably less noise than construction works for both phases. Furthermore, the residential NSLs located on the mainland, and are over 500m away from the location of demolition works and therefore no significant effects to NSLs are predicted.

Overall, effects at NSLs from Phase 1 Inis Cealtra Island demolition works noise is **likely** to be **negative, not significant, temporary, localised** and **direct**.

Effects of demolition noise on ecological receptors during the demolition phase is expected to be **not significant**, as is noted in **Chapter 10 Biodiversity** of this **EIAR**.

**Phase 1 Demolition Phase – Mountshannon Village Car Park Mound/Wall**

To facilitate the construction of the car park, it is proposed to remove the mound/wall (approx. 245m in length) extending north from the site's frontage at the southern boundary through the centre of the site. The existing gate and an 8m section of the existing masonry wall (which has a total length of approx. 13m) along the site's frontage at the southern boundary will also be removed.

The demolition works will be small in scale, will be temporary and are not anticipated to cause significant noise impacts.

Overall effects at NSLs from Phase 1 Mountshannon Village Car Park mound/wall demolition works is **likely** to be **negative, not significant, temporary, localised** and **direct**.

Effects of demolition noise on ecological receptors during the Phase 1 Mountshannon Village Car Park mound/wall demolition works is expected to be **not significant**, as is noted in **Chapter 10 Biodiversity** of this **EIAR**.

#### 11.11.1.2 Vibration

**Phase 1 Demolition Phase- Vibration**

There will be no significant, sources of vibration during the Phase 1 demolition phase and NSLs are significant distance from island works. Effects from vibration during Phase 1 demolition works are therefore **likely** to be **negative**, **imperceptible**, **local**, **temporary**, and **direct** on NSLs and ecological receptors.

### 11.11.2 Phase 1 Construction Effects

#### 11.11.2.1Noise

The construction works noise levels are indicative only and are based on theoretical worst-case assumptions in order to demonstrate that it will be possible to undertake the works without significant noise effects. By their nature the works over phase are temporary and will only potentially affect a small number of receptors at any one time. Construction works are intermittent, mobile and vary in intensity from phase to phase and accordingly are difficult to accurately predict for any given time in the future.

During each construction phase, the chief source of noise emissions will be plant used onsite. While sporadic emissions may arise from other sources such as voices and hammering, plant emissions may continue for extended periods of time and may potentially cause nuisance. Consequently, the assessment of noise impacts associated with construction phase emissions relates chiefly to plant sources.

As development progresses structures themselves can act to screen noise levels depending on the receiving receptors. Best practice is to adopt worst case assumptions using typical sources which tends to overestimate the effect.

**Phase 1 Inis Cealtra Island Construction Works Noise**

Construction works at Inis Cealtra island include the following:

- Pre-commencement activities including site investigation work and pre-construction surveys
- Pre-construction activities including demolition of the existing shelter on the island
- Site Clearance Works
- Construction of temporary site construction compound
- Construction of new floating access jetty and walkway located at Northwest of the island where the existing mooring point is located
- Construction of 3 no. new staff and public welfare facility 'pods' on the island
- Construction of new pedestrian paths on the island
- Complete site works, tidy up site, landscaping, restoration
- Demobilise site compound facilities

Construction plant required onsite for stage 1 of the proposed development works at Inis Cealtra Island are listed in **Table 11-12**. The exact equipment to be used is not known at this stage, but the

plant and machinery outlined in **Table 11-12** are typical of plant commonly used and can provide an accurate assessment of construction noise emissions.

The highest noise source from construction works on the Inis Cealtra Island will result from piling works. There will be piling at the floating access jetty, canoe/jetty launch and access walkway. The new proposed design is a breakwater jetty located at the site of the existing slipway. Four no. 800mm dia (max diameter) steel piles will be required to retain the jetty. It is planned to install a 9m long x 1.5m wide max ramp to allow safe access from the Land (fixed) to the jetty (floating). This will require 4 no. 203mm H piles to support the concrete (2m x2m) anchor base that retains the ramp anchor points. These piles will be vibrated into the bed by an excavator on the pontoon raft along the stone causeway on the Southern side and the piles will be hidden inside the stone filled gabions to the Island. Similarly, 2 254mm x 254mm H piles will be required to retain the Canoe Launch section in the sheltered side of the land Structure. They will be vibrated also into place by the excavator on the Pontoon raft. It is envisaged that the programme of works will take approximately 5 to 6 weeks to complete.

Piling will also be required for welfare facility pods proposed on the island to meet needs of staff and visitors by providing a weather shelter, WCs and a rest room for island staff. The pods will have new timber walkways to provide level access into them and these too will be of timber construction resting on mini- pile foundations. All pod and walkway components will be assembled on the island to minimise the impact of their construction and are designed to be dismantled and removed if required, with little trace left on the landscape.

The associated noise levels have been sourced from BS 5228 Noise and Vibration from open and construction sites, totalled, and extrapolated to the nearest noise sensitive location. Only attenuation due to different distances. The resultant noise level is then compared to compared against the relevant noise thresholds (refer to **Table 11-1**).

The result is a theoretical worst case, as it assumes all machinery will be operating simultaneously which will not be the case and accounts for attenuation due to distance only. In reality there will be further noise attenuation due to atmospheric absorption, ground absorption, and landform screening. Therefore, the noise levels presented herein are an overestimate.

The calculations also assume that the equipment will operate for 66% of the working time. Using the following equation, noise emissions from the construction site are extrapolated to different distances.

$$SPL2 = SPL1 - 20\log(r2/r1)$$

Where:

- Sound Pressure Level 1 (SPL1) = Known noise level at 10m from construction site
- Sound Pressure Level 2 (SPL2) = Unknown noise level at nearest receptor
- r2 = Distance between noise sensitive receptor and construction site
- r1 = 10 m

**Table 11-12 Typical Plant and Machinery and associated noise levels for Phase 1 Construction at Inis Cealtra Island**

| Activity | ITEM BS5228 Ref (Plant Noise at 10m Distance) | | % Plant On-Time | Predicted Sound Pressure Level $L_{eq}$ dB(A) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 10m | 20m | 30m | 60m | 80m | 85m | 90m | 100m |
| General Construction | Vibratory Piling (C.3.1) | 89 | 66 | 87 | 82 | 78 | 72 | 70 | 69 | 69 | 68 |
| | Tracked excavator (C2.21) | 71 | | 69 | | | | | | | |
| | Compressor (D7.8) | 70 | | 68 | | | | | | | |
| | Telescopic Handler (C4.54) | 79 | | 77 | | | | | | | |
| | Hand-held Circular Saw (C4.72) | 79 | | 77 | | | | | | | |
| | Diesel Generator (C4.76) | 61 | | 59 | | | | | | | |
| Total | | 90 | | 88 | | | | | | | |

The construction works will be sequenced and all the noise sources in **Table 11-12** above will not be in operation continuously or simultaneously for the duration of the construction.

The theoretical worst case predicted noise levels show that where works are taking place within 140m of an NSL, there is the potential for typical construction noise thresholds (65dB (A)) to be exceeded. There are however no residential properties within 500m of the Inis Cealtra Island works. The therefore it is not possible that construction limits will be exceeded.

Therefore, in the absence of mitigation, the construction noise from Phase 1 Inis Cealtra Island construction works will **likely** result in a **negative, not significant, temporary** to **short-term**, **local** and **direct** effect on NSLs.

The piling aspect of construction works on Inis Cealtra would generate high levels of noise and vibration at source . However, it is important to note that Inis Cealtra Island is beside a lough (Lough Derg) which does not harbour particular aquatic mammals, whose sense of hearing is relied upon for navigation and hunting.

Therefore there are no significant impacts to aquatic receptors predicted from the temporary piling works.

In the absence of mitigation, noise from piling activities has the potential to a cause **negative, not significant, temporary**, **local** and **direct** effects on aquatic receptors.

The island is located within the Lough Derg (Shannon) SPA is designated for the below qualifying interests:

- Cormorant (Phalacrocorax carbo) [A017]
- Tufted Duck (Aythya fuligula) [A061]
- Goldeneye (Bucephala clangula) [A067]
- Common Tern (Sterna hirundo) [A193]
- Wetland and Waterbirds [A999]

There is existing anthropogenic noise in the vicinity of Inis Cealtra with boat activity and therefore a temporary introduction of piling noise is not expected to cause significant effects. Therefore in the absence of mitigation, noise from piling activities has the potential to a cause **negative, not significant, temporary**, **local** and **direct** effects on avian receptors.

It is recommended that, if possible, works are conducted in early autumn or late spring to avoid the main breeding and wintering periods for bird activity. Pushing out works to later in the breeding season will reduce the likelihood of an overlap between construction activity and breeding activity on the island. Typically, this would be from April to July.

Although there are no significant effects predicted to receptors from piling works, it is recommended that best practice measures be implemented during piling works. Provided mitigation measures to prevent effects to ecological receptors, outlined in **Section 11.12.3** are applied, no significant effects are predicted.

**Phase 1 Construction Phase - Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island) Boat Traffic Noise**

During the Phase 1 construction, Inis Cealtra Island will generally remain closed for the duration of the works, except where access is required for a burial and by a farmer for livestock.

The proposed Phase 1 construction would generate up to eight round boat trips daily between Mountshannon Harbour and Inis Cealtra Island.

The proposed Phase 1 construction works activity would not increase expected typical future baseline round boat trips daily between Mountshannon Harbour and Inis Cealtra Island. The proposed Phase 1 construction works activity would reduce the expected typical future baseline round boat trips daily between the L8070 slipway/pier access and Inis Cealtra Island.

The proposed Phase 1 construction would not increase expected 2027 levels of boat activity on Lough Derg.

As boat trips are not predicted to increase significantly on existing boat traffic activities, no significant effects are predicted. Similar to road traffic, a significant increase in boat traffic volumes compared with existing volumes would be required for a significant increase in dB levels.

The boat traffic noise associated with Phase 1 construction is **likely** to be **neutral**, **imperceptible**, **temporary** to **short-term**, **localised** and **direct**.

**Phase 1 Construction Phase - Mountshannon Village Car Park Construction Works Noise**

Construction plant required onsite for Mountshannon Village Car Park works in stage 1 of the proposed development works are listed in **Table 11-13**.

Construction works at the Mountshannon Village Car Park include the following:

- Pre-commencement activities including site investigation work and pre-construction surveys
- Pre-construction activities including demolition of the existing shelter on the island
- Site Clearance Works
- Construction of temporary site construction compound
- Construction of new floating access jetty and walkway located at Northwest of the island where the existing mooring point is located
- Construction of 3 no. new staff and public welfare facility 'pods' on the island
- Construction of new pedestrian paths on the island
- Complete site works, tidy up site, landscaping, restoration
- Demobilise site compound facilities

The exact equipment to be used is not known at this stage, but the plant and machinery outlined in **Table 11-13** are typical of plant commonly used and can provide an accurate assessment of construction noise emissions.

The associated noise levels have been sourced from BS 5228 Noise and Vibration from open and construction sites, totalled, and extrapolated to the nearest noise sensitive location. Only attenuation due to different distances. The resultant noise level is then compared to compared against the relevant noise threshold (refer to **Table 11-1**).

The calculations also assume that the equipment will operate for 66% of the working time.

**Table 11-13 Typical Plant and Machinery and associated noise levels for Phase 1 Construction at car park at Mountshannon Village Car Park**

| Activity | ITEM BS5228 Ref (Plant Noise at 10m Distance) | | % Plant On-Time | Predicted Sound Pressure Level $L_{eq}$ dB(A) | | |
|---|---|---|---|---|---|---|
| | | | | 10m | 13m | 16m |
| General Construction | Dump Truck (tipping fill) (C2.30) | 79 | 66 | 77 | 80 | 78 |
| | Tracked excavator (C2.21) | 71 | | 69 | | |
| | Compressor (D7.8) | 70 | | 68 | | |
| | Telescopic Handler (C4.54) | 79 | | 77 | | |
| | Diesel Generator (C4.76) | 61 | | 59 | | |
| Road Works / Landscaping | Asphalt Paver & Tipping Lorry (C5.30) | 75 | | 73 | | |
| | Electric Water Pump (C5.40) | 68 | | 66 | | |
| | Vibratory Roller (C5.20) | 75 | | 73 | | |
| Total | | 84 | | 82 | | |

The theoretical worst case predicted noise levels for car park construction works show that where works are at the nearest NSLs east and west of construction, (NSL1/NSL2) at 13m and 16m respectively, there is the potential for the guideline Category B construction noise thresholds of 70dB $L_{Aeq}$ to be exceeded.

Therefore, in the absence of mitigation, the plant and machinery noise from Phase 1_Mountshannon Village Car Park construction works will **likely** result in a **negative, slight to moderate, temporary** to **short-term**, **local** and **direct** effect on NSLs.

**Chapter 10 Biodiversity** has assessed the impact of noise on ecological receptors and assessed the effect of construction noise from the Mountshannon Village Car Park area to be **not significant** to **slight**.

Hoarding will be installed around the construction works. A 10dB reduction in noise levels due to the effect of a solid hoarding placed along the works boundary has been assumed and therefore noise at the nearest NSL, NSL1 will reduce to 70 dB $L_{Aeq}$ and will therefore not exceed construction noise thresholds of 70dB (A). Screening of construction noise is discussed further in **Section 11.12.3.1**.

**Phase 1 Construction Phase – Mountshannon Village Car Park Tree Felling**

The car park site is surrounded by an existing natural boundary of mature trees and hedgerows, the majority of which will be retained, and additional trees and planting will be introduced to the site and placed between the parking areas.

**Table 11-14** presents the predicted noise levels from the Mountshannon Village Car Park tree felling activities at the nearest NSL, NSL2 which is the NSL located approximately 20m from the closest point of tree felling to a receptor, refer to **Figure 11-2**.

**Table 11-14 Typical Plant and Machinery and associated noise levels for Phase 1 Construction Tree Felling at Mountshannon Village Car Park**

| Activity | ITEM BS5228 Ref (Plant Noise at 10m Distance) | | % Plant On-Time | Predicted Sound Pressure Level $L_{eq}$ dB(A) | |
|---|---|---|---|---|---|
| | | | | 10m | 20m |
| Tree Felling | Harvester[2] (C2.5) | 76 | 50 | 73 | 69 |
| | Forwarder[3] (C4.53) | 77 | 50 | 74 | 70 |
| | Lorry(C11.9) | 82 | 20 | 75 | 71 |
| Total | | | | | 75 |

Assuming all plant is operating, the predicted worst case noise from tree felling occurs at the nearest NSL, NSL2, refer to **Figure 11-2.** Noise from tree felling could potentially reach 75 dB $L_{Aeq}$ if all plant is operating simultaneously, which would exceed the adopted construction noise limit of 70 dB $L_{Aeq}$ for nearest NSLs. As areas of tree felling move away from nearest NSLs, the noise will dissipate and occur below 75 dB $L_{Aeq}$.

[2] Excavator BS 5228 Ref C2.5

[3] Lorry with lifting boom – C4.53

In order for construction noise to be deemed significant, construction noise thresholds would need to be exceeded over the following periods, as is discussed in **Section 11.5.3.1**:

- Ten or more days or night in any 15 consecutive day or nights; and
- A total number of days exceeding 40 in any six consecutive months.

The duration of tree felling is expected to occur less than the above periods and therefore will not cause significant effects. In accordance with significance ratings outlined in **Table 11-2** of **Section 11.5.3.1**, noise effects from tree felling works are predicted to be likely to be **negative**, **slight** to **moderate**, **temporary**, **local** and **direct** effect on all receptors.

Hoarding will be installed prior to tree felling works which will reduce noise levels from tree felling. Screening of construction noise is discussed further in **Section 11.12.3.1**.

**Phase 1 Construction Phase - Mountshannon Local Network Traffic Noise**

The increase in AADT generated by construction vehicles is noted in **Chapter 6** of this **EIAR**, **Traffic and Transportation**.

Access to the Mountshannon Car Park will be by means of the existing entrance onto the R352.

Construction traffic will include:

- HGVs importing construction materials, including concrete, road build-up materials, building materials, drainage/ducting materials, structural steel, cabling, site boundary fencing, etc.
- HGVs exporting waste/spoil/demolition materials
- HGVs delivering plant/cranes and fuel
- Traffic associated with on-site construction personnel

The predicted Phase 1 peak construction total traffic volumes are provided in **Table 11-15**.

**Table 11-15 Predicted Peak Phase 1 Construction Vehicles**

| Location | Road Link | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | | Weekend Morning Peak Hour | | Weekend Evening Peak Hour [1] | |
|---|---|---|---|---|---|---|---|---|---|
| | | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change [1] |
| R352/L4034 Harbour Road/L4032 Junction | R352 West | 215 (24) | +19 (10) | 334 (19) | +19 (10) | 285 (6) | +10 (6) | 329 | 0 |
| | L4032 | 20 | 0 | 19 | 0 | 11 | 0 | 18 | 0 |
| | R352 East | 204 (23) | +19 (10) | 303 (19) | +19 (10) | 256 (6) | +10 (6) | 305 | 0 |
| | L4034 Harbour Road | 26 (2) | + 1 (1) | 50 (1) | + 1 (1) | 46 (1) | +1 (1) | 65 | 0 |
| R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 178 (20) | + 12 (6) | 281 (14) | + 12 (6) | 241 (6) | +6 (6) | 337 | 0 |
| | L8078 | 11 | 0 | 19 | 0 | 23 | 0 | 21 | 0 |
| | R352 East | 170 (19) | +12 (6) | 261 (12) | +12 (6) | 216 (6) | +6 (6) | 289 | 0 |
| | L4034 Harbour Road | 49 (2) | + 2 (1) | 90 (1) | + 2 (1) | 85 (1) | +2 (1) | 148 | 0 |

Note [1]: Subject to planning conditions, weekend construction working hours will be 8.00 a.m. to 1.00 p.m. on Saturdays. No work will be undertaken on Sundays and Bank Holidays.

The UK Design Manual for Roads and Bridges (DMRB, Volume 11, Section 3, Part 7) states that it takes a 25% increase or a 20% decrease in traffic flows in order to get a 1dBA change in traffic noise levels. A 100% increase in traffic volumes would result in a 3dB increase in noise levels (at receptors close to the impacted road network).

The proposed Phase 1 peak construction would increase weekday morning and evening peak hour traffic volumes by up to 19 vehicles on the R352 and up to two vehicles on the L4034 Harbour Road. The peak hour increases in traffic volumes on the R352 would equate to an increase of up to 10.3%. The predicted peak hour increases in traffic volumes on the L4034 would equate to an increase of up to 4.3%.

In order to increase traffic noise levels by 1 dB, traffic volumes would need to increase by the order of 25%. These % increases indicate a traffic noise increase of less than 1dB which would not be perceptible to the human ear.

In the context of the existing noise environment the effects from the noise contribution of increased traffic on the receiving noise environment from Phase 1 Mountshannon Car Park traffic noise will likely result in a **neutral**, **imperceptible**, **temporary** to **short-term**, **local** and **direct** effect on NSLs.

### 11.11.2.2Vibration

**Phase 1 Construction Phase - Inis Cealtra Island Construction Works Vibration**

The main source of vibration from works at Inis Cealtra Island will result from piling works proposed for construction of the new floating access jetty at the location of the existing concrete landing point to the north-west of the island.

In terms of vibration effecting structures, the nearest residential buildings to the location of piling works are located over 500m away and are located on the mainland. The distance and water between piling area and houses mean no vibration effects are predicted.

The existing buildings on the island are at a distance of approximately 300m from piling works areas and therefore no vibration effects are predicted to buildings on the island.

The construction phase vibration effects associated with Phase 1 Inis Cealtra Island works are likely to be **negative**, **imperceptible**, **temporary** to **short-term**, **localised** and **direct**.

**Phase 1 Construction Phase - Mountshannon Village Car Park Construction Works Vibration**

There are no significant vibrations anticipated during construction of the Mountshannon Village Car Park. In addition, vibration levels will be controlled to levels outlined in **Section 11.5.3.2**.

The construction phase vibration effects associated with Phase 1 Mountshannon Village Car Park construction works are **likely** to be **negative, not significant, temporary** to **short-term, localised** and **direct**.

## 11.11.3 Phase 1 Operational Effects

### 11.11.3.1Noise

**Phase 1 Operational Phase - Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island) Boat Traffic Noise**

The main noise associated with the operational phase of the Inis Cealtra operational phase will be from increased boat traffic accessing island. Access to the Inis Cealtra Island will be via guided boat tours operated by licenced boat operators. Licences will be awarded by tender by Clare County Council on a 3-year basis. Subject to demand, licences will be awarded to a single or multiple operators.

The proposed Phase 1 visitors' boat service to/from Inis Cealtra Island from/to Mountshannon Harbour will be seasonal, ranging from two round trip daily boat services during low season to eight round trip daily boat services during high season. The expected high season eight daily round trip sailings is of the same order as the existing summer tourist season - there are typically eight existing round boat trips daily between Mountshannon Harbour and Inis Cealtra Island.

Accordingly, there will be no increase in total boat traffic generated by Mountshannon Harbour and on Lough Derg with the proposed Phase 1 development in operation.

The maximum daily capacity on the Inis Cealtra island will be 400 persons, with no more than 100 people permitted on the island at any one time.

As boat trips are not predicted to increase significantly on existing boat traffic activities, no significant effects are predicted. Similar to road traffic, a significant increase in boat traffic volumes compared with existing volumes would be required for a significant increase in dB levels.

The effects of noise associated with the Inis Cealtra Island operational phase boat traffic is **likely** to be **neutral**, **imperceptible**, **long term**, **localised** and **direct**.

**Chapter 10 Biodiversity** has assessed the impact of noise on ecological receptors and assessed the effect of operational noise to be **not significant**.

**Phase 1 Operational Phase – Village Car Park**

The typical noise level 10m beyond the boundary of a typical busy commercial car park has been found to be of the order 48 dB $L_{Aeq}$,T[4]. For the purposes of this assessment, this figure will be used to calculate predicted noise to the nearest receptor.

The baseline survey in **Section 11.8.1** measured the existing noise to average 63 $L_{Aeq,\ 15\ min}$ for the daytime period. Given the proximity of NSLs (NSL1/NSL2) to existing traffic noise, additional noise from car park operations is expected to result in a 0 dB increase on existing noise at NSL1 and NSL2.

Therefore effects of noise associated with the Phase 1 operational phase Mountshannon Village Car Park is **likely** to be **negative**, **not significant**, **long term**, **localised** and **direct**.

Mitigation measures will be implemented during the operational phase to reduce car park noise and are included in **Section 11.12.4.1**.

**Chapter 10 Biodiversity** has assessed the impact of noise on ecological receptors and assessed the effect of operational noise to be **not significant**.

**Phase 1 Operational Phase - Mountshannon Local Road Network Traffic Noise**

For the purposes of assessing potential noise impact assessing potential noise impact from the proposed development on the Mountshannon Local Road Network during the operational phase, it is appropriate to consider the relative increase in noise level associated with traffic movements on the existing road network.

The increase in traffic volumes generated by operational vehicles is noted in **Chapter 6** of this **EIAR**, **Traffic and Transportation**. The Phase 1 peak operations high season weekday and weekend morning peak hour and evening peak hour traffic volumes on the Mountshannon local road network, in the vicinity of the proposed development, with the proposed development peak capacity daily visitors, during the initial peak year 2032 (Phase 1, Year 5), are provided in **Table 11-16**.

[4] https://www.pleanala.ie/publicaccess/EIAR-NIS/300745/CH11-%20Noise%20&%20Vibration.pdf?r=564911

**Table 11-16 Predicted 2032 Weekday and Weekend Peak Hour Link Traffic Volumes With Peak Season Phase 1 Operational Development With Peak Capacity Daily Visitors**

| Location | Road Link | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | | Weekend Morning Peak Hour | | Weekend Morning Peak Hour | |
|---|---|---|---|---|---|---|---|---|---|
| | | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change |
| R352/L4034 Harbour Road/L4032 Junction | R352 West | 223 (21) | +13 | 347 (11) | +13 | 303 | +13 | 360 | +13 |
| | L4032 | 21 | 0 | 20 | 0 | 11 | 0 | 19 | 0 |
| | R352 East | 210 (15) | +13 | 314 (11) | +13 | 272 | +13 | 335 | +13 |
| | L4034 Harbour Road | 26 (1) | 0 | 52 | 0 | 47 | 0 | 69 | 0 |
| R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 187 (17) | +9 | 294 (10) | +9 | 257 | +9 | 345 | +9 |
| | L8078 | 11 | 0 | 20 | 0 | 25 | 0 | 23 | 0 |
| | R352 East | 177 (15) | +9 | 272 (7) | +9 | 230 | +9 | 3189 | +9 |
| | L4034 Harbour Road | 49 (1) | 0 | 93 | 0 | 88 | 0 | 156 | 0 |

In order to increase traffic noise levels by 1dB, traffic volumes would need to increase by the order of 25% approximately, as stated by The UK Design Manual for Roads and Bridges (DMRB, Volume 11, Section 3, Part 7). A 100% increase in traffic volumes would result in an approximate 3dB increase in noise levels (at receptors close to the impacted road network).

The proposed Phase 1 peak operations high season, with peak capacity daily visitors, would increase peak hour traffic volumes on the R352 Main Street by up to 13 vehicles two-way, with the proposed development peak capacity daily visitors. This would equate to one additional vehicle every 4.6 minutes and would not be significant. The projected typical increase in peak hour traffic volumes on the R352 Main Street during high season would be up to seven vehicles two-way, during the peak traffic hours and also would not be significant.

These increases do not represent a significant increase and indicate a traffic noise increase of less than 1dB which would not be perceptible to the human ear.

Noise from increased traffic on Mountshannon Local Road Network during the operational phase of Phase 1 is **likely** to be **neutral**, **imperceptible**, **long-term**, **localised** and **direct**.

**Chapter 10 Biodiversity** has assessed the impact of noise on ecological receptors and assessed the effect of operational noise to be **not significant**.

#### 11.11.3.2Vibration

**Phase 1 Operational Phase – Vibration**

There will be no significant, sources of vibration during the operational phase of Phase 1. Effects from vibration during the operational phase of Phase 1 are therefore **likely** to be **negative**, **imperceptible**, **local**, **long term**, and **direct** on NSLs and ecological receptors.

### 11.11.4 Phase 2 Demolition Effects

#### 11.11.4.1Noise

**Phase 2 Demolition Phase – Visitor Centre Stone Wall**

Sections of the existing stone wall at the south and south-west boundary (approx. length 45m in total) along the site's frontage shall be removed to facilitate access from the ground level of the building to the harbour as well as to provide a strong visual connection between the new Visitor Centre and Lough Derg.

The demolition works of the existing wall be small in scale, will be temporary and are not anticipated to cause significant noise impacts. Hand tools will be used where possible.

Overall effects at NSLs from Phase 2 demolition works noise of the stone wall in front of the Visitor Centre will **likely** to be **negative, not significant, temporary, localised** and **direct**.

Effects of demolition noise on ecological receptors during the Phase 2 demolition phase is expected to be **not significant**, as is noted in **Chapter 10 Biodiversity** of this **EIAR**.

#### 11.11.4.2Vibration

**Phase 2 Demolition Phase – Vibration**

There will be no significant sources of vibration during the Phase 2 demolition phase. Effects from vibration during Phase 2 demolition works are therefore **likely** to be **negative**, **imperceptible**, **local**, **temporary**, and **direct** on NSLs.

Effects of demolition noise on ecological receptors during the Phase 2 demolition phase is expected to be **not significant**, as is noted in **Chapter 10 Biodiversity** of this **EIAR**.

### 11.11.5 Phase 2 Construction Effects

The proposed Phase 2 construction includes the reconfiguration of the Harbour Car Park and the new Visitor Centre at Mountshannon, south of Aistear Park. The Phase 2 construction is scheduled for 18 months with the proposed Phase 1 peak operational development in place. The Harbour Car Park construction works are scheduled for six months and to coincide with the new Visitor Centre construction works schedule for 18 months. The proposed development Phase 2 peak construction year is 2041.

#### 11.11.5.1Noise

**Phase 2 Construction Phase – Visitor Centre and Harbour Car Park Construction Works Noise**

Construction works for Phase 2 at the Visitor Centre and Harbour Car Park, consist of the following:

##### Harbour Car Park Reconfiguration

- Pre-commencement activities including site investigation work and pre-construction surveys
- Pre-Construction Activities
- Site Clearance Works
- Construction of temporary site construction compound
- Reconfiguration of the existing Mountshannon Harbour Car Park, located to the south of the proposed Visitor Centre with all associated ancillary site works
- Complete site works, tidy up site, landscaping, restoration
- Demobilise site compound facilities

##### Visitor Centre

- Pre-commencement activities including site investigation work and pre-construction surveys
- Site preparation and pre-construction activities (including tree felling)
- Environmental measures
- Construction of temporary site construction compound
- Construction traffic routes
- Site construction drainage system
- Construction of proposed Visitor Centre to the southern part of the Old Rectory site
- Complete site works, tidy up site, landscaping, restoration
- Demobilise site compound facilities

Construction plant required onsite for the works in Phase 2 of the proposed development at the Visitor Centre and Harbour Car Park works are listed in **Table 11-17**. The exact equipment to be used is not known at this stage, but the plant and machinery outlined in **Table 11-17** are typical of plant commonly used and can provide an accurate assessment of construction noise emissions.

The associated noise levels have been sourced from BS 5228 Noise and Vibration from open and construction sites, totalled, and extrapolated to the nearest noise sensitive location. Only attenuation due to different distances. The resultant noise level is then compared to compared against the relevant noise threshold (refer to **Table 11-1**).

The calculations also assume that the equipment will operate for 66% of the working time.

**Table 11-17 Typical Plant and Machinery and associated noise levels for Phase 2 Construction Visitor Centre and Harbour Car Park Construction Works Noise**

| Activity | ITEM BS5228 Ref (Plant Noise at 10m Distance) | | % Plant On-Time | Predicted Sound Pressure Level $L_{eq}$ dB(A) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 10m | 55m | 60m | 65 | 70 |
| General Construction | Dump Truck (tipping fill) (C2.30) | 79 | 66 | 77 | 67 | 66 | 66 | 65 |
| | Tracked excavator (C2.21) | 71 | | 69 | | | | |
| | Compressor (D7.8) | 70 | | 68 | | | | |
| | Telescopic Handler (C4.54) | 79 | | 77 | | | | |
| | Diesel Generator (C4.76) | 61 | | 59 | | | | |
| Road Works / Landscaping | Asphalt Paver & Tipping Lorry (C5.30) | 75 | | 73 | | | | |
| | Electric Water Pump (C5.40) | 68 | | 66 | | | | |
| | Vibratory Roller (C5.20) | 75 | | 73 | | | | |
| Total | | 84 | | 82 | | | | |

The closest NSL to works will be NSL4 which is approximately 55m north east of visitor centre construction works. The resultant theoretical worst-case noise emission level at NSL4 is 67 dB $L_{Aeq}$ which is marginally above Category A construction noise thresholds of 65 dB(A).

Effects from Phase 2 Visitor Centre and Harbour Car Park Construction Works Noise during are likely to be **negative**, **slight**, **local**, **temporary** to **short term**, and **direct** on NSLs.

Hoarding will be installed around the construction works. A 10dB reduction in noise levels due to the effect of a solid hoarding placed along the works boundary has been assumed and therefore noise at the nearest NSL, NSL4 will reduce to 57 dB $L_{Aeq}$ which is below construction noise thresholds of 65dB (A). Noise at the Lough Derg SPA, when hoarding is in place, is predicted to be approximately 64 dB (A) and is therefore below 70 dB $L_{Aeq}$ which was the noise level deemed to be the zone of significant impact for birds. Screening of construction noise is discussed further in **Section 11.12.3.1**.

**Chapter 10 Biodiversity** has assessed the impact of noise on ecological receptors and assessed the effect of construction noise from the Visitor Centre to be **not significant to slight**.

**Phase 2 Construction Phase – Visitor Centre Tree Felling**

A small number of trees right in front of the centre of building removed to allow for a generous access as well as open the view towards the island.

As is the case with tree felling works at the Mountshannon Village Car Park, noise effects from tree felling works are predicted to be likely to be **negative**, **slight** to **moderate**, **temporary**, **local** and **direct** effect on all receptors.

Hoarding will be installed prior to tree felling works which will reduce noise levels from tree felling. Screening of construction noise is discussed further in **Section 11.12.3.1**.

**Phase 2 Construction Phase – Mountshannon Local Road Network Traffic Noise**

The increase in AADT generated by construction vehicles is noted in **Chapter 6** of this **EIAR**, **Traffic and Transportation**.

It is envisaged that the distribution of construction vehicles would be all via the R352 at Mountshannon, with a similar directional distribution to the recorded baseline traffic volumes on the R352, of circa 60% west and 40% east.

Construction traffic will include:

- HGVs importing construction materials, including concrete, road build-up materials, building materials, drainage/ducting materials, structural steel, cabling, site boundary fencing, etc.
- HGVs exporting waste/spoil/demolition materials
- HGVs delivering plant/cranes and fuel
- Traffic associated with on-site construction personnel

The predicted Phase 2 peak construction year, 2041, weekday and weekend morning peak hour and evening peak hour traffic volumes on the Mountshannon local road network, in the vicinity of the proposed development, with the proposed development peak Phase 2 construction and the proposed Phase 1 high season operational phase with peak capacity visitors, are provided in **Table 11-18**.

**Table 11-18 Predicted 2032 Weekday and Weekend Peak Hour Link Traffic Volumes With Peak Season Phase 1 Operational Development With Peak Capacity Daily Visitors**

| Location | Road Link | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | | Weekend Morning Peak Hour | | Weekend Evening Peak Hour [1] | |
|---|---|---|---|---|---|---|---|---|---|
| | | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change [1] |
| R352/L4034 Harbour Road/L4032 Junction | R352 West | 219 (19) | +36 (8) | 349 (13) | +36 (8) | 301 | +21 (8) | 361 | +13 |
| | L4032 | 22 | 0 | 21 | 0 | 12 | 0 | 20 | 0 |
| | R352 East | 206 (17) | +36 (8) | 314 (13) | +36 (8) | 270 | +17 (4) | 335 | +13 |
| | L4034 Harbour Road | 28 (2) | + 4 (4) | 54 | + 4 (4) | 49 | +4 (4) | 71 | 0 |
| R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 186 (19) | + 24 (6) | 297 (11) | + 24 (6) | 258 | +13 (4) | 370 | +9 |
| | L8078 | 12 | 0 | 21 | 0 | 26 | 0 | 23 | 0 |
| | R352 East | 176 (17) | +24 (6) | 274 (8) | +24 (6) | 230 | +15 (6) | 318 | +9 |
| | L4034 Harbour Road | 52 (2) | + 34 (10) | 97 | + 34 (10) | 91 | +10 (10) | 162 | 0 |

Note [1]: Subject to planning conditions, weekend construction working hours will be 8.00 a.m. to 1.00 p.m. on Saturdays. No work will be undertaken on Sundays and Bank Holidays.

In order to increase traffic noise levels by 1dB, traffic volumes would need to increase by the order of 25% approximately, as stated by The UK Design Manual for Roads and Bridges (DMRB, Volume 11, Section 3, Part 7). A 100% increase in traffic volumes would result in an approximate 3dB increase in noise levels (at receptors close to the impacted road network).

The proposed development peak Phase 2 construction and the proposed Phase 1 high season operational phase, with peak capacity visitors, would increase weekday morning and evening peak hour traffic volumes by up to 36 vehicles on the R352 and up to 34 vehicles on the L4034 Harbour Road. The peak hour increases in traffic volumes on the R352 would equate to an increase of up to 17.5%. The predicted peak hour increases in traffic volumes on the L4034 would equate to an increase of up to 65.4%. The increase in traffic on the L4034 road (65.4%) would increase existing noise by more than 2 dB approximately.

Applying criteria outlined in **Table 11-3** of **Section 11.5.3.1**, the noise from increased traffic during Phase 2 construction works are **likely** to be **negative, not significant, temporary to short term, localised** and **direct** on NSLs and ecological receptors.

### 11.11.5.2 Vibration

**Phase 2 Construction – Construction Works Vibration**

Potential for vibration impacts during the construction phase of Phase 2 works are likely to be limited given the distances to the receptor locations. With respect to the potential vibration impact, the only significant source of vibration is expected to be due to excavations and foundation activities. However, the distance between the areas where these activities are to occur, and the nearest noise sensitive locations are such that all vibration transmission would be below recommended the significance criteria for human response and the orders of magnitude below those set for the avoidance of cosmetic damage to buildings. In this instance, taking account of the distance to the nearest sensitive off-site buildings, vibration levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in **Section 11.5.3.2** to avoid any cosmetic damage to buildings.

Effects from vibration during the operational phase of Phase 2 are therefore **likely** to be **negative**, **not significant**, **local**, **temporary to short term**, and **direct** on NSLs and ecological receptors.

## 11.11.6 Phase 2 Operational Effects

### 11.11.6.1 Noise

**Phase 2 Operational Phase – Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island) Boat Traffic Noise**

The main noise associated with the operational phase of the Phase 2 Inis Cealtra operational phase will be from increased boat traffic accessing island. As is the case during Phase 1, the proposed Phase 2 visitors' boat service to/from Inis Cealtra Island from/to Mountshannon Harbour will be seasonal, ranging from six round trip daily boat services during low season to 14 round trip daily boat services during high season. The expected high season 14 daily round trip boat sailings would be six additional to the existing summer tourist season - there are typically eight existing round boat trips daily between Mountshannon Harbour and Inis Cealtra.

Accordingly, there will be up to 12 additional boat traffic movement volumes generated by Mountshannon Harbour and on Lough Derg with the proposed Phase 2 development in operation.

The maximum daily capacity on the Inis Cealtra island will be 400 persons, with no more than 100 people permitted on the island at any one time.

As boat trips are not predicted to increase significantly on existing boat traffic activities, no significant effects are predicted. Similar to road traffic, a significant increase in boat traffic volumes compared with existing volumes would be required for a significant increase in dB levels.

The Phase 2 Operational Noise associated with Inis Cealtra Island boat traffic is therefore **likely** to be **neutral**, **imperceptible**, **long term**, **localised** and **direct** on NSLs and ecological receptors.

**Phase 2 Operational Phase – Mountshannon Harbour Car Park**

The typical noise level 10m beyond the boundary of a typical busy commercial car park has been found to be of the order 48 dB $L_{Aeq}$,T[5]. Given that the Harbour Car park is approximately 100m from the nearest NSL, there are no significant effects expected from car park noise. The car park area is already in a location where cars park and there is existing harbour noise therefore no significant additional noise is expected.

Therefore effects of noise associated with the Phase 2 operational phase Harbour Car Park is likely to be **negative**, **not significant**, **long term**, **localised** and **direct**.

Mitigation measures will be implemented during the operational phase to reduce car park noise and are included in **Section 11.12.4.1**.

**Chapter 10 Biodiversity** has assessed the impact of operational noise on ecological receptors and assessed the effect to be **not significant**.

**Phase 2 Operational Phase – Visitor Centre Noise**

Once operational, there will be building services plant items required to serve the visitor centre. These will typically be limited to heating and cooling plant and extract units. Given the use of the Visitor Centre, the majority of plant items are likely to be required during daytime hours only, however, there may be requirement for night-time operational plant, depending on specific requirements.

The location or type of building services plant has not yet been established; therefore, it is not possible calculate noise levels to the surrounding environment. In this instance, it is best practice to set appropriate noise limits that will inform the detailed design during the selection and layout of building services for the development.

These items will be selected at a later stage, however, they will be designed and located so that there is no negative impact on sensitive receivers within the development itself. The operational noise level from building services plant within the Visitor Centre to meet the relevant BS4142 noise criteria for day and night-time periods as set out in this assessment. Based on the baseline noise data collected for this assessment it is considered an appropriate design criterion is the order of 35 dB $L_{Aeq}$,15min. This limit is set in order to achieve acceptable noise levels at NSLs.

Once the relevant noise criteria is achieved at NSLs, it is expected there will be no significant effects from Visitor Centre operational noise.

Effects at NSLs from Phase 2 Visitor Centre operational noise is likely to be negative, not significant, long term, localised and direct.

**Chapter 10 Biodiversity** has assessed the impact of operational noise on ecological receptors and assessed the effect to be **not significant**.

[5] https://www.pleanala.ie/publicaccess/EIAR-NIS/300745/CH11-%20Noise%20&%20Vibration.pdf?r=564911

**Phase 2 Operational Phase – Mountshannon Local Road Network Traffic Noise**

For the purposes of assessing potential noise impact assessing potential noise impact from the proposed development on the Mountshannon Local Road Network during the operational phase, it is appropriate to consider the relative increase in noise level associated with traffic movements on the existing road network.

The increase in traffic volumes generated by operational vehicles at Mountshannon Village Car Park is noted in **Chapter 6** of this **EIAR**, **Traffic and Transportation**. The Phase 2 peak operations high season weekday and weekend morning peak hour and evening peak hour traffic volumes on the Mountshannon local road network, in the vicinity of the proposed development, with the proposed development peak season daily visitors, during the initial peak year 2046 (Phase 2, Year 5), are provided in **Table 11-19**.

**Table 11-19 Predicted 2046 Weekday and Weekend Peak Hour Link Traffic Volumes With Phase 2 High Season Operational Development**

| Location | Road Link | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | | Weekend Morning Peak Hour | | Weekend Morning Peak Hour | |
|---|---|---|---|---|---|---|---|---|---|
| | | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change | Total Vehicles (HGVs) | Change |
| R352/L4034 Harbour Road/L4032 Junction | R352 West | 243 (21) | +21 | 374 (14) | +21 | 325 | +21 | 385 | +21 |
| | L4032 | 22 | 0 | 21 | 0 | 12 | 0 | 20 | 0 |
| | R352 East | 231 (19) | +21 | 339 (14) | +21 | 293 | +21 | 359 | +21 |
| | L4034 Harbour Road | 28 (2) | 0 | 54 | 0 | 50 | 0 | 72 | 0 |
| R352 Main Street/L4034 Harbour Road/L8078 Junction | R352 West Main Street | 213 (21) | +14 | 315 (12) | +14 | 274 | +14 | 387 | +14 |
| | L8078 | 12 | 0 | 21 | 0 | 26 | 0 | 24 | 0 |
| | R352 East | 193 (19) | +14 | 292 (9) | +14 | 246 | +14 | 338 | +14 |
| | L4034 Harbour Road | 53 (2) | 0 | 98 | 0 | 92 | 0 | 164 | 0 |

In order to increase traffic noise levels by 1dB, traffic volumes would need to increase by the order of 25% approximately, as stated by The UK Design Manual for Roads and Bridges (DMRB, Volume 11, Section 3, Part 7). A 100% increase in traffic volumes would result in an approximate 3dB increase in noise levels (at receptors close to the impacted road network).

The proposed Phase 2 peak operations high season would increase peak hour traffic volumes on the R352 Main Street by up to 21 vehicles two-way. This would equate to one additional vehicle every 2.9 minutes, would not be significant and would not represent significant increases in existing traffic.

Noise from increased traffic during on the Mountshannon local road network during the Phase 2 operational phase are **likely** to be **negative, imperceptible** to **not significant , long-term, localised** and **direct** on NSLs and ecological receptors.

### 11.11.6.2 Vibration

**Phase 2 Operational Phase – Vibration**

There will be no significant, sources of vibration during the operational phase of Phase 2. Effects from vibration during the operational phase of Phase 2 are therefore **likely** to be **neutral**, **imperceptible**, **local**, **long term**, and **direct** on sensitive receptors.

## 11.11.7 Cumulative Effects

Cumulative effects relate to the addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.

A description of all the existing and planned developments around the proposed development site is provided in **Table 11-20**:

**Table 11-20 Planned and permitted developments in proximity to the proposed development**

| File Number | Application Status | Decision Date | Decision Code | Address | Development Description | Local Authority |
|---|---|---|---|---|---|---|
| 2180 | APPLICATION FINALISED | 29/04/2021 | CONDITIONAL | Clooonoolia North Mountshannon Co Clare | to construct an extension to slatted cattle shed and associated site works... | Clare County Council |
| 218000 | DECISION MADE | 10/05/2021 | CONDITIONAL | The Old Rectory Mountshannon Co Clare | to carry out the following development. Alterations, modifications and partial change of use of the ... | Clare County Council |
| 22123 | APPLICATION FINALISED | 06/04/2022 | CONDITIONAL | Aistear Park Mountshannon Co Clare | to erect a Pavilion (a roofed open structure) for communal, cultural, education and events and gather... | Clare County Council |
| 22269 | APPLICATION FINALISED | 28/03/2023 | CONDITIONAL | Mountshannon Co Clare | the development will consist of 11 no. dwelling houses of varying size and design, 1 no. building co... | Clare County Council |

| File Number | Application Status | Decision Date | Decision Code | Address | Development Description | Local Authority |
|---|---|---|---|---|---|---|
| 22340 | APPLICATION FINALISED | 03/06/2022 | CONDITIONAL | The Old School House & Church Mountshannon Co Clare V94 AT2W | of the following development to the existing building which is a protected structure (RPS No. 130); ... | Clare County Council |
| 238001 | DECISION MADE | 10/07/2023 | UNCONDITIONAL | The Old Rectory Mountshannon Co Clare | to carry out the following development, Alterations, modifications and change of use of the existing... | Clare County Council |

All the existing approved planning applications are/will be subject to appropriate planning and regulatory consents, to ensure that there are no significant effects on receptors from noise.

Having considered the implementation of good construction practice and design for the proposed development and other development in the surrounding area, no cumulative effects are anticipated.

### 11.11.8 Worst-case scenario

A worst-case scenario would arise if the noise and vibration mitigation measures are not implemented during the construction phase of the development. This would result in the generation of uncontrolled noise and vibration from the site which would result in an unacceptable impact on local receptors and the receiving environment.

### 11.11.9 Summary

**Table 11-21** summarises the identified likely significant effects of the proposed development in the absence of mitigation during the demolition phase.

**Table 11-21 Summary of Demolition Phase Likely Significant Effects without Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Phase 1** | | | | | | |
| Phase 1 Demolition Works Noise (All Receptors) | Negative | Not significant | Local | Likely | Temporary | Worst-Case |
| Phase 1 Demolition Works Vibration (All receptors) | Negative | Imperceptible | Local | Likely | Temporary | Worst-Case |
| **Phase 2** | | | | | | |
| Phase 2 Demolition Works Noise (All Receptors) | Negative | Not significant | Local | Likely | Temporary | Worst-Case |
| Phase 2 Demolition Works Vibration (All receptors) | Negative | Imperceptible | Local | Likely | Temporary | Worst-Case |

**Table 11-22** summarises the identified likely significant effects of the proposed development in the absence of mitigation during the construction phase.

**Table 11-22 Summary of Construction Phase Likely Significant Effects without Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Phase 1** | | | | | | |
| Inis Cealtra Island Construction Works Noise (NSLs) | Negative | Not significant | Local | Likely | Temporary to Short-Term | Worst-Case |
| Inis Cealtra Island Construction Works Noise (Ecological Receptors) | Negative | Not Significant | Local | Likely | Temporary | Worst-Case |
| Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island) Boat Traffic Noise (All Receptors) | Neutral | Imperceptible | Local | Likely | Temporary to Short-Term | Worst-Case |

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Mountshannon Village Car Park Construction Works Noise (NSLs) | Negative | Slight to Moderate | Local | Likely | Temporary to Short-Term | Worst-Case |
| Mountshannon Village Car Park Construction Works Noise (Ecological Receptors) | Negative | Not Significant to Slight | Local | Likely | Temporary | Worst-Case |
| Mountshannon Village Car Park Tree Felling (All Receptors) | Negative | Slight to Moderate | Local | Likely | Temporary | Worst-Case |
| Mountshannon Local Network Traffic Noise (All Receptors) | Neutral | Imperceptible | Local | Likely | Temporary to Short-Term | Worst-Case |
| Phase 1 Construction Works Vibration (All Receptors) | Negative | Imperceptible to Not Significant | Local | Likely | Temporary | Worst-Case |
| **Phase 2** | | | | | | |
| Visitor Centre and Harbour and Harbour Car Park Construction Works Noise (NSLs) | Negative | Slight | Local | Likely | Temporary to Short-Term | Worst-Case |
| Visitor Centre and Harbour Car Park Construction Works Noise (Ecological Receptors) | Negative | Not Significant to Slight | Local | Likely | Temporary | Worst-Case |
| Visitor Centre Tree Felling (All Receptors) | Negative | Slight to Moderate | Local | Likely | Temporary | Worst-Case |
| Mountshannon Local Traffic Noise (All Receptors) | Negative | Not Significant | Local | Likely | Temporary | Worst-Case |
| Phase 2 Construction Works Vibration (All Receptors) | Negative | Not Significant | Local | Likely | Temporary to Short-Term | Worst-Case |

**Table 11-23** summarises the identified likely significant effects of the proposed development in the absence of mitigation during the operational phase.

**Table 11-23 Summary of Operational Phase Likely Significant Effects without Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Phase 1** | | | | | | |
| Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island) Boat Traffic Noise (All Receptors) | Neutral | Imperceptible | Local | Likely | Long-Term | Worst-Case |
| Village Car Park Noise (All Receptors) | Negative | Not Significant | Local | Likely | Long Term | Worst-Case |
| Mountshannon Local Road Network Traffic Noise (All Receptors) | Negative | Imperceptible to Not Significant | Local | Likely | Long-Term | Worst-Case |
| Phase 1 Operational Phase Vibration (All Receptors) | Neutral | Imperceptible | Local | Likely | Long-Term | Worst-Case |
| **Phase 2** | | | | | | |
| Lough Derg/Mountshannon Harbour/Inis Cealtra (Holy Island) Boat Traffic Noise (All Receptors) | Neutral | Imperceptible | Local | Likely | Long-Term | Worst-Case |
| Harbour Car Park Noise (All Receptors) | Negative | Not Significant | Local | Likely | Long Term | Worst-Case |
| Visitor Centre Operational Noise (All Receptors) | Negative | Not Significant | Local | Likely | Long Term | Worst-Case |
| Mountshannon Local Road Network Traffic Noise (All Receptors) | Negative | Not Significant | Local | Likely | Long-Term | Worst-Case |
| Phase 2 Operational Vibration (All Receptors) | Neutral | Imperceptible | Local | Likely | Long Term | Worst-Case |

## 11.12 Mitigation

### 11.12.1 Incorporated Design Mitigation

As part of the detailed design of the development, plant items with appropriate noise ratings and, where necessary, appropriately selected remedial measures (e.g. enclosures, silencers etc.) will be specified in order that the adopted plant noise criteria is achieved at the facades of sensitive properties, including those within the development itself.

In terms of traffic car Park upgrades as part of design will assist to reduce noise from increased traffic.

### 11.12.2 Demolition Phase Mitigation

#### 11.12.2.1 Noise Mitigation

No significant effects are predicted at NSLs from demolition phase works however best practice measures as outlined for construction noise mitigation, refer to **Section 11.12.3.1** should also be applied during demolition works.

#### 11.12.2.2 Vibration Mitigation

Vibration from demolition activities will be limited to the values set out in **Section 11.5.3.2.**

### 11.12.3 Construction Phase Mitigation

#### 11.12.3.1 Noise Mitigation

With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228 (2009 + A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2. It is expected that the contractor will ensure that all best practice noise and vibration control methods will be used as necessary in order to ensure impacts to nearby residential noise sensitive locations are not significant.

Noise-related mitigation methods are described below and will be implemented for the project in accordance with best practice. These methods include:

- No plant used on site will be permitted to cause an ongoing public nuisance due to noise;
- The best means practicable, including proper maintenance of plant, will be employed to minimise 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 attenuated 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;
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;
- During construction, the contractor will manage works to comply with noise limits outlined in BS 5228-1:2009+A1 2014. Part 1 – Noise;

- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures;
- Limiting the hours during which site activities which are likely to create high levels of noise or vibration are permitted;
- Monitoring levels of noise and vibration during critical periods and at sensitive locations;
- Establishing channels of communication between the contractor/developer, Clare County Council and residents so that receptors are aware of the likely duration of activities likely to generate higher noise or vibration;

Furthermore, it is envisaged that a variety of practicable noise control measures will be employed. These may include:

- Selection of plant with low inherent potential for generation of noise and/or vibration;
- Erection of good quality, printed site hoarding which will act as a noise barrier to general construction activity at ground level;
- Erection of barriers as necessary around items such as generators or high duty compressors; and
- Situate any noisy plant as far away from sensitive properties as permitted by site constraints.

**Screening**

Screening is an effective method of reducing the noise level at an NSL and can be used successfully as an additional measure to all other forms of noise control. Where required, the use of temporary hoarding will be used to aid in reducing noise levels from potential high levels of construction activity as well as during tree felling works.

**Working Hours**

Normal working times will be 07:00 to 1900hrs Monday to Friday and 08:00 to 13:00hrs Saturday. There will be no work on Sundays and bank holidays. Works will not be undertaken outside these working hours without the written permission of Clare County Council.

**Tree Felling**

Temporary hoarding and careful sequencing of works will reduce noise impacts on nearby residents and ecological receptors. Felling activities will be scheduled to avoid sensitive breeding or nesting periods for birds, typically from April to July.

As many mature trees as possible to maintain natural noise buffers.

**Piling Mitigation**

It is recommended that, if possible, works are conducted in early autumn or late spring to avoid the main breeding and wintering periods for bird activity. Pushing out works to later in the breeding season will reduce the likelihood of an overlap between construction activity and breeding activity on the island. Typically, this would be from April to July.

For piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover.

In addition to the above mitigation measures, mitigation measures from **Chapter 10 Biodiversity** will be carried out during construction to prevent significant effects to ecological receptors.

#### 11.12.3.2 Vibration Mitigation

Vibration from construction activities will be limited to the values set out in **Section 11.5.3.2**.

### 11.12.4 Operational Phase Mitigation

#### 11.12.4.1 Noise Mitigation

**Visitor Centre**

As part of the detailed design of the development, plant items with appropriate noise ratings and, where necessary, appropriately selected remedial measures (e.g. enclosures, silencers etc.) will be specified in order that the adopted plant noise criteria is achieved at the facades of sensitive properties, including those within the development itself.

No mitigation measures are necessary during the operational phase with respect to the control of noise or vibration.

**Mountshannon Village Car Park and Harbour Car Park**

To mitigate car park noise from the development, speed limits will be implemented to reduce tire and engine noise.

#### 11.12.4.2 Vibration Mitigation

No mitigation measures are necessary during the operational phase with respect to the control of noise or vibration.

## 11.13 Residual Impact Assessment

### 11.13.1 Demolition Phase

**Residual Noise Impact**

The impact of the demolition phase will result in an increase in daytime noise levels at Inis Cealtra Island however is sufficient distance from NSLs to cause significant effects. With best practice mitigation measures in place, it is predicted that the residual construction noise effects will be **negative**, **imperceptible**, **local**, **temporary** and **direct**.

**Residual Vibration Impact**

There are no significant sources of vibration at Inis Cealtra Island during the demolition phase and hand tools will be mostly used for works. With best practice mitigation measures in place, it is predicted that the residual construction noise effects will be **negative**, **imperceptible**, **local** and **temporary** and **direct** .

### 11.13.2 Construction Phase

**Residual Noise Impact**

The impact of the Phase 1 construction phase works at Inis Cealtra island will result in an increase in daytime noise levels at Inis Cealtra Island however is sufficient distance from NSLs to cause significant effects. With best practice mitigation measures in place, it is predicted that the residual construction noise effects from works at Inis Cealtra Island will be **negative**, **imperceptible**, **local**, **temporary** and **direct**.

The impact of the Phase 1 construction phase works noise at Inis Cealtra ecological receptors will not be significant provided mitigation measures in **Section 11.12.3** are applied**.**. Effects from construction works at Inis Cealtra Island ecological receptors will be **negative**, **imperceptible**, **local**, **temporary** and **direct**.

Phase 1 works at the Mountshannon car park and Phase 2 works at the Visitor Centre will not cause significant effects provided hoarding is installed and best practice mitigation measures are applied. It is predicted that the residual construction noise effects from Phase 1 Mountshannon Car Park works and Phase 2 Harbour Car Park and Visitor Centre works will be **negative**, **not significant**, **local temporary** to **short term** and **direct**.

**Residual Vibration Impact**

There are no significant sources of vibration are predicted during the construction phase of the proposed development provided best practice mitigation measures are applied.

Vibration effects from the proposed development construction works are predicted to be **negative**, **imperceptible**, **local** and **temporary** and **direct**.

### 11.13.3 Operational Phase

#### 11.13.3.1 Noise

With mitigation measures from **Section 11.12.4.1** applied, no significant noise effects at NSLs are predicted during the operational phase.

Noise effects during the proposed development operational phase are predicted to be **negative**, **imperceptible**, **local**, l**ong term** and **direct**.

#### 11.13.3.2 Vibration

There will be vibration residual effects during the operational phase of the proposed development.

### 11.13.4 Summary of Post-mitigation Effects

**Table 11-24** summarises the identified likely significant effects of the proposed development during the demolition phase of the proposed development post application of mitigation measures.

**Table 11-24 Demolition Phase Post Mitigation Effects**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Phase 1** | | | | | | |
| Phase 1 Demolition Works Noise (All Receptors) | Negative | Imperceptible | Local | Likely | Temporary | Worst-Case |
| **Phase 2** | | | | | | |
| Phase 2 Demolition Works Noise (All Receptors) | Negative | Imperceptible | Local | Likely | Temporary | Worst-Case |

**Table 11-25** summarises the identified likely significant effects of the proposed development during the construction phase of the proposed development post application of mitigation measures.

**Table 11-25 Construction Phase Post Mitigation Effects**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Phase 1** | | | | | | |
| Inis Cealtra Island Construction Works Noise (NSLs) | Negative | Imperceptible | Local | Likely | Temporary to Short-Term | Worst-Case |
| Inis Cealtra Island Construction Works Noise (Ecological Receptors) | Negative | Imperceptible | Local | Likely | Temporary | Worst-Case |
| Mountshannon Village Car Park Construction Works Noise (NSLs) | Negative | Not Significant | Local | Likely | Temporary to Short-Term | Worst-Case |
| Mountshannon Village Car Park Construction Works Noise (Ecological Receptors) | Negative | Not Significant | Local | Likely | Temporary | Worst-Case |
| Mountshannon Village Car Park Tree Felling (All Receptors) | Negative | Not Significant | Local | Likely | Temporary | Worst-Case |

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Phase 1 Construction Works Vibration (All Receptors) | Negative | Imperceptible | Local | Likely | Temporary | Worst-Case |
| **Phase 2** | | | | | | |
| Visitor Centre and Harbour and Harbour Car Park Construction Works Noise (NSLs) | Negative | Not Significant | Local | Likely | Temporary to Short-Term | Worst-Case |
| Visitor Centre and Harbour Car Park Construction Works Noise (Ecological Receptors) | Negative | Not Significant | Local | Likely | Temporary | Worst-Case |
| Visitor Centre Tree Felling (All Receptors) | Negative | Not Significant | Local | Likely | Temporary | Worst-Case |
| Mountshannon Local Traffic Noise (All Receptors) | Negative | Imperceptible | Local | Likely | Temporary | Worst-Case |
| Phase 2 Construction Works Vibration (All Receptors) | Negative | Imperceptible | Local | Likely | Temporary to Short-Term | Worst-Case |

**Table 11-26** summarises the identified likely significant effects of the proposed development during the operational phase of the proposed development post application of mitigation measures.

**Table 11-26 Operational Phase Post Mitigation Effects**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| **Phase 1** | | | | | | |
| Village Car Park Noise (All Receptors) | Negative | Imperceptible | Local | Likely | Long Term | Worst-Case |
| Mountshannon Local Road Network Traffic Noise (All Receptors) | Negative | Imperceptible to Not Significant | Local | Likely | Long-Term | Worst-Case |
| **Phase 2** | | | | | | |
| Harbour Car Park Noise (All Receptors) | Negative | Imperceptible | Local | Likely | Long Term | Worst-Case |
| Visitor Centre Operational Noise (All Receptors) | Negative | Imperceptible | Local | Likely | Long Term | Worst-Case |
| Mountshannon Local Road Network Traffic Noise (All Receptors) | Negative | Imperceptible to Not Significant | Local | Likely | Long-Term | Worst-Case |

**Cumulative Residual Effects**

There will be no significant cumulative residual effects.

## 11.14 Interactions

The main interactions with noise are in relation to human beings and flora and fauna. The impact of noise on human beings living in the area of the proposed development has been addressed above for demolition, construction and operational phase of the proposed development. The impact assessment shows that the noise impacts that will be experienced by human beings in the vicinity of the proposed development are all within the prescribed criteria, provided mitigation measures are applied/. The interaction is described as **negative** and **imperceptible** to **not significant** for the demolition and construction phases and **imperceptible** for the operational phase.

In relation to the interaction of noise from the proposed development with flora and fauna, the noise generated by the development will not have a significant negative impact on the local birdlife and wildlife. Local birdlife and wildlife are already accustomed to activity within the Lough Derg area and will quickly accustom to any slight change in the noise climate of the area as typically occurs for projects of this type. The interaction is described as **negative to neutral** and quantified as **imperceptible** to **not significant**.

## 11.15 Monitoring

### 11.15.1 Demolition Phase Noise Monitoring

No noise monitoring is required for the demolition phase of the proposed development.

### 11.15.2 Construction Phase Noise Monitoring

This section describes the noise monitoring methodologies that shall be implemented at the site to ensure that construction site activities do not cause excessive nuisance at NSLs and to demonstrate how live monitoring systems will assist construction management to comply with noise limit criteria.

Prior to the commencement of the site construction activities, a programme of continuous noise monitoring at the closest NSLs to the site shall be undertaken to assess and manage the impact that site activities may have on ambient noise levels at NSLs.

These surveys will establish the noise impact of site activities at the closest NSLSs to assess compliance with the specified construction noise limit criteria and to ensure that mitigation and control measures are being implemented as required.

All noise monitoring data will be compiled into a monthly technical monitoring report which will include a full assessment of the potential noise impacts arising from site construction activities.

The environmental noise measurements will be completed in accordance with the requirements of ISO 1996-1: 2017: Acoustics – Description, measurement and assessment of environmental noise and with regard to the EPA's 2016 Guidance Note for Noise: Licence Applications, Surveys and Assessments

in Relation to Scheduled Activities (NG4). The measurement parameters to be recorded include $L_{Aeq}$, $L_{A90}$, $L_{A10}$ and $L_{Amax}$ , and 1/3 Octave Frequency analysis to allow tonal noise to be identified.

All live noise monitoring systems shall be programmed to include audio recording to allow construction management to identify the source of high noise. The systems shall be capable of transmitting live text and email alerts to nominated construction staff should a noise limit be approached or exceeded.

### 11.15.3 Operational Phase Noise Monitoring

No noise monitoring will be required during the operational phase.

## 11.16 Summary of Mitigation and Monitoring

**Table 11-27** summarises the proposed construction phase mitigation and monitoring measures.

**Table 11-27 Summary of Mitigation and Monitoring Measures**

| Likely Significant Effect | Mitigation | Monitoring |
|---|---|---|
| **Site preparation, general construction works Noise** | Best Practice Noise Mitigation in accordance with BS5228 Part 1 | Continuous live noise surveys for duration of construction phase |
| **Site preparation, general construction works Noise** | Screening though use of hoarding. | Continuous live noise surveys for duration of construction phase |
| **Piling Works Noise** | Enclose driving system in acoustic shroud. | NA |
| **Piling Works Noise** | Conduct piling works in early autumn or late spring to avoid the main breeding and wintering periods for bird activity. | NA |

## 11.17 Conclusion

This Noise and Vibration assessment, undertaken for the proposed development at Inis Cealtra Island and Mountshannon, provides a comprehensive evaluation of the potential impacts on both human receptors and ecological systems during the demolition, construction, and operational phases. Based on the analysis conducted, it is evident that while there will be temporary and localised increases in noise levels during the construction and demolition phases, these effects are manageable and not predicted to cause significant effects, particularly with the implementation of mitigation measures set out in this chapter.

Key findings indicate that demolition works, which are small in scale, will not cause significant noise impacts at residential noise-sensitive locations (NSLs), and vibration effects will be imperceptible.

Construction activities, particularly at Inis Cealtra Island, may result in temporary noise impacts at source, but these will be confined to the immediate construction area and are unlikely to exceed acceptable thresholds for residential receptors or cause significant impacts on ecological receptors. Mainland construction will elevate noise levels over a temporary period however no significant impacts are predicted once mitigation measures are applied. The noise generated by boat and road traffic during construction will remain consistent with baseline levels and not significantly affect the environment in terms of additional noise.

During the operational phase, noise from traffic, car park operations, and boat services is anticipated to have minimal impact on the surrounding community, with no significant effects expected on local wildlife also. The proposed mitigation measures including selection of appropriate mechanical plant in terms of acceptable noise output for the Visitor Centre will further reduce any potential impacts. Additionally, no significant sources of vibration will arise during the operational phase.

Overall, the development's impact on noise and vibration will be manageable, with all significant effects reduced to acceptable levels through the implementation of best practice noise control measures and monitoring. The project will contribute to the local area while preserving the comfort and well-being of surrounding communities and ecological systems. With the proposed mitigation strategies in place, residual effects from noise are predicted to be imperceptible, local, and temporary in nature. Therefore, the proposed development, with appropriate safeguards, is considered to be acceptable from a noise and vibration impact perspective.

## 11.18 References and Sources

BS 4142: 2014: Methods for Rating and Assessing Industrial and Commercial Sound.

BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise.

BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2 – Vibration.

BS 6472 Guide to evaluation of human exposure to vibration in buildings (2008): Part 1 - Vibration sources other than blasting.

BS 7385-2:1993 Evaluation and measurement for vibration in buildings. Guide to damage levels from ground borne vibration.

BS 8233: 2014 Guidance on sound insulation and noise reduction for buildings

Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2 (DMR, 2020)

Good Practice Guide for the Treatment of Noise during the Planning of National Road Schemes (NRA, 2014).

Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities (EPA, 2016).

National Highways Design Manual for Roads and Brides Part 7 HD 213/11 – Revision 1 Noise and Vibration.

Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment, (IEMA 2014).

ISO 1996: 2017: Acoustics – Description, measurement, and assessment of environmental noise.

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 12
# AIR QUALITY & CLIMATE

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


12 Air Quality & Climate ..... 12-4
12.1 Introduction ..... 12-4
12.2 Expertise & Qualifications ..... 12-4
12.3 Proposed Development ..... 12-4
12.3.1 Aspects Relevant to this Assessment ..... 12-5
12.4 Methodology ..... 12-6
12.4.1 Relevant Legislation & Guidance ..... 12-6
12.4.2 Assessment Methodology ..... 12-7
12.4.3 Modelling Methodology ..... 12-17
12.4.4 Consultation ..... 12-18
12.5 Difficulties Encountered ..... 12-18
12.6 Baseline Environment ..... 12-18
12.6.1 Climate Baseline ..... 12-21
12.6.2 Sensitivity of the Receiving Environment ..... 12-24
12.7 The 'Do Nothing' Scenario ..... 12-31
12.8 Potential Significant Effects ..... 12-31
12.8.1 Construction Phase ..... 12-31
12.8.2 Operational Phase ..... 12-37
12.8.3 Cumulative Effects ..... 12-41
12.8.4 Summary ..... 12-44
12.9 Mitigation ..... 12-45
12.9.1 Construction Phase Mitigation ..... 12-45
12.9.2 Operational Phase Mitigation ..... 12-46
12.10 Residual Impact Assessment ..... 12-46
12.10.1 Construction Phase ..... 12-46
12.10.2 Operational Phase ..... 12-46
12.10.3 Summary of Post-mitigation Effects ..... 12-47
12.10.4 Cumulative Residual Effects ..... 12-48
12.11 Risk of Major Accidents or Disasters ..... 12-48
12.12 Worst Case Scenario ..... 12-48
12.13 Interactions ..... 12-48
12.14 Monitoring ..... 12-49
12.15 Summary of Mitigation and Monitoring ..... 12-50
12.16 Conclusion ..... 12-51
12.17 References and Sources ..... 12-52

# Table of Figures

Figure 12.1: Long Term trends in ambient $PM_{2.5}$ in Ireland .....12-19
Figure 12.2: Long Term trends in ambient $NO_2$ in Ireland .....12-19
Figure 12.3: Wind Rose Shannon Airport 1991 - 2020 .....12-23
Figure 12.4: Aerial Image of Project Location (Google Earth) .....12-26
Figure 12.5 Mountshannon Link Traffic Monitoring Locations .....12-40

# Table of Tables

Table 12.1: Phases of Development .....12-5
Table 12.2: Limit Values of Directive 2008/50/EC, 1999/30/EC and 2000/69/EC (Source: EPA) .....12-9
Table 12.3: New Directive Proposed Limit Values for the protection of human health to be attained by 1 January 2030 .....12-10
Table 12.4: Target values for Ozone Defined in Directive 2008/50/EC & Proposed Long term objectives for Ozone (Source: EPA).....12-11
Table 12.5: Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2035 (Department of the Environment, Climate and Communications 2022).....12-15
Table 12.6: Sectoral Emissions Ceiling 2030 (Department of the Environment, Climate and Communications 2022) .....12-15
Table 12.7: Monthly Rainfall Scariff 2010 - 2020.....12-21
Table 12.8: Mean Air Temperature (°C) Shannon Airport .....12-22
Table 12.9: Mean Wind Speed (knots) Shannon Airport .....12-22
Table 12.10: Classification of Sensitive Receptors.....12-25
Table 12.11: Sensitivity Classification of Project Elements.....12-27
Table 12.12: Sensitivity of the Area to Dust Soiling Effects on People and Property .....12-28
Table 12.13: Sensitivity of the Area to Human Health Impacts .....12-29
Table 12.14: Sensitivity of the Area to Ecological Impacts .....12-30
Table 12.15: Sensitivity of the Area - Outcome .....12-30
Table 12.16: Risk Category from Demolition Activities .....12-32
Table 12.17: Risk Category from Earthwork Activities.....12-33
Table 12.18: Risk Category from Construction Activities.....12-34
Table 12.19: Risk Category from Trackout Activities .....12-35
Table 12.20: Summary of Phase 1 Risk Categories to define Site Specific Mitigation.....12-36
Table 12.21: Summary of Phase 2 Risk Categories to define Site Specific Mitigation.....12-36
Table 12.22: Dust and Air Quality Impact on Sensitive Receptors (with no mitigation) Phase 1 ....12-36
Table 12.23: Dust and Air Quality Impact on Sensitive Receptors (with no mitigation) Phase 2 ....12-37

Table 12.24: Predicted Phase 1 peak Operations High Season Additional Operational Vehicles with Peak Capacity Daily Visitors .....12-38
Table 12.25: Predicted Phase 2 peak Operations High Season Additional Operational Vehicles with Peak Capacity Daily Visitors .....12-38
Table 12.26 Planned and permitted developments in proximity to the proposed development...12-41
Table 12.27 Summary of Demolition & Construction Phase Likely Significant Effects in the absence of mitigation .....12-44
Table 12.28 Summary of Operational Phase Likely Significant Effects in the absence of mitigation..12-45
Table 12.29 Summary of Demolition & Construction Phase Effects Post Mitigation .....12-47
Table 12.30 Summary of Operational Phase Effects Post Mitigation .....12-47
Table 12.31: Environmental Monitoring Schedule .....12-49
Table 12.32 Summary of Demolition & Construction Phase Mitigation and Monitoring .....12-50

# 12 Air Quality & Climate

## 12.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on air quality and climate.

It should be read in conjunction with Chapter 2 which provides a full project description, Chapter 6 Material Assets: Traffic & Transport, Chapter 7: Material Assets: Built Services & Waste, Chapter 15 Interactions of the Foregoing and Chapter 16 Summary of Mitigation Measures.

## 12.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Claire Boylan of Malachy Walsh and Partners. Claire Boylan holds a BSc (EnvMgt), an Adv Dip Planning and Environmental Law, a BBS and DipSci. Claire is an experienced Environmental Scientist at Malachy Walsh and Partners (MWP), having worked for 6 years in the environmental sector. Claire has worked on a variety of infrastructure projects, environmental licensing applications, conducted environmental assessments and supported the delivery of a number of environmental deliverables including Environmental Impact Assessment (EIA) Screening Reports, Appropriate Assessment (AA), Natura Impact Statements (NIS) and Environmental Impact Assessment Reports (EIAR). Claire has been involved in the preparation of EIARs for the following projects:

- Dernacart Wind Farm
- Leeside Quays Large Scale Residential Development
- Architectural & Metal Systems Anodising Facility

## 12.3 Proposed Development

A detailed description of the proposed development is contained within chapter 2 of this EIAR and the Planning Statement that accompanies this application. The statutory notice should also be referenced. Following is a summary description of the development.

The Inis Cealtra Visitor Experience is to be developed on Inis Cealtra (Holy Island) and on the mainland, in two principal locations within Mountshannon Village. The project is comprised of different elements as set out below.

**Inis Cealtra Island**

- Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island.
- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp.

- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.
- Provision of three staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

**Mainland – Mountshannon**

- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, together with coach parking and bicycle parking facilities.
- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building incorporating a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.
- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.

The current indicative phasing strategy suggests that the project will be split over 2 phases. For EIA purposes, Phase 1 will be assessed with the current baseline. Phase 2 will be assessed with Phase 1 included as part of the baseline.

**Table 12.1: Phases of Development**

| Phase | Project Element / Proposed Works | Duration of Works | Anticipated Completion |
|---|---|---|---|
| 1 | (a) Works at Inis Cealtra island including:<br>• Mooring point<br>• Demolition of existing visitor shelter<br>• Network of pedestrian pathways<br>• Welfare Pods<br>(b) New Car Park in Mountshannon Village | 12 months | Q1 of 2028 |
| 2 | (a) Visitor Centre, Mountshannon<br>(b) Reconfiguration of Mountshannon Harbour car park | 18 months<br>6 months | Q3 of 2042 |

### 12.3.1 Aspects Relevant to this Assessment

The following aspects of the proposed development are relevant to this chapter

Inis Cealtra Island

- Construction activities associated with the new mooring, pods and walkway.
- Operational increase in road and boat traffic.

Village car park

- Construction activities such as demolition, excavation, trackout and construction.
- Operational increase in road traffic.

Visitor Centre

- Construction activities such as demolition, excavation, trackout and construction.
- Operational increase in road traffic.
- Increase demand for power supply.
- Vulnerability of the development to climate change impacts including flooding

Mountshannon Harbour Car Park

- Construction activities such as excavation, trackout and construction.

## 12.4 Methodology

### 12.4.1 Relevant Legislation & Guidance

#### 12.4.1.1 Air Quality

The following legislation and published guidance has been consulted in undertaking this assessment:

- Clean Air Strategy (Government of Ireland 2023);
- Guidance on the assessment of dust from demolition and construction (IAQM 2024);
- Air Quality Assessment of Proposed National Roads - Standard (TII 2022a);
- Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document (TII 2022b)
- Guidelines for Assessment of Ecological Impacts of National Roads Schemes (TII 2009);
- UK Department of Environment Food and Rural Affairs (DEFRA) Part IV of the Environment Act 1995: Local Air Quality Management, LAQM.TG (16) (DEFRA 2018);
- Advisory Note: Ecological Assessment of Air Quality Impacts, Chartered Institute of Ecology and Environmental Management, January 2021;
- UK Highways Agency (UKHA) Design Manual for Roads and Bridges (DMRB) – LA 105 Air Quality (UKHA 2019); and
- World Health Organization (WHO) Air Quality Guidelines for Particulate Matter, Ozone, Nitrogen Dioxide and Sulphur Dioxide Global Update 2005 (WHO 2005).

#### 12.4.1.2 Climate

This assessment has been prepared in accordance with national guidelines, where available, in addition to international standards and guidelines relating to the assessment of Greenhouse Gas

(GHG) emissions and associated climatic impact. References to legislation include amendments thereto. These are summarised below:

- DCCAE (2017) National Adaption Plan;
- DCCAE (2024) Climate Action Plan 2024;
- Department of Transport, Tourism and Sport (DTTAS) (2019) Transport – Climate Change Sectoral Adaption Plan;
- Climate Action and Low Carbon Development (Amendment) Act 2021 (No.46 of 2015) (hereafter referred to as the 2021 Climate Act);
- Clare County Council Climate Action Plan 2024-2029;
- European Commission (EC) (2014) 2030 Climate and Energy Policy Framework;
- Transport Infrastructure Ireland (TII) (2011) Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes;
- UKHA (2019) Design Manual for Roads and Bridges: A 114 – Climate;
- European Green Deal (EC, 2022);
- Kyoto Protocol (United Nations Framework Convention on Climate Change(UNFCC, 1997);
- Paris Agreement (UNFCC, 2015);
- The Climate Action and Low Carbon Development (Amendment) Act 2021;
- Climate Action Plan 2023 (CAP) (DCCAE, 2022);
- Glasgow Climate Pact (COP26);
- Summary of Global Climate Action at COP 27 (UNFCC, 2022).

#### 12.4.1.2.1 Local Policy and Guidelines

The Clare County Development Plan 2023-2029, Killaloe Municipal District Settlement Plans outlines some of the general objectives relating to Mountshannon. These include:

- To encourage further retail, tourism and commercial development;
- To encourage developments that will provide services for both visitors to the area and the local population in order to generate year-round activity and employment in the area;
- To support new enterprises, particularly those of a craft/tourism type, on the enterprise zoned lands;
- To encourage a sustainable tourism based industry based on the amenities of Lough Derg and Inis Cealtra (Holy Island) and the White Tailed Eagle;
- To ensure the appropriate zoning of land within the village to provide for the development of the Inis Cealtra visitor experience.

### 12.4.2 Assessment Methodology

The methodology is to assess the impacts on air quality and climate involving the assessment of baseline air quality, a review of the project construction and operation practices to determine the likelihood and significance of any emissions, and a desktop assessment of all relevant guidance, best practice and legislation. Due to the non-industrial nature of the proposed development and the

general character of the surrounding environment, air quality sampling was deemed to be unnecessary for this EIAR.

As part of this assessment, the local climate was characterised based on 30-year averages measured at a representative weather observatory. The compatibility of the proposed project with the 2024 national Climate Action Plan (CAP) was examined. Climate is a global rather than a national consideration, therefore current reports on the state of the climate have been summarised.

#### 12.4.2.1 Site Surveys/Investigations

The methodology used for this study included desk-based research of published information to assemble information on the local receiving environment. The desk study included reviewing the following activities:

- Existing EPA air quality monitoring data to characterize existing baseline air quality;
- Identification of sensitive receptors within the site and in close proximity to the area;
- Relevant assessment criteria, guidelines and best practice to assess the potential impact of the proposed development on air quality (at sensitive receptors) and climate;
- The construction methodology and its potential for dust generation;
- Review of Clare County Council's development plans and planning policy in order to identify future development and identify any planning allocations within the study area;
- Review of the Regional Spatial & Economic Strategy (RSES) for the Southern Region;
- Reviews of CCC's Planning Register to identify relevant development proposals currently under considerations by the Council.

#### 12.4.2.2 Air Quality

In the EU, directives set down Air Quality Standards to protect health, vegetation and ecosystems. The Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) was published in May 2008 and was transposed into Irish legislation by the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011). The current applicable legislation in Ireland is the Ambient Air Quality Standards 2022, which incorporates EU Directive 2008/50/EC limit values for pollutants. In October 2024, the European Council formally adopted a directive setting updated air quality standards across the EU. The revised directive sets new air quality standards for pollutants to be reached by 2030 which are more closely aligned with the WHO air quality guidelines. The adopted text will be published in the EU's Official Journal and enter into force on the twentieth day following publication. Member states will have two years after the entry into force to transpose the directive into national law. The new directive air quality limits are shown in Table 12-3.

To reduce the risk of poor air quality, National and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limits are set for the protection of human health and ecosystems. Air Quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values which incorporate European Commission Directive 2008/50/EC which has set limit values for pollutants $SO_2$, $NO_2$, $PM_{10}$, Lead, Benzene and Carbon Monoxide. Council Directive 2008/50/EC combines the previous Air Quality Framework Directive (96/62/EC) and its subsequent daughter directives (including 1999/30/EC and 2000/69/EC). Provisions are also made for the inclusion of ambient limit values relating to $PM_{2.5}$.

**Table 12.2: Limit Values of Directive 2008/50/EC, 1999/30/EC and 2000/69/EC (Source: EPA)**

| Pollutant | Limit Value Objective | Averaging Period | Limit Value (µg/m³) | Limit Value (ppb) | Basis of Application of Limit Value |
|---|---|---|---|---|---|
| Sulphur dioxide ($SO_2$) | Protection of Human Health | 1 hour | 350 | 132 | Not to be exceeded more than 24 times in a calendar year |
| Sulphur dioxide ($SO_2$) | Protection of human health | 24 hours | 125 | 47 | Not to be exceeded more than 3 times in a calendar year |
| Sulphur dioxide ($SO_2$) | Protection of vegetation | Calendar year | 20 | 7.5 | Annual mean |
| Sulphur dioxide ($SO_2$) | Protection of vegetation | 1st Oct to 31st Mar | 20 | 7.5 | Winter mean |
| Nitrogen dioxide ($NO_2$) | Protection of human health | 1 hour | 200 | 105 | Not to be exceeded more than 18 times in a calendar year |
| Nitrogen dioxide ($NO_2$) | Protection of human health | Calendar year | 40 | 21 | Annual mean |
| Nitrogen monoxide (NO) and nitrogen dioxide ($NO_2$) | Protection of ecosystems | Calendar year | 30 | 16 | Annual mean |
| Particulate matter 10 ($PM_{10}$) | Protection of human health | 24 hours | 50 | - | Not to be exceeded more than 35 times in a calendar year |
| Particulate matter 2.5 ($PM_{2.5}$) | Protection of human health | Calendar year | 40 | - | Annual mean |
| Particulate matter 2.5 ($PM_{2.5}$) Stage 1 | Protection of human health | Calendar year | 25 | - | Annual mean |
| Particulate matter 2.5 ($PM_{2.5}$) Stage 2 | Protection of human health | Calendar year | 20 | - | Annual mean |
| Lead (Pb) | Protection of human health | Calendar year | 0.5 | - | Annual mean |
| Carbon Monoxide (CO) | Protection of human health | 8 hours | 10,000 | 8,620 | - |
| Benzene ($C_6H_6$) | Protection of human health | Calendar Year | 5 | 1.5 | - |

**Table 12.3: New Directive Proposed Limit Values for the protection of human health to be attained by 1 January 2030**

| Pollutant | Limit Value Objective | Averaging Period | Limit Value (µg/m3) | Basis of Application of Limit Value |
|---|---|---|---|---|
| Sulphur dioxide ($SO_2$) | Protection of Human Health | 1 hour | 350 | Not to be exceeded more than 3 times in a calendar year |
| Sulphur dioxide ($SO_2$) | Protection of human health | 24 hours | 50 | Not to be exceeded more than 18 times in a calendar year |
| Sulphur dioxide ($SO_2$) | Protection of vegetation | Calendar year | 20 | Annual mean |
| Sulphur dioxide ($SO_2$) | Protection of vegetation | Calendar Year and Winter (1st Oct to 31st Mar) | 20 | Winter mean |
| Nitrogen dioxide ($NO_2$) | Protection of human health | 1 hour | 200 | Not to be exceeded more than 3 times in a calendar year |
| Nitrogen dioxide ($NO_2$) | Protection of human health | 24 hours | 50 | Not to be exceeded more than 18 times in a calendar year |
| Nitrogen dioxide ($NO_2$) | Protection of human health | Calendar year | 20 | Annual mean |
| Nitrogen monoxide (NO) and nitrogen dioxide ($NO_2$) | Protection of ecosystems | Calendar year | 30 | Annual mean |
| Particulate matter 10 ($PM_{10}$) | Protection of human health | 24 hours | 45 | Not to be exceeded more than 18 times in a calendar year |
| Particulate matter 10 ($PM_{10}$) | Protection of human health | Calendar year | 20 | Annual mean |
| Particulate matter 2.5 ($PM_{2.5}$) | Protection of human health | 24 hours | 25 | Not to be exceeded more than 18 times in a calendar year |
| Particulate matter 2.5 ($PM_{2.5}$) | Protection of human health | Calendar year | 10 | Annual mean |
| Lead (Pb) | Protection of human health | Calendar year | 0.5 | Annual mean |
| Carbon Monoxide (CO) | Protection of human health | Maximum daily 8 hour mean | 10 | 8 hour mean |
| Carbon Monoxide (CO) | Protection of human health | 24 hours | 4 | Not to be exceeded more than 18 times in a calendar year |
| Benzene ($C_6H_6$) | Protection of human health | Calendar Year | 3.4 | Annual mean |

The Ozone Daughter Directive 2002/3/EC is different from the other Daughter Directives in that it sets target values and long-term objectives for ozone rather than limit values. **Table 12-4** presents the current limit and target values for ozone as well as the adopted limits to be enacted.

**Table 12.4: Target values for Ozone Defined in Directive 2008/50/EC & Proposed Long term objectives for Ozone (Source: EPA)**

| Objective | Parameter | Target Value for 2010 | Target Value for 2020 | Long-term objective (1 Jan 2050) |
|---|---|---|---|---|
| Protection of human health | Maximum daily 8-hour mean | 120 $mg/m^3$ not to be exceeded more than 25 days per calendar year averaged over 3 years | 120 $\mu g/m^3$ | 100 $\mu g/m^3$ |
| Protection of vegetation | AOT40 calculated from 1 hour values from May to July | 18,000 $mg/m^3.h$ averaged over 5 years | 6,000 $\mu g/m^3.h$ | 6,000 $\mu g/m^3.h$ |
| Information Threshold | 1-hour average | 180 $mg/m^3$ | - | |
| Alert Threshold | 1-hour average | 240 $mg/m^3$ | - | |

The potential for a significant impact to air quality may arise from emissions of fugitive dust during construction. Transport Infrastructure Ireland (TII) have issued updated guidance, December 2022, 'Air Quality Assessment of Proposed National Roads – Standard '. This has been consulted to determine the potential impacts from the proposed construction activities.

**Dust**

With regards to larger dust particles that can give rise to nuisance dust (soiling), there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. The impact of dust is usually monitored by measuring rates of dust deposition. The German TA Luft Air Quality Standards (TA Luft, 1986) are the only standards available that specify a method for measuring dust deposition – The Bergerhoff Method. The TA Luft dust deposition limits at site boundaries for total dust is 350$mg/m^2$/day averaged over a 30-day period. The extent of dust generation at any site depends on the type of activities undertaken, the location, the nature of the dust, i.e. soil, sand, peat 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.

Transport Infrastructure Ireland (TII) published new guidance in 2022 for assessing dust effects at a local level from road construction 'Air quality assessment of proposed national roads – Standard' (TII, 2022A) and 'Air quality assessment of specified infrastructure projects – overarching technical document' (TII,2022B). The assessment of dust has been carried out in accordance with same. The TII Guidance in relation to dust is in accordance with the latest 2024 IAQM Guidelines on construction dust assessments, Guidance on the assessment of dust from demolition and construction.

This assessment of dust effects therefore focuses on identifying the existing baseline levels of $PM_{10}$ and $PM_{2.5}$ in the region of the proposed development by an assessment of EPA monitoring data. Thereafter, the effect of the construction phase of the proposed development on air quality was determined by a qualitative assessment of the nature and scale of dust generating construction activities with the proposed development based on the guidance issued by the IAQM (2024).

**Traffic**

TII guidance documents (TII, 2022A/2022B) state that the following scoping criteria shall be used to determine whether the air quality impacts of a project can be scoped out or require an assessment based on changes between 'Do-Something' traffic scenario (with the proposed development) compared to the 'Do-Minimum' traffic scenario (without the proposed development):

- Road alignment will change by 5m or more;
- Annual average daily traffic (AADT) flows will change by 1,000 or more; or
- Heavy duty vehicle (HDV) (vehicles greater than 3.5 tonnes, including buses and coaches) flows will change by 200 AADT or more; or
- Daily average speed change by 10 kph or more;
- Peak hour speed will change by 20kph or more.

If the above criteria are not met, then a detailed quantitative assessment of construction traffic is not required.

**Ecology**

For routes that pass within 2km of a designated area of conservation (either Irish or European designation) the TII requires consultation with an Ecologist (2011). However, the TII guidance states that in practice the potential for impact to an ecological site is highest within 200m of the proposed scheme and when significant changes in AADT (>5%) occur.

Transport Infrastructure Ireland's Guidelines for Assessment of Ecological Impacts of National Road Schemes (2009) and Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DEHLG, 2010) provide details regarding the legal protection of designated conservation areas.

If both the following assessment criteria are met, an assessment of the potential for impact due to nitrogen deposition shall be conducted:

- A European designated area of conservation is located within 200m of the proposed development; and
- A significant change in AADT flows (>5%) will occur.

If the above criteria are not met, then an assessment of the impact of the proposed development on NOx concentrations and nitrogen deposition is not required.

#### 12.4.2.3 Climate

##### 12.4.2.3.1 National Climate Policy

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted 9the Act). The purpose of the Act was to enable Ireland 'to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050' (3.(1) of No. 46 of 2015). This is referred to in the Act as the 'national transition objective'. The Act provided for the establishment of the Climate Change Advisory Council (hereafter referred to as the Advisory Council) with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations. The Advisory Council is to advise and make recommendations on the following:

- The preparation of a Climate Action Plan (CAP);
- The preparation of a national long-term climate action strategy;
- The preparation of a national adaption framework;
- The finalisation and revision of a carbon budget; and
- Compliance with any existing obligations of the State under EU law or any international agreements.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 outlined the current status across the key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The Government published the second Climate Action Plan in November 2021 (Government of Ireland, 2021a) and a third update in December 2022 (Government of Ireland, 2022).

Following on from Ireland declaring a climate and biodiversity emergency in May 2019, and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme in December 2019, followed by the publication of the Climate Action and Low Carbon Development (Amendment) Bill 2021 (hereafter referred to as the 2021 Climate Bill) in March 2021. The Climate Act was signed into Law on the 23rd of July 2021, giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act was to provide for the approval of plans 'for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050'. The 2021 Climate Act will also 'provide for carbon budgets and a sectoral emissions ceiling to apply to different sectors of the economy'. The 2021 Climate Act removes any reference to a national mitigation plan and instead refers to both the CAP, as published in 2019, and a series of National Long Term Climate Action Strategies. In addition, the Minister for the Environment, Climate and Communications is required to request that each local authority prepare a 'local authority climate action plan' lasting five years and specifying the mitigation measures and the adaptation measures to be adopted by the local authority. The 2021 Climate Act has set a target of a

51% reduction in the total amount of GHGs over the course of the first two carbon periods ending 31 December 2030 relative to 2018 annual emissions. The 2021 Climate Act defines the carbon budget as 'the total amount of GHG emissions that are permitted during the budget period'. The 2021 Climate Act outlined a series of specific actions including:

• To make a strategy to be known as the 'National Long Term Climate Strategy' not less than once in every five-year period with the first to be published for the period 2021 to 2035 and with each subsequent Strategy covering the next three five-year carbon budgets and also include a longer-term perspective of at least 30 years;

• To adopt a system of carbon budgets which will be determined as part of a grouping of three five-year periods calculated on an economy-wide basis, starting with the periods 2021 to 2025, 2026 to 2030, and 2031 to 2035 (See Table 10 2);

• To introduce a requirement for Government to adopt "sectoral emission ceilings" for each relevant sector within the limits of each carbon budget;

• To request all local authorities to prepare CAPs for the purpose of contributing to the national climate objective. These plans should contain mitigation and adaptation measures that the local authority intends to adopt;

• Increasing the power of the Advisory Council to recommend the appropriate climate budget and policies;

• Requiring the Minister to set out a roadmap of actions to include sector specific actions that are required to comply with the carbon budget and sectoral emissions ceiling for the period to which the plan relates; and

• Reporting progress with the CAP on an annual basis with progress including policies, mitigation measures and adaptation measures that have been adopted.

In relation to carbon budgets, the Climate Action and Low Carbon Development (Amendment) Act (Government of Ireland, 2021b) states 'A carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'budget period')'. The carbon budget is to be produced for 3 sequential budget periods, as shown in Table 12-5. The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the Minister for the Environment) shall prepare and submit to government the maximum amount of GHG emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectorial emission ceilings for 2030 were published July in 2022 and are shown in Table 12-6

**Table 12.5: Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2035 (Department of the Environment, Climate and Communications 2022)**

| Sector | Reduction Required | 2018 Emissions (MtCO2e)Note 1 |
|---|---|---|
| 2021 – 2025 | 295 $MtCO_2eq$ | Reduction in emissions of 4.8% per annum for the first budget period. |
| 2026 – 2030 | 200 $MtCO_2eq$ | Reduction in emissions of 8.3% per annum for the second budget period. |
| 2031 – 2035 | 151 $MtCO_2eq$ | Reduction in emissions of 3.5% per annum for the third provisional budget. |

Note 1: MtCO2eq demotes million tonnes carbon dioxide equivalent.

**Table 12.6: Sectoral Emissions Ceiling 2030 (Department of the Environment, Climate and Communications 2022)**

| Sector | Reduction Required | 2018 Emissions ($MtCO_2eq$) | 2030 Emission Ceiling ($MtCO_2eq$) |
|---|---|---|---|
| Electricity | 75% | 10.5 | 3 |
| Transport | 50% | 12 | 6 |
| Buildings (Commercial and Public) | 45% | 2 | 1 |
| Buildings (Residential) | 40% | 7 | 4 |
| Industry | 35% | 7 | 4 |
| Agriculture | 25% | 23 | 17.25 |
| Other** | 50% | 2 | 1 |

**F-gases, Waste and Petroleum refining

In December 2023, CAP24 was published (Government of Ireland, 2023). It builds on the introduction of the carbon budgets and sectoral emissions ceilings in the Climate Action Plan 2023 and sets a course for Ireland's targets to halve emissions by 2030 and reach net-zero no later than 2050. The CAP has six vital high impact sectors where the biggest savings can be made: renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and change of land-use.

#### 12.4.2.3.2 EU Climate Policy

Ireland is party to both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. The Paris Agreement, which entered into force in 2016, is an important milestone in terms of international climate change agreements and includes an aim of limiting global temperature increases to no more than 2°C above pre-industrial levels with efforts to limit this rise to 1.5°C.

In 2023, the first ''global stocktake'' will assess progress on Paris Agreement goals and chart a way forward. This process was concluded at COP28 in Dubai in December 2023. The global stocktake was considered the central outcome of COP28 and can now be used to develop stronger climate action plans due by 2025.

The stocktake recognised the science that indicates that global greenhouse gas emissions need to be cut by 43% by 2030, compared to 2019 levels, to limit global warming to 1.5°C and notes parties are off track to meet their Paris Agreement goals.

The stocktake calls on Parties to take actions towards achieving, at a global scale, a tripling of renewable energy capacity and doubling energy efficiency improvements by 2030. The list also includes accelerating efforts towards the phase-down of unabated coal power, phasing out inefficient fossil fuel subsidies, and other measures that drive the transition away from fossil fuel in energy systems, in a just, orderly and equitable manner, with developed countries continuing to take the lead.

In the short-term, Parties are encouraged to come forward with ambitious, economy-wide emission reduction targets, covering all greenhouse gases, sectors and categories and aligned with the 1.5°C limit in their next round of climate action plans (NDCs) by 2025.

With a view towards strengthening the country's resolve towards meeting its targets, the Irish Government published the Climate Action Plan 2024 the third update to Ireland's Climate Action Plan 2019.

Through the Climate Act and Climate Action Plans 2021 and 2023, Ireland has:

- Set economy-wide Carbon Budgets for the 2021-25 and 2026-30 periods respectively
- Established sectoral emissions ceilings, with 26 MtCO2eq. of unallocated emissions savings in the second carbon budgetary period
- Specified the measures and actions needed to meet sectoral emissions ceilings
- Defined the governance and delivery approach.

Climate Action Plan 2024 (CAP24) builds on the previous plans and is focused on:

- Underpinning delivery of the established pathways by conducting a stock-take of progress to date, in order to identify gaps and potential corrective actions
- Identifying measures to address unallocated emissions savings
- Identifying an approach to achieving emissions reductions and to reporting in the Land Use, Land Use Change and Forestry (LULUCF) sector.

New high-impact actions include:

- Adaptation: Develop a new National Adaptation Framework, improve resilience of Ireland's water infrastructure using nature-based solutions and assess the potential impacts of climate change on flooding and flood risk across Ireland.
- Agriculture: Develop ecosystem services through a new national carbon farming framework and incorporate the Teagasc 2023 marginal abatement cost curve into the Plan.
- Built Environment (residential): Develop legislation to regulate for a district heating model that delivers consumer protection and a vibrant district heating industry and increase the number of registered One Stop Shops and Sustainable Energy Communities.

- Electricity: Adopt the Electricity Storage Policy Framework, incentivise and enable large energy users to join flexible demand initiatives, publish Revised Wind Energy Development Guidelines for onshore wind, and deliver onshore and offshore Renewable Electricity Support Scheme (RESS) auctions as per the annual RESS auction calendar.
- Industry: develop a work programme to implement the National Hydrogen Strategy and implement the Decarbonisation Roadmap for Industrial Heat based on the recommendations of the Sustainable Energy Authority of Ireland National Heat Study.
- Just Transition: develop green skills and capacities required for a net-zero economy through Education and Training Boards, and specifically for the Midlands - support economic diversification and the restoration & rehabilitation of degraded bogs.
- Local Government: adopt all local authority climate action plans and develop decarbonising zones.

Achieving further emissions reductions between now and 2030 requires a major step up across three key measures:

- Accelerate and increase the deployment of renewable energy to replace fossil fuels;
- Deliver a flexible system to support renewables and demand;
- Manage electricity demand.

The European Green Deal is an ambitious plan to transform Europe into the first climate-neutral continent. The European Green Deal is a comprehensive package of policy initiatives aimed at achieving climate neutrality across the EU by 2050. The EU is committed to reducing its net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. The Commission's 'Fit for 55' package of legislation was created to achieve this across all sectors of the EU Economy. The REPower EU plan builds on 'Fit for 55' to speed up the roll-out of renewables to replace fossil fuels and reduce Europe's dependency on energy imports as quickly as possible. The Commission is recommending setting a target of reducing emissions by 90% for 2040.

### 12.4.3 Modelling Methodology

This assessment has been undertaken with reference to the most applicable guidance documents relating to air quality which are set out in the following sections of this Chapter.

An overview of the methodology undertaken for the air quality impact assessment is outlined below:

- A baseline air monitoring study has been undertaken in order to characterise the existing ambient environment in areas along the proposed scheme. This has been undertaken through a review of available published ambient air monitoring data from locations in proximity to the proposed development;
- A review of the most applicable standards and guidelines has been reviewed in order to define the air quality significance criteria for the Construction and Operational Phases of the Proposed Scheme;

- Predictive calculations and impact assessments relating to the likely Construction Phase air quality impacts have been undertaken at the nearest sensitive locations to the construction work area associated with the Proposed Scheme;
- Predictive calculations have been performed to assess the potential air quality impacts associated with traffic alterations associated with the operation of the Proposed Scheme at the most sensitive locations; and
- A schedule of mitigation measures has been incorporated where required, to reduce, where necessary, the identified potential air quality impacts associated with the Proposed Scheme.

### 12.4.4 Consultation

This Chapter did not require direct consultation with Statutory or Non-Statutory bodies.

The guidelines referenced in this chapter provide sufficient direction to complete the chapter.

## 12.5 Difficulties Encountered

It is not possible to quantify exactly what effect the proposed development will have on Climate and Air Quality beyond the site boundary. The assessment is based on the project details that were made available at the time of writing.

## 12.6 Baseline Environment

Clare County Council are seeking planning permission for the development of the Inis Cealtra Visitor Experience to be developed on Inis Cealtra (Holy Island) and the mainland (Mountshannon). Mountshannon is a village in east County Clare, at the foot of the Slieve Aughty mountains and on the shores of Lough Derg. Inis Cealtra is one of Ireland's most important historical and ecclesiastical sites. Lough Derg is a Special Area of Conservation (SPA Site Code 004058) and Natural Heritage Area (NHA Site Code 000011). Baseline Air Quality

The Environmental Protection Agency (EPA) has designated four Air Quality Zones for Ireland:

- Zone A: Dublin City and environs;
- Zone B: Cork City and environs;
- Zone C: 16 urban areas with population greater than 15,000[1];
- Zone D: Remainder of the country.

These zones were defined to meet the criteria for air quality monitoring, assessment and management described in the Framework Directive and Daughter Directives. The site of the proposed development lies within Zone D, which represents rural areas located away from large population centres.

The EPA publishes Air Quality Monitoring Station Reports for monitoring locations in all four Air Quality Zones in Ireland. The development site is located in Zone D. The nearest rural ambient air

[1] Zone C: Other cities and large towns comprising Limerick, Galway, Waterford, Drogheda, Dundalk, Bray, Navan, Ennis, Tralee, Kilkenny, Carlow, Naas, Sligo, Newbridge, Mullingar, Wexford, Letterkenny, Athlone, Celbridge, Clonmel, Balbriggan, Greystones, Leixlip and Portlaoise

monitoring station is approx. 40km north-east, located at Birr, Co. Offaly. It records parameters $NO_2$, $PM_{10}$ and $PM_{2.5}$.

Long term trends in $PM_{2.5}$ and $NO_2$ are reported in the EPA Air Quality report 2023 for small towns.

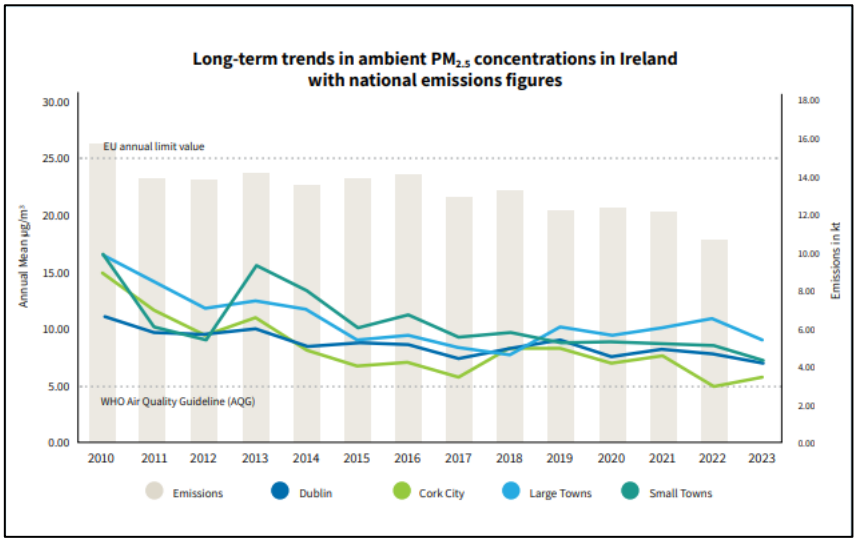



**Figure 12.1: Long Term trends in ambient $PM_{2.5}$ in Ireland**

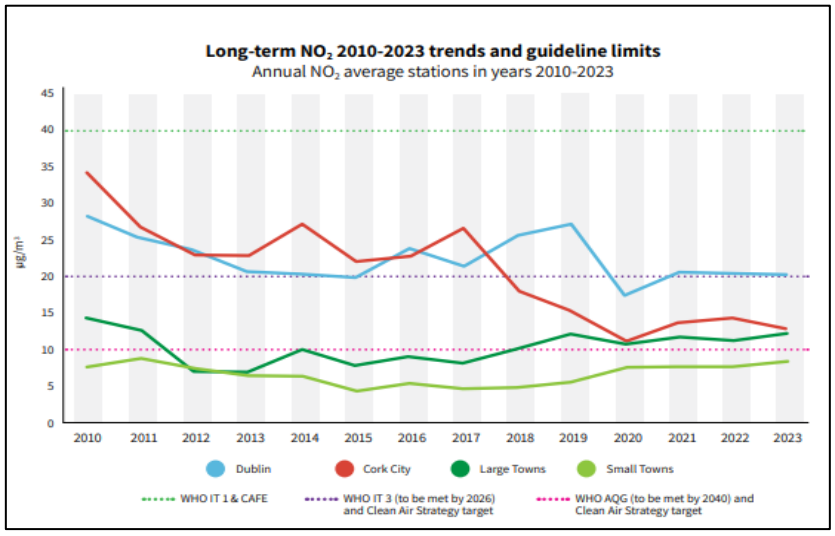



**Figure 12.2: Long Term trends in ambient $NO_2$ in Ireland**

Since 2014, the EPA have been producing annual reports to provide an overview of air quality in Ireland based on the data obtained from the 29 monitoring stations that form the National Ambient Air Quality Network. Data taken throughout the year is validated and a summary report produced the following year. The most recent report available, produced in 2024 for data collected during 2023, also includes summary tables for all stations throughout Ireland. A summary of the key messages from the 2023 EPA report include:

- Ireland's latest monitoring shows we are in compliance with current EU standards;

- Ireland is not on track to achieve its ambition, set out in the National Clean Air Strategy, to meet the health-based WHO air quality guideline limits in 2026. Achieving future targets will be very challenging;
- Main pollutants of concern are fine particulate matter (PM2.5) from solid fuel combustion and nitrogen dioxide (NO2) from vehicle emissions/traffic;
- Air pollution can be a major environmental risk to people's health, with approximately 1,600 premature deaths annually in Ireland due to poor air quality.

According to the EPA, the two most significant pollutants in Ireland are particulate matter and nitrogen dioxide. Transport Infrastructure Ireland (TII) produced an updated standard in December 2022 titles 'Air Quality Assessment of Proposed National Roads – Standard' the purpose of which was to assess the potential air quality impacts of national road schemes. The guidance states that the main concern in relation to emissions from road traffic are nitrogen dioxide ($NO_2$) and particulate matter in the fractions of equal to or less than 10µm ($PM_{10}$) and equal to or less than 2.5µm ($PM_{2.5}$). During the construction phase, potential air quality effects can occur due to dust emissions and from construction traffic movements. Construction traffic movements include additional vehicle trips associated with the construction of the scheme, as well as traffic management measures. Construction phase impacts will be temporary or short-term in nature.

EPA validated air monitoring data for 2023 was collated to reflect ambient air quality data at the proposed development site. The average $PM_{2.5}$ concentration for all stations located in Zone D was 7.1µg.m$^3$ in 2023. The nearest Zone D monitoring station to the proposed development which collects $PM_{2.5}$ data is Birr and the annual average mean result for this location was 8.3µg.m$^3$. Both average levels recorded are well below the 20µg.m$^3$ air quality standard limit in the Ambient Air Quality Standards Regulations 2022 which incorporate limits (EU Directive 2008/50/EC) and would be within the revised directive limits to be enacted.

$PM_{10}$ data results from Zone D for 2023 was an average of 11.0µg.m$^3$ and for Birr located in Zone D was 13.1 µg.m$^3$. Both average levels recorded are well below the 40µg.m$^3$ air quality standard limit. The applicable standards in Ireland include the Ambient Air Quality Standards Regulations 2022 and within the revised directive limits to be enacted.

$NO_2$ is monitored at Birr station and the annual mean for the period 2023 was 11.3 µg.m$^3$ and the average for all Zone D monitored locations was 8.1 µg.m$^3$ , well below the AQS limit of 40 µg.m$^3$ mean per calendar year and within the revised directive limits to be enacted.

The proposed development Phase 1 peak construction year is 2027 and the Phase 2 peak construction year is 2041. The proposed development Phase 1 peak operational initial year is Phase 1 Year 5, 2032. The proposed development ultimate peak operational initial year is Phase 2 Year 5, 2046.

As part of its net-zero goal, Ireland has committed to halve transport-related carbon emissions by 2030 compared to 2018 (excluding international aviation and maritime). Modal shift in transport and fleet electrification is required. The current target under the Climate Action Plan is to have 30% of the private car fleet switched to electric by 2030. Fleet forecasts have been estimated using the Irish Car Fleet Model that assesses the impact of new vehicle technologies on carbon emissions. The model

predicts how the proportion of fuel types (petrol, diesel, hybrid or electric) within the fleet will change over time using observed vehicle registration and scrappage rates by age and fuel type. The new EU Regulation on CO2 Emissions for Cars and Lights Vans, which was finalised in March 2023, is a crucial part of the Transport Sector's transition to carbon neutrality. Emissions from road transport constitute the single largest portion of overall transport emissions and therefore tackling this is central to achieving our overall targets. The new Regulation accelerates the timeframes for zero emissions for cars and light vans, introducing 2035 as the year by which there must be 100% $CO_2$ reduction in both new cars and vans. Ireland is among a number of more ambitious Member States that argued for more stringent targets, calling for the end to the ICE sales by 2030.

Ireland's Clean Air Strategy provides the high-level strategic policy framework necessary to identify and promote the integrated measures across government policy that are required to reduce air pollution and promote cleaner ambient air, while delivering on wider national objectives.

The first progress report on the Strategy was published in July 2024. Some of the key highlights include:

- There have been significant improvements in many of the areas where localised air quality had been substantially impacted by solid fuel burning;
- Substantial progress has been made to date in relation to our annual $SO_2$, $NO_x$ and $PM_{2.5}$ emissions, but some challenges remain in relation to emissions of ammonia and NMVOCs.

Ireland is fully committed to delivering the European Green Deal's zero ambition of having an environment free of harmful pollution by 2050.

### 12.6.1 Climate Baseline

#### 12.6.1.1 Local Climate

Ireland has a temperate, oceanic climate, resulting in mild winters and cool summers. There are a total of 20 automatic weather stations (AWS) and 5 manned weather stations (MWS) in Ireland. They are part of an observation network used in weather forecasts, aviation, marine, agriculture, climate analysis, forecast verification and meteorological research. All weather observations record day-to-day changes of the atmosphere and are quality controlled in Met Eireann's database to formulate long-term climate records. There are also 500 rainfall stations scattered across the country, strategically located to cover variation in rainfall.

Scariff (Fossabeg) is the nearest rainfall station to Mount Shannon. The station is located approximately 7.4km south west of the proposed development. Rainfall measurements (mm) are detailed in Table 11-5.

**Table 12.7: Monthly Rainfall Scariff 2010 - 2020**

| Scariff Rainfall Station (mm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rain (mm) | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 2010 | 66.1 | | 96.3 | 74.7 | 35.1 | 41.9 | 134.3 | 57.7 | 153.3 | 88.7 | 163.9 | 33.4 |
| 2011 | 81.8 | 149.2 | 37.2 | 54.2 | 119.2 | 102 | 55.4 | 48.9 | 118.5 | 146.5 | 122.1 | 193.5 |
| 2012 | 156.3 | 60.6 | 31.4 | 101.2 | 62.6 | 196.9 | 127.4 | 124.6 | 85.8 | 105.7 | 126 | 141.2 |

| Scariff Rainfall Station (mm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2013 | 126.4 | 72,8 | 42 | 87.7 | 82.6 | 71.6 | 59 | 63.2 | 53.7 | 143 | 99.9 | 207.8 |
| 2014 | 203.5 | 231.1 | 104 | 46.6 | 103.7 | 47.8 | 67.1 | 140.2 | 27 | 122.5 | 152.1 | 144 |
| 2015 | 161.6 | 92.6 | 105.8 | 68.2 | 133 | 34.8 | 92.9 | 110.7 | 76.3 | 50.4 | 221 | 311.7 |
| 2016 | 154.5 | 188.9 | 75.4 | 56 | 52.9 | 97.6 | 73.5 | 109.1 | 106.8 | 51.9 | 63.7 | 90.8 |
| 2017 | 55.9 | 106.3 | 128.3 | 17.4 | 61.8 | 92.3 | 103.6 | 104.9 | 109.2 | 111.9 | 138 | 170.1 |
| 2018 | 248.4 | 82,2 | 84,1 | 99.8 | 49.4 | 20 | 26.2 | 76.1 | 89.5 | 42.5 | 123.3 | 150.3 |
| 2019 | 90 | 64.9 | 207.2 | 87 | 38.1 | 95.1 | 70.3 | 204 | 132.4 | | 87.7 | 89.3 |
| 2020 | 104 | 272.5 | 113.8 | 59.3 | 31.1 | 75.2 | 150.5 | 238.5 | 61 | 160.6 | 116.1 | 153.5 |
| Average Monthly | 132 | 146 | 94 | 68 | 70 | 80 | 87 | 116 | 92 | 102 | 129 | 153 |

The nearest weather station with climate data is located approximately 40km south west at Shannon Airport. Available data includes air temperature and wind speed.

**Table 12.8: Mean Air Temperature (°C) Shannon Airport**

| Shannon Airport Station Mean Air Temp (°C) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean Air Temp (°C) | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 2010 | 2.4 | 3.3 | 6.4 | 9.8 | 11.7 | 15.8 | 16 | 15 | 14.5 | 10.8 | 5.7 | 0.7 |
| 2011 | 3.6 | 7.4 | 7 | 12 | 11.8 | 12.8 | 14.7 | 14.1 | 14.2 | 12.2 | 10.4 | 7.1 |
| 2012 | 8 | 8 | 9.8 | 7.8 | 12 | 13.6 | 14.9 | 16.3 | 13.1 | 9.5 | 6.9 | 6.7 |
| 2013 | 6.3 | 5.6 | 4.7 | 8.2 | 10.8 | 14.1 | 18.5 | 16.1 | 14.6 | 12.8 | 7.5 | 7.6 |
| 2014 | 6 | 6.1 | 7.7 | 10.9 | 12.1 | 15.2 | 17.1 | 14.9 | 15.2 | 11.8 | 8.1 | 6.7 |
| 2015 | 5.8 | 5.3 | 7 | 9.5 | 10.7 | 13.6 | 14.7 | 14.5 | 13 | 11.2 | 10 | 9.2 |
| 2016 | 6.8 | 5.8 | 6.9 | 8.1 | 12.9 | 15.6 | 16 | 16.1 | 14.6 | 11.2 | 6 | 7.4 |
| 2017 | 6.7 | 6.9 | 9 | 9.7 | 13 | 14.7 | 15.5 | 15.2 | 13.3 | 12 | 8.2 | 6.6 |
| 2018 | 6.5 | 4.5 | 5.2 | 9.6 | 13.1 | 17 | 17.4 | 15.5 | 12.8 | 10.4 | 8.3 | 8.8 |
| 2019 | 6.8 | 8.4 | 7.8 | 10.1 | 11.8 | 13.6 | 16.8 | 15.9 | 13.8 | 10 | 6.7 | 6.6 |
| 2020 | 6.7 | 6.7 | 6.9 | 10.4 | 13 | 14.2 | 14.9 | 16.3 | 14.1 | 10.3 | 8.7 | 5.8 |
| Average Monthly | 6 | 6 | 7 | 10 | 12 | 15 | 16 | 15 | 14 | 11 | 8 | 7 |

**Table 12.9: Mean Wind Speed (knots) Shannon Airport**

| Shannon Airport Station Mean Wind Speed (knots) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean Wind Speed (knots) | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 2010 | 7 | 6.5 | 7.9 | 7.8 | 7.6 | 7.7 | 9.1 | 8.1 | 9 | 7.9 | 9.1 | 5.1 |
| 2011 | 6 | 9.1 | 6.4 | 7.4 | 13.1 | 8.9 | 7.6 | 7.4 | 12.2 | 10.4 | 10.7 | 11.7 |
| 2012 | 11.5 | 8.2 | 8 | 9.8 | 8.5 | 8.7 | 8.1 | 9.5 | 8.6 | 8 | 8.3 | 9.8 |
| 2013 | 9.8 | 9.6 | 10.1 | 11.6 | 10.7 | 8.7 | 6.5 | 8.6 | 8.8 | 8.9 | 7.1 | 12 |
| 2014 | 10.8 | 13.1 | 9 | 8.7 | 8.8 | 6.8 | 7.3 | 8.8 | 5.6 | 9.3 | 7.5 | 10.6 |
| 2015 | 11.8 | 8.9 | 10.6 | 7.9 | 11 | 9.3 | 10.3 | 8.6 | 7.8 | 7.3 | 11.9 | 12.8 |
| 2016 | 11.2 | 11 | 8.8 | 8.8 | 7.6 | 8.4 | 8.4 | 9.9 | 9.2 | 7.9 | 6.6 | 8.4 |
| 2017 | 8.3 | 11.2 | 10.4 | 7.6 | 7.7 | 9.8 | 8.5 | 8.2 | 9.4 | 9.8 | 7.6 | 8.5 |
| 2018 | 12.5 | 9.7 | 9.1 | 10 | 7.8 | 7 | 7.4 | 9 | 8.6 | 8.5 | 10.7 | 10.5 |

| Shannon Airport Station Mean Wind Speed (knots) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | 7.8 | 11.5 | 10.5 | 10.5 | 8.1 | 8.9 | 7.7 | 10 | 8.9 | 9.1 | 8.3 | 10.6 |
| 2020 | 9.1 | 14.5 | 10.4 | 7 | 8.8 | 9.4 | 9.2 | 7.9 | 8 | 9.9 | 8.7 | 9.1 |
| Average Monthly | 10 | 10 | 9 | 9 | 9 | 9 | 8 | 9 | 9 | 9 | 9 | 10 |

Wind direction at Shannon Airport, which would be representative of the Lough Derg and Mountshannon area, is largely from a south westerly direction[2]. Thirty years of data is represented in the wind rose Figure 12-3.

**Figure 12.3: Wind Rose Shannon Airport 1991 - 2020**

### 12.6.1.2 Global Climate

Every year, the World Meteorological Organisation (WMO) issues a 'Statement on the State of the Global Climate'. It is based on data provided by National Meteorological and Hydrological Servies and other national and international organisations. Some of the key messages in the WMO 'Provisional Statement of the State of the Climate 2023'[3] are as follows:

- The past nine years, 2015-2023, will be the nine warmest years on record.
- Record monthly global temperatures have been observed for the ocean – from April through to September – and, starting slightly later, the land – from July through to September.
- Observed concentrations of the three main greenhouse gases – carbon dioxide, methane and nitrous oxide – reached record high levels in 2022, the latest year for which consolidated global values are available (1984-2022). Real time data from specific locations show that levels of the three greenhouse gases continued to increase in 2023.
- The ten-year average 2014-2023 (to October) global temperature is 1.19 ± 0.12°C above the 1850-1900 average, the warmest 10-year period on record.
- In 2023, global mean sea level reached a record high in the satellite record (1993 to present), reflecting continued ocean warming as well as the melting of glaciers and ice sheets. The rate

[2] https://www.met.ie/cms/assets/uploads/2023/09/Irelands-Climate-Averages_1991-2020.pdf

[3] https://wmo.int/sites/default/files/2023-11/WMO%20Provisional%20State%20of%20the%20Global%20Climate%202023.pdf

of global mean sea level in rise in the past ten years (2013-2022) is more than twice the rate of sea level rise I the first decade of the satellite record (1993-2002).

- Extreme weather continues to lead to severe socio-economic impacts. Extreme heat affected many parts of the world. Wildfires in Hawaii, Canada and Europe led to the loss of life, the destruction of homes and large-scale air pollution. Flooding associated with extreme rainfall from Mediterranean Cyclone Daniel affected Greece, Bulgaria, Turkey and Libya with particularly heavy loss of life in Libya.
- Food security, population displacements and impacts on vulnerable populations continue to be of concern in 2023, with weather and climate hazards exacerbating the situation in many parts of the world.
- Extreme weather and climate conditions continued to trigger new, prolonged and secondary displacement in 2023 and increased vulnerability of many who were already uprooted by complex multi-casual situations of conflict and violence.

#### 12.6.1.3 Greenhouse Gas Emissions

In July 2024, the EPA updated the 1990-2023 greenhouse gas emissions inventory data. Ireland's emissions in 2023 are below the 1990 baseline for the first time in three decades. 2023 total national greenhouse gas emissions (excluding LULUCF) are estimated to have decreased by 6.8% on 2022 levels to 55.01 million tonnes carbon dioxide equivalent (Mt CO2eq). Emissions per capita decreased from 11.4 to 10.4 in 2023. Overall emissions from the Energy Industries sector decreased by 21.6% in 2023, down 2.2 Mt CO2eq on last year. This was due to a 12-fold increase in the amount of imported electricity (9.5% of electricity supply in 2023), in combination with an increase in the share of renewable energy to 40.7% in 2023. The emissions intensity of power generation decreased from 332g CO2/kWh in 2022 to a historic low of 255g CO2/kWh in 2023. Agriculture emissions decreased by 4.6% or 1.0 Mt CO2eq in 2023. This was primarily due to an 18% reduction in fertiliser nitrogen use, leading to -0.43 Mt CO2eq less emissions from agricultural soils. A 26.6% decrease in liming and a 2.1% reduction in methane from livestock in combination represent -0.46 Mt CO2eq. Greenhouse gas emissions from the Transport sector increased by 0.3% or 0.03 Mt CO2eq in 2023, having already increased by 6% in both 2021 and 2022. Emissions in 2023 are 4.3% below 2019 pre-COVID levels. In 2023 the increased use of biofuels and electric vehicles slowed growth in emissions in this sector due to increases in the national fleet and a growing workforce. Annual emissions reductions of 10%, 14%, 12%, and 3% are required for 2024-25 in the Electricity, Industry, Transport and Buildings (Commercial and Public) sectors are needed to achieve respective Sectoral Emission Ceilings (SEC). Data indicate Residential and Agricultural sectors can meet their SEC. For Agriculture this was largely driven by refinements to the Agricultural inventory. However, the National Climate objective of a 51% reduction by 2030 will not be achieved unless all sectors meet their indicative reductions.

### 12.6.2 Sensitivity of the Receiving Environment

A receptor is a location that may be affected by dust emissions during demolition and construction. Human receptors include locations where people spend time and where property may be impacted by dust. Ecological receptors are habitats that might be sensitive to dust. The Institute of Air Quality Management (IAQM) have recently updated guidance for the assessment of dust from demolition and

construction. Transport Infrastructure Ireland (TII) has published guidance for 'Air Quality Assessment of Proposed National Roads' (PE-ENV-01107). This standard refers to the IAQM procedures.

The objectives of the AQA process are to:

- Determine baseline air quality within the study area.
- Identify human receptors where a potential significant change in $NO_2$, $PM_{10}$ or $PM_{2.5}$ concentrations, due to the proposed national road scheme, may occur.
- Identify sensitive designated habitats where a potential significant change in NOx or ammonia concentrations, due to the proposed national road scheme, may occur.
- Identify human and sensitive designated habitats where there is risk of dust and traffic movement effects occurring during the construction phase.
- Determine suitable mitigation measures to reduce significant air quality effects to an acceptable level.

A key principle of the air quality assessment process is to be proportional to the nature and scale of the project as it relates to the potential for significant air quality effects.

**Step 1**: Screen the need for a detailed assessment: An assessment will be required where there are sensitive receptors located within 200m of the boundary of the site or route used by construction vehicles on the public highway. Sensitive receptors can be classed as human and ecological.

Each receptor and/or environmental resource which may be impacted by the Proposed Development is identified and assigned a value on the basis of its importance or sensitivity to the potential impacts. The terminology used to describe the sensitivity of the receptor is High, Medium or Low. The following table indicates how sensitive receptors would be defined for the purposes of this report:

**Table 12.10: Classification of Sensitive Receptors**

| Classification | Human | Ecological |
|---|---|---|
| High Sensitivity Receptor | Locations where members of the public are exposed over a period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).<br>Indicative examples include residential properties. Hospitals, schools, and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment. | Locations with an international or national designation and the designated features may be affected by dust soiling or locations where there is a community of a particular dust sensitive species. Indicative examples include a Special Area of Conservation (SAC) that is dust sensitive. |

| Classification | Human | Ecological |
|---|---|---|
| Medium Sensitivity Receptor | Locations where the people exposed are workers, and exposure is over a period relevant to the air quality objectives, at relevant locations would be one where individuals may be exposed for eight hours or more in a day).<br>Indicative examples include office and shop workers but will generally not include workers occupationally exposed to $PM_{10}$, as protection is covered by Health and Safety at Work Legislation. | Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or locations with a national designation where the features may be affected by dust deposition.<br>Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features |
| Low Sensitivity Receptor | Locations where human exposure is transient.<br>Indicative examples include public footpaths, playing fields, parks and shopping streets. | Locations with a local designation where the features mya be affected by dust deposition.<br>Indicative example is a local Nature Reserve with dust sensitive features |

Mountshannon is a seasonally busy village and is a popular destination for Shannon cruisers. Attractions include a tour of Holy Island, fly fishing, angling, walking trails and bird watching. The village has a number of food and accommodation offerings for visitors. The proposed development contains four key elements which are shown in Figure 12-4.

**Figure 12.4: Aerial Image of Project Location (Google Earth)**

For the identification of potential sensitive receptors and the phasing for impact assessment, the key elements are defined in Table 12-11.

**Table 12.11: Sensitivity Classification of Project Elements**

| Element | Phase | Human Receptor | Ecological Receptor |
|---|---|---|---|
| Inis Cealtra Works | 1 | The island is uninhabited. There will be no human sensitive receptors in proximity during the construction phase. The site would be considered low sensitivity. | Inis Cealtra is within Lough Derg (Shannon) SPA, Site Code 004058. Qualifying interests (birds) for the site include Cormorant, Tufted Duck, Goldeneye, Common Tern and wetlands (suitable habitat for birds). Shorelines of many small islands are fringed with swamp vegetation some of which are included in the Red Data Book Species. The site would be considered high sensitivity from impacts on air quality. |
| Village Car Park | 1 | The are numerous residential receptors in close proximity to the proposed car park. The area would be considered highly sensitive to air quality impacts. | The car park isn't within a designated Natura or proposed Natura site. There were no protected species recorded at this location during the habitat survey. The site is c. 140m from Lough Derg (Shannon) SPA. The site would be considered low sensitivity from impacts on air quality. |
| Harbour Car Park Reconfiguration | 2 | There are residential receptors within c. 110m of the car park. The site would be considered low sensitivity from impacts on air quality. | The harbour car park isn't within a designated site and there were no protected species recorded during the habitat survey. It is directly adjacent to Lough Derg (Shannon) SPA and is therefore classed as a medium sensitivity site. |
| Visitor Centre | 2 | The rectory site is within 50m of residential properties and is therefore classed as an area highly sensitive to air quality impacts. | The rectory site isn't within a designated site and there were no protected species recorded during the habitat survey. The site is c. 135m from Lough Derg (Shannon) SPA. The site would be considered low sensitivity from impacts on air quality. |

**Step 2**: Assess the Risk of Dust Impacts

The risk of dust arising in sufficient quantities to cause annoyance and/or health and/or ecological impacts should be determined using four risk categories: negligible, low, medium and high risk. A site is allocated to a risk category based on two factors:

- The scale and nature of the works (Step 2A), which determines the potential dust emission magnitude as small, medium or large and;
- The sensitivity of the area to dust impacts (Step 2B) which is defined as low, medium or high sensitivity.

These two factors are combined to determine the risk of dust impacts with no mitigation applied.

**Step 2A:** The scheme being assessed will be completed in two phases. Phase 1 will include the installation of a new floating jetty, new pedestrian paths and welfare pods on the island of Inis Cealtra, and a new village car park. Phase 2 will include the visitor centre and reconfiguration of Mountshannon Harbour car park. The phases of development will include demolition, earthworks, construction and trackout.

**Step 2B:** Define the Sensitivity of the Area

The sensitivity of the area takes account of a number of factors:

- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- In the case of $PM_{10}$, the local background concentration and;
- Site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

**Table 12.12: Sensitivity of the Area to Dust Soiling Effects on People and Property**

| Receptor Sensitivity | Number of Receptors | Distance from Source (m)[C] | | | |
|---|---|---|---|---|---|
| | | <20 | <50 | <100 | <250 |
| High | >100 | High | High | Medium | Low |
| | 10 - 100 | High | Medium | Low | Low |
| | 1 - 10 | Medium | Low | Low | Low |
| Medium | >1 | Medium | Low | Low | Low |
| Low | >1 | Low | Low | Low | Low |

| Receptor Sensitivity | Number of Receptors | Distance from Source (m)[C] | | | |
|---|---|---|---|---|---|
| | | <20 | <50 | <100 | <250 |
| * Phase 1 car park has between 1-10 receptors within 50m of the proposed car park. There are no human sensitive receptors on Inis Cealtra. Phase 1 sensitivity is classed as Low. Phase 2 rectory and car park have between 10-100 receptors within 50m therefore the sensitivity is classed as medium. | | | | | |

**Table 12.13: Sensitivity of the Area to Human Health Impacts**

| Receptor Sensitivity | Annual Mean $PM_{10}$ concentration | Number of Receptors | Distance from Source (m)[C] | | | |
|---|---|---|---|---|---|---|
| | | | <20 | <50 | <100 | <250 |
| High | >32µg/m$^3$ | >100 | High | High | High | Medium |
| | | 10 - 100 | High | High | Medium | Low |
| | | 1 - 10 | High | Medium | Low | Low |
| | 28 - 32µg/m$^3$ | >100 | High | High | Medium | Low |
| | | 10 - 100 | High | Medium | Low | Low |
| | | 1 - 10 | High | Medium | Low | Low |
| | 24 - 28µg/m$^3$ | >100 | High | Medium | Low | Low |
| | | 10 - 100 | High | Medium | Low | Low |
| | | 1 - 10 | Medium | Low | Low | Low |
| | <24µg/m$^3$ | >100 | Medium | Low | Low | Low |
| | | 10 - 100 | Low | Low | Low | Low |
| | | 1 - 10 | Low | Low | Low | Low |
| Medium | >32µg/m$^3$ | >10 | High | Medium | Low | Low |
| | | 1 - 10 | Medium | Low | Low | Low |
| | 28 - 32µg/m$^3$ | >10 | Medium | Low | Low | Low |
| | | 1 - 10 | Low | Low | Low | Low |
| | 24 - 28µg/m$^3$ | >10 | Low | Low | Low | Low |

| Receptor Sensitivity | Annual Mean $PM_{10}$ concentration | Number of Receptors | Distance from Source (m)[C] | | | |
|---|---|---|---|---|---|---|
| | | | <20 | <50 | <100 | <250 |
| | | 1 - 10 | Low | Low | Low | Low |
| | <24µg/m$^3$ | >10 | Low | Low | Low | Low |
| | | 1 - 10 | Low | Low | Low | Low |
| Low | - | ≥1 | Low | Low | Low | Low |
| * Average air quality for Zone D is 11.0 µg/m$^3$. There are 1-10 high sensitive receptors within 50m of the Phase 1 car park, with a baseline less than 24 µg/m3 therefore the overall sensitivity to human health impacts is low. There are between 10-100 high sensitive receptors adjacent to Phase 2 within 50m and with a baseline air quality less than 24 µg/m3, the overall sensitivity to human health impacts is classed as low. | | | | | | |

**Table 12.14: Sensitivity of the Area to Ecological Impacts**

| Receptor Sensitivity | Distance from Source (m)[C] | |
|---|---|---|
| | <20 | <50 |
| High | High | Medium |
| Medium | Medium | Low |
| Low | Low | Low |
| *Phase 1 works on Inis Cealtra are within a protected Natura site therefore receptor sensitivity is high and there is high risk of ecological impacts. The Phase 2 rectory and car park reconfiguration are within 50m of a high sensitive receptor (SPA), therefore the sensitivity of the area to ecological impacts is medium. | | |

**Table 12.15: Sensitivity of the Area - Outcome**

| Potential Impact | Sensitivity of the Surrounding Area | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| Dust Soiling | Ph1 (L) Ph2 (L) | Ph1 (L) Ph2 (M) | Ph1 (L) Ph2 (M) | Ph1 (L) Ph2 (L) |
| Human Health | Ph1 (L) Ph2 (L) | Ph1 (L) Ph2 (L) | Ph1 (L) Ph2 (L) | Ph1 (L) Ph2 (L) |
| Ecological | Ph1 (H) Ph2 (M) | Ph1 (L) Ph2 (L) | Ph1 (L) Ph2 (L) | Ph1 (L) Ph2 (L) |

| Potential Impact | Sensitivity of the Surrounding Area | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| *There are some demolition works being proposed in Inis Cealtra. The scale is small (16sq.m.) and will be done with hand tools minimising generation of dust. The new Mountshannon car park will involve the removal of a wall/mound along the south-north boundary and along the road front (253sq.m) Phase 2 will involve the demolition of a stone wall approx. 45m in total. Demolition volumes will be relatively low and excavated earthworks volumes from the island will be minimal. | | | | |

## 12.7 The 'Do Nothing' Scenario

If the proposed development for which this document has been prepared does not go ahead, it is assumed that the current landuse will remain unchanged. There will be no alteration of the existing air quality on the mainland or the island.

## 12.8 Potential Significant Effects

The current proposal is to develop the project in two phases. The proposed development Phase 1 peak construction year is 2027 and the Phase 2 peak construction year is 2041. The proposed development Phase 1 peak operational initial year is Phase 1 Year 5 (optimal visitor numbers), 2032. The proposed development ultimate peak operational initial year is Phase 2 Year 5 (optimal visitor numbers), 2046.

### 12.8.1 Construction Phase

Emissions of dust and greenhouse gases can occur during the preparation of the land (demolition, land clearing and earth moving) and during construction.

The main air quality impacts that may arise during demolition and construction activities are:

1) Dust deposition, resulting in the soiling of surfaces;
2) Visible dust plumes, which are evidence of dust emissions;
3) Elevated $PM_{10}$, $PM_{2.5}$ concentrations from demolition and construction activities (including earthworks and trackout) and;
4) An increase in concentrations of $PM_{10}$, $PM_{2.5}$ and nitrogen dioxide due to exhaust emissions from vehicles and equipment used on site (non-road) mobile machinery and vehicles accessing the site.

The most common impacts are dust soiling and increased ambient $PM_{10}$ concentrations due to dust arising from activities on the site. Dust soiling will arise from the deposition of the Particulate Matter (PM) in all size fractions but would be associated with particulate matter greater than 10 µm. The ambient PM relevant to health outcomes would be that measured as $PM_{10}$, although most of this will

be in the $PM_{2.5}$ fraction, rather than the $PM_{2.5}$ portion. In general, 85% to 90% by weight of the fugitive dust emissions of $PM_{10}$ from construction sites are $PM_{2.5-10}$ and 10% to 15% are in the $PM_{2.5}$ fraction[4].

The risk of dust emissions from a demolition/construction site causing loss of amenity and/or health or ecological impacts (and effects) is related to:

1) The activities being undertaken (demolition, number of vehicles an plant etc.);
2) The duration of these activities; the size of the site;
3) The meteorological conditions (wind speed, direction and rainfall);
4) The proximity of receptors to the activities;
5) The adequacy of the mitigation measures applied to reduce or eliminate dust; and
6) The sensitivity of the receptors to dust.

An assessment will normally be required where there is:

- a 'human receptor' within:
    - 250 m of the boundary of the site; and/or
    - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).
- an 'ecological receptor' within:
    - 50 m of the boundary of the site; and/or
    - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

The distances cited above and the proximity of receptors in relation to certain aspects of the development means that a more detailed assessment is required.

#### 12.8.1.1 Demolition Phase

Dust emission magnitude from demolition can be classified as small, medium and large as described below.

**Table 12.16: Risk Category from Demolition Activities**

| Distance to the Nearest Receptor | | Dust Emission Class | | |
|---|---|---|---|---|
| Dust Soiling and $PM_{10}$ | Ecological | Large | Medium | Small |
| <20 | - | High Risk Site | High Risk Site | Medium Risk Site |
| 20 - 100 | <20 | High Risk Site | Medium Risk Site | Low Risk Site |
| 100 - 200 | 20 - 40 | Medium Risk Site | Low Risk Site | Low Risk Site |
| 200 - 350 | 40 - 100 | Medium Risk Site | Low Risk Site | Negligible |

[4] https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf

| Distance to the Nearest Receptor | Dust Emission Class |
|---|---|
| Assessment Criteria:<br>• Large: Total building volume >75,000m$^3$, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12 m above ground level;<br>• Medium: Total building volume 12,000m$^3$ – 75,000m$^3$, potentially dusty construction material, demolition activities 6-12 m above ground level; and<br>• Small: Total building volume <12,000 m$^3$, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6m above ground demolition during wetter months. | |
| Phase 1: The demolition works associated with Phase 1 include the demolition of 1 existing shelter on Inis Cealtra and the removal of a wall/mound at the location of the proposed new car park. The demolition works on Inis Cealtra will be done with hand tools minimising the likelihood of dust generation and mobilisation. The removal of the wall/mound at the car park (253sq.m) is of small volume with low potential for dust release.<br>Phase 2: Sections of the existing stone wall at the south and south-west boundary (approx. length 45m in total) along the site's frontage shall be removed. Small volume with low potential for dust release. | |
| Classification:<br>Phase 1: Low Risk Site<br>Phase 2: Low Risk Site | |

### 12.8.1.2 Earthwork Phase

Earthworks will primarily involve excavating material, haulage, tripping and stockpiling. This may also involve levelling the site and landscaping. The risk of impact of dust emissions from earthwork activities is defined in Table 12-17.

**Table 12.17: Risk Category from Earthwork Activities**

| Distance to the Nearest Receptor | | Dust Emission Class | | |
|---|---|---|---|---|
| Dust Soiling and $PM_{10}$ | Ecological | Large | Medium | Small |
| <20 | - | High Risk Site | High Risk Site | Medium Risk Site |
| 20 - 100 | <20 | High Risk Site | Medium Risk Site | Low Risk Site |
| 100 - 200 | 20 - 40 | Medium Risk Site | Low Risk Site | Low Risk Site |
| 200 - 350 | 40 - 100 | Medium Risk Site | Low Risk Site | Negligible |
| Assessment Criteria:<br>• Large: Total site area >110,000 m$^2$, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height;<br>• Medium: Total site area 18,000 m2 – 110,000 m2 , moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3m - 6m in height; and<br>• • Small: Total site area <18,000m$^2$, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3m in height. | | | | |

| Distance to the Nearest Receptor | Dust Emission Class |
|---|---|
| Phase 1: At the jetty at Inis Cealtra, there will be excavation of the lake bed on the south end of the main breakwater jetty (approx. 2m3). For the Phase 1 village car park, approximately 3,200m$^3$ of topsoil will be excavated and bulk excavation of 4,200m$^3$ for required sub-formation levels. The site area for the car park is 8,594sq.m.<br>Phase 2: Mountshannon Harbour Reconfiguration and Visitor Centre will require the removal of 8,800m3 of soils and bulk excavation. | |
| Classification:<br>Phase 1: Low Risk Site<br>Phase 2: Low Risk Site | |

### 12.8.1.3 Construction Activities

The key issues when determining the potential dust emission magnitude during the construction phase include the size of the building(s)/infrastructure, method of construction, construction materials, and duration of build. The risk of impact of dust emissions from construction activities is defined in Table 12-18.

**Table 12.18: Risk Category from Construction Activities**

| Distance to the Nearest Receptor | | Dust Emission Class | | |
|---|---|---|---|---|
| Dust Soiling and $PM_{10}$ | Ecological | Large | Medium | Small |
| <20 | - | High Risk Site | High Risk Site | Medium Risk Site |
| 20 - 100 | <20 | High Risk Site | Medium Risk Site | Low Risk Site |
| 100 - 200 | 20 - 40 | Medium Risk Site | Low Risk Site | Low Risk Site |
| 200 - 350 | 40 - 100 | Medium Risk Site | Low Risk Site | Negligible |
| Assessment Criteria:<br>• Large: Total building volume >75,000 m3 , on site concrete batching, sandblasting;<br>• Medium: Total building volume 12,000 m3 – 75,000 m3 , potentially dusty construction material (e.g. concrete), on site concrete batching; and<br>• • Small: Total building volume <12,000m3, construction material with low potential for dust release (e.g. metal cladding or timber) | | | | |
| Phase 1: The Inis Cealtra works which include the installation of welfare pods, a new mooring point (jetty) and paths. Components will be prefabricated off-site and assembled on the island. The mooring point will consist of a jetty, a stone and concrete causeway and a steel access ramp. The village car park will be 8,594 sq.m. Imported material will be in the region of 5,200m$^3$ It will allow for 169 vehicle spaces incl. overflow, some (5 spaces) of which will be on grasscrete. The overall building for phase 1 would be classified as small.<br>Phase 2: Visitor centre with GFA 1,606 sq.m, part one storey and part two storey and max height 9.6m. Resurfacing of Harbour Car Park. The overall construction phase 1 would be classified as small. | | | | |
| Classification:<br>Phase 1: Low Risk Site<br>Phase 2: Low Risk Site | | | | |

### 12.8.1.4 Trackout Activities

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, vehicle numbers, geology duration. The risk of impact of dust emissions from trackout activities is defined in Table 12-19.

**Table 12.19: Risk Category from Trackout Activities**

| Distance to the Nearest Receptor | | Dust Emission Class | | |
|---|---|---|---|---|
| Dust Soiling and $PM_{10}$ | Ecological | Large | Medium | Small |
| <20 | - | High Risk Site | High Risk Site | Medium Risk Site |
| 20 - 50 | <20 | High Risk Site | Medium Risk Site | Low Risk Site |
| 50 - 100 | 20 - 100 | Medium Risk Site | Low Risk Site | Low Risk Site |
| Assessment Criteria:<br>• Large: >50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m;<br>• Medium: 20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m; and<br>• Small: <20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m<br>• | | | | |
| Phase 1: During Phase 1 construction volumes will allow for 7,400$m^3$ to be removed from the car park area and 3,900 $m^3$ to be imported. The HDV vehicle movements will be c.25 HDV outward movements at peak construction. The nature of the materials will be low to moderate potential for dust. There are a number of sensitive receptors close by. The overall trackout for phase 1 would be classified as medium risk site.<br>Phase 2: Earthwork volumes from Phase 2 will result in the c. 20 truck movements for removal of material. There are a number of receptors within 20-50m. The overall trackout for phase 2 would be classified as a low risk site. | | | | |
| Classification:<br>Phase 1: Medium Risk Site<br>Phase 2: Low Risk Site | | | | |

***Summary of Dust Emission Risk***

The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity to prevent significant effects occurring.

The Dust Risk Summary Table for Phase 1 is shown in Table 12-20. The Dust Risk Summary for Phase 2 is shown in Table 12-21.

**Table 12.20: Summary of Phase 1 Risk Categories to define Site Specific Mitigation**

| Potential Effect | Risk | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| Dust Soiling | Low Risk | Low Risk | Low Risk | Medium Risk |
| Human Health | Low Risk | Low Risk | Low Risk | Medium Risk |
| Ecological | Low Risk | Low Risk | Low Risk | Low Risk |

**Table 12.21: Summary of Phase 2 Risk Categories to define Site Specific Mitigation**

| Potential Effect | Risk | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| Dust Soiling | Low Risk | Low Risk | Low Risk | Low Risk |
| Human Health | Low Risk | Low Risk | Low Risk | Low Risk |
| Ecological | Low Risk | Low Risk | Low Risk | Low Risk |

**Effect Rating**

Table 12-22 and 12-23 shows the risk of the various stages of the development in relation to dust soiling, human health and ecological receptors. Overall, in the absence of mitigation, dust effects from the proposed development construction phase works are predicted to be negative, not significant temporary to short-term and direct on dust sensitive receptors.

**Table 12.22: Dust and Air Quality Impact on Sensitive Receptors (with no mitigation) Phase 1**

| Dust and Air Quality Impacts on Sensitive Receptors | | | | |
|---|---|---|---|---|
| | Quality of Effect | Significance | Spatial Effect | Duration |
| Dust Soiling | Negative | Not Significant | Local | Temporary |
| Human Health | Negative | Not Significant | Local | Temporary |
| Ecological | Negative | Not Significant | Local | Temporary |

**Table 12.23: Dust and Air Quality Impact on Sensitive Receptors (with no mitigation) Phase 2**

| Dust and Air Quality Impacts on Sensitive Receptors | | | | |
|---|---|---|---|---|
| | Quality of Effect | Significance | Spatial Effect | Duration |
| Dust Soiling | Negative | Not Significant | Local | Temporary |
| Human Health | Negative | Not Significant | Local | Temporary |
| Ecological | Negative | Not Significant | Local | Temporary |

#### 12.8.1.5 Climate

There is the potential for the release of a number of greenhouse gas emissions to atmosphere during the construction of the development. Construction vehicles, generators etc., may give rise to $CO_2$ and $N_2O$ emissions. However, due to the small scale of the development, the impact on the climate is considered to be imperceptible in the short and long term.

### 12.8.2 Operational Phase

#### 12.8.2.1 Air Quality Effects

##### 12.8.2.1.1 Air Quality Effects Traffic

There is potential for a number of emissions to atmosphere during the operational phase of the development. In particular, the traffic-related air emissions may generate quantities of air pollutants such as $NO_2$, CO, Benzene and $PM_{10}$. The potential for impacts from these emissions have been assessed below based on the TII criteria (TII, 2022A/2022B) which requires an assessment between 'Do-Something' traffic scenario (with the proposed development) compared to the 'Do-Minimum' traffic scenario (without the proposed development):

- Road alignment will change by 5m or more;
- Annual average daily traffic (AADT) flows will change by 1,000 or more; or
- Heavy duty vehicle (HDV) (vehicles greater than 3.5 tonnes, including buses and coaches) flows will change by 200 AADT or more; or
- Daily average speed change by 10 kph or more;
- Peak hour speed will change by 20kph or more.

If the above criteria are not met, then a detailed quantitative assessment of operational phase traffic is not required. The traffic and transport assessment outlines the following additional vehicles from peak season of the operation of Phase 1.

**Table 12.24: Predicted Phase 1 peak Operations High Season Additional Operational Vehicles with Peak Capacity Daily Visitors**

| Phase 1 Development | Morning Peak Traffic Hour Additional Vehicles | | Evening Peak Traffic Hour Additional Vehicles | | Daily Additional Vehicles | |
|---|---|---|---|---|---|---|
| | Arrivals | Departures | Arrivals | Departures | Arrivals | Departures |
| Staff | 2 | 0 | 0 | 2 | 4 | 4 |
| Visitors | 10 | 10 | 10 | 10 | 88 | 88 |
| Total | 12 | 10 | 10 | 12 | 92 | 92 |

None of the TII criteria above are met, therefore requirement for a detailed screening assessment for Phase 1 is screened out.

**Table 12.25: Predicted Phase 2 peak Operations High Season Additional Operational Vehicles with Peak Capacity Daily Visitors**

| Phase 1 Development | Morning Peak Traffic Hour Additional Vehicles | | Evening Peak Traffic Hour Additional Vehicles | | Daily Additional Vehicles | |
|---|---|---|---|---|---|---|
| | Arrivals | Departures | Arrivals | Departures | Arrivals | Departures |
| Staff | 7 | 0 | 0 | 7 | 13 | 13 |
| Visitors | 14 | 14 | 14 | 14 | 124 | 124 |
| Total | 21 | 14 | 14 | 21 | 137 | 137 |

None of the TII criteria above are met, therefore requirement for a detailed screening assessment for Phase 2 is screened out.

The additional traffic generated during the operational phase will not be significant therefore the overall potential impact from dust during the operational phase will be long-term, not significant and a negative impact on air quality from dust emissions.

12.8.2.1.2 Air Quality Effects Boat Traffic

**Phase 1 Boat Traffic:** The boat service to/from Inis Cealtra from/to Mountshannon Harbour will be seasonal. The expected high season eight daily round trip sailings is of the same order as the existing summer tourist season - there are typically eight existing round boat trips daily between Mountshannon Harbour and Inis Cealtra. Accordingly, there will be no increase in total boat traffic generated by Mountshannon Harbour and on Lough Derg with the proposed Phase 1 development in operation.

**Phase 2 Boat Traffic:** The proposed Phase 2 visitors' boat service to/from Inis Cealtra Island from/to Mountshannon Harbour will be seasonal, ranging from six round trip daily boat services during low season to 14 round trip daily boat services during high season. The expected high season 14 daily round trip boat sailings would be six additional to the existing summer tourist season - there are typically eight existing round boat trips daily between Mountshannon Harbour and Inis Cealtra. Accordingly, there will be up to 12 additional boat traffic movement volumes generated by Mountshannon Harbour and on Lough Derg with the proposed Phase 2 development in operation. It

is not anticipated that the six additional round trips to the island will have a significant impact on air quality.

The additional boat traffic generated during the operational phase will not be significant therefore the overall potential impact during the operational phase will be long-term, not significant and a negative impact on air quality from dust emissions.

12.8.2.1.3 Air Quality Effects Light and Heat

Heating for the visitor centre is proposed as an air to water heat system. All lights both internally and externally will be LED lanterns on PIR and absence detectors. Cognisant of the rural location, the light fittings proposed all provide downward light output only to ensure that there is no adverse light pollution on the surrounding environs. The lanterns specified are designed to operate at 3000K to minimise any unfavourable effects on the local wildlife and natural environment.

With Ireland's electricity targets of 80% renewables by 2030 and net zero by 2050, the additional electrical consumption during the operational phase will not have a significant impact on air quality or climate and therefore the overall potential impact during the operational phase will be long-term, not significant and neutral on air quality and climate.

12.8.2.1.4 Air Quality Effects on Ecological Receptors

TII's Guidelines for Assessment of Ecological Impacts of National Road Schemes (2009) and Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DEHLG, 2010) provide details regarding the legal protection of designated conservation areas.

If both the following assessment criteria are met, an assessment of the potential for impact due to nitrogen deposition shall be conducted:

- A European designated area of conservation is located within 200m of the proposed development; and
- A significant change in AADT flows (>5%) will occur.

If the above criteria are not met, then an assessment of the impact of the proposed development on NOx concentrations and nitrogen deposition is not required.

In addition, the Air Pollution Information System (APIS) (www. apis.ac.uk) is a very useful online resource regarding the sensitivity of habitats, species and statutory designated nature conservation sites to air pollution. Nox critical levels for features for Lough Derg (Shannon) SPA is 30µg.m$^3$. $NO^2$ ambient air emissions for rural Zone D is 8.1µg.m$^3$

The predicted additional vehicle trips generated by the proposed development during Phase 1 peak operations during high season, to include visitors and staff, is 92 arrivals and 92 departures daily. Traffic trips from Mountshannon will either arrive or depart via Junction 1 or Junction 2.

Junction 1: The link traffic counts on the R352 on the immediate west side of its L4034 Harbour Road/L4032 and east of its L3034 Harbour Road/L8078 junction were within 200m of the proposed development (c. 160m).

Junction 2: The link traffic counts on the R352 and east of its L3034 Harbour Road/L8078 junction were not within 200m of the proposed development.

**Figure 12.5 Mountshannon Link Traffic Monitoring Locations**

During phase 1 at junction 1, it is predicted that there will be <5% AADT change in flows between the baseline including TII growth with operational phase 1 of the project and without.

During phase 2 at junction 1, it is predicted that there will be c. 6% AADT change in flows between the baseline including TII growth with operational phase 2 of the project and without.

The additional traffic generated during the operational phase will not be significant and with trends in improving emissions technology, it is considered that the overall potential impact from dust and air emissions during the operational phase will be long-term, not significant and a negative impact on air quality from dust emissions.

### 12.8.2.2 Climate

There is the potential for a number of greenhouse gas emissions to atmosphere during the operational phase of the development. Road traffic and space heating of buildings may give rise to $CO_2$ and $N_2O$ emissions. However, as the projected changes in traffic volumes on the road links impacted by the development are below the criteria requiring a quantitative air and climate modelling assessment, it can therefore be determined that the impact to climate from traffic emissions during the operational stage will be long term and imperceptible.

The potential for impact from climate change on the project would be considered by way of increased flood risk to elements of the project. A flood risk assessment was carried out and a justification test was conducted for the proposed development. Most of the infrastructure, the jetty and harbour public realm are water compatible developments. The visitor centre, while shown outside Flood Zones A and B, has a ground level proposed higher than the flood level.

### 12.8.3 Cumulative Effects

Cumulative effects relate to the addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.

A description of all the permitted and planned developments around the proposed development site is provided in **Table 12-26** below:

**Table 12.26 Planned and permitted developments in proximity to the proposed development**

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| 23597 | Brett and Marcha Cox | Main St, Mountshannon | Retain use of former office as shop and coffee shop, retain garden room erected alongside coffee shop and house, and permission for change of use of garden room to coffee roaster, toilet and all associated site works. | Granted: 05/03/24 |
| 2360172 | Jamie and Rachel Keating | No. 3, Harbour View, Mountshannon. | Renovation and extension of existing dwelling house to include (1) Removal of existing balcony and replace with new balcony area (2) Significant Alterations to North, South and West elevations and all associated site works. | Granted: 23/08/23 |
| CCC: 22123 ABP: 313431 | Mountshannon Community Council | Aistear Park, Mountshannon | Erect a Pavilion (a roofed open structure) for communal, cultural, education and events and gatherings and all associated site works. | CCC Granted: 07/04/22 Appealed to ABP: 27/04/22 ABP Granted: 24/07/23 |
| 22269 | Inis Housing Association CLG | Mountshannon | Development of 11 no. dwelling houses of varying size and design, 1 no. building containing 2 no. apartments, new site entrance, development access roads paths, landscaping, service connections | Granted: 03/05/23 |

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| | | | and associated site works & services. | |
| 22688 | Josephine O'Brien | Mountshannon | Entrance and front boundary wall as constructed and all associated site works | Granted: 27/10/22 |
| 22340 | Paul Knapp | The Old School House & Church, Mountshannon | Development to existing building (protected structure (RPS No. 130)); (a) Retain change of use of building from church/school to single private residential unit; (b) Permission to replace existing roof covering with natural slate, re-render exterior of building with lime render, provide three no. new conservation roof windows to rear of roof and all associated ancillary site works. | Granted: 13/07/22 |
| 22124 | Dermot O'Sullivan | Mountshannon | Retention of porch as constructed to the front of the house and retain two sheds erected at rear of house and all associated site works. | Granted: 11/05/22 |
| 21985 | Josephine O'Brien | Mountshannon | Garage/shed as erected to rear of house and all associated site works. | Granted: 15/12/21 |
| 21968 | Pat Sweeney | Mountshannon | Construction of a garage/shed. | Granted: 08/12/21 |
| 21555 | Adrian Dooley | Millpool Road, Mountshannon | Erect a dwelling house, garage, driveway, install effluent treatment system and polishing filter and all associated site works. | Granted: 19/11/21 |
| 21253 | Mary Teresa Ryan | Old Rectory, Mountshannon | Retain demolition works and alterations to existing out-buildings (part of Old Rectory Protected Structure (RPS No.464)) and retain the constructed works to same incorporating garage and storage sheds. | Granted: 23/06/21 |
| 218000 | Clare County Council | The Old Rectory, Mountshannon | Alterations, modifications and partial change of use of Old Rectory on site measuring 1.17ha, consisting of: i. Construction of | Granted: 27/05/21 |

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| | | | 57sqm single-storey ground floor extension to northwest of building (double height space) - max. height of 6.4m (lift height 7.8m) above ground level for Education/Enterprise space of 30sqm, new internal stair access; ii. Ground floor change of use from residential to a) Education/Enterprise Facilities (2 no. rooms with total GFA of 79sqm) b). Reception Area (26sq.) c) Welfare Facilities (5sqm) d) Storeroom (2sqm) e) Plant (3sqm) iii. First floor partial change of use from residential to: a) Community Facility/Co-working Space (16sqm) b) Welfare Facilities (7sqm) iv. 1-bedroom apartment (87sqm) with private amenity space of 50sqm; v. New lift within footprint of existing building; vi. Ground floor - new opening in north and west wall of existing building, new and enlarged openings to internal walls between existing kitchen/utility room and between existing hallway/lounge; vii. First floor - new openings/removal of internal partitions, opening in roof for access to lift and new opening in north wall at first floor; viii. Clean/repoint existing brickwork, repair/replacement of damaged roof slates with natural slate, replacement of PVC windows with double-glazed timber sash windows, removal of modern internal additions (flooring, cornices); ix. Resurface existing vehicular access, construct new vehicle passing bay; x. Construct 1.8m-wide pedestrian footpath west of existing vehicular access; xi. Demolish new build section | |

| Application No. | Applicant | Location | Proposed Development | Decision and Date |
|---|---|---|---|---|
| | | | existing splayed entrance, reinstatement of splayed entrance. | |
| 20941 | Gerry Cantrell | 4 Harbour View, Harbour Road, Mountshannon | Retain minor elevational changes to the existing dwelling house. | Granted: 08/03/21 |
| 21555 | Adrian Dooley | Millpool Road, Mountshannon | Erect a dwelling house, garage, driveway, install effluent treatment system and polishing filter and all associated site works. | Granted: 19/11/21 |

All the existing approved planning applications are/will be subject to appropriate planning and regulatory consents, to ensure that there are no significant effects on air quality and climate.

Having considered the implementation of good construction practice and design for the proposed development and other development in the surrounding area, no cumulative effects are anticipated.

### 12.8.4 Summary

The following Table summarises the identified likely significant effects during the demolition and construction phase of the proposed development before mitigation measures are applied.

**Table 12.27 Summary of Demolition & Construction Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Impacts on air quality from demolition phase | Negative | Not significant | Local | Unlikely | Short-term | Direct |
| Impacts on air quality from earthworks phase | Negative | Not significant | Local | Unlikely | Short-term | Direct |
| Impacts on air quality from construction phase | Negative | Not significant | Local | Unlikely | Short-term | Direct |
| Impacts on air quality from trackout (traffic) phase | Negative | Not significant | Local | Unlikely | Short-term | Direct |

The following Table summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

**Table 12.28 Summary of Operational Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Impacts on air quality from Operational Phase 1 traffic | Negative | Not significant | Local | Unlikely | Long-term | Direct |
| Impacts on air quality from Operational Phase 2 traffic | Negative | Not significant | Local | Unlikely | Long-term | Direct |

## 12.9 Mitigation

### 12.9.1 Construction Phase Mitigation

The pro-active control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the dust mitigation measures. The key aspects of controlling dust are listed below. These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site. In summary the measures which will be implemented will include:

• Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.

• Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.

• Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.

• Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph.

• Public roads in the vicinity of the site entrance will be regularly inspected for cleanliness and cleaned as necessary.

• Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.

• During movement of materials both on and off-site and before entrance onto public roads trucks will be adequately inspected to ensure no potential for dust emissions.

• Ensure regular maintenance of plant and equipment. Carry out periodic technical inspection of vehicles to ensure they perform most efficiently.

• All site vehicles and machinery will be switched off when not in use, and no idling of engines will be permitted.

- Adherence to the Traffic Management Plan.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

### 12.9.2 Operational Phase Mitigation

Operational phase impacts are mitigated by the Visitor Management Plan.

## 12.10 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

### 12.10.1 Construction Phase

#### 12.10.1.1 Phase 1

All phases of construction including demolition shall be undertaken in accordance with the measures outlined in the CEMP. No significant residual impacts on air quality or climate are predicted as a result of the construction of Phase 1 of the proposed scheme.

#### 12.10.1.2 Phase 2

All phases of construction including demolition shall be undertaken in accordance with the measures outlined in the CEMP. No significant residual impacts on air quality or climate are predicted as a result of the construction of Phase 2 of the proposed scheme.

### 12.10.2 Operational Phase

#### 12.10.2.1 Phase 1

Phase 1 peak operational year is estimated to be 2032. There are no significant residual impacts predicted as a result of the operational phase 1 period of the proposed scheme in particular with consideration of the stricter air quality limits to be imposed, advancements in technology for transport emissions and higher percentage of electric vehicles in the fleet.

#### 12.10.2.2 Phase 2

Phase 2 peak operational year is estimated to be 2046. There are no significant residual impacts predicted as a result of the operational phase 2 period of the proposed scheme in particular with

consideration of the stricter air quality limits to be imposed, advancements in technology for transport emissions and higher percentage of electric vehicles in the fleet.

### 12.10.3 Summary of Post-mitigation Effects

The following Table summarises the identified likely significant residual effects during the demolition and construction phase of the proposed development following the application of mitigation measures.

**Table 12.29 Summary of Demolition & Construction Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Impacts on air quality from demolition phase | Negative | Imperceptible | Local | Unlikely | Short-term | Direct |
| Impacts on air quality from earthworks phase | Negative | Imperceptible | Local | Unlikely | Short-term | Direct |
| Impacts on air quality from construction phase | Negative | Imperceptible | Local | Unlikely | Short-term | Direct |
| Impacts on air quality from trackout (traffic) phase | Negative | Imperceptible | Local | Unlikely | Short-term | Direct |

The following Table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

**Table 12.30 Summary of Operational Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Impacts on air quality from Operational Phase 1 traffic | Negative | Imperceptible | Local | Unlikely | Long-term | Direct |
| Impacts on air quality from Operational Phase 2 traffic | Negative | Imperceptible | Local | Unlikely | Long-term | Direct |

### 12.10.4 Cumulative Residual Effects

There will be no significant cumulative residual effects.

## 12.11 Risk of Major Accidents or Disasters

This section presents an assessment of the vulnerability of the proposed development in relation to major accidents and disasters. It assesses the likelihood of the proposed development to cause an increased risk of major accidents and disasters.

Major accidents can relate to any incident, technological or otherwise, which has the potential to have a significant impact on the facility or on the receiving environment. Examples of major accidents which have such potential are fire, explosion, traffic collisions, contamination and pollution.

A natural disaster is an all-encompassing term which describes any severe natural event which has the potential to cause disturbance to an individual, development or population. The severity depends on the receptor and the type of disaster. Examples of natural disasters are earthquakes, flooding, tsunamis, lightning strikes, hurricanes or any other extreme natural event. This section has considered the potential increased risk of such events occurring as a result of climate change, such as increased frequency in the occurrence of extreme weather events.

It is considered that there is no potential for the proposed development to cause a major accident or disaster. Furthermore, there is no increased risk to the development from a major accident or disaster.

## 12.12 Worst Case Scenario

A worst-case scenario would arise if the best practice measures were not implemented during the construction phase of the development. This may result in the generation of uncontrolled release of dust and air pollution emissions from the site which would result in an unacceptable impact on local receptors and the receiving environment.

## 12.13 Interactions

The main interactions with air quality and climate are in relation to human beings and ecological receptors. The impact of air quality and climate on human beings living in the area of the proposed development has been addressed above for demolition, construction and operational phase of the proposed development. The impact assessment shows that the air quality impacts that will be experienced by human beings in the vicinity of the proposed development are all within the prescribed criteria, provided mitigation measures are applied. The interaction is described as negative and imperceptible to not significant for the demolition and construction phases and imperceptible for the operational phase.

In relation to the interaction of air quality and climate with ecology from the proposed development, the development will not have a significant negative impact on the local birdlife and wildlife. The operational phase will not contribute to a significant negative impact on air quality and with

implementation of revised lower ambient air quality limits, this will mean the interaction will be described as neutral and quantified and imperceptible to not significant.

## 12.14 Monitoring

A preliminary monitoring schedule has been prepared as part of the CEMP and will be finalised pending the appointment of the contractor. The site checklist must have the following information included as a minimum:

**Table 12.31: Environmental Monitoring Schedule**

| Aspect | Area of Inspection | Monitoring Required | Note/Checks | Frequency | Responsibility |
|---|---|---|---|---|---|
| Surface water Run-off | Weather Forecast | Met Éireann download | • Pre-determined rainfall trigger levels (e.g. 1 in 5-year storm event or heavy rainfall at >25mm/hr) | Every 24 hours minimum | Project Manager |
| Water quality monitoring | Excavations and Roadside attenuation drain | Visual inspection | •Colour, presents of silts | Daily | Environmental Manager |
| Roads | Site Entrance | Visual inspection | • Unacceptable level of sediment/silt on the road surface<br>• Presence of waste<br>• Surface condition | Daily | Project Manager |
| Temporary Site Compound Area | Fuel & Oil Storage areas | Visual inspection | • Damage to containers or ancillary equipment<br>• Leakages<br>• Unlocked storage container | Daily | Environmental Manager |
| | Construction Materials Storage Areas | Visual inspection | • Damage<br>• Untidiness | Daily | Environmental Manager |
| | Spoil Storage areas | Visual inspection | • Levels/Slippage<br>• Re-vegetation | Daily early/weekly | Environmental Manager |

| | | | | | |
|---|---|---|---|---|---|
| | Waste Collection Areas | Visual inspection | • Damage<br>• Untidiness<br>• Full skips | Daily | Environmental Manager |
| | Concrete chute washout area | Visual inspection | • Damages<br>• Leakages<br>• Unacceptable level of concrete washings | Daily | Environmental Manager |
| Operation Control | Wastewater facilities | Visual inspection | • Portaloos requiring servicing | Weekly | Project Manager |
| | Hoarding and boundary fences | Visual inspection | • Signs of movement (i.e. not in a straight line)<br>• Damaged or fallen sections of fence | Weekly | Project Manager |
| | Concrete pours | Visual inspection | • Run-off / spills | To be scheduled with pours | Project Manager |
| | Dust generation | Visual inspection | • Cleanliness of roads and compound area<br>• Dust at stockpiles<br>• Dust from delivery vehicles | Daily | Project Manager |

## 12.15 Summary of Mitigation and Monitoring

The following Table summarises the Demolition and Construction Phase mitigation and monitoring measures.

**Table 12.32 Summary of Demolition & Construction Phase Mitigation and Monitoring**

| Character of potential impact | Mitigation Measure |
|---|---|
| Dust from excavation and site clearance activities Phase 1 car park | • A Construction Traffic Management Plan will be implemented as part of the overall CEMP;<br>• Measures in the CTMP will include:<br>- Limiting vehicle speeds on the construction site;<br>- All vehicles exiting the site will make use of wheel wash facilities prior to entering onto public roads, to ensure mud and other wastes are not tracked onto public roads. Public |
| Dust from demolition Inis Cealtra Phase 1 | |
| Dust from excavation and site clearance activities Phase 2 car park & visitor centre | |
| Dust from construction Phase 2 car park and visitor centre | |
| Dust and Air Quality impacts from traffic movements Phase 1 & Phase 2 | |

| Character of potential impact | Mitigation Measure |
|---|---|
| | roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.<br>- Topsoil and other dusty material being moved onsite will be transported in covered trucks, where the likelihood of emitting dust is high, and during dry weather conditions the area of removal will be sprayed with water from a mobile tanker on a regular basis to control dust emissions;<br>- Exhaust emissions from vehicles operating within the site, including trucks, excavators, diesel generators or other plant equipment, will be minimised through regular servicing; and<br>- Public roads outside the Proposed Scheme will be regularly inspected for soiling associated with traffic movements/construction activities.<br>• A Construction Dust Management Plan will be implemented. Measures in the CDMP will include:<br>- During very dry periods, spraying surfaces with water will control dust emissions from heavily trafficked locations;<br>- During periods of very high winds (gales), construction activities likely to generate significant dust emissions should be postponed until the gale has subsided.<br>- Site hoarding will be installed minimising the likelihood of dust impacts off-site. |

The following Table summarises the Operational Phase mitigation and monitoring measures.

**Summary of Operational Phase Mitigation and Monitoring**

Operational phase impacts are mitigated by the Visitor Management Plan.

There are no additional mitigation measures proposed for the operational phase of the proposed development.

## 12.16 Conclusion

During the construction and operation of both phases of the proposed development, a number of activities will take place, some of which have the potential to affect the local air quality at the site or in its vicinity.

Pollution control and other preventative measures have been incorporated into the project design to minimise adverse effects on air quality during construction.

There are no significant effects on air quality and climate foreseen as a result of the proposed development operational phase.

## 12.17 References and Sources


Government of Ireland (2022) Carbon Budgets Available at https://www.gov.ie/pdf/?file=https://assets.gov.ie/222805/697ec730-a09f-4216-a54a-6a5cd0b358df.pdf#page=null

Environmental Protection Agency (2015) Advice Notes for Preparing Environmental Impact Statements – Draft September 2015

Environmental Protection Agency (2021) GHG Emissions Projections Report - Ireland's Greenhouse Gas Emissions Projections 2020 – 2040 Environmental Protection Agency (2022a)

Air Quality in Ireland 2022 (& previous annual reports)

Environmental Protection Agency (2022b) Guidelines on the Information to be contained in Environmental Impact Statements

Environmental Protection Agency (2022c) Ireland's Final Greenhouse Gas Emissions 1990 – 2020

German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft Government of Ireland (2015)

Climate Action and Low Carbon Development Act

Government of Ireland (2019) Climate Action Plan 2019 Government of Ireland (2020)

Draft General Scheme of the Climate Action (Amendment) Bill 2019 Government of Ireland (2021a) Climate Action Plan 2021

Government of Ireland (2021b) Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021)

Government of Ireland (2022) Climate Action Plan 2023

IAQM (2024) Guidance on the Assessment of Dust from Demolition and Construction

Met Éireann (2023) Met Éireann Website: www.met.ie

TII Publications (2022) Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document

TII Publications (2022) Air Quality Assessment of Proposed National Roads - Standard

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 13
# CULTURAL HERITAGE: BUILT HERITAGE

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


13 Cultural Heritage: Built Heritage ..... 13-4
13.1 Introduction ..... 13-4
13.3 Proposed Development ..... 13-4
13.3.1 Aspects Relevant to this Assessment ..... 13-5
13.4.1 Relevant Legislation & Guidance ..... 13-10
13.4.8 Site Surveys/Investigations ..... 13-13
13.4.9 Consultation ..... 13-14
13.5 Difficulties Encountered ..... 13-14
13.6 Baseline Environment ..... 13-14
13.6.1 History of Inis Cealtra ..... 13-14
13.6.2 Sites included in the Built Heritage ..... 13-15
13.6.3 Main Phases of Building ..... 13-16
13.6.4 Description of the monuments ..... 13-16
13.6.5 St Caimin's Church (RMP:CL029-009011) ..... 13-16
13.6.6 'The Confessional' CL029-009017 ..... 13-17
13.6.7 St Brigid's Church: CL029-009006 ..... 13-18
13.6.8 'Tempall na bhFear nGonta'CL029-009015 ..... 13-18
13.6.9 St Mary's Church CL029-009008 ..... 13-19
13.6.10 The Lady Well: CL029-009023- ..... 13-20
13.6.11 St Michael's Church CL029-009003- ..... 13-20
13.6.12 Round tower CL029-009010 ..... 13-20
13.6.13 Carved stone ..... 13-21
13.6.14 Possible terrace ..... 13-22
13.6.15 House - 18th/19th century CL029-009031- ..... 13-22
13.6.16 Penitential station 'Bargaining Stone'CL029-009022 ..... 13-22
13.6.17 Post-Medieval Pilgrimage ..... 13-23
13.6.18 Bullaun Stones ..... 13-24
13.6.19 Paths ..... 13-25
13.6.20 Landing stages and Fisherman's Hut ..... 13-25
13.7 The 'Do Nothing' Scenario ..... 13-26
13.8.1 Demolition Phase ..... 13-26
13.8.2 Construction Phase ..... 13-27
13.8.3 Operational Phase ..... 13-31
13.8.4 Cumulative Effects ..... 13-32
13.8.5 Summary ..... 13-32

13.9 Mitigation ..... 13-32
13.9.1 Incorporated Design Mitigation ..... 13-32
13.9.2 Demolition Phase Mitigation ..... 13-33
13.9.3 Construction Phase Mitigation ..... 13-33
13.9.4 Operational Phase Mitigation ..... 13-33
13.10 Residual Impact Assessment ..... 13-33
13.10.1 Demolition Phase ..... 13-33
13.10.2 Construction Phase ..... 13-33
13.10.3 Operational Phase ..... 13-34
13.10.4 Summary of Post-mitigation Effects ..... 13-34
13.10.5 Cumulative Residual Effects ..... 13-34
13.11 Risk of Major Accidents or Disasters ..... 13-34
13.12 Worst Case Scenario ..... 13-34
13.13 Interactions ..... 13-34
13.14 Monitoring ..... 13-35
13.15 Summary of Mitigation and Monitoring ..... 13-35
13.16 Conclusion ..... 13-35
13.17 References and Sources ..... 13-37

# Table of Figures

Figure 13-1. Landownership map Inis Cealtra .....13-38
Figure 13-2 Lidar Survey of Inis Cealtra showing embankments and paths .....13-39
Figure 13-3. Excavation trenches 197--80 overlain on geophysics.....13-40
Figure 13-4. Path from north-west jetty to the monastery .....13-41
Figure 13-5. View of the jetty and cattle landing area .....13-41
Figure 13-6. St Caimin's church and round tower from north-east.....13-42
Figure 13-7. West elevation of St Caimin's church .....13-43
Figure 13-8. South elevation of St Caimin's church .....13-44
Figure 13-9. St Caimin's church and tower from south-west .....13-45
Figure 13-10. Bullaun stone south of round tower.....13-45
Figure 13-11. View of St Caimin's church from north.....13-46
Figure 13-12. View of St Caimin's church and round tower during scrub clearance February 2024 ..13-46
Figure 13-13. Walls of the 'cottage ' rediscovered February 2024.....13-47
Figure 13-14. St Michael's church under excavation 1970s .....13-47
Figure 13-15. Enclosure and St Michael's 2020 .....13-48
Figure 13-16. Mourners at the funeral of the writer Edna O' Brien 2024 .....13-49
Figure 13-17. Horse shoe repurposed as mooring ring in the north west jetty .....13-49
Figure 13-18. Field boundary at site of proposed carpark Mountshannon.....13-50

# Table of Tables

Table 13-1 Summary of Demolition & Construction Phase Likely Significant Effects in the absence of mitigation.....13-32
Table 13-2 Summary of Operational Phase Likely Significant Effects in the absence of mitigation13-32
Table 13-3 Summary of Demolition & Construction Phase Effects Post Mitigation.....13-34
Table 13-4 Summary of Operational Phase Effects Post Mitigation.....13-34
Table 13-5 Summary of Demolition & Construction Phase Mitigation and Monitoring .....13-35
Table 13-6 Summary of Operational Phase Mitigation and Monitoring .....13-35

# 13 Cultural Heritage: Built Heritage

## 13.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on the built heritage of Inis Cealtra.

It should be read in conjunction with Chapter 14, the archaeological heritage of Inis Cealtra, where there is considerable overlap. Additionally a series of Appendices to Chapter 14, specifically the geophysics report, have relevance to this chapter. These include the following:

Appendix 14.1 Geophysical survey Preliminary Report 21R0095

Appendix 14.2. Inis Cealtra Co Clare Lidar and Geophysical Report

Appendix 14.3 Inis Cealtra Co Clare Underwater Archaeological Impact Assessment

Appendix 14.4 Inis Cealtra Archaeo-geophysical Survey

Appendix 14.5 Underwater Archaeological Impact Assessment

Appendix 14.6 Old Rectory Mountshannon, Archaeological Impact Assessment

Appendix 14.7 Excavation of Archaeological Test pits at Inis Cealtra

## 13.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Claire Walsh of Claire Walsh Archaeological Projects ltd.

Claire Walsh holds an honours degree in Archaeology from NUI. Claire Walsh has almost 40 years of experience and has carried out many excavations and assessments of archaeological sites and been involved in the preparation of EIARs for the following projects:

- Oldbridge , Battle of the Boyne
- Heuston South Quarter, Kilmainham
- Greystones Media Campus

## 13.3 Proposed Development

The full description of the proposed development is outlined in Chapter 2 'Development Description' of this EIAR.

The Inis Cealtra Visitor Experience is to be developed on Inis Cealtra (Holy Island) and on the mainland, in two principal locations within Mountshannon Village.

### 13.3.1 Aspects Relevant to this Assessment

The aspects of the development relevant to this assessment are summarised below.

**Inis Cealtra Island**

- Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island.
- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp.
- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.
- Provision of three staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

**Mainland – Mountshannon**

- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, together with coach parking and bicycle parking facilities.
- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building incorporating a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.
- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.

Following is a more detailed description of the constituent parts of the project as relevant to this chapter.

#### 13.3.1.1 Phase 1 Construction Activity

The proposed Phase 1 construction includes the upgrade works at Inis Cealtra island and the new Village Car Park at Mountshannon, on the north side of Main Street. The Phase 1 construction is scheduled for 12 months. The proposed development Phase 1 peak construction year is 2027.

This planning application is accompanied by a **Construction and Environmental Management Plan (CEMP)**. The CEMP provides a comprehensive description of the construction phase and outlines the commitments and mitigation measures to be implemented during the construction phase of the proposed development.

Construction access for the Inis Cealtra Island works will be via Mountshannon Harbour and the construction of new floating access jetty and walkway located at the north west of the island where the existing mooring point is located.

During the Phase 1 construction, Inis Cealtra Island will generally remain closed for the duration of the works, except where access is required for a burial and by a farmer for livestock, and OPW staff for routinine maintenance of the Monuments in Care.

A temporary construction compound will be provided on Inis Cealtra Island for the Island works. A work force comprising a maximum of 20 personnel is envisaged for the Inis Cealtra Island works. The main focus of the work will be on the installation of the new jetty. All welfare facilities for construction staff will be provided on site at the proposed construction compounds for each construction element, including staff canteen facilities

Demolition volumes generated by the Inis Cealtra upgrade works will be relatively low and mainly comprise the demolition of the existing structure close to the jetty for removal to a licensed recycling facility. Excavated earthworks volumes for removal off the Island will be minimal. The foundations for the three pods are to be screwed piles. All the pods will be above ground, minimising any ground levelling or excavation.

#### 13.3.1.2 Island Mooring Point

It is proposed to construct a new floating access jetty at the location of the existing concrete landing point to the north-west of the island. The existing jetty extends only a short distance into the lake, meaning the depth of water around it is relatively shallow, limiting the size of boats which can land there to very small vessels. Works to the existing jetty and provision of a new floating jetty, which extends into deeper water will allow for safer and more convenient passage between the mainland and the island, and this will become the principal point of arrival for visitors to the island.

The new L-shaped jetty extends out into the lake approximately 53m and is designed as a breakwater jetty that breaks most of a wave's crest and provides a safer mooring on the inner jetty area. The structure is made up of four principal parts: a floating breakwater jetty, a stone and concrete causeway, a steel access ramp connecting the two and a canoe launch jetty with access ramp. The floating jetty is 4m wide and is held in position using 4 no. 800 mm diameter steel piles.

The causeway, which is constructed over the existing concrete jetty (which will remain in place) on the shore of the island, comprises a concrete anchor platform, held in place by 4 no. 203mm H- piles, around which stone gabions are placed, built up to provide a 3m wide level surface which will be paved with stone.

A 1.5m wide steel access ramp will be fitted between the two, fixed to the causeway at one end and resting on the jetty at the other. This will allow the ramp to move up and down with the rise and fall of the lake level.

Boats travelling from Mountshannon Harbour to Inis Cealtra, landing at the new jetty will travel via established navigational channels around the island, giving the opportunity to view the full island from the lake.

#### 13.3.1.3 Island Tours & Boat Service

The proposed development includes a detailed **Visitor Management Plan (VMP)**. The VMP provides a comprehensive description of projected visitor numbers, types, times, travel modes, management

and mitigation measures. The VMP also includes details of staff types, numbers and times. The guides will operate on the island from 9.00am to 5.00pm in low season, with working hours extended to 6.00pm in high season. Staff numbers will be minimum 2 persons.

An estimated 60% of visitors accessing the Visitor Centre in Mountshannon will take a boat trip to the island for a guided tour. The boat service will be tendered by Clare County Council, and the successful tender will operate 25-seater boats.

The island guided tour will last approximately 45 minutes, allowing for some self-exploration for visitors. Visitors are likely to remain on the island for one hour but will be requested to stay no longer than two hours.

The boat service will scale over time to reflect visitor demands, Phase 1 comprises the Old Rectory Interpretive Centre combined with an optional boat and guided island tour at Inis Cealtra. It is expected that Phase 2 will generate sufficient demand for a number of boat tour operators to operate the service.

The proposed Phase 1 visitors' boat between Mountshannon Harbour and Inis Cealtra Island will be seasonal, ranging from two round trip daily boat services during low season to eight round trip daily boat services during high season. The expected high season eight daily round trip sailings is of the same order as the existing summer tourist season.

The proposed Phase 2 visitors' boat service to/from Inis Cealtra Island from/to Mountshannon Harbour will be seasonal, ranging from six round trip daily boat services during low season to 14 round trip daily boat services during high season. The expected high season 14 daily round trip boat sailings would be six additional to the existing summer tourist season - there are typically eight existing round boat trips daily between Mountshannon Harbour and Inis Cealtra.

Daily visitor numbers to the island will be capped at 400, with the majority encouraged to book on-line to spread the numbers throughout the day. No more than 100 persons will be permitted to access the island (for visitor reasons) at any one time.

The maximum daily capacity on Inis Cealtra island will be 400 persons, with no more than 100 people permitted on the island at any one time.

Accordingly, there will be no increase in total boat traffic generated by Mountshannon Harbour and on Lough Derg with the proposed Phase 1 development in operation.

#### 13.3.1.4 Management Structures

Members of the local community and members of Lough Derg Anglers will be able to land for free with a permit-style approach.

Guided tours on the island will be operated by Clare Tourism DAC, staffed by Inis Cealtra Visitor Experience. Their role will also include monitoring and surveying of visitor impacts.

Key stakeholders involved in the management of Inis Cealtra will form a representative group, the Inis Cealtra Management Group, to have oversight both in terms of the strategic management of the island

and the operational management of the island. This group, led by Clare County Council, will include OPW, NMS, Waterways Ireland and Department of Housing, Local Government and Heritage.

Inis Cealtra Community Forum will be established to represent the voice of the local community in the management of Inis Cealtra and the delivery of the new visitor experience. Its role will be to facilitate local community input and linkages as the project develops, ensuring the socio-economic benefits of this project are reflected across East Clare. It will also serve as a liaison with Clare County Council in managing local access to Inis Cealtra.

#### 13.3.1.5 New Pedestrian Paths on the island

A series of 2m wide mown grass pathways is proposed to allow visitors to explore the island, its archaeological features and natural beauty.

The design of the paths is in line with the principles of minimal intervention to archaeological and natural heritage, and seeks to find a balance between accessibility, wayfinding, readability of the landscape and protection of archaeology and nature.

The layout and location of the paths is defined by the following:

- Existing path locations and access to main monuments (Path 1, Path 8).
- Accessibility and location of monuments - paths 11 and 12 are proposed to take visitors to Lady Well and the Bargaining Stone in a less direct but gentler sloping route.
- A series of additional paths are proposed to make a looped walk around the island with the option of a smaller loop (Path 3) or a bigger loop walk around the whole island to enjoy the natural beauty of the island as well as its cultural heritage, leading through grasslands and woodlands and back to the mooring point (Path 2). The provision of a short connection between the two options (Path 4) allows for a wider variety of loop options.
- Another path (Path 6) is proposed alongside the ecclesiastical enclosure as a way to experience the site's now hidden history (the enclosure is not visible above the ground).

The path of least intervention has been chosen for the proposal - the paths are all proposed as mown paths to existing ground levels for minimum visual impact and to avoid impact on the archaeology underground.

In order to avoid erosion, several measures are proposed:

- Several path options are proposed to spread the footfall. These may be phased in different seasons as the intensity of use is observed.
- The existing stone base to path 1 is proposed to be repaired where necessary. Path 1 is expected to be the most heavily used as it leads from the mooring point directly to the Round Tower.
- Where heavy footfall is expected, a layer of crushed aggregate is proposed with topsoil spread on top to allow for grass to develop. This will allow for sufficient air and moisture for grass to

develop even with heavier footfall and only expose the aggregate in extreme situations rather than eroded topsoil. No plastics, geotextile or edging is being proposed.

- Where the footfall is expected to be the heaviest, 1m on either side of the path is proposed to be mown in addition to the 2m width in the main season to allow visitors to spread over a wider width of the path. A 6-week mowing regime is proposed in the summer for the additional strips.

Details of the proposals for maintenance of the paths and island are given in the Landscape and Conservation Management Plan.

#### 13.3.1.6 Island Pods

Three new staff and public welfare facility 'pods' are proposed on the island to meet the minimum needs of staff and visitors by providing a weather shelter, WCs and a rest room for island staff.

Photovoltaic (PV) panels will be installed on all roofs to power essential equipment, including lighting and a small pump in the WC's.

The proposed pods will be timber framed structures sitting on metal piles. The structure will be infilled with timber and clad with timber on their walls and roofs.

The pods are lightweight, freestanding, timber pavilions, raised on timber legs so that their contact with the ground will be minimal, reducing the risk of disturbing sensitive archaeology. While each pod serves a distinct function, they share a similar architecture and method of construction.

The pods will have new timber walkways to provide level access into them and these too will be of timber construction resting on mini- pile foundations. All pod and walkway components will be assembled on the island to minimise the impact of their construction and are designed to be dismantled and removed if required, with little trace left on the landscape.

The pod locations have been carefully considered to minimise their visual impact on the island and provide facilities that are geographically convenient for visitors and staff. In all cases, they are to be built in the shelter of existing woodland or scrub. The predominant use of timber in their construction means that they will sit comfortably within the woodland and scrub landscapes where they are to be placed and remain visually unobtrusive.

The proposed pods are as follows:

- The **Weather Shelter** (20 sq.m) will be located close to the new jetty in an area previously occupied by a small built refuge. The location is optimal from the point of view that it is close to the new jetty, so it will provide shelter for people while waiting for the boat, and from an archaeological perspective, it is beneficial as it will be built on land that has previously been disturbed by the construction of the existing structure. The pod height will range from 5.4m to 6.3m and will contain space for visitors to shelter during adverse weather conditions, with an approx. capacity for 30 no. persons seated.

- The **WC Pod** (15 sq.m) will range from 5.25m to 6.25m in height. It will contain 2 no. dry WCs and requires no foul drainage or water supply. Given the relative complexity of removing waste off the island but recognising the need for such facilities, WCs will be for 'emergency'

use only with the aim of ensuring that their use and disposal are appropriately managed. Sanitation gels will be used for hand hygiene.

- A dry toilet system will be implemented to overcome the logistical challenges of removing solids and liquids. Deposited waste will be separated into liquid and solid form. This waste will then be stored in a holding container as part of the dry toilet set-up. A contractor will be appointed to manage the maintenance of the foul system and waste removal from the island. There is no ancillary plumbing or other ground disturbance associated with the WC unit.
- The **Staff Pod** (25 sq.m) will range from 5.4m to 6.3m in height. It will provide shelter and rest for the island guides and ushers who will be on Inis Cealtra daily. The accommodation comprises a single space containing a tea station, a break area with seating, lockers, and first aid equipment.
- The pods will be connected via a boardwalk.

## 13.4 Methodology

The methodology for this assessment is based on the following sources:

Printed sources, listed in the bibliography/ references section

Grey literature, listed in the bibliography/ references section

Record of Monuments and Places for County Clare, available on the Historic Environment Viewer at www.archaeology.ie

Field visits

### 13.4.1 Relevant Legislation & Guidance

The following pieces of legislation standards and guidelines are applicable to this chapter of the EIAR:

National Monuments Act 1930 (as amended)

Architectural Heritage and Historical Properties Act 1999

European Convention on the protection of the Archaeological Heritage 1992

Planning and Development Act 2000 (as amended)

Heritage Act 1995

Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022)

Duchas (now Department of Housing, Local Government and Heritage) 1996 Frameworks and Principles for the Protection of the Archaeological Heritage

Clare County Council Development Plan 2023-2029 Killaloe Municipal District Vol 3C, 2023

### 13.4.2 Site ownership and Responsibilities

Currently, the Minister for Housing, Local Government and Heritage is responsible for the protection of the archaeological remains on Inis Cealtra. The local authority Clare County Council owns the lands on the island which are not in ownership of the State. Clare County Council also has responsibility for municipal burial grounds located on the island. The Office of Public Works (OPW) is responsible for the management of the national monuments on Inis Cealtra. The National Monuments Service (NMS) is responsible for the conservation and recording of the site. National Parks & Wildlife Service (NPWS) has a role in management and environmental conservation on Inis Cealtra, given the area's SAC and SPA designations. Waterways Ireland has responsibility for the management, development and promotion of Lough Derg and the Shannon Navigation, including Mountshannon Harbour and the jetty on Inis Cealtra. There will be no change to the role of the statutory bodies responsible for the national monuments and conservation measures on Inis Cealtra, nor the role of Waterways Ireland.

### 13.4.3 Record of Monuments and Places

The National Monuments Act (1994 amendment) provides in section 12 (1) that the relevant minister shall establish and maintain a record of RMPs where it is known that such monuments exist. This record comprises a list of monuments and relevant places and mapping, showing each monument and relevant place in respect of each county in the state. These sites receive statutory protection under the National Monuments Act.

When the owner or occupier of a property or any other person proposes to carry out, or to cause, or to permit the carrying out of any work at or in relation to a Recorded Monument or a Registered Monument they are required to give notice to the Minister two months before commencing that work. This is to allow the National Monuments Service time to consider the proposed works and how best to proceed to further the protection of the monument.

The island of Inis Cealtra Is not in the ownership of the State, with the monuments in the care of the Minister for Housing, Local Government and Heritage, and the remainder of the island in the ownership of Clare County Council.

### 13.4.4. Sites and Monuments Record

The Sites and Monuments Record holds documentary evidence and field inspections of all known archaeological sites and monuments. This also includes monuments or sites whose precise location is not confirmed and are omitted from the Record of Monuments and Places. The Sites and Monuments Record is updated as new sites are discovered, both through archaeological excavation and discovery

mechanisms such as aerial photography. This record includes information on sites that have been totally excavated, and they are not therefore scheduled for inclusion in the next revision of the Record of Monuments and Places. There are presently 189 such individual or grouped entries on the Sites and Monuments Record for Inis Cealtra, and several more entries will be required due to new discoveries resulting from the Geophysical study. A list of the monuments on Inis Cealtra is given in Appendix 13.1.

### 13.4.5 Topographical Files of the National Museum

The Topographical Files of the National Museum of Ireland have been superseded in the case of Inis Cealtra by the data on the finds from the 1970s excavations by Liam de Paor, in a preliminary catalogue of finds prepared by Matthew Seaver (now of National Museum of Ireland) and Professor Aidan O' Sullivan of UCD Archaeology Department (2015).

### 13.4.6 Historic Maps

Inis Cealtra is depicted and annotated on Sir William Petty's 1685 map of County Clare, but there is no further information from this map. The Petty map is available at DownSurvey.ie.

The series of Ordnance Survey historic maps are important sources for lands, indicating townland boundaries, farmsteads, field boundaries and annotated features such as wells which may be no longer be visible. The series of Ordnance Survey maps for Inis Cealtra annotate most of the main features on the island, including the well, naming churches and bullaun stones which may not no longer be visible. The naming of the differing churches and monuments is noted in the Historic Environment Viewer (digital source of RMP) on the website of National Monuments, www.archaeology.ie The pilgrim paths are marked on the series of Ordnance Survey maps, also available at Historic maps at UCD. The landing point on the north-west of the island is marked on the first edition of the Ordnance Survey, and the stone jetty is likely to have been in place in some form from at least this period, if not earlier.

### 13.4.7 Additional Site Specific Surveys

The assessment is informed by the following surveys and investigations undertaken by Clare County Council .

Appendix 14.1 Geophysical survey Preliminary Report 21R0095

Appendix 14.2. Inis Cealtra Co Clare Lidar and Geophysical Report

Appendix 14.3 Inis Cealtra Co Clare Underwater Archaeological Impact Assessment

Appendix 14.4 Inis Cealtra Archaeo-geophysical Survey

Appendix 14.5 Underwater Archaeological Impact Assessment

Appendix 14.6 Old Rectory Mountshannon, Archaeological Impact Assessment

Appendix 14.7 Excavation of Archaeological Test pits at Inis Cealtra

Many site visits and on- site discussions with other members of the Design Team

These sources informed the compilation of the Cultural Heritage and Built Heritage baseline, and the assessment of interactions and the potential impacts of the development.

### 13.4.8 Site Surveys/Investigations

No further survey or investigation of the Built Heritage of Inis Cealtra has been undertaken as part of this assessment. The buildings on the island are National Monuments in State Care, and no intervention as part of the Visitor Plan is intended for these buildings. However the non-invasive surveys such as the LIDAR and the Geophysics, outlined below, provide additional context for the setting and below ground archaeology of the Built Heritage of the island.

The main source of Information on Inis Cealtra is the report on the excavation which took place between 1970 and 1980 under the direction of Liam de Paor. The report submitted to National Monuments in 1997 was made available, as was updates on the post-excavation programme under the stewardship of Matthew Seaver, NMI and Professor Aidan O'Sullivan, UCD. The sequence of Carbon 14 dates for samples from de Paor's excavation was included in the post- excavation report, which indicates the location of monuments of varying dates close to the hub of the monastery.

The source material supplied by Clare County Council includes a detailed analysis of the island prepared by a researcher on the stone sculpture of the island, Cliodhna O' Leary, along with Dr Bernadette Mc Carthy and Dr Pat Wallace.

Additional surveys of archaeological relevance were commissioned by Clare County Council. The geophysics survey (Appendix 14.1) is a preliminary survey, in that much of the northern part of the monastic enclosure is obscured by scrub. This double C- shaped enclosing ditch was uncovered only through the geophysics survey, the excavation having been seemingly placed through an entrance in the west, and not through the ditch itself.

The encroaching scrub covered even stone features such as 'the cottage' which had been exposed and excavated in de Paor's 1970- 1980 excavation. The full extent of the semi-circular enclosure identified in the geophysics survey was not traced due to scrub.

A further circular enclosure towards the south- west side of the island was identified in the geophysics survey.

The information yielded from the geophysics survey is of high significance and emphasizes the importance of non-invasive methods of survey in garnering information on an island site such as Inis Cealtra.

A Lidar Survey (Appendix 14.2) was undertaken using a Drone flying over the island, and the data was interpreted by Dr Stephen Davis of UCD Archaeology Department. The thick blanket of ploughsoil over the northern part of the island has obscured most earlier features, but notwithstanding, the various network of earthworks which characterise much of the island's archaeological remains are prominent in the Lidar data.

A series of underwater surveys (Appendix 14.3, 14.4. and 14. 5) were undertaken. The first survey 14.3, confirmed the presence of log boats off the north-east side of the island, and provisionally identified the probable site of the harbour on the north-east part of the island in the medieval period.

Further non-invasive surveys, including underwater geophysics, identified the presence of probable log-boats, and other more modern detritus, particularly around the present jetty on the north- west side of the island.

Test pits for engineering purposes were monitored at the Old Rectory site in Mountshannon (Appendix 14.6). No material of archaeological significance was uncovered.

Test pits under Ministerial Consent were excavated in September 2024 in the proposed locations of Welfare and Staff pods on the north-eastern part of the island, close to the jetty. No finds or features of archaeological significance were recovered. Location of the pods was selected for the remove from the monastic built elements, and the perceived lack of archaeological features in this area.

### 13.4.9 Consultation

Staff of National Monuments have been kept informed of any activity on the island in relation to the proposed visitor facilities, in particular the location of the proposed new jetty. Advice on underwater geophysics was received from the Underwater Unit of National Monuments. Additionally National Monuments staff visited the island to observe the shrub clearance carried out in February 2024 under archaeological supervision. In all, many visits from National Monuments staff to the island have been made to appraise the conditions regarding the landscape, underwater archaeology, access and other.

On-line meetings with the Architect responsible for the National Monuments on Inis Cealtra outlined the responsibilities of all parties to the various elements which comprise this EIAR.

Additionally an Accessibility Audit on the island was carried out in response to a request from National Monuments at a consultation meeting on 02.07.2024. An Accessibility Audit report accompanies this application.

## 13.5 Difficulties Encountered

No difficulties were encountered in the compilation of this information.

## 13.6 Baseline Environment

The main site of archaeological and cultural significance is Inis Cealtra. This chapter discusses the evidence from the archaeological excavations of the 1970s, the results from geophysics as it pertains to interpretation of the main features and provides a description of the built heritage. Given the significance of the island monastery and the quality of the archaeological finds, it is of necessity succinct.

The new Visitor Centre is within the curtilage of the Old rectory, a protected structure. There is an ACA within the village core, and it includes the south portion of the car park site.

### 13.6.1 History of Inis Cealtra

The island of Inis Cealtra, or Holy Island, lies close to the shore at Knockaphort on the west side of Lough Derg. The location, on a large island close to shore in a low-lying riverine context, is typical of

the location of the majority of ecclesiastic settlements, perhaps reflecting a desire to be near communication opportunities afforded by a riverside location. There may also have been a political reason for the choice of location. de Paor (1997) observed that Inis Cealtra effectively lay between Munster and Connacht, a strategic location which may have influenced the later patronage of the Ui Briain clan. He states that it is possibly as the result of a territorial dispute that the monastery was refounded from a possible early hermitage in the 7th century.

The island has an important group of ecclesiastic monuments located on the eastern shore. This comprises the following churches or ecclesiastic buildings: St Caimin's, St Michael's, St Brigid's, St Mary's, Tempeall na bhFear nGonta, a shrine (known as the Confessional) and substantial remains of a round tower. A stone monument known as the Bargaining Stone, a Penetential Station, lies near the Lady Well. There are numerous bullaun stones, mounds of stones and earth associated with pilgrim patterns, earthworks and a children's burial ground or 'cillin'. There are 189 individual sites or stone features identified on the island and entered on the Record of Monuments and Places under the prefix CL029-009001…. The individual monuments are listed in Appendix 13.1.

The churches, round tower, shrine and other principle monuments are National Monuments in the care of the State (Number 5). Sections of land on the island are owned by the State (figure 13.1). The remainder of the island was acquired by Clare County Council in recent years.

### 13.6.2 Sites included in the Built Heritage

This section includes the churches of St Brigid, St Mary, St Caimin, Teampall na bhFear nGonta, St Michael's, the Confessional, the Round Tower, the Lady Well, and the stone structure known as the Bargaining Stone. It also includes the post- medieval structure known as the 'Cottage'. The Saint's Graveyard is also included.

The extensive remains of cross- slabs, bullaun stones, and monastic 'furniture', including some potential stone terracing on the east shore of the island, should also be included. The two extant landing points on the islands, including the fisherman's hut, are included, as is the possible and likely location for a monastic landing place on the north east side of the island.

Paths uncovered by the 1970s excavations are no longer visible, but probably lie beneath the returfing/ backfilling of the excavation trenches. An extensive network of paths, linking the pilgrimage stations, and within each station a layer of stone paving was laid along the interior face of the wall.

The walled enclosures are also included in this section. Most of these date to the post-medieval pilgrimage period (c. 1700). De Paor remarked in his report (1997, 98) that these were of very poor construction, but many appear to have been reconstructed since his excavation was completed in 1980, with attendant cementitious mortar capping on what were originally dry-stone walls, occasionally bonded with clay/earth.

Most of the above, excluding the jetties, fisherman's hut and the possible monastic landing place, are listed on the Sites and Monuments record for the island, totalling 189 entries (see Appendix 13.1). The major monuments on the island comprise a National Monument (5) in State Care .

## 13.6.3 Main Phases of Building

The main period of building appears to have taken place during the earlier part of the 12th century, probably initiated by Muirchertach Ui Briain, who died 1119, and continued by Turlough Ui Briain, who became King of Munster in 1142, and died in 1167. The high quality Romanesque sculpture and architecture has parallels on other sites in the Munster area, and was likely to have been undertaken by a group of possibly Anglo- Norman masons commissioned by the Ui Briain patrons. New models of church architecture were introduced at this period, including the chancel and altar at St Caimin's Church.

St Caimin's Church and possibly the Confessional were remodelled c. 1700 by the O' Gradys.

Reconstruction of the main churches on the island began under the Board of Works in 1879-80. Some errors in reconstruction from this period were noted by de Paor, who recorded some of the works to the monuments following his excavations from the 1970s onwards.

## 13.6.4 Description of the monuments

The main descriptions of the important monuments are retrieved from the Historic Environment Viewer, found on the National Monuments website, archaeology.ie. The information is supplemented with that from de Paor (1997) and O'Leary et al, 2017. The list of monuments in Appendix 13.1 is generated from information on archaeology.ie.

## 13.6.5 St Caimin's Church (RMP:CL029-009011)

Description: On the E side of Inis Cealtra) and at the centre of the monastic complex, St Caimin's Church is a building showing several periods of construction. It was originally a single-celled building (int. dims. 9.22m E-W by 6.1m N-S) with corner antae, in roughly coursed, mortared stone, no doubt with a trabeate doorway. The remaining more westerly window in the S wall (H 0.75m; Wth at base 0.4m; Wth at top 0.32m) is of the first period of building which is most probably of 10th century date. The window has a flat lintel and inclined sides with an external reveal and the interior sill is built up in steps. There is also a round headed window with external moulding in the S wall closer to the chancel (H 0.7m; Wth at base 0.28m; Wth at top 0.27m). This also has a splayed embrasure but the sill is plunging rather than stepped. A curious small triangular window formed of three stones occupies the W gable high above the door. While this may be original it is not paralleled at other early churches (Ó Carragáin 2010, 309): mentioned by Petrie in 1845, it pre-dates the reconstructions by the Board of Works of the 1870s. A Romanesque doorway was later made in the W wall; the present doorway of four orders was inserted during the excavations in the 1970s, replacing a door with three orders built in 1879. A Romanesque chancel was inserted between the E antae. The chancel (int. dims. 4.4m x 3.8m), sometimes referred to as St. Colum 's Church, is neatly built with well squared stones and it is not bonded to the nave. Where the E wall of St. Caimin's was broken through, a chancel arch was inserted with three orders facing the nave and two facing the chancel. Ornament was confined to the

rounded piers which are adorned with capitals and there is a grotesque head on the keystone facing the nave. The side walls of the chancel are of ashlar masonry and there is one remaining round-headed window in the S wall (H 0.63m; Wth 0.15m) with an external rebate and internal splay. There may originally have been an E window. The altar as restored is a block of masonry with bowtell mouldings at the angles capped with floral capitals. Ó Carragáin (ibid., 197) notes that monumental altars of well-dressed stone are very rare with only three convincing examples published - this one and two others also in Clare (Dysert O'Dea and Rath). There is a small square aumbry on the S wall close to the chancel arch. A string course extends along the N and S sides of the chancel just below the roof level. At some stage a bell-cote was contrived in the E gable and the building was extensively restored by the Board of Works in 1879-80. The nave was reroofed in the 1990s by the OPW. A large number of crosses and cross-slabs are housed in the church.

St Caimin's Church is the sole church on the island associated with one of the founding saints. It was originally a single -celled structure, probably dating to c. 1000. It may well have been constructed on the footprint of an earlier church. The primary stone structure has antae, and decorated finials (ex situ). These features are considered to be skeuomorphs in stone of architectural features of a timber building. Some features of the earlier phase which were retained include the trabeated window with external rebate in the south wall (entirely rebuilt but possibly to illuminate an altar located at the west wall) and a small window high in the west gable.

An ornamented doorway and a chancel were added in the 13th century. The similarity of masonry between the original form of St Caimin's Church and the Round Tower led de Paor to suggest that they were contemporary.

St Caimin's Church has been roofed by the Office of Public Works since the 1990s for use as a site museum. Earlier photographs show that much of the south wall was also rebuilt at this time. The Romanesque doorway was reconstructed in the 1970s using stone some of which was recovered from the excavations.

## 13.6.6 'The Confessional' CL029-009017

Description: Listed as 'Potential site - name' in the RMP (1996) based on the OS map designation. Situated on a narrow shelf on an E-facing slope immediately NE of the 'Saint's Graveyard' on Inis Cealtra and standing at one time in a circular enclosure. Although named 'Confessional' on the OS 6-inch map it is not clear that this structure had a penitential use. A small ruined building (ext. dims. 3.1m E-W; 2.45m N-S) built of roughly coursed mortared walls surviving to 1.45m in height (max. T 0.65m). There is a plinth of different widths all around but widest at N (0.48m; H 0.25m) and there is stone paving at E and S. A doorway at E (Wth 0.57m) leads into the interior which is divided by two inclined flat standing stones. Two inclined square blocks occupy the corners at the W end of the building. These four stones occupy most of the floor space of the building. The structure was fully excavated and reconstructed. The upright stones in the building surrounded 'a shallow cist-like construction of limestone flags' and the 'confessional' was shown in its present form to date to around AD 1700. The cist suggests the original use of the structure as a reliquary shrine, although only fragments of human bone, and animal bone, were recovered from the vicinity. It had been rebuilt several times. This stone building appears to have replaced an earlier timber structure or shrine to the

W (CL029-009134-) that was itself rebuilt several times. It may have been used as a reliquary. A recumbent cross-slab with a slot for an upright slab to the E were aligned with the confessional and the style suggests a tenth or eleventh-century date.

The Confessional remained an important focus for pilgrimage in the post- medieval era.

## 13.6.7 St Brigid's Church: CL029-009006

Description**:** Situated within a subrectangular enclosure c. 90m SW of the Round Tower (CL029-009010-) on Inis Cealtra (Holy Island) in Lough Derg. Named 'St Michael's Church and Garden' on the 1840 OS 6-inch map, 'Baptism Church' on the 1920 OS 6-inch map and called 'St Brigid's church' by Macalister (1916). A small, ruined, single-celled church (ext. dims. 8.5m by 5m) with a Romanesque doorway (Wth 0.7m; H 1.85m) at W. There are two deeply splayed windows, one in the E wall and one on the S13.4.9 wall near the altar. The E window is widely splayed (Wth 0.72m; H 0.7m; sill H 1.2m) and has been robbed out. The window in the S wall also has a wide interior splay (Wth 0.92m; surviving H 0.8m; sill H 0.95m) and the window itself was 0.15m wide. Excavation took place here from 1970 to 1972 revealing much collapsed masonry. The roof was slated and there was evidence that slates, brought from elsewhere, were trimmed in situ. The church was built about the middle of the 13th century but was abandoned as a place of worship about the beginning of the 13th century. The interior of the church was used for burial, almost certainly in the 13th century and perhaps later, with at least twenty bodies of men, women and juveniles interred. The burials were all extended, all but one lying E-W. The doorway and W gable had fallen by the early 19th century but these were rebuilt by the Board of Works in 1879-80 with some small irregularities. For a time in the 19th century the building was used to house animals.

St Brigid's Church was constructed in the 13th century, and has a fine Romanesque doorway, with some minor errors from late 19th century Office of Public Works reconstruction. The burials uncovered were of men, women and children. Burials were confined to the interior of the church itself, with none in the enclosure. The burials appear to date from the 13th century onwards, but primarily of medieval date. It may have remained roofed into the 16th century.

It appears that it was adapted for habitation in the 19th century, being converted into two rooms, and later used as a pig-sty.

## 13.6.8 'Tempall na bhFear nGonta'CL029-009015

Description: Situated in the N sector of the 'Saint's graveyard' on Inis Cealtra, this building is called 'Baptism Church' on the 1840 OS 6-inch map and 'Teampull na bhFear nGonta (in ruins)' on the 1920 OS 6-inch map. A ruined, rectangular, Romanesque structure (ext. dims. 5.8m E-W; 4.2m N-S; wall T 0.6m at S, 0.8m at W) of large, roughly coursed, squared blocks on a plinth (projecting 0.18m; H 0.2m). Squared quoins (0.11m x 0.11m) project 0.04m from each face at the corners and this squared feature continues along the base of the walls just above the plinth. The walls survive to a maximum height of 1.85m at W. There is no evident entrance. A window at W had an internal splay but has been robbed out (Wth 0.6m; H 1.5m). The lower courses of an ope survive at S near the W gable (Wth 0.66m; H 0.86m). Another ope at the E end of the N wall (Wth 0.8m; H 0.3m) has an external splay (ext. Wth 1.18m). None of the opes go to ground level. Macalister (1916-17, 136) interprets all three opes as

entrances. An altar (Wth 1.5m; projecting 0.5m) occupies the E end and is capped with large broken flags (1.75m x 0.8m). A wall extends for 3.06m from the NE corner and is butted to the E wall. The building was extensively reconstructed, probably around 1700 (De Paor 2013, 28). According to Ó Carragáin (2010, 223) this is a mortuary chapel used for the burial of particular classes of people.

Tempeal na bhFear nGonta was built in the late 13th or early 13th century. It is described by de Paor as a small but unusual late Romanesque building, whose original character and purpose are not clear. The name may refer to its location in the Saint's Graveyard. The remodification of the building by O'Grady may have been as a mausoleum or funeral chapel.

The location of the chapel is interesting, in that it lies immediately south and closest to, the probable shrine and later Confessional. It is sited centrally within the ecclesiastic enclosure ditches discovered in the geophysics survey. No excavation work took place in this location.

### 13.6.9 St Mary's Church CL029-009008

Description: Situated on a S-facing slope within a graveyard some 43m S of St. Brigid's church, St. Mary's is the largest (ext. dims. 18.57 by 8.72m) and most southerly church on the island, originally constructed in the late 13th/early 13th century but used as a medieval parish church and much reconstructed subsequently. It has a W doorway (Wth 1.07m; H 2m) with a slightly pointed arch and a simple external moulding of early 13th-century date. Two other later doorways, one in the S wall (Wth 1.42m; H 2.32m) 5.3m from the W gable and one in the N wall (Wth 1.13m; H 1.84m), are now blocked up. The N doorway is only visible externally. The church was not well lit. There were only two windows, a tall single lancet in the E end (Wth 0.23m, remaining H 1.2m with a deeply splayed embrasure) and another single round-headed lancet on the S wall to light the altar. This was also deeply splayed (int. H 2.5m; Wth 1.5m). There is an unusual offset in the S wall starting just W of the window and extending along the length of the church but not reaching the top of the wall. The wall may have been thickened at some stage by adding a new face to the inside. There are two aumbries, one in the S wall near the E corner and one in the N wall near the E end. The head of an ogee-headed window (15th century) is mounted inside the upper portion of the blocked-up doorway on the S wall and the lower part of a window is placed on the ground beneath. It is not clear where these belonged originally. There is a buttress against the N wall externally with a water channel or slop-stone pierced through (a piscina?) which is not bonded into the masonry of the church. An elaborately carved altar at the E end formed part of an O'Brien wall monument the upper portion of which is mounted on the S wall. Four cross-slabs (CL029-009071-, CL029-009100-, CL029-009108-, CL029-009202) are mounted on the walls in the interior

St Mary's Church was built in the beginning of the 13th century, possibly reflecting the changeover from the old monastic tradition to the parish system, which extended to the mainland. The original enclosure around St Brigid's Church was remodelled at this time to take account of the new building. The quadrangular enclosure around the church which contains the graveyard may date to the post-medieval period, while earthworks in the vicinity may be remains of an original enclosure. The graveyard is still in use.

## 13.6.10 The Lady Well: CL029-009023-

Description: Set into the base of the steep SE-facing slope down to the shore, 30m E of St Mary's church and just a few metres from the water's edge. Named 'Lady Well' on the 1920 OS 6-inch map. A circular walled structure (int. diam. 1.7m; wall Wth 0.7m; max. H on downslope 1.2m) with a lintelled opening (H 0.9m; Wth 0.3m) at SE. The water (D 0.05m) is covered in algae. Excavations by de Paor in 1970 (de Paor 2013, 29-30) on the approach side revealed objects, almost all dated to the 20th century with a few stretching back into the late 19th century. The well itself was pumped dry and excavated revealing small objects corresponding to those found outside. There was no evidence of medieval usage and the well construction was modern. The well featured in the pattern rounds of the early 19th century, and a draught of the water was taken. Layers of gravel around the well were uncovered in the excavations.

## 13.6.11 St Michael's Church CL029-009003-

Description: St. Michael's church is situated towards the centre of the island on the highest part, within a small children's burial ground (CL029-009004-) which is itself within a possible ringfort (CL029-009131-). The lower courses of a very small mortared stone structure (ext. dims. 2.8m x 2.7m) oriented WNW-ESE were excavated by de Paor in 1972-3. He found it to be without foundations but it was paved internally with flags. Macalister had described a building of roughly coursed flat stones with a doorway at W (Wth 0.48m). A small fragment of moulded stone which may have been associated was found lying inside the building in 1916. De Paor established that this building was late within the chronology of activity in this area which spanned about AD 1500 to the late 19th century and was likely to have been constructed while the surrounding enclosure was in use for infant burial. This was one of the stations during pilgrimages and a large sandstone block (known as the 'kissing stone' CL029-009052-) within the burial ground was used as a penitential station during the rounds. The area is now much overgrown.

The larger D- shaped enclosure was of early medieval date.

St Michael's structure in the children's burial ground did not yield any evidence for monastic use from the excavations. It appears to be of considerably later date, and associated with the path network of the pilgrimage rounds. However archaeological analysis of the sites on the island by O' Leary et al (2017) suggests that it may lie on a probable early medieval church site (no trace of this was uncovered in the excavations). Each of the infant's burials here (examined both in situ and ex situ) contained a handful of quartz pebbles and a long narrow stone, often a broken whetstone. Analysis of the burials (Lynch 2015) indicated that there were at least two phases of burial, the earlier with a different orientation to the later, which were on the structural remants.

## 13.6.12 Round tower CL029-009010

Description: A well-built round tower with a flat top (missing the conical cap) it is situated on a low hill 13m SW of St. Caimin's Church. This is a typical location for a round tower within a monastery. The stonework is well coursed with exceptionally large stones in the base. The wall is offset 0.1m at the base 0.3m above ground. Excavations in 1976 revealed this course to be 0.4m deep with a thin layer of small stones and natural rock below that. The diameter at base is 4.58m and at the doorway at ENE

(which faces St Caimin's Church) it is 4.5m. The interior is dug out to 0.6m above the external offset. Large stones project from the wall corresponding to the large stones in the external wall. There is a rough offset for a floor 2m above the ground. The second floor is formed by a number of large corbels and flagstones projecting from the wall and higher up there are three more offsets. The door at ENE is round-headed (Wth 0.64m at base; H 1.6m to soffit; T 1.05m). The top of the door is cut out of three stones carried right through the wall and the sill, likewise, is a single slab. A large, finely dressed, angle-headed window faces N above the second floor level and three more square-headed windows face ENE, SSW and NW in ascending order. The excavation revealed careful preparation in advance of construction. A large oval disc of puddled clay studded with small boulders and stones was laid down, ringed by small drain-trenches. A short sequence of post-holes concentric with the tower at NW were interpreted as marking the end of a stairway which rose to the sill of the door.

The Round Tower, located just south- west of the main church of St Caimin's, was a symbol of prestige, as de Paor states, an advertisement for the monastery. The dating of the structure to c 1000 is coeval with a period of dynastic and religious politics which enveloped Iniscealtra at that period. The tower is located in what is considered to be a typical location for this monument in relation to the main church at the period. The Round Tower was associated with a legend of a witch who scoffed the stone-mason (or failed to bless the work) leading him to throw his hammer which turned her into a stone high cross. As this legend has it, he failed to finish the work.

### 13.6.13 Carved stone

Iniscealtra has one of the largest collections of early medieval carved stone in the North Atlantic region. Much of it is located in the Saint's Graveyard, which may have been laid out and walled in the 13th century or just before this; there are over 75 grave slabs in situ within it which are of 11th-13th century date. There are further carved stones and sculpture in this graveyard; recumbent gravemarkers placed east- west, are lined in strict rows, respecting the boundary walls. The individual pieces are listed in Appendix 13.1.

A typology of the material (O' Leary 2015) identified c. 20 small pre-10th century cross-slabs in Group 1, with over 100 larger 11th and 13th century belonging in Group 2. Most of these are large recumbent slabs, tapering towards the base and the majority still in their original recumbent position within the Saint's Graveyard. Many carry cross motifs, while fifteen have inscriptions, mainly pleas to pray for the deceased. Notable are the slabs giving the name and status/ occupation of the deceased; one of Domhnall the priest, one of Gillu- Crist bishop, and three with the epithet mael (tonsured). One slab has an incision of two shoe-prints, with the inscription of 'Coscrach the Leinsterman', who may have been a bishop.

There is a high cross with inscription to Cathasach 'the chief elder of Ireland' who died on Iniscealtra in 1111.

A Romanesque carving of the head of Christ was recovered in the excavations and probably came from a high cross. It is amongst a very small number of such carvings.

There are also two sundials (one lost, the other in OPW Athenry depot) and many quernstones, crosses, cross fragments, cross -bases and socket stones, probably dating from the 11th to 13th centuries. Sundials were significant on monastic sites for the required timing of the prayers.

De Paor suggested that quernstones were manufactured on the island in the 13th century.

### 13.6.14 Possible terrace

A section of dry-stone walling east of the Confessional is located on the steep slope which leads down to the jetty on this side of the island. The walling comprises large undressed boulders, and may be the remains of a terrace. It does not appear to extend very far either north- south. Several mature trees are growing between the stones.

### 13.6.15 House - 18th/19th century CL029-009031-

Description: Near the E shore c. 40m NE of the 'Saint's Graveyard'. The foundations of a small two-roomed building excavated by de Paor in 1970. Described by Macalister (1916-17, 140) as a structure (34ft (10.3m) by 18ft (5.4m)) of drystone masonry, very roughly built (wall T 2ft 6in (0.76m); H 3ft (0.91m)) with a central chimney and back-to-back fireplaces. In spite of being cleared out by the Board of Works in 1879-80 it was clear that the floor had sloped steeply. The interior of the cottage and a small area around it was excavated. Finds were few and seemed to relate to the occupation of the building. Two fragments of querns were found inside, one to the W of the fireplace and one near the SE corner. A whetstone was found E of the chimney. Once the building had fallen into ruin it was used as a rubbish dump. On the basis of the few finds from the excavation, de Paor estimates a mid-18th century date. The excavated foundations of the Cottage were relocated in shrub clearance of this part of the island in 2024. Ash trees are now growing from the central foundations.

### 13.6.16 Penitential station 'Bargaining Stone'CL029-009022

Description: Situated 2.5m from the SE shore of Inis Cealtra, c. 40m S of St. Mary's church (CL029-009008-) in a rough, marshy area. Named 'Stone' in Gothic script on the 1920 OS 6-inch map and listed in the RMP (1996) as 'Potential site - name'. The monument comprises 3 stones. An unworked conglomerate base stone ( Wth 0.74m; L 1m; H 0.22m) aligned NW-SE has a round-bottomed channel (Wth 0.2m; D 0.13m) extending along its long axis. Two limestone slabs are attached on top, overhanging the channel and meeting along its long axis. The larger slab (max. L 0.98m; max. Wth 0.4m; T 0.13m) is at NE. It has a pronounced convex curve on its NE face and a less pronounced concave curve on the SW face. The smaller slab is roughly rectangular (max. L 0.5m; max. Wth 0.28m; T 0.13m). Some of the channel is exposed at each end beneath this slab. There may have been other stones covering each end (Macalister 1916-17, 144). This group of stones is known traditionally as the 'Bargaining stone' as people joined hands through the channel to seal a bargain or a promise.

Several other mounds of stone throughout the island have been identified as stations on the pilgrimage route. The description of the post-medieval pilgrimage process is given below.

### 13.6.17 Post-Medieval Pilgrimage

The pilgrimage function of the island is not described until the 17th century. In 1607, twelve pilgrimage sites, including Inis Cealtra, were assigned indulgences. Inis Cealtra was known, as was Glendalough and Clonmacnoise, as 'Seven Churches', although there were not this many churches on the island. Bishop Rider referred to Inis Cealtra in 1622 as 'ye island of Seven Altars' (O' Leary et al 2017, 44).

By this time the island had become the scene of a great annual pilgrimage or pattern which continued until the 19th century when it was suppressed by the Roman Catholic clergy. Assemblies of 15,000 people are reported in the 17th century. In 1837 Lewis reported that the island is still a favorite burial place and is much visited by pilgrims. Even after the suppression of the pattern, two of the island's graveyards continued to be used for burial as they still are to this day.

While the island is now primarily associated with St Caimin, the chancel of St Caimin's Church was known locally as St Colum's Chapel. There are however few other traces of the other saints of Holy Island.

The account of the 'patron' is given in the Ordnance Survey letter dated Mountrath, November 19, 1838 by T. O' Conor (in the Galway volume) with annotations by John O' Donovan (in the Clare volume). O' Conor gives the following account:

*A patron used to be held here annually four days, Friday, and Saturday before Whit Sunday, on which day and the following Monday it was continued. No assemblage of persons was allowed here those years past on this occasion in consequence of the outrageous conduct of some ill-behaved young rascals who were wont to seize the opportunity of providing for themselves fresh consorts for the ensuing year by carrying off by open force from the island young girls, in spite of all their friends and relations. Three brothers of a family of the O'Brien's who resided in the county of Clare within view of the island used to frequent the patron at which they conducted themselves, it is said, in a most disgraceful manner. On one occasion one of them carried off a young girl by force from it, whom he afterwards detained till he had three children by her. The neighbours state that no law corrected such detestable behaviour at the time. The station was commenced at Lady Well and the performers went round the extremity of the island, one mile in the circuit, seven times, equal 7 miles. The short rounds were commenced at a station monument (a little mound of earth and stones) lying 35 yards to the west of the round tower. They went round this monument seven times and proceeded through the door on the west gable of St Caimin's Church and as far as the altar in St Colum's chapel. They went this length seven times from the monument just mentioned, and at the commencement of every seven times of these they went round the monument itself seven times. They went round St Caimin's church 14 times, the tower and all the churches around it being included on the rounds. They went round a station monument at the end of St Caimin's church, either the one (a little mound of earth) immediately at the southwest corner or the one (also a little mound of earth) within a few yards of the northwest corner of it. They also went seven times round St Michael's garden and seven times round the bank of earth about St Michael's church and seven times around the church itself and seven times round a large flagstone lying at it, on which stone they finally (i.e. after having gone round it seven times) impressed kisses. They went seven times round St Mary's church and seven times round the Baptism church. They finished at the well and drank of its water.*

This is the most accurate description I could get of the mode in which the station on the island was performed. I could not get a minute description which would detail the number of prayers repeated during the process of the rounds. Nor am I certain that the description I have given here affords a correct view of the order of the process. I introduced it here merely to show what station monuments were made use of.

The old walks which were formerly gravelled over on this island are now covered with grass and still traceable. Henry Boucher the grandfather of Herny Allen, both of whom are mentioned above saw rows of trees planted along the sides of them. The principal road is still observable leading from the lake to the churches in a southern direction. It is said that there is a road (or causeway) extending opposite or near the western extremity of this road a distance of from perches from the island into the lake. A person could safely walk on it in summertime when the weather is dry. It is supposed that this road formerly connected the island with the main road. ‘

In 1863 a group of British tourists visit Inis Cealtra and they were shocked at the state of the island. In one of the churches there were a pig- sty while cattle roamed over the unprotected burial ground. Subsequently the parish priest of Scariff obtained the cooperation of the landlord Philip Reade to have something done about this. The remains and monuments came into the care of the state as a result of the Church Disestablishment act of 1869 and in August 1878 Sir Thomas Deane, Superintendent of Irish National Monuments. came to the area. The pig-sty seems had gone by then but the graveyards were still unfenced. Two years later it was reported that the Board of Works had repaired the cemetery attached to St Caimin’s Church while the Scariff Board of Guardians was bound to do the same for the cemetery attached to St Mary's church. Much more work was also done at this time.

The island has many associated myths and legends, including the stone mason who failed to finish the construction of the Round Tower. Traditions abound of bad luck falling to those who remove cross-slabs or memorials off the island, and that women should not enter Teampall na BhFear nGonta, less they be rendered barren. The Bargaining Stone was used to seal a deal or promise, and a marriage contract.

### 13.6.18 Bullaun Stones

Iniscealtra is notable for the quantity of bullaun stones on the island. Writing in 1981, McNamara identified five. The Historic Environment Viewer has several additional to this number. Several of the bullaun stones located in earlier surveys are now covered in impenetrable briar. One is now located 10m off shore, partly submerged due to the rise in the level of the lake after the building of Ardnacrusha down river of Iniscealtra. The area around two of the bullaun stones south- west of the round tower was excavated by de Paor, who uncovered possible associated metal working debris, and a possible pestle. A bullaun stone is lying ex situ along with other worked stone at the side of the OPW hut.

It is notable how several of the bullaun stones ring the north-east shore.

## 13.6.19 Paths

Paths were an integral part of the pilgrimage route, as described above in 13.6.16. All of the paths and the 'paved street' uncovered and recorded 13.7in de Paor's excavations are now covered over. None of the early medieval or post-medieval path surfaces, either of gravel, paved stone, or metalling, are now visible. Where they were investigated during the excavation, paving tended to occur on the inside of the post-medieval pilgrimage enclosures around the churches. The main path/ earthwork apparent on the island is that which extends from St Michael's Church past St Brigid's Church and down to St Mary's Church would appear to be of primary monastic date. There is additionally a 100m section of a double banked walkway from St Michael's enclosure towards St Caimin's Church.

The path from the pier on the north-west of the island to the monastic enclosure was apparently partly reinstated in 2001 (information from Ger Madden, cited in O' Leary et al (2017, 87). Due to overgrowth, the original 50m of this path from the pier does not follow the original line taken. Fragments of geotextile are presently exposed and the lower section of the path is eroded. Either side of the path is marked with occasional large flanking boulders.

The embankments and/or paths are clearly defined on the overall LIDAR figure of the island (figure 13.2).

## 13.6.20 Landing stages and Fisherman's Hut

There is a concrete covered landing stage on the east shore. It is located within the arc of the ecclesiastic enclosure, as discovered from the Geophysics survey (Appendix 14.1).

The landing stage was described by Macalister (1916-17) as a boat-pier of large undressed blocks of stone. ..now some distance from the water's edge (CL029-009026) This feature is covered by the lake, following the rise in water level by approximately 1m when Ardnacrusha Dam was constructed.

Neither of the modern piers are included on the RMP. Both are of stone and capped with concrete. The pier on the north-west side of the island will be the site of the proposed new jetty.

A possible landing stage or harbour was identified by the Dive Team from ADCO who carried out a survey on the north- east tip of the island, to locate and describe some submerged log boats off shore (Appendix 13. 3). The access to this location is now overgrown and very shrubby and was not examined from the island by this writer. The possible landing stage is a squared inlet which was noted as being stone free, and the immediate zone in the lake is also stone free. It is located on the preferred part of the island for most sheltered landing from the prevailing south- westerlies. The presence of log boats off shore close by may reinforce interpretation of this little inlet as the monastic harbour. The possible harbour is located north- east of a bullaun stone, one of several which mark the northern side of the island. More investigative work here is required to confirm this inlet as a modified landing stage.

The Fisherman's Hut was built in the 1960s with support from the ESB (information from Ger Madden, cited by O' Leary et al 2017). The hut has a doorway on the north end of the east wall, and a single window in the same wall. A small fireplace is built into the south west corner. The roof is of galvanised sheet metal, laid on timber rafters. The hut will be demolished and two pods will be built in this location.

## 13.7 The 'Do Nothing' Scenario

[If the proposed development were not to go ahead, there would be no apparent direct impact on the Built Heritage of the island. However the following is considered to impact on the landscape of the island, and hence indirectly on the Built Heritage.

Visitors to the island will continue to increase, albeit in low numbers, with no attendant facilities. The island is presently visited by interested tourists and kayakers. It is fortunately not a destination for group gatherings/ parties etc.

In the absence of any visitor facilities or wardens, the area around the fisherman's hut is subject to waste and surface contamination, noted when trial pits were being excavated in September 2024. It is recorded that numbers of visitors to the island increased in the weeks following the funeral and burial of the writer Edna O' Brien on the island in 2024. Several other burials took place also in 2024.

There would be no wardens on the island and presently St Caimin's Church is locked with limited access. Some of the graveslabs are kept within St Caimin's Church, while several of the carved sculptural pieces in the Saint's Graveyard are subject to erosion. Covering stones of some of the graves within the Saint's Graveyard are broken.

Maintenance of features such as shrub control and visits by wardens to collect litter would probably drop, as maintenance of the island would in all likelihood no longer be considered a priority. None of the positive aspects brought by the Conservation and Management Plan would be likely to be implemented in either the short or long- term. There would be no focus on research opportunities concerning this important monastic island site which increased visitor numbers, across all disciplines, would be likely to bring.

If the development of the new Visitor facility and car park within the village of Mountshannon were not to proceed, the village would have limited potential as a visitor destination. Many of the historic buildings within the village are in need of conservation work and reuse, which is unlikely to take place if the Visitor Centre does not proceed.

## 13.8 Potential Significant Effects

### 13.8.1 Demolition Phase

To facilitate the development, it is proposed to demolish the existing concrete shelter adjacent to the existing pier at the north-west of the island, known as the fisherman's hut.

The structure is simple in its construction, being of mass concrete walls and floor with a flat roof and a single window and door, and internal fireplace. According to information from Ger Madden, it was constructed with aid from ESB. The principal dimensions of the structure are 4.830m width, 3.244m length and 2.57m height. It has a gross floor area (GFA) of 16 sq.m.

It will be carefully removed by hand to facilitate two new purpose-built 'pods', comprising a new shelter for visitors and restroom facilities for staff.

The existing shelter will be dismantled from the top down using hand tools to break the existing concrete and timber into sections that can be manually handled. Dismantling will start with the removal of the roof, followed by the removal of the window and door, taking down of the walls, breaking out of the floor slab and removal of foundations (if any). The material will be sorted into waste for disposal/ recycling and then removed off the island by boat where it will be disposed of by a licensed waste contractor.

The lower phase of demolition works at the Fisherman's Hut will be monitored by the archaeologist. Albeit recently constructed (1960s) any finds which had been included in the structure should be retained and recorded. Potential finds could be the mundane tools used, others such as dropped coins, etc, and lost pilgrimage tokens.

The jetty on the north-west side of the island will become the main landing stage, and be reconstructed. The original core of the jetty will be maintained in the new structure, that is, there will be no demolition of the original jetty. It was noted that the mooring rings on the jetty are of upturned horseshoes- these should be retained.

The loading pier for animals, originally cattle, will be retained.

Construction of the car park at Mountshannon will result in the removal of sections of the historic field boundary. The field boundary should be recorded in full prior to removal, with the excavation of several sections through the structure, and a detailed record to archaeological standards of its make-up and dating if possible.

### 13.8.2 Construction Phase

It is proposed to construct two pods on and close to the existing fisherman's hut, which will be demolished in advance of the work. The present hut is constructed on a concrete plinth, which extends c. 1.50m beyond the walls of the hut in all directions, and extends down below the present ground level. The construction of the hut with attendant fencing and cattle crush has resulted in a considerable degree of disturbance and incorporation of modern debris into the shallow topsoil. Shallow topsoil overlies a clear subsoil horizon as uncovered in trench 1. Due to the relocation of the WC pod east of the jetty and south of the existing trackway, it is advisable that a test trench for archaeological purposes be sited here. It is considered very unlikely however that archaeological deposits will be uncovered at the site of the WC pod: this area is presently very overgrown, but natural rock outcropping is visible, which tends to mitigate any survival of archaeological deposits.

Each of the larger pods will be built on screw piles. ' The pods will be made up of two distinct elements, a lightweight timber oak exo- frame resting on mini pile foundations and an oak- framed oak clad pod structure which will sit into this frame' (Drawing INC2-P-ISL-105-A, MCM). Each will measure 7700mm by 3575mm. The WC pod will be of similar construction, while measuring 6100 by 3575mm.

The pods will not be visible from the monastery due to the fall in elevation from the top of the island to the eastern shoreline and the presence of dense vegetation in the location of the pods, much of will be retained for screening (See drawing INC2-ISL-P-150, MCM). There will therefore be no impact on the Built Heritage of the monastery during the construction phase.

The process of the construction of the new jetty will be discussed here, as it precedes the pod construction. The sequence as outlined in the CEMP prepared by Malachy Walsh Partners, dated November 2024, is as follows:

• Pre-commencement activities including site investigation work and pre-construction surveys

• Pre-Construction Activities including

• Site Clearance Works to allow for the new jetty to be constructed

• Construction of temporary site construction compound

• Construction of new floating access jetty and walkway located at Northwest of the island where the existing mooring point is located.

• Site Clearance Works to allow for the remaining works on the Island

• Demolition of a structure on the island

• Construction of 3no. new staff and public welfare facility "pods" on the island

• Construction of new pedestrian paths on the island

• Complete site works, tidy up site, landscaping, restoration

• Demobilise site compound facilities

It is expected that the construction works on the island elements of the works (construction of jetty/ demolition of existing shelter / construction of pods & paths) will require approximately 25 personnel including during the peak construction phase, to include site contractors, engineers, materials delivery personnel, environmental personnel, health and safety personnel.

Site Investigation works will be conducted at the proposed jetty location in advance of the main works to inform the detailed design for the jetty.

• The drilling rig will be transported by the Coill an Eo workboat to the site and placed on the Pontoon raft. After securing the rig to the raft the raft will mobilise to the locations shown in Figure 5 as GI1, GI2 and GI3.

• Boreholes are drilled at each respective location (See figure 5) to verify the geotechnical profile of the site. Samples are recovered and sent to lab for testing.

The new proposed design is a breakwater jetty located at the site of the existing slipway. The existing slipway is a narrow concrete covered stone structure suitable only for very shallow craft. 4 number 800mm dia (max diameter) steel piles will be required to retain the jetty. It is planned to install a 9m long x 1.5m wide max ramp to allow safe access from the Land (fixed) to the jetty (floating). This will require 4 number 203mm H piles to support the concrete (2m x2m) anchor base that retains the ramp anchor points. These piles will be vibrated into the bed by an excavator on the pontoon raft along the stone causeway on the Southern side and the piles will be hidden inside the stone filled gabions to the Island. Similarly, 2 254mm x 254mm H piles will be required to retain the Canoe Launch section in the sheltered side of the land Structure. They will be vibrated also into place by the excavator on the

Pontoon raft. It is envisaged that the programme of works will take approximately 5 to 6 weeks to complete.

Some of the fleet required to complete the installation of the floating jetty are the Coill an Eo workboat, the Inish Muilinn workboat and the 16-unit pontoon raft with an excavator on board. The pontoon raft requires a draft of 0.4 metres and can be up to 0.6 metres when fully laden. It is held in position by spud legs dropped by gravity into the lake bed or pushed into the lake bed by the excavator on board based on the type of working activity.

The proposed layout is a 4 metre wide breakwater jetty with 4 number 800mm (max) diameter piles core drilled into the lake bed. A 9 metre access ramp will provide access from the Island. This ramp will be secured on the mainland to a concrete base that will sit on stone gabions at the front face of the access causeway. Also attached to the causeway is a 7 metre ramp to a Canoe launch at right angles to the causeway.

The excavator with the piling attachment will drive the outer H piles and outer trench sheet piles from the pontoon raft and will then track off the pontoon raft (held in place by 2 spud legs pushed into the lake bed) on the South West Side of the access causeway onto timber mats placed in advance from the excavator on the pontoon raft and drive the remaining trench sheet piles. During the construction of the causeway the excavator will travel on the timber mats over the travel area for the excavator to work. The excavator will be working in a depth of water up to 0.6 metres. • The excavator will vibrate the trench sheets with the piling attachment into the bed and to a depth designed based on the Ground Investigation results. The trench sheets will be stored on the Pontoon raft.

The excavator will place gabion mattresses (1m x 2m x 0.9m) filled with broken washed stone (filled at Mountshannon Harbour) and transported out on the pontoon raft) on the exposed side of the existing causeway structure and inside the trench sheet wall. There will be some loose stone infill required during the construction. 1m³ bags of stone will be transported from Mountshannon Harbour and the excavator will lift the bags from the pontoon raft and spill the stone at the required locations.

The front face of the causeway will have a Trench sheet face finished on top with a concrete anchor block supported by 4 number 254 x 254 H piles driven into the lake bed. These piles will be driven by a piling attachment on the excavator (and vibrated into the lake bed. This concrete platform will be constructed and poured the shuttering of the anchor base area is complete. There will be a timber fender bolted to the top of the Trench Sheet Piles and will act as a screed for the concrete finish. Concrete for the base will be ready mixed locally and delivered to Mountshannon Harbour where it will be poured into small skips and delivered on the pontoon raft to the site where the excavator will pour the skips into the shuttered area. This concrete platform will be the anchor point for the Ramp to the Floating Jetty. The exposed face (SW) of the causeway will be faced with 300 to 600mm large stone to break the wave. The stone will be placed on the pontoon raft at Knockaport and shunted by workboat to the site.

The floating jetty sections will be delivered to Mountshannon Harbour where they will be assembled over water at the Harbour and then towed by the Coill an Eo workboat to the proposed jetty location. A core drilled rig will also be loaded onto the pontoon raft at Mountshannon slipway and travel to the jetty mooring location.

4 piles (P1 -P4) will be core drilled into the lakebed size to a depth based on the GI results. Excavation of the lake bed will be required on the South end of the main breakwater jetty (see Waterways Ireland's Drawings). The excavator with digging shovel will remove the material ($2m^3$) and place on a skip on the pontoon raft. This material will be removed off site. A silt curtain will be placed around excavation area when removing material.

The jetty will then be pulled into place with the WI tugboat and anchored with pile guide brackets. The 2 H piles for the canoe launch will also be driven by the excavator from the Pontoon raft. The canoe launch will be accessed to the causeway via a 7 metre ramp. The canoe launch will have a freeboard of 300mm to the water line.

The access ramps will then be placed with the aid of the Excavator on the pontoon raft at the location shown for the Causeway construction to the concrete anchor platform. It is envisaged that the programme of works will take approx. 7 to 8 weeks to complete.

Mitigation: the area for the pontoon and proposed jetty location has been surveyed both by underwater geophysics and a dive survey. No archaeological deposits have been noted. Appropriate archaeological excavation of pile locations and monitoring under Ministerial Consent should form part of the process. This will include monitoring of the Ground Investigation piling, the resultant samples taken, monitoring of the piling for construction, and monitoring/ inspection of the material to be excavated from the lake bed at the south end of the main breakwater jetty.

The following section concerns the CEMP for the demolition of the fisherman's hut and construction of the pods on the island. The following sequence will ensue:

• Secure site and erect fencing, hoarding, and signage as required;

• Install any bunding and/or run-off controls where required;

• Identification of temporary stockpiling and storage areas;

• Set up contractor welfare facilities and site accommodation.

• Provision of temporary power, lighting and water services.

• Dredging works at the proposed jetty at Inis Cealtra is not envisaged.

Prior to construction commencing, on site, demarcation of the construction site boundary will be undertaken. Hoarding/ Fencing will be erected to secure the site for safety reasons. The island will close to the public during the course of the works, but for access for the farmer/ for a funeral should it be required will be permitted, and this will need to be arranged in advance with the Contractor to allow for safe access.

Following demolition of the fisherman's hut and removal of the material off the island, a temporary site construction compound will be set up upon commencement of the construction phase of the works on the island at the location shown indicatively in Figure 7 beside the existing slipway. The compound will be used as a secure storage area for construction materials and excess spoil, and it will also contain temporary site units to provide welfare facilities for site personnel.

If existing scrub vegetation is present where a pod is proposed to be constructed, clearing will occur using a flair mower. If grass is present where a pod is proposed to be constructed, clearing will occur using a lawnmower.

This work will be performed outside of the bird nesting season to ensure no disturbance occurs. The area is then landscaped to the Landscape Architect's specification.

The pod foundations will be supported by a series of screw piles installed to a depth sufficient to ensure a stable load-bearing capacity. Installation will be carried out using a tracked mini-digger equipped with a screw pile anchor drive attachment. The exact number of screw piles will be determined based on the pod dimensions.

The pods' structural frames will be built on-site using treated timber. The timber will be brought from the mainland by boat, unloaded at the new jetty, and stored nearby. It will then be taken to the pod locations, where it will be assembled into the structural frames.

The structural frame of the pods will be clad with timber inside and out, including the walls, floor, and roof. The timber will be transported by boat, stored, and then installed in the pods. The envelope will be insulated and fitted with necessary membranes to ensure it is airtight and weatherproof. Timber windows and doors will also be installed.

The WC unit will be of similar construction type, fixed on screw piles.

The works on the island are to be completed at times of dry weather when the ground conditions are appropriate so that the potential for scoring deep tracks is minimised in so far as is reasonably practicable.

The suggested mitigation is for archaeological monitoring under Ministerial Consent from National Monuments to be undertaken as part of the works, at all stages that the archaeologist and National Monuments consider to be appropriate. The project design and the proposed implementation will have minimal, if any, impact on the important archaeological resource of Inis Cealtra.

The mitigation measures will be issued as conditions of planning from National Monuments to Clare County Council.

It should be noted that during the construction phase, there will be no visitors to the island. Essential maintenance by staff of the historic buildings and landscape will be carried out.

### 13.8.3 Operational Phase

In the operational phase, the new visitor facilities will bring many more visitors to the island. The numbers of visitors will fluctuate seasonally and will not exceed 400 persons per day. The numbers will be carefully monitored with staff to guide and present on the island between the hours of 9.00am to 5.00pm with an extra hour to 6.00pm in high season.

The jetty will be well monitored with frequent journeys to and from the mainland, and with staff welfare facilities located close by. The jetty will be maintained by Waterways Ireland.

The paths to the monastery will be cut regularly, and monitoring of any areas of wear will result in mowing a 1m wide path alongside the main path, to spread the load of wear. The procedure of monitoring of wear and tear is outlined in the Conservation and Landscape Management Plan.

### 13.8.4 Cumulative Effects

The cumulative effects have been considered. The cumulative effects will be temporary to short term, slight to moderate negative effects on the basis of the EPA EIAR Guidelines. Interactions between the built heritage and the cultural heritage exist, but there are no potential cumulative impacts identified upon the architectural, archaeological and cultural heritage.

### 13.8.5 Summary

The following Table summarises the identified likely significant effects during the demolition and construction phase of the proposed development before mitigation measures are applied.

**Table 13-1 Summary of Demolition & Construction Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Moderate | Negative | Low | | | | |

The following Table summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

**Table 13-2 Summary of Operational Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Not significant | | | | | | |

## 13.9 Mitigation

Mitigation for the Built Heritage is outlined in the following sections. It should be noted that none of the works to the island are to take place in the zone of the monastic buildings, with impact only on the stone jetty at the north-west side of the island and the 1960s concrete built Fisherman's Hut.

### 13.9.1 Incorporated Design Mitigation

Archaeological monitoring of several phases in the operations are detailed below. All the measures are considered to be standard archaeological mitigation measures with positive outcome in similar designs.

### 13.9.2 Demolition Phase Mitigation

Some archaeological mitigation is considered necessary in demolition of the fisherman's hut on the island. Removal of the concrete plinth on which the hut is constructed should be monitored by the archaeologist.

### 13.9.3 Construction Phase Mitigation

Construction of the new sections of the jetty should be monitored. Prior to locating the exact position of the test bores and subsequent piles for the jetty, these sections of the lake bed should be subject to an underwater excavation. It is not anticipated that any artefacts or structures of archaeological significance will be located, but it is advisable that this take place in advance of piling.

Similarly, the areas of lake bed which have to be excavated or dredged as part of the breakwater construction should be subject to underwater excavation/ screening as part of the construction programme.

Archaeological monitoring of scrub removal in advance of the screw piling for the pods should be undertaken, with the location of each pile screened as part of the construction.

### 13.9.4 Operational Phase Mitigation

No mitigation is deemed necessary in the Operational Phase.

## 13.10 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

### 13.10.1 Demolition Phase

No significant environmental impacts to the Built Heritage will remain during the demolition phase after mitigation measures are implemented. All demolition material resulting from the removal of the Fisherman's Hut will be removed off the pier at the north-west side of the island. No access from the compound to the monastery will be permitted for the 20-25 construction personnel on the island.

### 13.10.2 Construction Phase

No significant environmental impacts to the Built Heritage will remain during the construction phase after mitigation measures are implemented. No access from the compound to the monastery will be permitted for the 20-25 construction personnel on the island.

### 13.10.3 Operational Phase

No significant environmental impacts to the Built Heritage will remain during the operational phase after mitigation measures are implemented.

### 13.10.4 Summary of Post-mitigation Effects

The following Table summarises the identified likely significant residual effects during the demolition and construction phase of the proposed development following the application of mitigation measures.

**Table 13-3 Summary of Demolition & Construction Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Very low | Neutral | None | | | | |

The following Table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

**Table 13-4 Summary of Operational Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Very Low | Positive | Medium | | | | |

### 13.10.5 Cumulative Residual Effects

There will be positive residual effects on the Built Heritage as a result of this development.

## 13.11 Risk of Major Accidents or Disasters

This element is not relevant to the Built Heritage as a result of this development.

## 13.12 Worst Case Scenario

This element is not considered relevant to the Built Heritage as a result of this development.

## 13.13 Interactions

Interactions between the Built Heritage, cultural and archaeological heritage exist. Mitigation for all elements have interactions. Interactions also exist between the Built Heritage, landscape and cultural heritage.

## 13.14 Monitoring

Monitoring of the Built Heritage, cultural and archaeological heritage will be undertaken on an ongoing basis with maintenance of the architectural heritage by the State Body charged with upkeep of the National Monuments. The archaeological heritage will be monitored as outlined in the Conservation and Landscape Management Plan. While responsibility for the upkeep of the National Monuments rests with the Office of Public Works, staff on the island will be provided by Clare County Council, who will run the Visitor Facility. As at present there are no guides or wardens on the island, the presence of staff to monitor, advise and guide visitors is considered to be a positive element of the proposed development.

## 13.15 Summary of Mitigation and Monitoring

The following Table summarises the Demolition and Construction Phase mitigation and monitoring measures.

**Table 13-5 Summary of Demolition & Construction Phase Mitigation and Monitoring**

| Likely Significant Effect | Quality | Significance |
|---|---|---|
| Indirect | Positive | Moderate |

The following Table summarises the Operational Phase mitigation and monitoring measures.

**Table 13-6 Summary of Operational Phase Mitigation and Monitoring**

| Likely Significant Effect | Quality | Significance |
|---|---|---|
| Direct | Positive | Moderate |

## 13.16 Conclusion

The assessment concludes that the most direct impact to the cultural heritage -Built Heritage lies in the construction of the new jetty at the north-west side of the island. The impact is considered however to be low, as the construction of the stone and concrete jetty here in the 19$^{th}$ century or earlier will have resulted in the removal of any earlier material if such was present.

The assessment concludes that the impact to the Built Heritage from increased visitor numbers will be positive. An assessment of remediation of more recent and inappropriate intervention to the Built Heritage of Inis Cealtra lies outside the remit of this assessment, but several examples are noted in the extensive documentation prepared by O' Leary et at (2017). These include the use of cementitious flashing and mortar on several of the churches, and rusting wire used to hold the apex of a plaque in place, chipped and damaged stone with poor repairs.

Increased visitor numbers will result in the presence of staff on the island, to inform and guide the visitors, to maintain the landscape and in part improve it with additional planting of native species and removal of the encroaching scrub. Proposals for the maintenance and improvement of the landscape are outlined in the Landscape and Conservation Management Plan.

Establishment of improved visitor facilities, both in Mountshannon and on Inis Cealtra, will bring increased awareness of this important island monastic site, which ranks in significance with sites such as Clonmacnoise and Glendalough. Renewed focus on Inis Cealtra will result in an increase of research and study of this important resource.

## 13.17 References and Sources

www. Archaeology.ie Historic Environment Viewer

Clare County Council 2017. O' Leary, C., Wallace, P. and Mc Carthy, B., Archaeological background in Appendix B Inis Cealtra: appendix 2 Detailed Support Material.

De Paor, L. 1997. Inis Cealtra Report on archaeological and other investigations of the monuments on the island. Unpublished report submitted to National Monuments.

De Paor, L. 2013. Inis Cealtra: Archaeological Investigations of the Monuments on the Island. North Munster Antiquarian Journal vol 53.

Mc Namara, The Bullaun Stones of Inis Cealtra.

Macalister, R.A.S. 1916-7. The historic and antiquities of Inis Cealtra. Proceedings of the Royal Irish Academy 33, 93-174.

Madden, G. 2008. Inis Cealtra Island of the Churches. Mountshannon.

Malachy Walsh Partners November 2024. Construction and Environmental Management Plan prepared for Clare County Council.

O' Sullivan, A. and Seaver, M. 2015 Post-excavation reports on Iniscealtra excavations. Unpublished report submitted to the Royal Irish Academy.

O' Sullivan, A., Mc Cormick, F., Kerr, T., and Harney, L., 2013. Early Medieval Ireland: the evidence from archaeological excavations. Royal Irish Academy.

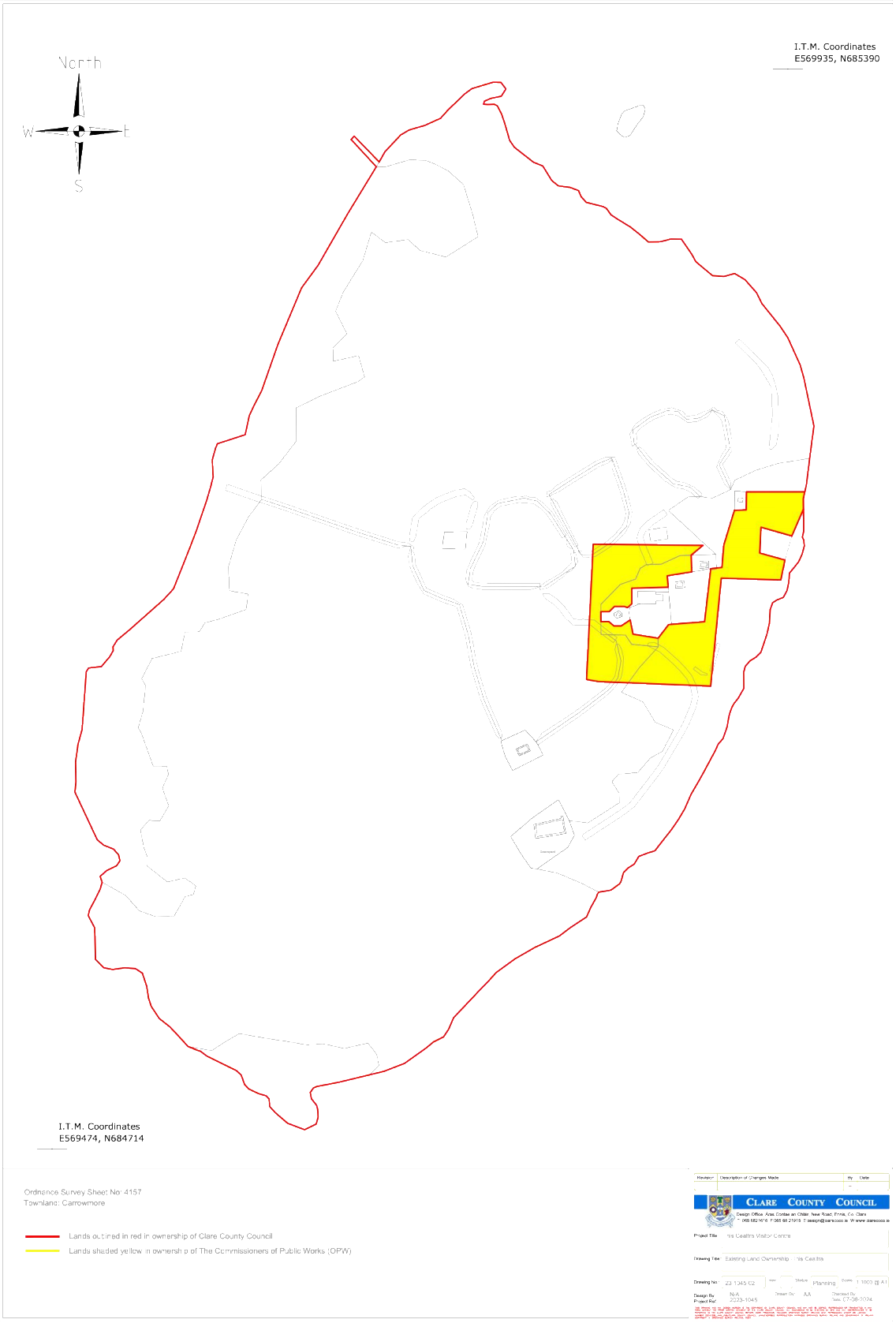



**Figure 13-1. Landownership map Inis Cealtra**

**Figure 13-2 Lidar Survey of Inis Cealtra showing embankments and paths**

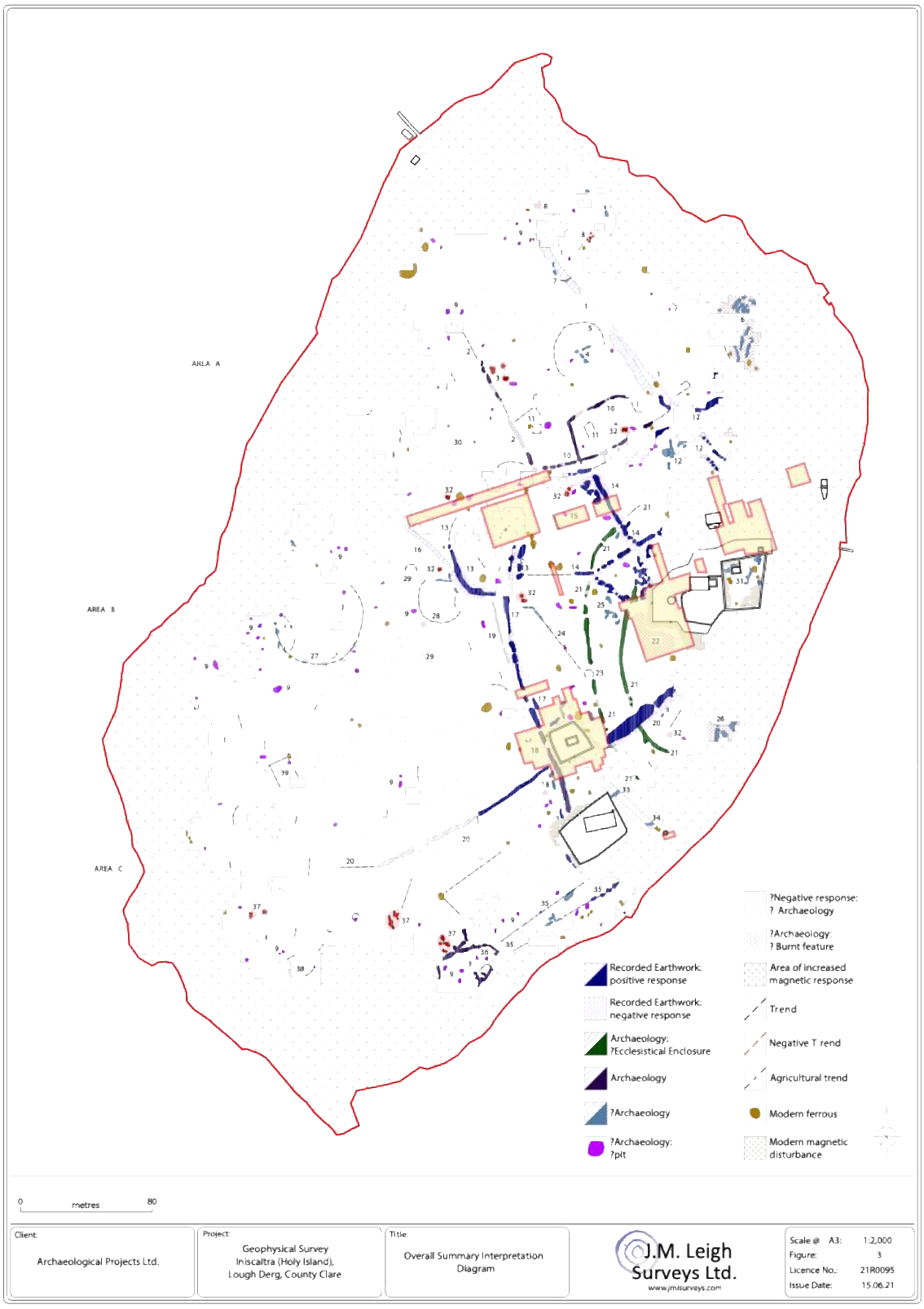



**Figure 13-3. Excavation trenches 197--80 overlain on geophysics**

**Figure 13-4. Path from north-west jetty to the monastery**

**Figure 13-5. View of the jetty and cattle landing area**

**Figure 13-6. St Caimin's church and round tower from north-east**

**Figure 13-7. West elevation of St Caimin's church**

**Figure 13-8. South elevation of St Caimin's church**

**Figure 13-9. St Caimin's  church and tower from south-west**

**Figure 13-10. Bullaun stone south of round tower**

**Figure 13-11. View of St Caimin's church from north**

**Figure 13-12. View of St Caimin's church and round tower during scrub clearance February 2024**

**Figure 13-13. Walls of the 'cottage ' rediscovered February 2024**

**Figure 13-14. St Michael's church under excavation 1970s**

**Figure 13-15. Enclosure and St Michael's 2020**

**Figure 13-16. Mourners at the funeral of the writer Edna O' Brien 2024**

**Figure 13-17. Horse shoe repurposed as mooring ring in the north west jetty**

**Figure 13-18. Field boundary at site of proposed carpark Mountshannon**

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 14
# CULTURAL HERITAGE: ARCHAEOLOGICAL HERITAGE

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents

14 Cultural Heritage: Archaeological Heritage....14-3
14.1 Introduction....14-3
Table14.3 Proposed Development....14-3
Aspects Relevant to this Assessment....14-3
14 4. Methodology....14-9
14.4.1 Relevant Legislation & Guidance....14-9
14.4.8 Site Surveys/Investigations....14-11
14.4.9 Consultation....14-12
14.5 Difficulties Encountered....14-12
14.6 Baseline Environment....14-13
14.6.1. History of Inis Cealtra....14-13
14.6.2 Post-Medieval Pilgrimage....14-15
14.6.3 Archaeological excavation 1970-1980....14-16
14.6.4 Other surveys....14-17
14.6.5 Post- excavation analysis....14-17
14.6.6 Burials....14-18
14.6.7 Early medieval enclosure on Inis Cealtra....14-18
14.6.8 Layout of the monastery....14-19
14.6.9 Main features uncovered in the excavations....14-19
14.6.10 Mountshannon Old Rectory and New Surface Carpark....14-24
14.8 Potential Significant Effects....14-24
14.8.1 Demolition Phase....14-24
14.8.2 Construction Phase....14-25
14.8.3 Operational Phase....14-29
14.8.4 Cumulative Effects....14-30
14.8.5 Summary....14-30
14.9 Mitigation....14-31
14.9.1 Incorporated Design Mitigation....14-31
14.9.2 Demolition Phase Mitigation....14-31
14.9.3 Construction Phase Mitigation....14-31
14.9.4 Operational Phase Mitigation....14-32
14.10 Residual Impact Assessment....14-32
14.10.1 Demolition Phase....14-32
14.10.2 Construction Phase....14-32
14.10.3 Operational Phase....14-32
14.10.4 Summary of Post-mitigation Effects....14-32

14.10.5 Cumulative Residual Effects ..... 14-33
14.11 Risk of Major Accidents or Disasters ..... 14-33
14.12 Worst Case Scenario ..... 14-33
14.13 Interactions ..... 14-33
14.14 Monitoring ..... 14-33
14.15 Summary of Mitigation and Monitoring ..... 14-33
14.16 Conclusion ..... 14-34
14.17 References and Sources ..... 14-35

## Table of Figures

Figure 14.1 Land ownership map showing site of carpark and Old Rectory, Mountshannon ..... 14-36
Figure 14.2. Landownership map Inis Cealtra ..... 14-37
Figure 14.3. Excavation trenches 1970-1980 overlain on geophysical survey 2021 ..... 14-38
Figure 14.4. Inis Cealtra on Petty's 1685 map ..... 14-39
Figure 14.5. Lidar image of Inis Cealtra showing embankments ..... 14-39
Figure 14.6. Possible early harbour at north-east corner of Inis Cealtra ..... 14-40
Figure 14.7. Layout of pods, pathways and new jetty, Inis Cealtra ..... 14-41
Figure 14.8. detail of pods and new jetty, Inis Cealtra ..... 14-42

## Table of Tables

Table 14-1 Summary of Demolition & Construction Phase Likely Significant Effects in the absence of mitigation ..... 14-30
Table 14-2 Summary of Operational Phase Likely Significant Effects in the absence of mitigation 14-31
Table 14-3 Summary of Demolition & Construction Phase Effects Post Mitigation ..... 14-32
Table 14-4 Summary of Operational Phase Effects Post Mitigation ..... 14-33
Table 14-5 Summary of Demolition & Construction Phase Mitigation and Monitoring ..... 14-33
Table 14-6 Summary of Operational Phase Mitigation and Monitoring ..... 14-34

# 14 Cultural Heritage: Archaeological Heritage

## 14.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on the archaeological heritage of Inis Cealtra and Mountshannon.

It should be read in conjunction with Chapter 13 of the EIAR, Appendix 13.1 and the following appendices:

Appendix 14.1 Geophysical survey Preliminary Report 21R0095

Appendix 14.2. Inis Cealtra Co Clare Lidar and Geophysical Report

Appendix 14.3 Inis Cealtra Co Clare Underwater Archaeological Impact Assessment

Appendix 14.4 Inis Cealtra Archaeo-geophysical Survey

Appendix 14.5 Underwater Archaeological Impact Assessment

Appendix 14.6 Old Rectory Mountshannon, Archaeological Impact Assessment

Appendix 14.7 Excavation of Archaeological Test pits at Inis Cealtra

## 14.2 Expertise & Qualifications

This chapter of the EIAR has been prepared by Claire Walsh of Claire Walsh Archaeological Projects ltd.

Claire Walsh holds an honours degree in archaeology from NUI and has carried out almost 40 years of archaeological excavation and assessment, and been involved in the preparation of EIARs, amongst others, for the following projects:

- Oldbridge, Battle of the Boyne
- Heuston South Quarter, Kilmainham
- Greystones Media Campus

## Table14.3 Proposed Development

The full description of the proposed development is outlined in Chapter 2 'Development Description' of this EIAR.

The Inis Cealtra Visitor Experience is to be developed on Inis Cealtra (Holy Island) and on the mainland, in two principal locations within Mountshannon Village.

### Aspects Relevant to this Assessment

The aspects of the development relevant to this assessment are described below.

**Inis Cealtra Island**

- Demolition of an existing concrete shelter adjacent to the existing pier at the north-west of the island.
- Installation of a new L-shaped floating access jetty and walkway at the north-west of the island, consisting of a floating breakwater jetty, a stone and concrete causeway connected by a steel access ramp and a canoe launch jetty with access ramp.
- A series of new mown grass pedestrian paths to allow for enhanced access to the main monuments and natural landscape on the island.
- Provision of three staff and public welfare facility 'pods' including weather shelter, WCs and a rest room for island staff.

**Mainland – Mountshannon**

- Construction of a new public car park in Mountshannon Village, on the north side of Main Street, incorporating 169 total car parking spaces, together with coach parking and bicycle parking facilities.
- A Visitor Centre in the southern part of the 'Old Rectory Site'. It is a part-one-storey, part-two-storey semi-circular building incorporating a series of spaces for interpretation, exhibition and education associated with the Inis Cealtra Visitor Experience, together with a café and ancillary supporting spaces. Public realm works in front of the main façade, paved in natural stone, will continue the curved geometry of the building, creating a comfortable space for visitors to meet, relax and take in views of Lough Derg and Inis Cealtra.
- Reconfiguration of the existing Mountshannon Harbour car park, providing for 49 total car parking spaces and public realm enhancements.

Following is a more detailed description of the constituent parts of the project as relevant to this chapter.

**Phase 1 Construction Activity**

The proposed Phase 1 construction includes the upgrade works at Inis Cealtra island and the new Village Car Park at Mountshannon, on the north side of Main Street. The Phase 1 construction is scheduled for 12 months. The proposed development Phase 1 peak construction year is 2027.

This planning application is accompanied by a **Construction and Environmental Management Plan (CEMP)**. The CEMP provides a comprehensive description of the construction phase and outlines the commitments and mitigation measures to be implemented during the construction phase of the proposed development.

Construction access for the Inis Cealtra Island works will be via Mountshannon Harbour and the construction of new floating access jetty and walkway located at the north west of the island where the existing mooring point is located.

During the Phase 1 construction, Inis Cealtra Island will generally remain closed for the duration of the works, except where access is required for a burial and by a farmer for livestock, and OPW staff for routing maintenance of the Monuments in Care.

A temporary construction compound will be provided on Inis Cealtra Island for the Island works. A work force comprising a maximum of 20 personnel is envisaged for the Inis Cealtra Island works. The main focus of the work will be on the installation of the new jetty. All welfare facilities for construction staff will be provided on site at the proposed construction compounds for each construction element, including staff canteen facilities.

Demolition volumes generated by the Inis Cealtra upgrade works will be relatively low and mainly comprise the demolition of the existing structure close to the jetty for removal to a licensed recycling facility. Excavated earthworks volumes for removal off the Island will be minimal. The foundations for the three pods are to be screwed piles. All the pods will be above ground, minimising any ground levelling or excavation.

**Island Mooring Point**

It is proposed to construct a new floating access jetty at the location of the existing concrete landing point to the north-west of the island. The existing jetty extends only a short distance into the lake, meaning the depth of water around it is relatively shallow, limiting the size of boats which can land there to very small vessels. Works to the existing jetty and provision of a new floating jetty, which extends into deeper water will allow for safer and more convenient passage between the mainland and the island, and this will become the principal point of arrival for visitors to the island.

The new L-shaped jetty extends out into the lake approximately 53m and is designed as a breakwater jetty that breaks most of a wave's crest and provides a safer mooring on the inner jetty area. The structure is made up of four principal parts: a floating breakwater jetty, a stone and concrete causeway, a steel access ramp connecting the two and a canoe launch jetty with access ramp. The floating jetty is 4m wide and is held in position using 4 no. 800 mm diameter steel piles.

The causeway, which is constructed over the existing concrete jetty (which will remain in place) on the shore of the island, comprises a concrete anchor platform, held in place by 4 no. 203mm H- piles, around which stone gabions are placed, built up to provide a 3m wide level surface which will be paved with stone.

A 1.5m wide steel access ramp will be fitted between the two, fixed to the causeway at one end and resting on the jetty at the other. This will allow the ramp to move up and down with the rise and fall of the lake level.

Boats travelling from Mountshannon Harbour to Inis Cealtra, landing at the new jetty will travel via established navigational channels around the island, giving the opportunity to view the full island from the lake.

**Island Tours & Boat Service**

The proposed development includes a detailed **Visitor Management Plan (VMP)**. The VMP provides a comprehensive description of projected visitor numbers, types, times, travel modes, management and mitigation measures. The VMP also includes details of staff types, numbers and times. The guides will operate on the island from 9.00am to 5.00pm in low season, with working hours extended to 6.00pm in high season. Staff numbers will be minimum 2 persons.

An estimated 60% of visitors accessing the Visitor Centre in Mountshannon will take a boat trip to the island for a guided tour. The boat service will be tendered by Clare County Council, and the successful tender will operate 25-seater boats.

The island guided tour will last approximately 45 minutes, allowing for some self-exploration for visitors. Visitors are likely to remain on the island for one hour but will be requested to stay no longer than two hours.

The boat service will scale over time to reflect visitor demands, Phase 1 comprises the Old Rectory Interpretive Centre combined with an optional boat and guided island tour at Inis Cealtra. It is expected that Phase 2 will generate sufficient demand for a number of boat tour operators to operate the service.

The proposed Phase 1 visitors' boat between Mountshannon Harbour and Inis Cealtra Island will be seasonal, ranging from two round trip daily boat services during low season to eight round trip daily boat services during high season. The expected high season eight daily round trip sailings is of the same order as the existing summer tourist season.

The proposed Phase 2 visitors' boat service to/from Inis Cealtra Island from/to Mountshannon Harbour will be seasonal, ranging from six round trip daily boat services during low season to 14 round trip daily boat services during high season. The expected high season 14 daily round trip boat sailings would be six additional to the existing summer tourist season - there are typically eight existing round boat trips daily between Mountshannon Harbour and Inis Cealtra.

Daily visitor numbers to the island will be capped at 400, with the majority encouraged to book on-line to spread the numbers throughout the day. No more than 100 persons will be permitted to access the island (for visitor reasons) at any one time.

The maximum daily capacity on Inis Cealtra island will be 400 persons, with no more than 100 people permitted on the island at any one time.

Accordingly, there will be no increase in total boat traffic generated by Mountshannon Harbour and on Lough Derg with the proposed Phase 1 development in operation.

**Management Structures**

Members of the local community and members of Lough Derg Anglers will be able to land for free with a permit-style approach.

Guided tours on the island will be operated by Clare Tourism DAC, staffed by Inis Cealtra Visitor Experience. Their role will also include monitoring and surveying of visitor impacts.

Key stakeholders involved in the management of Inis Cealtra will form a representative group, the Inis Cealtra Management Group, to have oversight both in terms of the strategic management of the island and the operational management of the island. This group, led by Clare County Council, will include OPW, NMS, Waterways Ireland and Department of Housing, Local Government and Heritage.

Inis Cealtra Community Forum will be established to represent the voice of the local community in the management of Inis Cealtra and the delivery of the new visitor experience. Its role will be to facilitate

local community input and linkages as the project develops, ensuring the socio-economic benefits of this project are reflected across East Clare. It will also serve as a liaison with Clare County Council in managing local access to Inis Cealtra.

**New Pedestrian Paths on the island**

A series of 2m wide mown grass pathways is proposed to allow visitors to explore the island, its archaeological features and natural beauty.

The design of the paths is in line with the principles of minimal intervention to archaeological and natural heritage, and seeks to find a balance between accessibility, wayfinding, readability of the landscape and protection of archaeology and nature.

The layout and location of the paths is defined by the following:

- Existing path locations and access to main monuments (Path 1, Path 8).
- Accessibility and location of monuments - paths 11 and 12 are proposed to take visitors to Lady Well and the Bargaining Stone in a less direct but gentler sloping route.
- A series of additional paths are proposed to make a looped walk around the island with the option of a smaller loop (Path 3) or a bigger loop walk around the whole island to enjoy the natural beauty of the island as well as its cultural heritage, leading through grasslands and woodlands and back to the mooring point (Path 2). The provision of a short connection between the two options (Path 4) allows for a wider variety of loop options.
- Another path (Path 6) is proposed alongside the ecclesiastical enclosure as a way to experience the site's now hidden history (the enclosure is not visible above the ground).

The path of least intervention has been chosen for the proposal - the paths are all proposed as mown paths to existing ground levels for minimum visual impact and to avoid impact on the archaeology underground.

In order to avoid erosion, several measures are proposed:

- Several path options are proposed to spread the footfall. These may be phased in different seasons as the intensity of use is observed.
- The existing stone base to path 1 is proposed to be repaired where necessary. Path 1 is expected to be the most heavily used as it leads from the mooring point directly to the Round Tower.
- Where heavy footfall is expected, a layer of crushed aggregate is proposed with topsoil spread on top to allow for grass to develop. This will allow for sufficient air and moisture for grass to develop even with heavier footfall and only expose the aggregate in extreme situations rather than eroded topsoil. No plastics, geotextile or edging is being proposed.
- Where the footfall is expected to be the heaviest, 1m on either side of the path is proposed to be mown in addition to the 2m width in the main season to allow visitors to spread over a

wider width of the path. A 6-week mowing regime is proposed in the summer for the additional strips.

Details of the proposals for maintenance of the paths and island are given in the Landscape and Conservation Management Plan.

**Island Pods**

Three new staff and public welfare facility 'pods' are proposed on the island to meet the minimum needs of staff and visitors by providing a weather shelter, WCs and a rest room for island staff.

Photovoltaic (PV) panels will be installed on all roofs to power essential equipment, including lighting and a small pump in the WC's.

The proposed pods will be timber framed structures sitting on metal piles. The structure will be infilled with timber and clad with timber on their walls and roofs.

The pods are lightweight, freestanding, timber pavilions, raised on timber legs so that their contact with the ground will be minimal, reducing the risk of disturbing sensitive archaeology. While each pod serves a distinct function, they share a similar architecture and method of construction.

The pods will have new timber walkways to provide level access into them and these too will be of timber construction resting on mini- pile foundations. All pod and walkway components will be assembled on the island to minimise the impact of their construction and are designed to be dismantled and removed if required, with little trace left on the landscape.

The pod locations have been carefully considered to minimise their visual impact on the island and provide facilities that are geographically convenient for visitors and staff. In all cases, they are to be built in the shelter of existing woodland or scrub. The predominant use of timber in their construction means that they will sit comfortably within the woodland and scrub landscapes where they are to be placed and remain visually unobtrusive.

The proposed pods are as follows:

- The **Weather Shelter** (20 sq.m) will be located close to the new jetty in an area previously occupied by a small built refuge. The location is optimal from the point of view that it is close to the new jetty, so it will provide shelter for people while waiting for the boat, and from an archaeological perspective, it is beneficial as it will be built on land that has previously been disturbed by the construction of the existing structure. The pod height will range from 5.4m to 6.3m and will contain space for visitors to shelter during adverse weather conditions, with an approx. capacity for 30 no. persons seated.

- The **WC Pod** (15 sq.m) will range from 5.25m to 6.25m in height. It will contain 2 no. dry WCs and requires no foul drainage or water supply. Given the relative complexity of removing waste off the island but recognising the need for such facilities, WCs will be for 'emergency' use only with the aim of ensuring that their use and disposal are appropriately managed. Sanitation gels will be used for hand hygiene.

- A dry toilet system will be implemented to overcome the logistical challenges of removing solids and liquids. Deposited waste will be separated into liquid and solid form. This waste will

then be stored in a holding container as part of the dry toilet set-up. A contractor will be appointed to manage the maintenance of the foul system and waste removal from the island. There is no ancillary plumbing or other ground disturbance associated with the WC unit.

- The **Staff Pod** (25 sq.m) will range from 5.4m to 6.3m in height. It will provide shelter and rest for the island guides and ushers who will be on Inis Cealtra daily. The accommodation comprises a single space containing a tea station, a break area with seating, lockers, and first aid equipment.
- The pods will be connected via a boardwalk.

## 14 4. Methodology

The methodology for this assessment is based on the following sources:

Printed sources, listed in the bibliography/ references section

Grey literature, listed in the bibliography/ references section

Record of Monuments and Places for County Clare

### 14.4.1 Relevant Legislation & Guidance

The following pieces of legislation, standards and guidelines are applicable to this chapter of the EIAR:

National Monuments Act 1930 (as amended)

Architectural Heritage and Historical Properties Act 1999

European Convention on the protection of the Archaeological Heritage 1992

Planning and Development Act 2000 (as amended)

Heritage Act 1995

Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022)

Duchas (now Department of Housing, Local Government and Heritage) 1996 Frameworks and Principles for the Protection of the Archaeological Heritage

Clare County Council Development Plan 2023-2029 Killaloe Municipal District Vol 3C, 2023

### 14.4.2. Site ownership and Responsibilities

Currently, the Minister for Housing, Local Government and Heritage is responsible for the protection of the archaeological remains on Inis Cealtra. The local authority Clare County Council owns the lands on the island which are not in ownership of the State. Clare County Council also has responsibility for

municipal burial grounds located on the island. The Office of Public Works (OPW) is responsible for the management of the national monuments on Inis Cealtra. The National Monuments Service (NMS) is responsible for the conservation and recording of the site. National Parks & Wildlife Service (NPWS) has a role in management and environmental conservation on Inis Cealtra, given the area's SAC and SPA designations. Waterways Ireland has responsibility for the management, development and promotion of Lough Derg and the Shannon Navigation, including Mountshannon Harbour and the jetty on Inis Cealtra. There will be no change to the role of the statutory bodies responsible for the national monuments and conservation measures on Inis Cealtra, nor the role of Waterways Ireland.

### 14.4.3 Record of Monuments and Places

The National Monuments Act (1994 amendment) provides in section 12 (1) that the relevant minister shall establish and maintain a record of RMPs where it is known that such monuments exist. This record comprises a list of monuments and relevant places and mapping, showing each monument and relevant place in respect of each county in the state. These sites receive statutory protection under the National Monuments Act.

When the owner or occupier of a property or any other person proposes to carry out, or to cause, or to permit the carrying out of any work at or in relation to a Recorded Monument or a Registered Monument they are required to give notice to the Minister two months before commencing that work. This is to allow the National Monuments Service time to consider the proposed works and how best to proceed to further the protection of the monument.

The island of Inis Cealtra Is not in the ownership of the State, with the monuments in the care of the Minister for Housing, Local Government and Heritage, and the remainder of the island in the ownership of Clare County Council.

### 14.4.4. Sites and Monuments Record

The Sites and Monuments Record holds documentary evidence and field inspections of all known archaeological sites and monuments. This also includes monuments or sites whose precise location is not confirmed and are omitted from the Record of Monuments and Places. The Sites and Monuments Record is updated as new sites are discovered, both through archaeological excavation and discovery mechanisms such as aerial photography. This record includes information on sites that have been totally excavated, and they are not therefore scheduled for inclusion in the next revision of the Record of Monuments and Places. There are presently 189 such individual or grouped entries on the Sites and Monuments Record for Inis Cealtra, and several more entries will be required due to new discoveries resulting from the Geophysical study. A list of the monuments on Inis Cealtra is given in Appendix 13.1.

### 14.4.5 Topographical Files of the National Museum

The Topographical Files of the National Museum of Ireland have been superseded in the case of Inis Cealtra by the data on the finds from the 1970s excavations by Liam de Paor, in a preliminary catalogue of finds prepared by Matthew Seaver (now of National Museum of Ireland) and Professor Aidan O' Sullivan of UCD Archaeology Department (2015).

### 14.4.6 Historic Maps

Inis Cealtra is depicted and annotated on Sir William Petty's 1685 map of County Clare, but there is no further information from this map.

The series of Ordnance Survey historic maps are important sources for lands, indicating townland boundaries, farmsteads, field boundaries and annotated features such as wells which may be no longer be visible. The series of Ordnance Survey maps for Inis Cealtra annotate most of the main features on the island, including the well, naming churches and bullaun stones which may not no longer be visible. The naming of the differing churches and monuments is noted in the Historic Environment Viewer (digital source of RMP) on the website of National Monuments, www.archaeology.ie

### 14.4.7 Additional Site Specific Surveys

The assessment is informed by the following surveys and investigations undertaken by Clare County Council.

Appendix 14.1 Geophysical survey Preliminary Report 21R0095

Appendix 14.2. Inis Cealtra Co Clare Lidar and Geophysical Report

Appendix 14.3 Inis Cealtra Co Clare Underwater Archaeological Impact Assessment

Appendix 14.4 Inis Cealtra Archaeo-geophysical Survey

Appendix 14.5 Underwater Archaeological Impact Assessment

Appendix 14.6 Old Rectory Mountshannon, Archaeological Impact Assessment

Appendix 14.7 Excavation of Archaeological Test pits at Inis Cealtra

Many site visits and on- site discussions with other members of the Design Team

These sources informed the compilation of the Cultural Heritage and Archaeological baseline, and the assessment of interactions and the potential impacts of the development.

### 14.4.8 Site Surveys/Investigations

The main source of Information on Inis Cealtra is the report on the excavation which took place between 1970 and 1980 under the direction of Liam de Paor. The report submitted to National Monuments in 1997 was made available, as was updates on the post-excavation programme under the stewardship of Matthew Seaver, NMI and Professor Aidan O'Sullivan, UCD.

The source material supplied by Clare County Council includes a detailed analysis of the island prepared by a researcher on the stone sculpture of the island, Cliodhna O' Leary, along with Dr Bernadette Mc Carthy and Dr Pat Wallace.

Additional surveys of archaeological relevance were commissioned by Clare County Council. The geophysics survey (Appendix 14.1) is a preliminary survey, in that much of the northern part of the monastic enclosure is obscured by scrub. The scrub covered even stone features such as 'the cottage'

which was exposed and excavated in de Paor's 1970- 1980 excavation. The full extent of the semi-circular enclosure identified in the geophysics survey was not traced due to scrub.

A further circular enclosure towards the south- west side of the island was identified in the geophysics survey.

The information yielded from the geophysics survey is of high significance and emphasizes the importance of non-invasive methods of survey in garnering information on an island site such as Inis Cealtra.

A Lidar Survey (Appendix 14.2) was undertaken using a Drone flying over the island, and the data was interpreted by Dr Stephen Davis of UCD Archaeology Department. The thick blanket of ploughsoil over the northern part of the island has obscured most earlier features, but notwithstanding, the various network of earthworks which characterise much of the island's archaeological remains are prominent in the Lidar data.

A series of underwater surveys (Appendix 14.3, 14.4. and 14. 5) were undertaken. The first survey 14.3, confirmed the presence of log boats off the north-east side of the island, and provisionally identified the probable site of the harbour on the north-east part of the island in the medieval period. Further non-invasive surveys, including underwater geophysics, identified the presence of probable log-boats, and other more modern detritus, particularly around the present jetty on the north- west side of the island.

Test pits for engineering purposes were monitored at the Old Rectory site in Mountshannon (Appendix 14.6). No material of archaeological significance was uncovered.

Test pits under Ministerial Consent were excavated in September 2024 in the proposed locations of Welfare and Staff pods on the north-eastern part of the island, close to the jetty. No finds or features of archaeological significance were recovered.

### 14.4.9 Consultation

Staff of National Monuments have been kept informed of evolving plans for the island in relation to the proposed visitor facilities, in particular the location of the proposed new jetty. Advice on underwater geophysics was received from the Underwater Unit of National Monuments. Staff of National Monuments met with members of the Design Team on the island to discuss plans for the visitor facilities and paths. Additionally National Monuments staff visited the island to observe the shrub clearance carried out in February 2024 under archaeological supervision. In all, many visits from National Monuments staff to the island have been made to appraise the conditions regarding the landscape, underwater archaeology, access and other.

An Accessibility Audit was commissioned for the island by Clare County Council on a recommendation by National Monuments.

## 14.5 Difficulties Encountered

No particular difficulties were encountered in the preparation of this chapter of the EIAR.

## 14.6 Baseline Environment

The main site of archaeological and cultural significance is Inis Cealtra. This chapter discusses the evidence from the archaeological excavations of the 1970s, the results from geophysics as it pertains to interpretation of the main features, and other aspects such as history, folklore and artefacts. Given the significance of the island monastery and the quality of the archaeological finds, it is of necessity succinct.

A summary of the archaeological potential of the car park site is provided.

The underwater archaeological surveys discuss the potential of the lakeshore and the jetty site in particular, concluding that it is not of high archaeological significance.

The proposed development to the harbour at Mountshannon is likewise not deemed to be of high archaeological significance, given the level of construction which has taken place there in recent years.

### 14.6.1. History of Inis Cealtra

The island of Inis Cealtra, or Holy Island, lies close to the shore at Knockaphort on the west side of Lough Derg. The location, on a large island close to shore in a low-lying riverine context, is typical of the location of the majority of ecclesiastic settlements, perhaps reflecting a desire to be near communication opportunities afforded by a riverside location. There may also have been a political reason for the choice of location. de Paor (1997) observed that Inis Cealtra effectively lay between Munster and Connacht, a strategic location which may have influenced the later patronage of the Ui Briain clan. He states that it is possibly as the result of a territorial dispute that the monastery was refounded from a possible early hermitage in the 7$^{th}$ century.

The island has an important group of ecclesiastic monuments located on the eastern shore. This comprises the following churches or ecclesiastic buildings: St Caimin's, St Michael's, St Brigid's, St Mary's, Tempall na bhFear nGonta, a shrine (known as the Confessional) and substantial remains of a round tower. A stone monument known as the Bargaining Stone, a Penetential Station, lies near the Lady Well. There are numerous bullaun stones, mounds of stones and earth associated with pilgrim patterns, earthworks and a children's burial ground or 'cillin'. There are 189 individual sites or stone features identified on the island and entered on the Record of Monuments and Places under the prefix CL029-009001…. The individual monuments are listed in Appendix 13.1. and are discussed in more detail in Chapter 13, Built Heritage, of this EIAR.

The churches, round tower, shrine and other principal monuments are National Monuments in the care of the State (Number 5). Sections of land on the island is owned by the State (figure 14.1). The remainder of the island was acquired by Clare County Council in recent years.

Inis Cealtra is recorded in hagiographical myth and legend from the 6$^{th}$ century. The foundation of the holy place is associated with various mythological figures and hermits, including Colum, who died ca549AD. A separate foundation on Inis Cealtra is attributed towards the mid 7$^{th}$ century to St Caimin, whose death is recorded in 654AD. Caimin too wished to withdraw from the world, but numerous followers and admirers came to join him on Inis Cealtra. According to de Paor the traditions and conflicting dates are perhaps mythological, but the origins of the island monasticism are rooted in the legends of these holy men.

Little is known of the monastery for some centuries. There is a potential link with the cult of St Cronan's church of Tomgraney (St Coonlan of Inis Cealtra d. ca750AD). The obituaries of two abbots of Inis Cealtra are recorded , Diarmait in 762, and Muchtighern in 785, suggesting that the island had an independent or autonomous monastic existence in the 8th century.

Following AD837, Viking ships and fleets were active on the Shannon, and Inis Cealtra was plundered and its community dispersed, under Turgeis's depredations. The death of Coscrach (the miserable) an anchorite of the island, is recorded in 898AD. In 922, Tomrar 'Jarl of the Foreigners' sailed upriver from Limerick and plundered Inis Cealtra and threw its books and reliquaries into the water.

The rise of Mathgamain and Brian Boruma to the kingship of Munster, and their firm control of Thomond brought patronage to Inis Cealtra. Further obituaries of abbots of Inis Cealtra are recorded for 951 and 967 AD. It is recorded that Brian Boruma built the churches of Killaloe and Inis Cealtra. Brian's brother Marcan, coarb of Inis Cealtra, died in 1010AD. The coarb was the figure with authority over the wealth of an ecclesiastical site.

In 1033AD, Conn Ua Sinnaig, anchorite of Ireland, died on Inis Cealtra. Gormlaith , wife of Toirdelbach Ua Briain, died at Killaloe and was buried on Inis Cealtra in 1076AD.

An 11th-12th century psalter fragment is attributed to St Caimin (replacing Colum in the local tradition of these later times). In 1111AD Cathasach 'head of the piety of Ireland', died on the island. His cross is now fixed to the inner face of the north wall of St Caimin's Church. This is the earliest inscription bearing cross of the Romanesque period. Cathasach was an ecclesiastic from Armagh so he was probably at Inis Cealtra 'in his pilgrimage' (that is away from his original monastery which seems to have been the rule in Ireland for elderly monks who had been invested with important charges.

The monastic history of the island suggests that it continued to be regarded in particular as a place of retreat, penance and burial, becoming known in later centuries as Insula Sanctorum, 'Holy Island'.

Structural changes to the church in the 12th century meant that the old monasteries, absorbed by territorial dioceses, became diocesan parishes. This pattern or narrative has been challenged in recent years as being somewhat simplistic, and the reality was undoubtedly much more complex. However the widespread changes to the 'Celtic Monasticism' through this period are evident, and this appears to have happened to Inis Cealtra at the beginning of the 14th century, having retained its monastic elements through the 12th century. This is evidenced in the scatter of Romanesque churches and the inscribed slabs in the Saint's Graveyard. St Caimin's church, almost certainly built under the patronage of Brian Borumha, was enlarged around 1150 AD, and the small church of St Brigid, dates from the second half of the 12th century.

In the 14th century, St Mary's Church at Holy Island became a parish church. The coarbs were drawn from the local family of Daly. The church appears to have continued to be a parish church until the Reformation, and possibly even as long as the 16th century. Then however it appears that the church roofs were stripped along with other destruction. Bishop Rider in his visitation of 1615 says of Inis Cealtra 'Cure not served, being an island and but one house'. The local families of Daly and O'Grady were gradually displaced in the locality and the parish lands came into the possession of Richard Boyle, Earl of Cork.

### 14.6.2 Post-Medieval Pilgrimage

The pilgrimage function of the island is not described until the 17th century. In1607, twelve pilgrimage sites, including Inis Cealtra, were assigned indulgences. Inis Cealtra was known, as was Glendalough and Clonmacnoise, as 'Seven Churches', although there were not this many churches on the island. Bishop Rider referred to Inis Cealtra in 1622 as 'ye island of Seven Altars' (O' Leary et al 2017, 44).

By this time the island had become the scene of a great annual pilgrimage or pattern which continued until the 19th century when it was suppressed by the Roman Catholic clergy. Assemblies of 15,000 people are reported in the 17th century. In 1837 Lewis reported that the island is still a favorite burial place and is much visited by pilgrims. Even after the suppression of the pattern, two of the island's graveyards continued to be used for burial as they still are to this day.

While the island is now primarily associated with St Caimin, the chancel of St Caimin's Church was known locally as St Colum's Chapel. There are however few other traces of the other saints of Holy Island.

The account of the 'patron' is given in the Ordnance Survey letter dated Mountrath, November 19, 1838 by T. O' Conor (in the Galway volume) with annotations by John O' Donovan (in the Clare volume). O' Conor gives the following account:

*A patron used to be held here annually four days, Friday, and Saturday before Whit Sunday, on which day and the following Monday it was continued. No assemblage of persons was allowed here those years past on this occasion in consequence of the outrageous conduct of some ill-behaved young rascals who were wont to seize the opportunity of providing for themselves fresh consorts for the ensuing year by carrying off by open force from the island young girls, in spite of all their friends and relations. Three brothers of a family of the O'Brien's who resided in the county of Clare within view of the island used to frequent the patron at which they conducted themselves, it is said, in a most disgraceful manner. On one occasion one of them carried off a young girl by force from it, whom he afterwards detained till he had three children by her. The neighbours state that no law corrected such detestable behaviour at the time. The station was commenced at Lady Well and the performers went round the extremity of the island, one mile in the circuit, seven times, equal 7 miles. The short rounds were commenced at a station monument (a little mound of earth and stones) lying 35 yards to the west of the round tower. They went round this monument seven times and proceeded through the door on the west gable of St Caimin's Church and as far as the altar in St Colum's chapel. They went this length seven times from the monument just mentioned, and at the commencement of every seven times of these they went round the monument itself seven times. They went round St Caimin's church 14 times, the tower and all the churches around it being included on the rounds. They went round a station monument at the end of St Caimin's church, either the one (a little mound of earth) immediately at the southwest corner or the one (also a little mound of earth) within a few yards of the northwest corner of it. They also went seven times round St Michael's garden and seven times round the bank of earth about St Michael's church and seven times around the church itself and seven times round a large flagstone lying at it, on which stone they finally (i.e. after having gone round it seven times) impressed kisses. They went seven times round St Mary's church and seven times round the Baptism church. They finished at the well and drank of its water.*

This is the most accurate description I could get of the mode in which the station on the island was performed. I could not get a minute description which would detail the number of prayers repeated during the process of the rounds. Nor am I certain that the description I have given here affords a correct view of the order of the process. I introduced it here merely to show what station monuments were made use of.

The old walks which were formerly gravelled over on this island are now covered with grass and still traceable. Henry Boucher the grandfather of Herny Allen, both of whom are mentioned above saw rows of trees planted along the sides of them. The principal road is still observable leading from the lake to the churches in a southern direction. It is said that there is a road (or causeway) extending opposite or near the western extremity of this road a distance of from perches from the island into the lake. A person could safely walk on it in summertime when the weather is dry. It is supposed that this road formerly connected the island with the main road. ‘

In 1863 a group of British tourists visit Inis Cealtra and they were shocked at the state of the island. In one of the churches there were a pig- sty while cattle roamed over the unprotected burial ground. Subsequently the parish priest of Scariff obtained the cooperation of the landlord Philip Reade to have something done about this. The remains and monuments came into the care of the state as a result of the Church Disestablishment act of 1869 and in August 1878 Sir Thomas Deane, Superintendent of Irish National Monuments. came to the area. The pig-sty seems had gone by then but the graveyards were still unfenced. Two years later it was reported that the Board of Works had repaired the cemetery attached to St Caimin’s Church while the Scariff Board of Guardians was bound to do the same for the cemetery attached to St Mary's church. Much more work was also done at this time.

The island has many associated myths and legends, including the stone mason who failed to finish the construction of the Round Tower. Traditions abound of bad luck falling to those who remove cross-slabs or memorials off the island, and that women should not enter Teampall na BhFear nGonta, less they be rendered barren. The Bargaining Stone was used to seal a deal or promise, and a marriage contract.

### 14.6.3 Archaeological excavation 1970-1980

Much of the study of the early Irish monastery was concentrated on the surviving art and architecture of the sites, and in this Inis Cealtra was no exception. Earlier studies of the architecture and sculpture of the island monastery were undertaken by Macalister (1916-1917) and Francois Henry. The church architecture and cross-slabs on the island continue to be studied (Clare County Council : 2017 Appendix 2:O’ Leary forthcoming).

This aspect of study was balanced through almost ten years of archaeological excavation undertaken through the offices of Failte Ireland/ Office of Public Works and UCD from 1970 to 1980, excluding 1978, under the direction of Dr Liam de Paor of University College Dublin. The excavations were envisaged as a long-term programme of research and conservation. A preliminary account of the works was published by de Paor in NMAJ (2014) with a three volume archive completed shortly before the death of the excavator. Post-excavation work is being carried out through the Department of Archaeology, UCD, subject to grant.

Five main areas were excavated, uncovering a range of archaeological features associated with an ecclesiastic site. These include habitation features, mainly a substantial round house, burials, ditches and gullies, pits and other. Samples of suitable material has been dated by radiocarbon, giving a span of 551AD into the early 14th century for differing samples (information from M. Seaver, NMI).

Most of the finds from the excavations date from the 9th century to the later 12th century, with specialist catalogues still in preparation. While struck flints and other miscellaneous finds of probable prehistoric date have been uncovered in the excavations, no specific features of prehistoric date were identified. There was however a group of prehistoric finds, including hollow based flint arrowheads and stone axes from an area north of St Brigid's church.

The evidence from other excavated sites is that monasteries tended to be established on 'new ground' and not on previously established settlements (Mc Cormick et al 2014, 466).

### 14.6.4 Other surveys

Clare County Council commissioned the following surveys which have contributed considerably to the archaeological background to the island. This includes dive surveys, which identified several log boats, specifically off the north- east corner of the island, where the divers identified a probable landing stage of the monastic period. Following a large scale underwater geophysics survey, a larger scale dive survey off the west shore of the island has not identified much material of archaeological significance.

A LIDAR survey of the island identified large plough furrows over much of the northern part, probably associated with the habitation described by de Paor as 'the cottage', a two roomed dwelling of post-medieval date on the northeast side of the monastery. Some potential post-medieval small enclosures towards the south- eastern shore, south of the monastic complex, may be remains of habitation.

The geophysics survey of those parts of the island which were not covered in scrub revealed the existence of a double ditched enclosure forming a D-shape around the monastic buildings of St Camin's Church, the Round Tower, Saint's Graveyard, and the Shrine. The overlay of de Paor's excavation trenches on the geophysics survey shows that his Area III trench just avoided clipping the most definitive subsurface expression of the monastery, the enclosure.

### 14.6.5 Post- excavation analysis

Preliminary analysis of the finds assemblage, faunal and burial material collected by the 1970-1980s excavation has been undertaken (O' Sullivan and Seaver 2015). This included selection of samples to be submitted for C14 dating. The earliest radiocarbon date obtained from a feature excavated to the West of St Caimin's Church was the date of 551-639AD (O' Sullivan and Seaver 2015, 35). Other significant dates recovered include one of 9th century date (also corroborated by artefact) for the boundary ditch on the west side of St Brigid's Church. The D-shaped outer enclosure around St Michael's was constructed in the 10th or early 11th century.

Material from a pit close to the Confessional returned a C14 date of 775-961AD. A date in the 10th century for the construction of this structure seems likely and suggests an overall period of building in stone to include the earliest church of St Caimin and of the Round Tower.

### 14.6.6 Burials

Some *in situ* recording of burials was undertaken during the period of the excavation. A further total of 58 individuals was examined, as well as disarticulated material which represents a minimum of a further 25 individuals. Of five samples submitted for C14 dates from the burials around the round tower, all are early medieval. Males, juveniles, and female were represented. Most of the burials from north of St Caimin's church were male, although female and juvenile were also present.

The burial of a young woman in the outer ditch of St Michael's was dated to the period 1024-1163, and is considered deviant.

### 14.6.7 Early medieval enclosure on Inis Cealtra

A geophysics survey of the island revealed the most significant information of the non-invasive studies recently undertaken by Clare County Council (Appendix 14.1). A defining characteristic of early Irish monasteries is the enclosure, or series of enclosures. These are thought to define the legal area belonging to the ecclesiastical settlement, and some scholars have argued that Irish ecclesiastical settlements were designed to a set pattern with the sacred core that was surrounded by a number of concentric boundaries demarcating areas of decreasing holy importance. A double- ditched C- shaped enclosure, probably the earliest manifestation of the monastic 'vallum' was identified at the eastern part of the island. This encloses St Caimin's church and Saint's Graveyard, and the shrine/ Confessional, and appears to extend to the lake shore. The northern section of the enclosure is covered by scrub, meaning that no survey could be undertaken in that area. The majority of ecclesiastical sites had an enclosure between 90-120m in diameter, however larger ecclesiastical sites could extend up to 300-500m in diameter. There were of course, exceptions to the circular ideal, with rectangular enclosures at Iona, a semi-circular enclosure at Clonmnacnoise, and a rectangular vallum suggested for Inch, Co. Down.

The double ditched enclosure at Inis Cealtra describes an internal area with a diameter of c 170m across the inner enclosure, and c. 220m across the outer enclosure. The inner enclosure ditch is more continuous than the outer, with a gap or probable entrance through both at a point to the south west of St Caimin's church.

Nendrum, Co. Down, the subject of early excavation, has been compared by de Paor to Inis Cealtra. The inner central enclosure at Nendrum was the ritual focus of the settlement containing church, round tower, burials, cross slabs and sundial. The middle enclosures contained the domestic buildings, and some industrial activity. Some ecclesiastical sites may have had settlements outside the enclosures. At Inis Cealtra, two circular enclosures were uncovered through geophysics at the western side of the island. The date of these enclosures is unknown, but may certainly be contemporary with the monastery.

The radial embankments apparent at Inis Cealtra are similar to those visible in aerial photographs of Nendrum, an early monastic enclosure. The landscape of Inis Cealtra is indicative of a dynamic, changing and expanding monastic settlement, where the earlier enclosures were possibly deliberately infilled as the settlement expanded or was modified. As noted on other excavated sites, the vallum was not always primary to the establishment of the settlement, and in time, was supplanted by other embankments and enclosures.

### 14.6.8 Layout of the monastery

Wooden churches (of oak, literally Dairthech) were the primary construction on monastic sites. At Inis Cealtra, evidence for a turf- based structure which appeared to support a post- and- wattle superstructure was identified, with walls some 2.5m thick, and measuring 5.5 by 4.1m internally (Mc McCormick et al, 490). The possible remains of an altar were identified in the form of a stain in the ground at the east end of a wooden church with earthen walls at Inis Cealtra. A sequence of at least three phases of construction of the structure was recovered, with each structure not on the same alignment.

The Confessional at Inis Cealtra was considered by de Paor to be the original tomb-shrine of the founder, although much modified, and itself a replacement of a possible earlier structure built of organic materials. The shrine, containing bones of the saints, or relics, was considered a major draw for pilgrims to visit.

The round tower at Inis Cealtra is located a short distance south- west of the west doorway of St Caimin's church. The tower lies directly opposite the suggested west gap or entrance through the enclosure ditches. De Paor was of the opinion that it may never have been completed: he may have been influenced by the abundance of local lore regarding the slighted stone mason who cast his hammer at a begrudging woman/ witch and turned her to stone.

Recent studies of round towers include interpretation as bell towers (cloig thech) and an association as ceremonial monuments associated with the expression of kingship. The level of foundations of excavated round towers is not consistent, with several examples having very shallow foundations. The tower at Inis Cealtra had shallow foundations but was built on a large circle or raft of deliberately laid down puddled clay and boulders.

Evidence for domestic arrangements/ dwellings was recovered from the excavations at Inis Cealtra. The large round house was considered a possibility as the principal residence of the abbot or a communal building housing the religious community (magnus domus). The large building returned a late date from numismatic evidence, being in use into the middle of the 12$^{th}$ century. Another structure was associated with metal-working.

An open space or plateau would have been present between the domestic buildings and the church/ graveyard and shrine. Commercial activities, such as craft working and other, may have taken place in this open area. The east/ west adherence of the monastic plan is evident from Inis Cealtra, but not always followed at other sites such as Church Island, Valentia Harbour and High Island, Co. Galway.

Much of the excavated evidence from Inis Cealtra accords with that from other ecclesiastic sites. Craft working was carried out at the western end of the monastery. This included copper working, iron smelting/ reduction, and evidence for antler comb manufacture.

Paved pathways were uncovered at several locations through the excavations at Inis Cealta, connecting the main structures.

### 14.6.9 Main features uncovered in the excavations

#### 14.6.9.1 Area I

The Lady Well was excavated in 1970. All the recovered artefacts were either 19th or 20th century in date, associated with the late phase of pilgrimage to the site. A series of gravel and cobbled surfaces had been laid down around the well. A path to the well is indicated on the first edition of the Ordnance Survey map. Rounds of the pattern began at the well and ended there, concluding with a drinking of the water.

### 14.6.9.2 Area II

Here was uncovered the post-medieval structure called the Cottage, which is sited some distance north-east of St Caimin's church. This area had been considerably overgrown for many years, but was re-exposed in scrub clearance in February 2024 which took place under archaeological supervision. The two room structure is of large boulders/ rubble, and the sloping ground internally was levelled with an introduction of up to 500mm of sterile soil. The structure had back- to – back fireplaces against the central wall. Finds were of late date, but with a number of quern stone fragments recovered amidst the rubble collapse of the west wall. The structure may date from as late as the 18th century, but could feasibly be the 'one house' referred to in Bishop Rider's visitation.

### 14.6.9.3. Area III

Area III was located around St Brigid's church (the Baptism Church). This church lay within an enclosure, located just outside the line of the outer C- shaped ecclesiastical enclosure discovered in geophysics. The southern line of the walled enclosure lay along that of a main east- west embankment. This radial embankment is of an early phase of activity.

The west doorway of the church had been rebuilt with several minor errors by OPW staff in the 19th century. The east wall was known to have been blown down in a great storm on January the 6th, 1839. The site was wholly excavated as was the ground around it on all sides. Dry stone paving was uncovered. The space around the church was free of burials, but the interior of the church had been intensively used for burial from the 14th century and later, with at least twenty bodies interred. A female burial had an infant aged 4-6 months placed on her abdomen. One burial had a decorated mounting probably attached to an armlet of organic material on the upper arm, with ornamentation of late 11th or early 12th century date. De Paor states however that the burial can be no earlier than the late 12th century. He interprets the evidence for St Brigid's as follows:

The Board of Works operations of 1879 had levelled the ground both within and without the church, but parts of the old surface of the period of the building remained relatively undisturbed. Fallen masonry overlay a scatter of roofing slates which were found inside the building as well as outside. The slates were of Killaloe variety, and had been finished, or trimmed, on site.

Evidence for a copperworker's furnace was recovered within the enclosure. Two decorated querns, and a broken one, of probable 14th century date, were recovered from pits. It appeared that querns were manufactured here.

Evidence for ironworking, including a furnace bottom, was also recovered. Bone and antler working evidence was also identified, primarily comb blanks, or unfinished combs of red Copper alloy stick pins, coins and other objects mainly of 14th century date were uncovered from a large cesspit north of the enclosure.

Significant finds from this area include decorated metal finds of probable 8th century date, part of a possible 7th or 8th century reliquary, and an incised Chi-Rho cross of early 7th century date. None of these finds were reckoned to be in primary position.

The church was probably built about the middle of the 12th century but abandoned as a place of worship about the beginning of the 14th century. St Mary's church was probably built very early in the 14th century, and around this time St Brigid's church came to be used for burial, while still roofed. The construction of paths linking different parts of the site or stations, began at least as early as the late 14th century but the main development of this aspect of the site was much later. A paved path led from close to the west door of the church to the gateway in the south wall. This appeared to lead directly to St Mary's church to the south-east. The drystone wall around the enclosure of St Brigids was probably as late as the 17th century, and the paved path along the inside was part of the pilgrimage route. At this time a broad paved road connected St Caimin's with St Mary's (de Paor 1997, 68).

#### 14.6.9.4 Area lV

St Michael's lay within the D- shaped embankment around the summit of the island, forming a focus for a system of earthworks. No occupation features at all were uncovered that were associated with the large enclosure.

A smaller enclosure near the centre of the D had two phases of construction. Remnants of stone paving were uncovered inside the wall. The enclosure had been used as a cillin, a children's graveyard. Skeletons were examined *in situ* by an osteologist Further analysis of the burial was undertaken as part of the post- excavation programme (Lynch in O" Sullivan and Seaver 2015). This indicated that there were probably two main phases of burial, one which pre-dated the small structure (below) and a second phase which respected the orientation of the small structure. Burials ranged from neonates through juveniles while an adult was tentatively identified. Burial of infants at St Michael's continued into fairly recent time. Stones were used to mark the individual graves.

A small mortared structure with a paved floor in the centre of the enclosure post- dated the use of the enclosure as a children's burial ground, and appears to be related to the development of the island's monumental features as part of the pilgrimage rounds. This was from c. 1500 (a silver coin of possibly Henry VIII was recovered from beneath the paving) to the late 19th century.

#### 14.6.9.5 Area V

St Caimin's and vicinity was the inner sanctum of the early monastery. The focus of the excavation was on several of the more important structures, with differing results.

##### 14.6.9.5.1 The Confessional

This structure had been suggested by Macalister as an anchorite's cell, and interpreted by de Paor as a reliquary shrine, housing the translated bones of a founding saint. It is located immediately to the north of the Saint's Graveyard. There had been some paving around the small structure, which had an entrance on the east side. Large leaning stones blocked off a shallow cist-like construction of thin limestone flags. Both human and animal bone fragments were recovered from the cist. A slab with a ringed cross in relief (10th-11th century) was sited just east of the doorway. A slot for a cross-slab was nearby, and the base of a cross sat on the surface, to the east of the doorway. The structure was

located within a small enclosure defined by a stony bank. De Paor interprets the structure in its original manifestation as a shrine.

The paving dated to the late medieval pilgrimage phase. The Confessional had been remodelled post 1700, but the cist-like structure may have been original. The two successive rebuilding phases included the reconstructions of the stone platform on which it was sited. It is likely to have been contemporary with the original stone church of St Caimin and the round tower.

A small squarish timber structure to the west of the Confessional was interpreted as an early shrine, having the same dimensions as the Confessional, by which it was later replaced. This structure appears to have been rebuilt at least twice. The building was on a north-south axis. Poorly preserved burials were placed within the enclosure around this small structure.

Evidence for bronze working was recovered from an ovoid enclosure, 23m in diameter, north of the structure. This was occupied from the early 11th to the 14th century. Stone motif pieces were recovered from this area- bone was poorly preserved, and scraps of bronze with ornamentation in the Irish Ringerike style. Two huts were identified.

The earlier phase of cultivation furrows in this area predated the ovoid enclosure, but overlay the most northerly burials.

Limited work was carried out on the Saint's Graveyard, but de Paor states that it is unlikely to be earlier than the 11th century, and possibly dates from the 12th century.

A long trench connecting St Michael's with Area V crossed several of the embankments, and showed that the enclosures were largely post- medieval in date (de Paor 1997, 79).

#### 14.6.9.5.2 The Round Tower

The tower was shown to have had very shallow foundations below a plinth. However it appeared to have been constructed on a prepared raft foundation of puddled clay and small boulders, ringed with small drain= trenches. Evidence for a timber staircase to the entrance was uncovered.

#### 14.6.9.5.3 Domestic Structures

Numerous small structures were identified in the area around the Round Tower, and north of St Caimin's Church. However the soil here was shallow and the evidence was fragmentary. A round house of c10m internal diameter with internal straight partitions appears to have been built of post- and-wattle, with some large posts set on pads. The hearth was centrally placed, and a hoard of 21 coins was recovered from beneath the hearth. The coins were mid- late 12th century in date, and were very worn. This is the building that de Paor had suggested was the residence of the abbot, or perhaps of the main body of monks.

A second house was also identified.

Numerous pits and other features were excavated in the vicinity of the two main roundhouses, indicating an intense level of settlement in this area.

Excavation work around the bullaun stone uncovered a second bullaun immediately to the south- this may be the stone adjacent to the OPW hut. Part of a stone pestle was retrieved from mixed deposits containing iron finds and clay pipe.

### 14.6.9.5.4 The earth walled church

A rectangular structure had been reconstructed several times. The earliest structure had a trodden clay floor on the interior which measured 5.5m by 4.1m. The walls were of post-and – wattle and earth, c. 2.5m thick. The entrance was at the west, and a timber type stain in the flooring at the east was interpreted as the possible base for an altar.

The orientation was altered slightly with each rebuilding. The orientation altered from that equalling St Brigid's Church to that exactly as St Caimin's Church. Along with the timber shrine to the east, and the early burials, this represents the earliest phase of the monastery.

### 14.6.9.6 Summary of excavation findings

The excavations indicate that activity on the island occurred more or less continuously from a date c. 600 down to the 19th century. Burial was practised from an early period, and continues to this day. The chief period represented for the monastery was from the 10th century to the end of the 12th century. The main radial elements of the island appear to date to an earlier period. A small number of artefacts of ecclesiastic function indicate activity of the 7th- 8th centuries. A few fragmentary sherds of Bii-ware of 5th-7th century date were found, indicating connection with the early wine trade. Some Late Roman amphorae, were stamped with early Christian symbols, such as the Chi- Rho, which is present on a stone from Inis Cealtra. De Paor had dated this to the 7th century, but it may be of 6th century date. E-ware from France, dating to the 7th/8th centuries, was also recovered in small quantities.

An overlay of the excavation trenches and the geophysics results shows that the excavation trench missed the inner enclosure ditch which appears to have had an entrance at this location. The plan showing main features of the earliest levels in Area V south and west of the round tower (de Paor 1997, figure 29) indicates that the early earthen oratory was located immediately inside the enclosure entrance. South of the oratory was the greatest concentration of round huts and larger structure.

There was little or no evidence for habitation at the site in the high medieval period. No rectangular structures of medieval date were uncovered, and it is unusual to have had a large round structure still in occupation into the middle of the 12thc century, as evidenced by the hoard of coins uncovered in the structure in area V.

The site continued to be important for religious and burial practices into the later medieval period.

The final years of occupation of the island are characterised by intensive pilgrimage, accounted by Lewis (1837) and O'Conor (Ordnance Survey Letters). The cottage appears to date to the 18th/ 19th century, and St Brigid's Church was adapted into a two room dwelling. Occupation on the island may have been seasonal.

Tillage with a plough- indicated by the high notable ridge and furrow marks, also including potato growing- the final layer of agricultural activity south of the cottage identified by de Paor's excavation, pasturing of cattle, continued when the island was probably no longer inhabited.

### 14.6.10 Mountshannon Old Rectory and New Surface Carpark

The proposed Visitor Centre is to be constructed within the curtilage of the Old Rectory, in the southern part of the site facing out to Harbour Road and Lough Derg. Works to the Old Rectory are currently underway (permitted under Reg. Ref. 238001), due for completion in early 2025. There were no archaeological implications for development here, as found during monitoring of test pits in 2022 (Appendix 14.6).

A surface car park is planned for a site on the north side of Main Street in Mountshannon. The site is formed from two adjoining back lands of a derelict property which once stood towards the street front. The site is typical of the narrow linear plots of the planned mill town of Mountshannon. The central partition between the two gardens is formed by a stone and earth embankment, with semi-mature shrub and trees growing on it. No particular structure to the embankment is evident.

It was noted during a site visit in 2022 that the grass to either side is covered with rushes and buttercups and shallow cultivation rigs, probably spade dug, evident.

## 14.7 The 'Do Nothing' Scenario

If no works to the island were to take place, the following is considered.

Visitors to the island will continue to increase, albeit in low numbers, with no attendant facilities. The area around the fisherman's hut is subject to waste and surface contamination from lack of facilities.

There would be no wardens on the island and presently St Caimin's Church is locked with limited access.

Maintenance of features such as shrub control and visits by wardens to collect litter would probably drop, as maintenance of the island would in all likelihood no longer be considered a priority. None of the positive aspects brought by the Conservation and Management Plan would be likely to be implemented in either the short or long- term. There would be no focus on research opportunities concerning this important monastic island site which increased visitor numbers, across all disciplines, would be likely to bring.

## 14.8 Potential Significant Effects

### 14.8.1 Demolition Phase

To facilitate the development, it is proposed to demolish the existing concrete shelter adjacent to the existing pier at the north-west of the island, known as the fisherman's hut.

The structure is simple in its construction, being of mass concrete walls and floor with a flat roof and a single window and door, and internal fireplace. According to information from Ger Madden, it was constructed with aid from ESB. The principal dimensions of the structure are 4.830m width, 3.244m length and 2.57m height. It has a gross floor area (GFA) of 16 sq.m.

It will be carefully removed by hand to facilitate two new purpose-built 'pods', comprising a new shelter for visitors and restroom facilities for staff.

The existing shelter will be dismantled from the top down using hand tools to break the existing concrete and timber into sections that can be manually handled. Dismantling will start with the removal of the roof, followed by the removal of the window and door, taking down of the walls, breaking out of the floor slab and removal of foundations (if any). The material will be sorted into waste for disposal/ recycling and then removed off the island by boat where it will be disposed of by a licensed waste contractor.

Removal of the concrete plinth to the 1960s fisherman's hut should be monitored under Ministerial Consent by an archaeologist. It is considered unlikely that anything of potential archaeological significance will be uncovered in the monitoring but given the important heritage significance of the island, all aspects of the demolition and construction works should be constantly monitored by an archaeologist.

### 14.8.2 Construction Phase

It is proposed to construct two pods on and close to the existing fisherman's hut, which will be demolished in advance of the work. The present hut is constructed on a concrete plinth, which extends c. 1.50m beyond the walls of the hut in all directions, and extends down below the present ground level. The construction of the hut with attendant fencing and cattle crush has resulted in a considerable degree of disturbance and incorporation of modern debris into the shallow topsoil. Shallow topsoil overlies a clear subsoil horizon as uncovered in trench 1.

Due to the relocation of the WC pod east of the jetty and south of the existing trackway, it is advisable that a test trench for archaeological purposes be sited here. It is considered very unlikely however that archaeological deposits will be uncovered at the site of the WC pod: this area is presently very overgrown, but natural rock outcropping is visible, which tends to mitigate any survival of archaeological deposits.

Each of the larger pods will be built on screw piles. ' The pods will be made up of two distinct elements, a lightweight timber oak exo- frame resting on mini pile foundations and an oak- framed oak clad pod structure which will sit into this frame' (Drawing INC2-P-ISL-105-A, MCM). Each will measure 7700mm by 3575mm. The WC pod will be of similar construction, while measuring 6100 by 3575mm.

The pods will not be visible from the monastery due to the fall in elevation from the top of the island to the eastern shoreline and the presence of dense vegetation in the location of the pods, much of will be retained for screening (See drawing INC2-ISL-P-150, MCM).

The process of the construction of the new jetty will be discussed here, as it precedes the pod construction. The sequence as outlined in the CEMP prepared by Malachy Walsh Partners, dated November 2024, is as follows:

• Pre-commencement activities including site investigation work and pre-construction surveys

• Pre-Construction Activities including

• Site Clearance Works to allow for the new jetty to be constructed

• Construction of temporary site construction compound

• Construction of new floating access jetty and walkway located at Northwest of the island where the existing mooring point is located.

• Site Clearance Works to allow for the remaining works on the Island

• Demolition of a structure on the island

• Construction of 3no. new staff and public welfare facility "pods" on the island

• Construction of new pedestrian paths on the island

• Complete site works, tidy up site, landscaping, restoration

• Demobilise site compound facilities

It is expected that the construction works on the island elements of the works (construction of jetty/ demolition of existing shelter / construction of pods & paths) will require approximately 25 personnel including during the peak construction phase, to include site contractors, engineers, materials delivery personnel, environmental personnel, health and safety personnel.

Site Investigation works will be conducted at the proposed jetty location in advance of the main works to inform the detailed design for the jetty.

• The drilling rig will be transported by the Coill an Eo workboat to the site and placed on the Pontoon raft. After securing the rig to the raft the raft will mobilise to the locations shown as GI1, GI2 and GI3.

• Boreholes are drilled at each respective location to verify the geotechnical profile of the site. Samples are recovered and sent to lab for testing.

The new proposed design is a breakwater jetty located at the site of the existing slipway. The existing slipway is a narrow concrete covered stone structure suitable only for very shallow craft. 4 number 800mm dia (max diameter) steel piles will be required to retain the jetty. It is planned to install a 9m long x 1.5m wide max ramp to allow safe access from the Land (fixed) to the jetty (floating). This will require 4 number 203mm H piles to support the concrete (2m x2m) anchor base that retains the ramp anchor points. These piles will be vibrated into the bed by an excavator on the pontoon raft along the stone causeway on the Southern side and the piles will be hidden inside the stone filled gabions to the Island. Similarly, 2 254mm x 254mm H piles will be required to retain the Canoe Launch section in the sheltered side of the land Structure. They will be vibrated also into place by the excavator on the

Pontoon raft. It is envisaged that the programme of works will take approximately 5 to 6 weeks to complete.

Some of the fleet required to complete the installation of the floating jetty are the Coill an Eo workboat, the Inish Muilinn workboat and the 16-unit pontoon raft with an excavator on board. The pontoon raft requires a draft of 0.4 metres and can be up to 0.6 metres when fully laden. It is held in position by spud legs dropped by gravity into the lake bed or pushed into the lake bed by the excavator on board based on the type of working activity.

The proposed layout is a 4 metre wide breakwater jetty with 4 number 800mm (max) diameter piles core drilled into the lake bed. A 9 metre access ramp will provide access from the Island. This ramp will be secured on the mainland to a concrete base that will sit on stone gabions at the front face of the access causeway. Also attached to the causeway is a 7 metre ramp to a Canoe launch at right angles to the causeway.

The excavator with the piling attachment will drive the outer H piles and outer trench sheet piles from the pontoon raft and will then track off the pontoon raft (held in place by 2 spud legs pushed into the lake bed) on the South West Side of the access causeway onto timber mats placed in advance from the excavator on the pontoon raft and drive the remaining trench sheet piles. During the construction of the causeway the excavator will travel on the timber mats over the travel area for the excavator to work. The excavator will be working in a depth of water up to 0.6 metres.

• The excavator will vibrate the trench sheets with the piling attachment into the bed and to a depth designed based on the Ground Investigation results. The trench sheets will be stored on the Pontoon raft.

• The excavator will place gabion mattresses (1m x 2m x 0.9m) filled with broken washed stone (filled at Mountshannon Harbour) and transported out on the pontoon raft) on the exposed side of the existing causeway structure and inside the trench sheet wall. There will be some loose stone infill required during the construction. 1m³ bags of stone will be transported from Mountshannon Harbour and the excavator will lift the bags from the pontoon raft and spill the stone at the required locations.

• The front face of the causeway will have a Trench sheet face finished on top with a concrete anchor block supported by 4 number 254 x 254 H piles driven into the lake bed. These piles will be driven by a piling attachment on the excavator (and vibrated into the lake bed. This concrete platform will be constructed and poured the shuttering of the anchor base area is complete. There will be a timber fender bolted to the top of the Trench Sheet Piles and will act as a screed for the concrete finish. Concrete for the base will be ready mixed locally and delivered to Mountshannon Harbour where it will be poured into small skips and delivered on the pontoon raft to the site where the excavator will pour the skips into the shuttered area. This concrete platform will be the anchor point for the Ramp to the Floating Jetty. The exposed face (SW) of the causeway will be faced with 300 to 600mm large stone to break the wave. The stone will be placed on the pontoon raft at Knockaphort and shunted by workboat to the site.

The floating jetty sections will be delivered to Mountshannon Harbour where they will be assembled over water at the Harbour and then towed by the Coill an Eo workboat to the proposed jetty location.

Acore drilled rig will also be loaded onto the pontoon raft at Mountshannon slipway and travel to the jetty mooring location.

4 piles (P1 -P4) will be core drilled into the lakebed size to a depth based on the GI results. Excavation of the lake bed will be required on the South end of the main breakwater jetty (see Waterways Ireland's Drawings). The excavator with digging shovel will remove the material ($2m^3$) and place on a skip on the pontoon raft. This material will be removed off site. A silt curtain will be placed around excavation area when removing material.

The jetty will then be pulled into place with the WI tugboat and anchored with pile guide brackets. The 2 H piles for the canoe launch will also be driven by the excavator from the Pontoon raft. The canoe launch will be accessed to the causeway via a 7 metre ramp. The canoe launch will have a freeboard of 300mm to the water line.

The access ramps will then be placed with the aid of the Excavator on the pontoon raft at the location shown for the Causeway construction to the concrete anchor platform. It is envisaged that the programme of works will take approx. 7 to 8 weeks to complete.

Mitigation: the area for the pontoon and proposed jetty location has been surveyed both by underwater geophysics and a dive survey. No archaeological deposits have been noted. Appropriate archaeological monitoring under ministerial consent should form part of the process. This will include monitoring of the Ground Investigation piling, the resultant samples taken, monitoring of the piling for construction, and monitoring/ inspection of the material to be excavated from the lake bed at the south end of the main breakwater jetty.

The following section concerns the CEMP for the demolition of the fisherman's hut and construction of the pods on the island. The following sequence will ensue:

- Secure site and erect fencing, hoarding, and signage as required;
- Install any bunding and/or run-off controls where required;
- Identification of temporary stockpiling and storage areas;
- Set up contractor welfare facilities and site accommodation.
- Provision of temporary power, lighting and water services.
- Dredging works at the proposed jetty at Inis Cealtra is not envisaged.

Prior to construction commencing, on site, demarcation of the construction site boundary will be undertaken. Hoarding/ Fencing will be erected to secure the site for safety reasons. The island will close to the public during the course of the works, but for access for the farmer/ for a funeral should it be required will be permitted, and this will need to be arranged in advance with the Contractor to allow for safe access.

Following demolition of the fisherman's hut and removal of the material off the island, a temporary site construction compound will be set up upon commencement of the construction phase of the works on the island beside the existing slipway. The compound will be used as a secure storage area

for construction materials and excess spoil, and it will also contain temporary site units to provide welfare facilities for site personnel.

If existing scrub vegetation is present where a pod is proposed to be constructed, clearing will occur using a flair mower. If grass is present where a pod is proposed to be constructed, clearing will occur using a lawnmower.

This work will be performed outside of the bird nesting season to ensure no disturbance occurs. The area is then landscaped to the Landscape Architect's specification.

The pod foundations will be supported by a series of screw piles installed to a depth sufficient to ensure a stable load-bearing capacity. Installation will be carried out using a tracked mini-digger equipped with a screw pile anchor drive attachment. The exact number of screw piles will be determined based on the pod dimensions.

The pods' structural frames will be built on-site using treated timber. The timber will be brought from the mainland by boat, unloaded at the new jetty, and stored nearby. It will then be taken to the pod locations, where it will be assembled into the structural frames.

The structural frame of the pods will be clad with timber inside and out, including the walls, floor, and roof. The timber will be transported by boat, stored, and then installed in the pods. The envelope will be insulated and fitted with necessary membranes to ensure it is airtight and weatherproof. Timber windows and doors will also be installed.

The WC unit will be of similar construction type, fixed on screw piles.

Any surface preparation in relation to the mown paths should be subject to consultation in advance with National Monuments.

The works on the island are to be completed at times of dry weather when the ground conditions are appropriate so that the potential for scoring deep tracks is minimised in so far as is reasonably practicable.

The suggested mitigation is for archaeological monitoring under Ministerial Consent from National Monuments to be undertaken as part of the works, at all stages that the archaeologist and National Monuments consider to be appropriate. The project design and the proposed implementation will have minimal, if any, impact on the important archaeological resource of Inis Cealtra.

Recording of the old field property line in the site of the car park at Mountshannon should take place in advance of its partial removal. It is recommended that removal of topsoil for the construction of the car park should be monitored by a suitably qualified archaeologist.

The mitigation measures will be issued as conditions of planning to Clare County Council.

In the absence of mitigation, negative effects would be moderate.

### 14.8.3 Operational Phase

This relates to the use of the new facilities on the island. The facilities are located close to the new jetty, which is sufficiently wide for railings and a firm and level surface underfoot. (The current landing

stage is unlikely to have been substantially modified since perhaps the 1960s when the fisherman's hut was constructed. At the recent well attended funeral of Edna O' Brian, local people considered it necessary to lay down gravel over mats on the surface of the jetty, and over the initial access to the path to the monastery).

The jetty will be well monitored with frequent journeys to and from the mainland, and with staff welfare facilities located close by. The jetty will be maintained by Waterways Ireland.

The paths to the monastery will be mown regularly, and monitoring of any areas of wear will result in mowing a 1m wide path alongside the main path, to spread the load of wear. The procedure of monitoring of wear and tear is outlined in the Conservation and Landscape Management Plan.

Visitor numbers will be recorded and kept below 400 per day for operational mitigation measures. The restricted visitor numbers were derived from the sensitivity analysis (LAC - Limits of Acceptable Change) which was undertaken during preparation of the Inis Cealtra Visitor Management & Sustainable Tourism Development Plan, and is to be implemented as part of this project as detailed in the Visitor Management Plan. This operational mitigation measure is intended to conserve or avoid adverse impacts to the archaeological, heritage and ecological resource..

Opening times from 9.00 am to 6.00 pm in high season will be maintained. Staff to guide and assist will be present on the island for this duration.

### 14.8.4 Cumulative Effects

The proposed Phase 1 operational phase in place, and the cumulative effects have been considered. The cumulative effects will be temporary to short term, slight to moderate negative effects on the basis of the EPA EIAR Guidelines. The Visitor Management Plan shows that visitor numbers will increase during operation of phase 2 when the new visitor centre in Mountshannon is delivered. Given the significant time between the phases, there is a potential cumulative effect between the 2 phases. That is, delivery of the visitor centre in phase 2 will result in greater numbers visiting the island which will have become operational some 15 years (approx.) before. Notwithstanding, implementation of the VMP will mitigate potential adverse impacts on the island by capping visitor numbers to the island.

Interactions between the built heritage and the cultural heritage exist, but there are no potential cumulative impacts identified upon the architectural, archaeological and cultural heritage.

### 14.8.5 Summary

The following Table summarises the identified likely significant effects during the demolition and construction phase of the proposed development before mitigation measures are applied.

**Table 14-1 Summary of Demolition & Construction Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Direct | Negative | Moderate | Limited | High | 6-12 months | Adverse |

The following Table summarises the identified likely significant effects during the operational phase of the proposed development before mitigation measures are applied.

**Table 14-2 Summary of Operational Phase Likely Significant Effects in the absence of mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| Direct | Negative | Moderate | Widespread | High | Years | Adverse |

## 14.9 Mitigation

Mitigation for the archaeological heritage is outlined in the following sections. Archaeological monitoring of several phases in the operations are detailed below. All the measures are considered to be standard archaeological mitigation measures with positive outcome in similar designs.

### 14.9.1 Incorporated Design Mitigation

The current development proposal has been heavily influenced by the aim of protecting archaeological features (known and unknown). In particular, the island layout (jetty, path and pod locations) evolved to avoid impacts to existing archaeology. Likewise, the method of construction selected, responds directly to the island's archaeology, to ensure minimal intervention. Mitigation through design has been an inherent feature of the design process, so that adverse impacts are avoided or reduced.

### 14.9.2 Demolition Phase Mitigation

Some archaeological mitigation is considered necessary in demolition of the fisherman's hut on the island. Removal of the concrete plinth on which the hut is constructed should be monitored by a suitably qualified archaeologist.

Demolition works to remove sections of the central embankment on the surface car park site on Main Street should be monitored by a suitably qualified archaeologist.

### 14.9.3 Construction Phase Mitigation

Construction of the new sections of the jetty should be monitored by a suitably qualified archaeologist. Prior to locating the exact position of the test bores and subsequent piles for the jetty, these sections of the lake bed should be subject to an underwater excavation. It is not anticipated that any artefacts or structures of archaeological significance will be located, but it is advisable that this take place in advance of piling. Should any unexpected features of archaeological significance be encountered in the course of monitoring or advance excavation as required, measures will be put in place via condition. These conditions would in all likelihood state that works in the immediate vicinity should cease until consultation and agreement on detailed mitigation with National Monuments staff is reached.

Similarly, the areas of lake bed which have to be excavated or dredged as part of the breakwater construction should be subject to underwater excavation/ screening under Ministerial Consent as part of the construction programme.

Archaeological monitoring of scrub removal and excavation of each location by a suitably qualified archaeologist in advance of the screw piling for the pods should be undertaken, with the location of each pile screened as part of the construction.

Archaeological monitoring of topsoil clearance to subsoil in the surface car park at Main Street should be undertaken.

### 14.9.4 Operational Phase Mitigation

No mitigation is deemed necessary in the Operational Phase should implementation of the Visitor Management Plan be undertaken. This includes measures to cap visitor numbers (100 max. per hour and 400 max. per day) as an operational phase mitigation measure. There are also operational stage measures such as monitoring the condition of walking paths by island staff/tour guides as part of the Landscape and Conservation Management Plan. Implementation of the visitor management strategies and conservation measures set out in the VMP should require no further mitigation.

## 14.10 Residual Impact Assessment

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

### 14.10.1 Demolition Phase

No residual impacts are predicted once all recommended mitigation measures have been carried out.

### 14.10.2 Construction Phase

No residual impacts are predicted once all recommended mitigation measures have been carried out.

### 14.10.3 Operational Phase

No residual impacts are predicted once all recommended mitigation measures have been carried out.

### 14.10.4 Summary of Post-mitigation Effects

The following Table summarises the identified likely significant residual effects during the demolition and construction phase of the proposed development following the application of mitigation measures.

**Table 14-3 Summary of Demolition & Construction Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| None | Low | Slight | Limited | Slight | 6-12 months | Positive |

The following Table summarises the identified likely residual significant effects during the operational phase of the proposed development post mitigation.

**Table 14-4 Summary of Operational Phase Effects Post Mitigation**

| Likely Significant Effect | Quality | Significance | Extent | Probability | Duration | Type |
|---|---|---|---|---|---|---|
| None | Low | Slight | Limited | Slight | Years | Positive |

### 14.10.5 Cumulative Residual Effects

No cumulative residual effects have been identified during the course of this assessment.

## 14.11 Risk of Major Accidents or Disasters

This is not considered a likely event in relation to this project. However increased rainfall as a result of climate change may result in deterioration of pedestrian paths on the island, resulting in negative impacts to archaeological features. Note that with implementation of the visitor management strategies and conservation measures set out in the VMP, adverse impacts are likely to be avoided.

## 14.12 Worst Case Scenario

This is not considered a likely event in relation to this project. The worst case scenario may be that recommended mitigation is not implemented.

## 14.13 Interactions

Interactions between the architectural cultural and archaeological heritage exist. Mitigation for all elements have interactions. Interactions also exist between the landscape and cultural heritage.

## 14.14 Monitoring

Monitoring of the architectural cultural and archaeological heritage will be undertaken on an ongoing basis with maintenance of the architectural heritage by the State body charged with upkeep of the National Monuments. The archaeological heritage will be monitored as outlined in the Conservation and Landscape Management Plan and in the Visitor Management Plan.

## 14.15 Summary of Mitigation and Monitoring

The following Table summarises the Demolition and Construction Phase mitigation and monitoring measures.

**Table 14-5 Summary of Demolition & Construction Phase Mitigation and Monitoring**

| Likely Significant Effect | Mitigation | Monitoring |
|---|---|---|
| Low | Archaeological monitoring | Ongoing |

The following Table summarises the Operational Phase mitigation and monitoring measures.

**Table 14-6 Summary of Operational Phase Mitigation and Monitoring**

| Likely Significant Effect | Mitigation | Monitoring |
|---|---|---|
| Low | Implemented through the VMP and the L&CMP | Ongoing |

## 14.16 Conclusion

The assessment concludes that the most direct impact to the cultural heritage and archaeological heritage lies in the construction of the new jetty at the north-west side of the island. The impact is considered however to be low, as the construction of the stone and concrete jetty here in the 19th century or earlier will have resulted in the removal of any earlier material if such was present.

The assessment concludes that the pods are to be located in an area of very low archaeological significance, with only either naturally deposited sands or hillwash present, and other soils with modern material throughout present. The foundations for the pods are a series of screw piles, which will have minimal impact on underlying deposits.

## 14.17 References and Sources

www. Archaeology.ie Historic Environment Viewer

Clare County Council 2017 O' Leary, C., Wallace, P. and Mc Carthy, B., Archaeological background in Appendix B Iniscealtra appendix 2 Detailed Support Material.

De Paor, L. 1997 Inis Cealtra Report on archaeological and other investigations of the monuments on the island. Unpublished report submitted to National Monuments.

De Paor, L. 2013. Inis Cealtra: Archaeological Investigations of the Monuments on the Island

North Munster Antiquarian Journal vol 53.

Malachy Walsh Partners November 2024. Construction and Environmental Management Plan prepared for Clare County Council.

O' Sullivan, A. and Seaver, M. 2015 Post-excavation reports on Iniscealtra excavations. Unpublished report submitted to the Royal Irish Academy.

O' Sullivan, A., Mc Cormick, F., Kerr, T., and Harney, L., 2013. Early Medieval Ireland: the evidence from archaeological excavations. Royal Irish Academy.

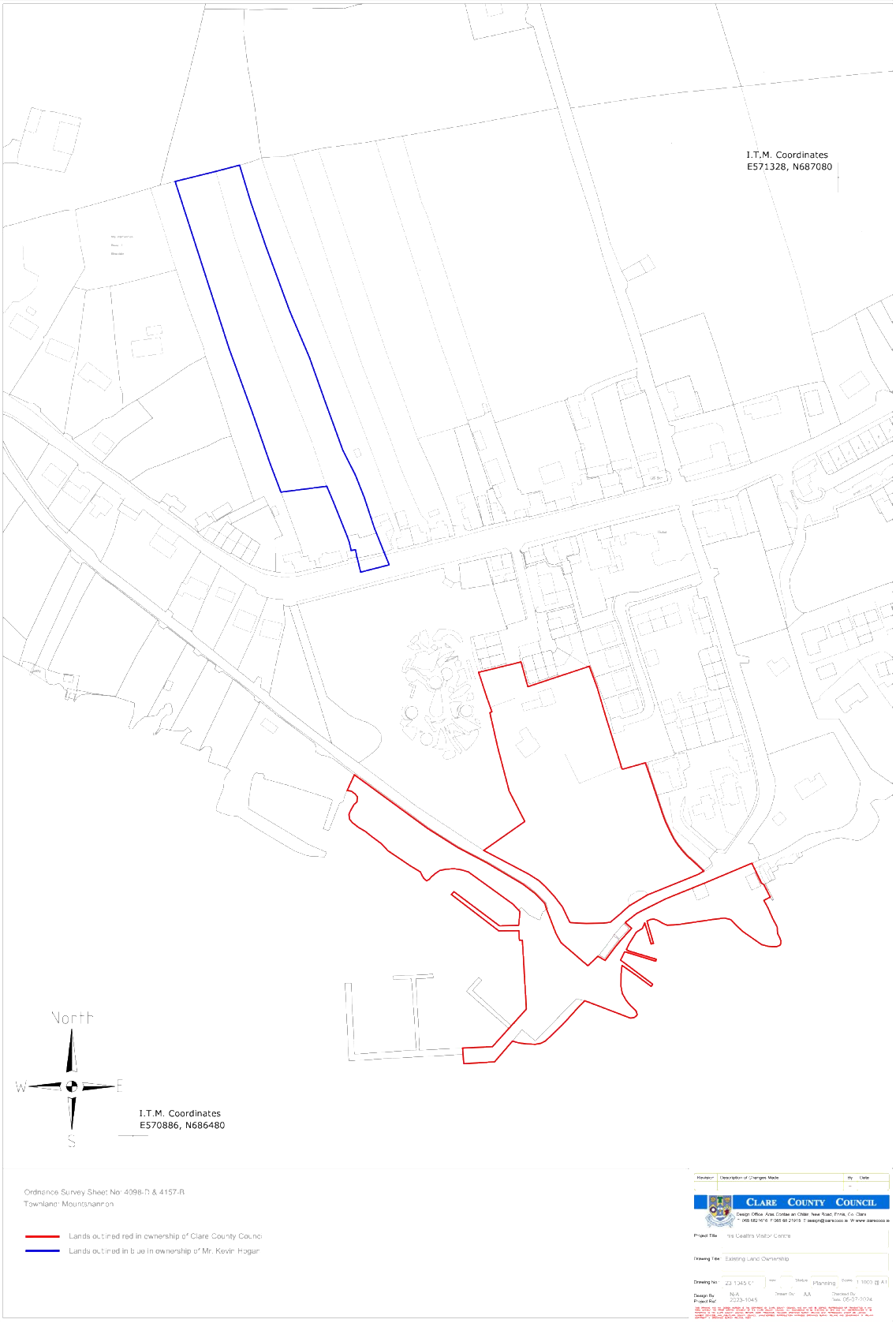



**Figure 14.1 Land ownership map showing site of carpark and Old Rectory, Mountshannon**

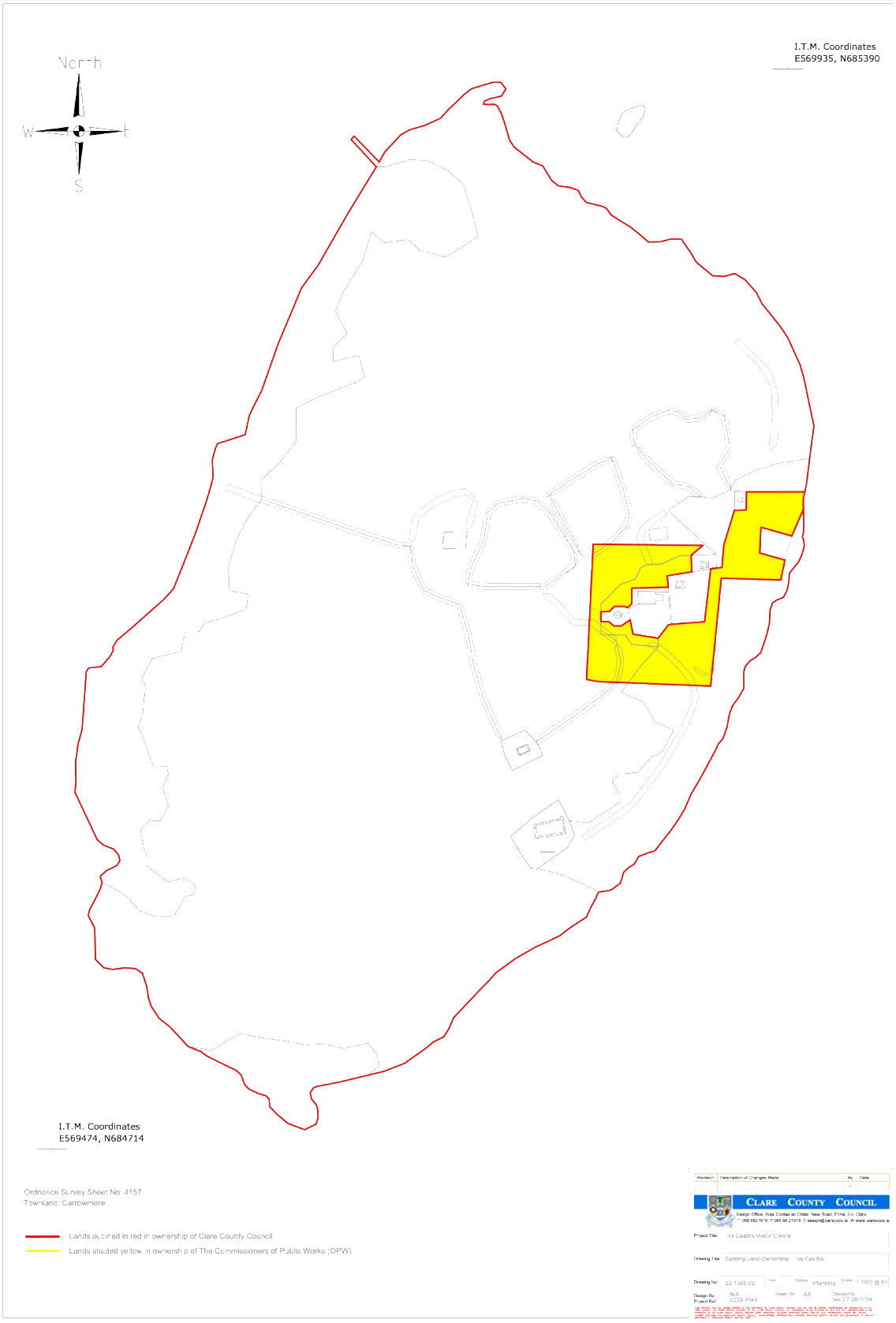



**Figure 14.2. Landownership map Inis Cealtra**

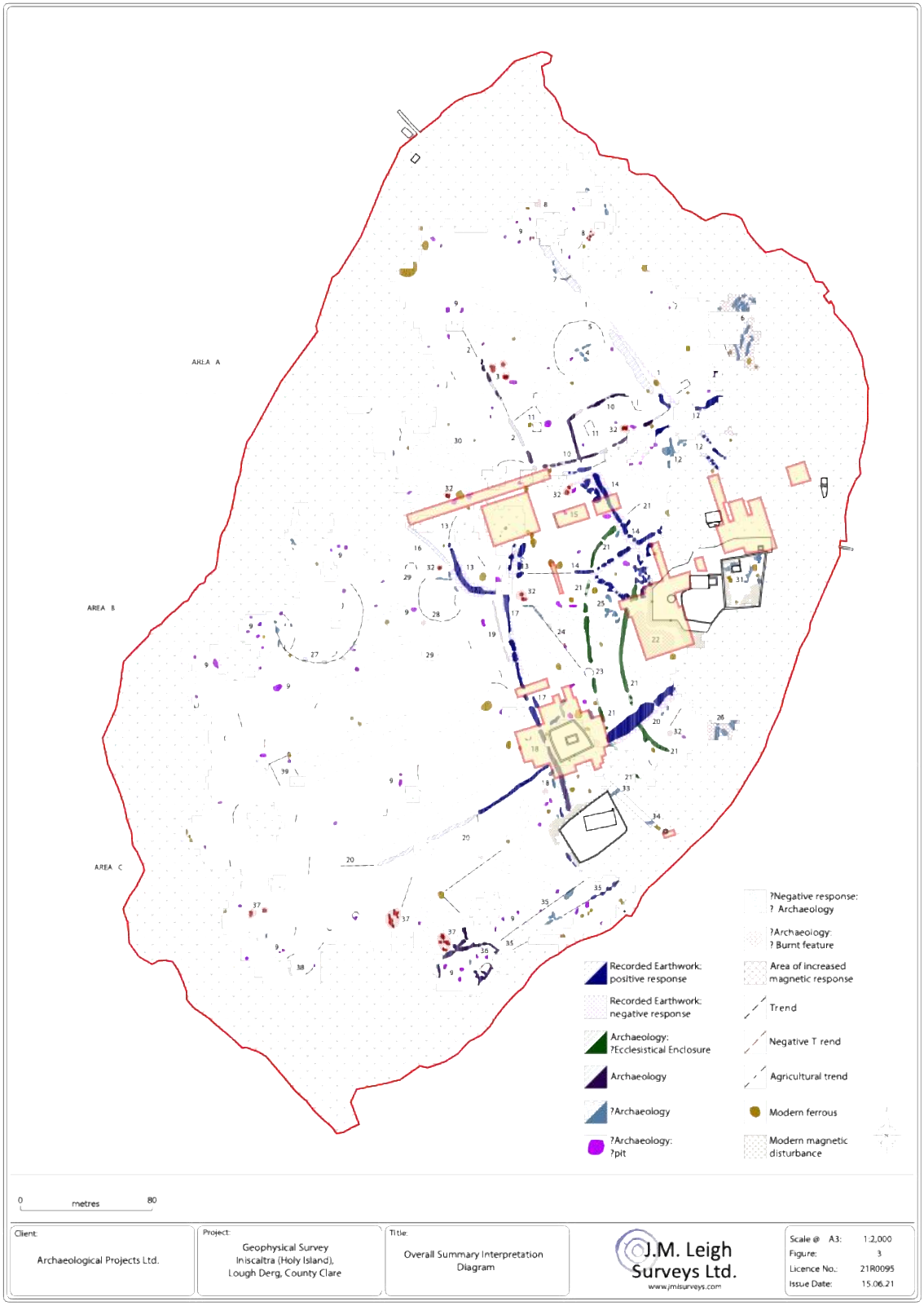



**Figure 14.3. Excavation trenches 1970-1980 overlain on geophysical survey 2021**

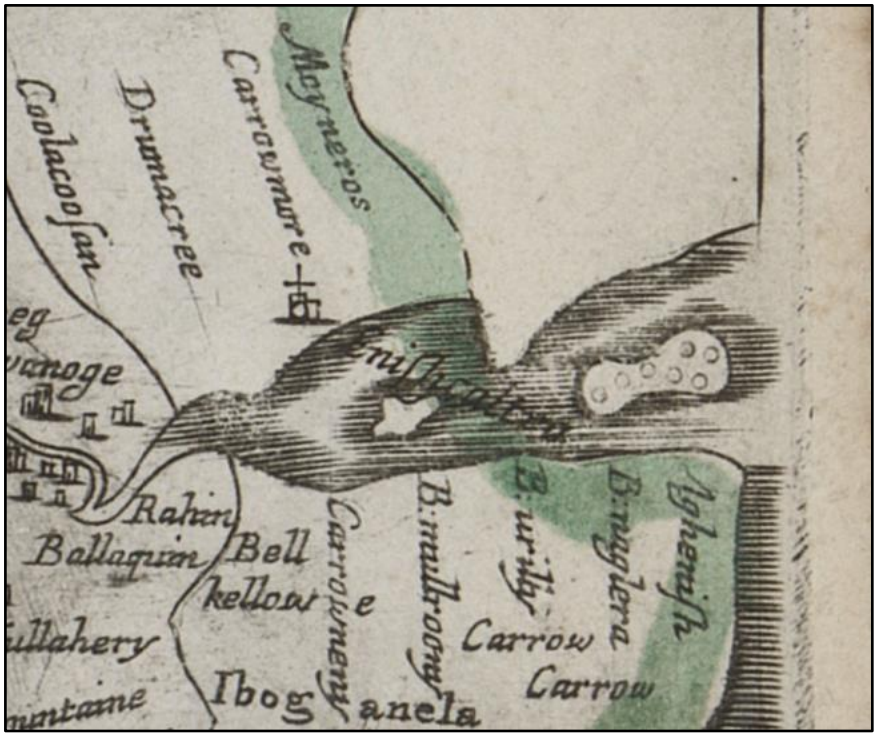



**Figure 14.4. Inis Cealtra on Petty's 1685 map**

**Figure 14.5. Lidar image of Inis Cealtra showing embankments**

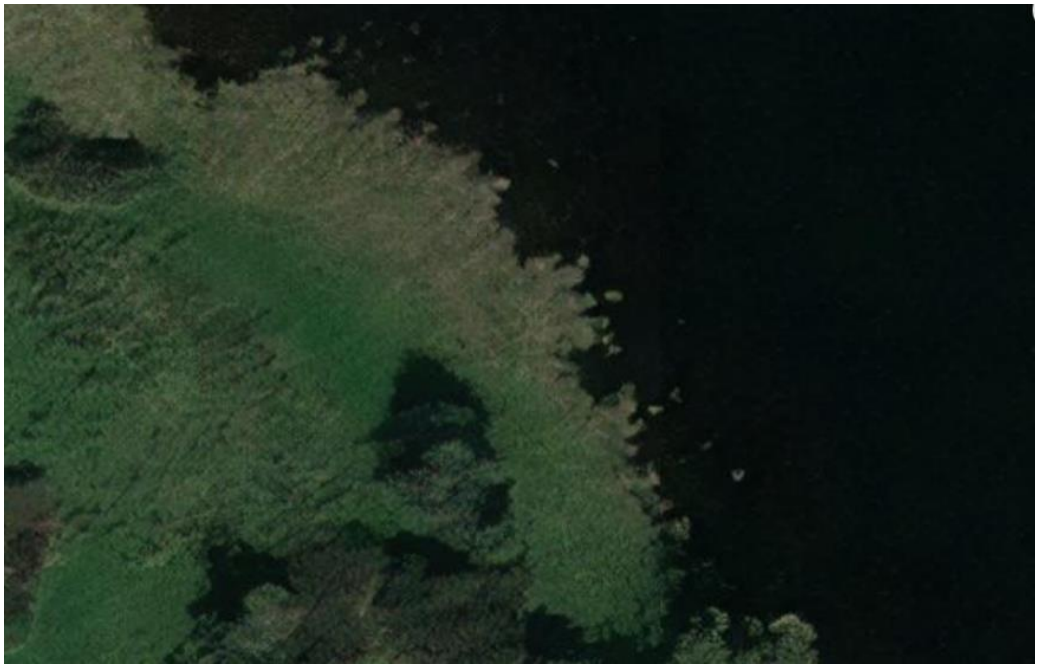


**Figure 14.6. Possible early harbour at north-east corner of Inis Cealtra**

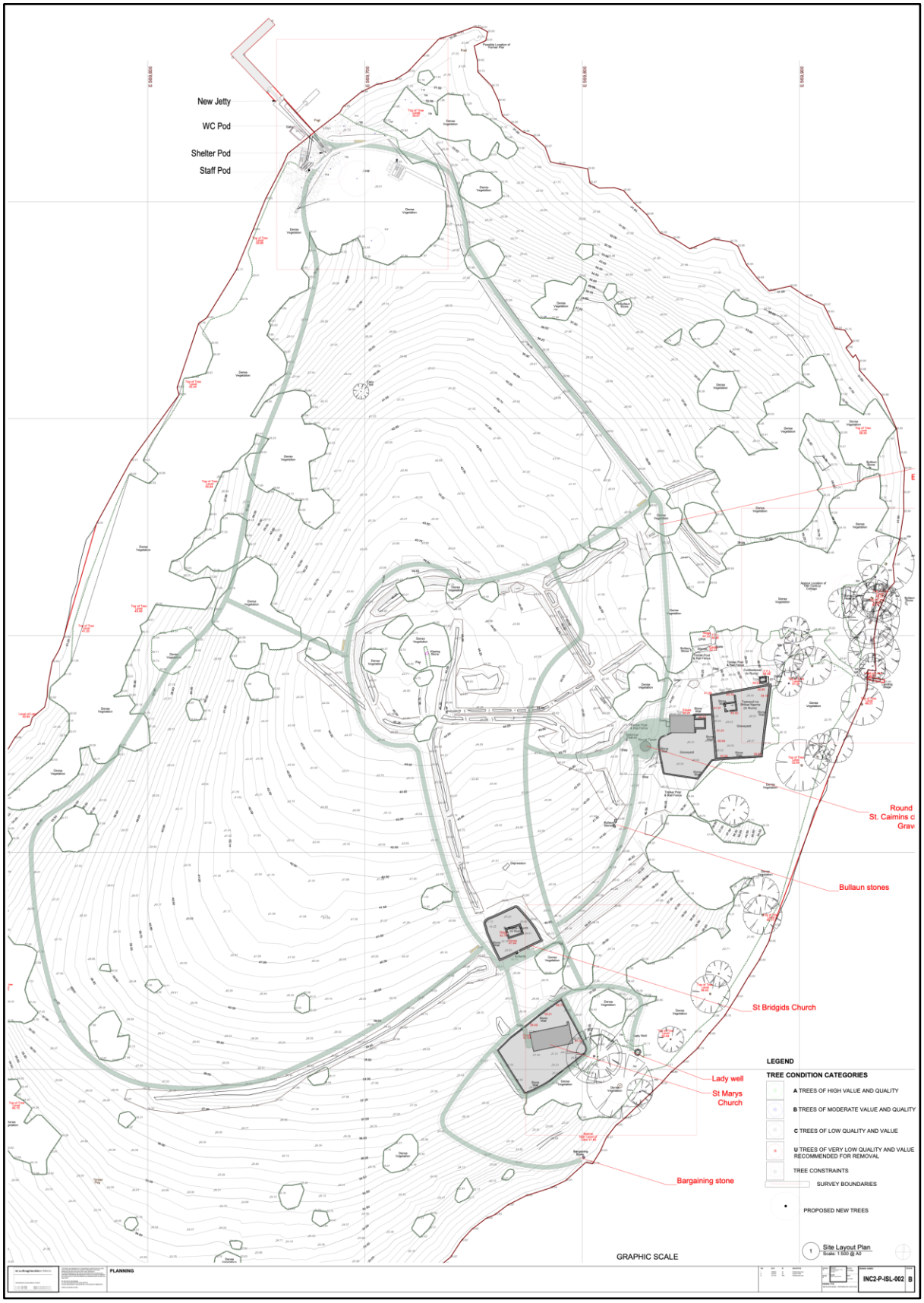



**Figure 14.7. Layout of pods, pathways and new jetty, Inis Cealtra**

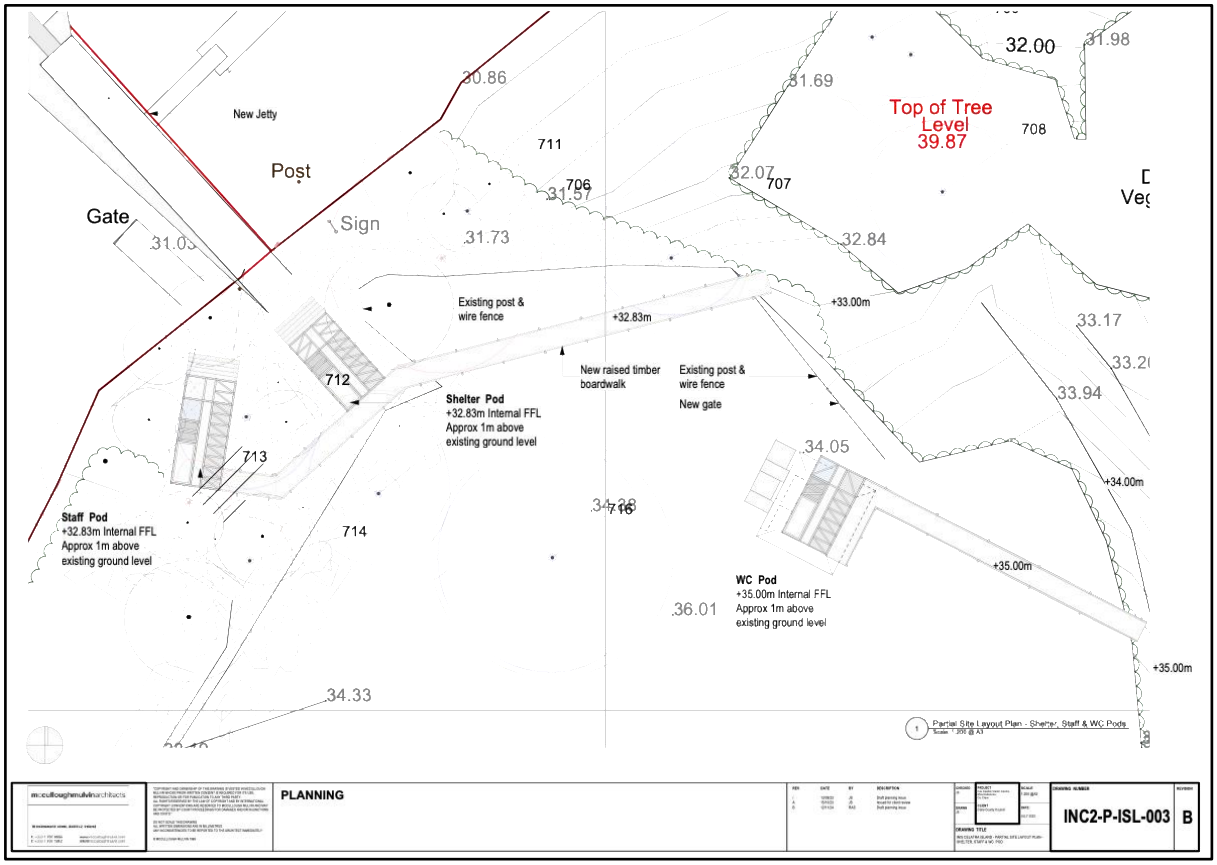



**Figure 14.8. detail of pods and new jetty, Inis Cealtra**

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 15
# INTERACTIONS OF THE FOREGOING

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents


15 Interactions of the Foregoing ..... 15-2
15.1 Introduction ..... 15-2
15.2 Population and Human Health ..... 15-2
15.3 Landscape and Visual ..... 15-3
15.4 Material Assets: Traffic and Transport ..... 15-4
15.5 Material Assets: Built Services ..... 15-5
15.6 Material Assets: Waste ..... 15-5
15.7 Land and Soils ..... 15-6
15.8 Water & Hydrology ..... 15-7
15.9 Biodiversity ..... 15-8
15.10 Noise and Vibration ..... 15-8
15.11 Air Quality ..... 15-9
15.12 Climate ..... 15-9
15.13 Cultural Heritage - Built Heritage ..... 15-10
15.14 Cultural Heritage – Archaeological Heritage ..... 15-11
15.15 Conclusion ..... 15-11


# Table of Tables


Table 15.1 Interactions with Potential for Significant Impacts Before the Implementation of Mitigation Measures ..... 15-12

# 15 Interactions of the Foregoing

## 15.1 Introduction

The construction, operational and cumulative impacts of the proposed development have been assessed within each chapter of the EIAR. This chapter considers the significant interactions of impacts between each of the separate disciplines.

In practice many impacts have slight or subtle interactions with other disciplines. This chapter highlights in **Table 15.1** (located at the end of this chapter) those interactions which are considered to potentially be of a significant nature. Discussions of the nature and effect of the impact is primarily undertaken within each of the relevant chapters, while this chapter identifies the most important potential interactions.

This chapter was prepared by Martina Keenan Rivero of McCutcheon Halley Chartered Planning Consultants. Martina holds a BSc (Hons) in Spatial Planning from Technological University Dublin and an Advanced Diploma in Planning and Environmental Law from Kings Inns. She has 10 years of professional experience, working in NSW, Australia with a Local Authority and as a planning and environmental consultant in Ireland. Martina has prepared AA screening reports, Environmental Impact Assessment screening reports and coordinated and contributed to Environmental Impact Assessment Reports for a range of development projects. Relevant project experience includes large housing developments, mixed-use schemes, industrial and commercial projects.

Martina was involved in the coordination and preparation of EIARs to accompany planning applications for the following projects that received permission:

- Southwest Gate – A mixed-use scheme across 13 blocks comprising 1,123 residential units with supporting amenities, retail units, office accommodation, a primary healthcare centre, gym, cultural centre, childcare facility, hotel and a series of public open spaces.
- Primark Distribution Centre – Construction of a Distribution Centre incorporating office floor space and ancillary buildings with a cumulative gross floor area of approx. 64,550 sq.m and associated site works.
- Oscar Traynor Road – Construction of 853 residential units (social, affordable and cost rental homes), together with a creche, retail unit/café, community facilities and a new public park.

## 15.2 Population and Human Health

During the construction phase, all environmental factors interact with population and human health. The following are the key areas of interaction:

- **Landscape and Visual -** Construction processes, plant and hoarding used during the construction phase may give rise to visual impacts.
- **Material Assets – Traffic & Transport:** Increased construction traffic movements on the local road network during the construction phase may give rise to noise, dust, and road safety impacts.

- **Material Assets – Built Services:** Excavation during the construction phase may give rise to risks to human health as a result of any excavation work in areas where built services exist through coming into contact with live electricity lines or damaging watermains.
- **Noise and Vibration:** There is potential for effects on human health associated with noise during the construction phase which may impact upon amenity.
- **Air Quality:** There is potential for impact on human health from dust associated with construction activities and thus impacting air quality.

The potential impacts on human health arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

During the operational phase, the following are the key areas of interaction with population and human health:

- **Landscape & Visual:** The landscaping proposals will impact on the quality of the public realm, which could impact on people's health and well-being.
- **Material Assets: Traffic and Transport:** Traffic flows toward the site have the potential to create safety risks for pedestrians and cyclists**.**
- **Air Quality:** There is potential for impact on human health from a deterioration in air quality associated with emissions from vehicles.

The potential significant impacts on human health arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

## 15.3 Landscape and Visual

During the construction phase, the following aspects have potential to interact with landscape and visual:

- **Material Assets: Traffic and Transport**: The potential for interactions with Traffic and Transport will be indirect effects upon landscape character and visual amenity in Mountshannon as a result of changes to existing traffic levels within the immediate surrounds when construction works are underway.
- **Land and Soils:** The potential for interactions with Land and Soils will occur during the demolition and construction phases with movement of material through/off the site and its temporary storage on site.

During the operational phase, the following aspects have potential to interact with landscape and visual:

- **Material Assets: Traffic and Transport:** Positive indirect effects on landscape character and visual amenity are likely to occur through the provision of a new landscaped car park in Main Street that will improve traffic flow in Mountshannon Village, particularly during the peak summer period. The provision of a dedicated off-street car parking area will also help to

minimise street clutter and encroachment into the footpath and carriageway arising from poorly parked vehicles.

The potential significant effects on landscape and visual arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

## 15.4 Material Assets: Traffic and Transport

During the construction phase, the following aspects have potential to interact with traffic and transport:

- **Noise & Vibration:** There are interactions between the traffic assessments and the noise and vibration assessments. With increased traffic movements, the noise levels in the surrounding area increase. The impacts of the proposed development on the noise environment are assessed by reviewing the change in traffic flows on roads close to the site.
- **Air Quality and Climate:** With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site.
- **Land and Soils:** Excavation and removal of soils off-site will lead to potential impacts on the surrounding road network. The scheme will be developed in line with the preliminary Construction Traffic Management Plan (CTMP) in Chapter 6 of this EIAR to ensure any impacts on local traffic are minimised during the construction stage. This impact will be short term in nature.
- **Water and Hydrology:** Construction activity at Inis Cealtra will require the transport of materials and machinery by boat from Mountshannon Harbour across Lough Derg. During the construction phase, the island will generally remain closed for the duration of the works thereby reducing the number of round boat trips daily between Mountshannon Harbour and Inis Cealtra.

During the operational phase, the following aspects have potential to interact with traffic and transport:

- **Noise & Vibration:** There are interactions between the traffic assessments and the noise and vibration assessments. With increased traffic movements, the noise levels in the surrounding area increase. The impacts of the proposed development on the noise environment are assessed by reviewing the change in traffic flows on roads close to the site.
- **Air Quality and Climate:** Interactions between Air Quality and Traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site.

The potential significant impacts on traffic and transport arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

## 15.5 Material Assets: Built Services

During the construction and operational phase, the following aspects have potential to interact with built services:

- **Population and Human Health:** Excavation during the construction phase may give rise to risks to human health as a result of any excavation work in areas where built services exist through coming into contact with live electricity lines or damaging live gas or watermains.
- **Land and Soils:** Excavations and removal of hardstanding, topsoil and earthworks for the installation of drainage and utilities may give rise to the erosion of subsoils and subsequent sediment generation.
- **Climate:** The built services have been designed with climate impact in mind including NZEB compliant buildings, SuDS drainage design and landscaping.
- **Water and Hydrology:** There are interactions with the water and hydrology chapter due to the proposed discharge of stormwater to existing outfalls and increased demand on potable water supply (Mountshannon).

The potential significant impacts on built services arising from these interactions have been considered within the relevant discipline, and mitigation measures have been outlined where required. With mitigation measures implemented, no significant permanent residual negative impacts will occur.

## 15.6 Material Assets: Waste

During the construction phase, the following aspects have potential to interact with material assets: waste:

- **Population & Human Health:** The potential impacts on human beings are in relation to incorrect management of waste during construction, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and amenity.
- **Traffic & Transport:** Local traffic and transport will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction phase of the proposed Development. The increase in vehicle movements as a result of waste generated during the construction phase will be *temporary* in duration.
- **Land & Soils:** During the construction phase, excavated soil and stone generated from excavations will largely be removed off-site. If material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort.
- **Climate**: Interactions across many areas can be used to minimise the GHG emissions from the construction phase. For instances, waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling or incineration.

During the operational phase, the following aspects have potential to interact with waste:

- **Population & Human Health:** The potential impacts on human beings are in relation to incorrect management of waste during operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity.
- **Material Assets: Traffic & Transport:** Local traffic and transport will be impacted by the additional vehicle movements generated by removal of waste from the site during the operational phase of the proposed Development. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movements will be imperceptible in the context of the overall traffic and transportation increase.
- **Climate**: Interactions across many areas can be used to minimise the GHG emissions from the operational phase. For instances, waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling or incineration.

The potential significant effects on waste arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative effects will occur.

## 15.7 Land and Soils

During the demolition and construction phase, the following aspects have potential to interact with land and soils:

- **Air Quality:** Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between Air Quality and Land and Soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between Air Quality and Land and Soils.
- **Material Assets: Transport, Built Services and Waste:** Excavated soil and stone will be generated from the excavations required to facilitate site levelling, construction of new foundations and installations of site services. Excavated material will largely need to be removed off-site. If material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort.
- **Water & Hydrology:** Site preparatory works (i.e., site clearance, excavation) during the construction stage has the potential to impact on the hydrology and hydrogeology due to the risk of suspended solids becoming entrained in surface water run-off and accidental spills etc.
- **Biodiversity:** There is potential for silt laden material or pollution to enter nearby surface waterbodies and impact on local biodiversity and European sites downstream from the works. Furthermore, dust emissions from exposed earthworks have the potential to settle on plants causing impacts to local ecology.

During the operational phase, the following aspects have potential to interact with land and soils:

- **Water & Hydrology:** The operational phase of the proposed development has the potential to interact negatively on groundwater and surface water quality via the proposed surface water network which involves discharging to Lough Derg during high tide periods.

The potential significant impacts on land and soils arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

## 15.8 Water & Hydrology

During the demolition and construction phase, the following aspects have potential to interact with water & hydrology:

- **Land & Soils:** Site preparatory works (i.e. site clearance, re-profiling etc.) during the construction stage have the potential to result in increased sediment runoff which has the potential to interact on surface water quality
- **Biodiversity:** Impacts to water quality during the construction phase, such as accidental pollution/spillage events, may give rise to impacts on sensitive aquatic receptors, such as habitats and fauna, that are hydrologically linked to the site.
- **Air Quality:** Construction phase activities such as land clearing, excavations, and stockpiling of materials etc. have the potential for interactions between air quality and water and hydrology in the form of dust emissions that may deposit in surface waters.

During the operational phase, the following aspects have the potential to interact with water & hydrology:

- **Material Assets Built Services:** There will be an increased demand on potable water supply and on drainage systems. The use of SuDS during operation will mean that the development will result in neutral water impacts in the operational phase with regard to runoff rates and flooding risk. As a part of the SuDS features, it is anticipated that small amounts of hydrocarbon sludge waste and debris may be generated in the hydrocarbon interceptors which will treat the surface water run-off.
- **Biodiversity:** There is potential for impacts to biodiversity associated with uncontrolled discharges to surface water (Lough Derg). In this instance, the existing and proposed surface water system discharges into Lough Derg for the sites on the mainland and surface water generated on the island will be managed at source by dispersing the runoff through the natural vegetation of Inis Cealtra. Therefore, there is a direct hydrological connection to Lough Derg (Shannon) SPA.
- **Climate:** Climate change has the potential to lead to increased rainfall in future years which may result in flood impacts and interactions between Hydrogeology and Hydrology, and Land, Soils and Geology.

The potential significant effects on water and hydrology arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative effects will occur.

## 15.9 Biodiversity

During the construction and operation phase, the following aspects have potential to interact with biodiversity:

- **Land & Soils:** there is overlap with the biodiversity chapter in that the potential impact of the construction works, through excavation, construction etc., have the potential to adversely affect the receiving environment, both geological and ecological. The mitigation measures in both chapters overlap somewhat as they deal with protecting the receiving environment from the construction works e.g., protecting waterbodies from pollution and sedimentation.
- **Water & Hydrology:** Impacts to water quality during the construction phase, such as accidental pollution events, may give rise to impacts on sensitive aquatic receptors, such as habitats and fauna. The mitigation measures proposed in these chapters address the potential for the Construction Phase to impact receiving waterbodies and ecology.
- **Air Quality:** A series of mitigation measures have been prepared to minimise dust emissions and they are set out in Chapter 12, Air Quality and Climate. Provided the dust minimisation measures outlined in the plan are adhered to, the predicted residual air quality effects during the construction phase are direct, short-term, negative, and imperceptible. Best practice mitigation measures are proposed for the construction phase of the proposed development, which will focus on the proactive control of dust and other air pollutants, to minimise generation of emissions at source. The mitigation measures that will be put in place during construction will ensure that the impact complies with all EU ambient air quality legislative limit values, which are based on the protection of human health (see Table 14.1). Therefore, the predicted residual, dust-related, human health effect of the construction phase of the proposed development is direct, short-term, negative, and imperceptible.

The potential significant impacts on biodiversity arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

## 15.10 Noise and Vibration

During the construction and operational phases, the following aspects have potential to interact with noise and vibration:

- **Traffic And Transport**: There are interactions between the noise and vibration assessment and Material Assets: Traffic and Transport assessment in Chapter 6. With increased traffic movements, the noise levels in the surrounding area increase. The impacts of the proposed development on the noise environment are assessed by reviewing the change in traffic flows on roads close to the site.
- **Population & Human Health:** There is potential for interaction with population and human health associated with noise and vibrations generated during the construction phase. To a lesser extent, there is a potential for interaction during the operational phase associated with noise from use of the new Village Car Park, Visitor Centre and the pedestrian route through Aistear Park.

The potential significant impacts on noise and vibration arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

## 15.11 Air Quality

During the construction phase, the following aspects have potential to interact with air quality:

- **Population and Human Health:** An adverse impact due to air quality in the construction phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits.
- **Traffic and Transportation:** With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site.
- **Land & Soils:** Construction phase activities such as land clearing, excavations, stockpiling of materials etc. may give rise to dust emissions.
- **Biodiversity:** Stripping of topsoil and excavation during the construction phase will remove some vegetation such as trees and scrub, and may give rise to dust emissions.
- **Climate:** Air quality and climate are strongly linked, as the burning of fossil fuels during the construction phase may give rise to air quality effects.

During the operational phase, the following aspects have potential to interact with air quality:

- **Population and Human Health:** There is potential for impact on human health from a deterioration in air quality associated with emissions from vehicles.
- **Traffic and Transportation:** Possible increases in traffic movements during the operational phase may give rise to increased vehicular emissions.
- **Climate:** Air quality and climate are strongly linked, as the burning of fossil fuels during the operational phase may give rise to both air quality and climate impacts.

The potential significant impacts arising on air quality from these interactions have been considered within the relevant discipline, and mitigation measures have been outlined where required. With mitigation measures implemented, no significant permanent residual negative impacts will occur.

## 15.12 Climate

During the construction phase, the following aspects have potential to interact with climate:

- **Air Quality:** Air Quality and Climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts.
- **Material Assets: Waste**: Interactions across many areas can be used to minimise the GHG emissions from the construction phase. For instances, waste management measures will be

put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling or incineration.

During the operational phase, the following aspects have potential to interact with climate:

- **Air Quality:** Air Quality and Climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts.
- **Population and Human Health:** Energy efficient design within the proposed development may give rise to reduced electricity consumption by future residents, potentially decreasing dependence on fossil fuels for energy generation, resulting in significant $CO_2$ savings.
- **Material Assets: Waste**: Interactions across many areas can be used to minimise the GHG emissions from the operational phase. For instances, waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling or incineration.
- **Water & Hydrology:** Climate has the potential to interact with a number of other environmental attributes. The impact of flood risk has been assessed and the surface water drainage network designed to cater for run-off from the development and the surrounding hardscaped areas ,with an additional 20% uplift for climate change.

The potential significant impacts arising on climate from these interactions have been considered within the relevant discipline, and mitigation measures have been outlined where required. With mitigation measures implemented, no significant permanent residual negative impacts will occur.

## 15.13 Cultural Heritage - Built Heritage

During the construction phase, the following aspects have the potential to interact with built heritage:

- **Cultural Heritage: Archaeology:** This chapter interacts most closely with Cultural Heritage: Archaeology.
- **Landscape & Visual:** The emergence of construction plant and hoarding to secure the development site will interact with the landscape and visual environment in the short term.

During the operational phase, the following aspects have the potential to interact with built heritage:

- **Landscape and Visual:** Operational phase visual impacts are anticipated on the setting of the Old Rectory, a Protected Structure, due to the Visitor Centre's location within its curtilage. The potential visual impact is mitigated by the design approach which exploits the site's level change by setting the ground floor of the building back into the site.
- **Population and Human Health:** The proposed development will increase awareness and understanding of the historic value of Inis Cealtra and its monuments.

The potential significant impacts on built heritage arising from these interactions have been considered within the relevant discipline, and mitigation measures have been outlined where required. With mitigation measures implemented, no significant permanent residual negative impacts will occur.

## 15.14 Cultural Heritage – Archaeological Heritage

During the construction phase, the following aspects have the potential to interact with archaeological heritage:

- **Land and Soils:** Site clearance works may impact on sub-surface archaeology.
- **Cultural Heritage: Built Heritage:** This chapter interacts most closely with Chapter 13 Cultural Heritage: Built Heritage.

No potential operational interactions were identified.

The potential significant impacts on archaeology arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative effects will occur.

## 15.15 Conclusion

As outlined above, the proposed development has the potential to impact on various environmental aspects, with interactions and inter-relationships between these aspects as described above. The EIAR has considered these interactions and inter-relationships throughout the appraisal, firstly through the design and layout of the proposed developments, to avoid impacts where possible, and also in the definition of suitable mitigation measures to minimise the impacts.

No significant likely impacts arising from interactions are identified.

**Table 15.1 Interactions with Potential for Significant Impacts Before the Implementation of Mitigation Measures**

| Interaction | Pop&HH | | L&V | | MA:T&T | | MA:BS | | MA:Wst | | Land&S | | Water&H | | BioDiv | | Noise&V | | AirQual | | Climate | | CH: BH | | CH:Arch | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C | O | C | O | C | O | C | O | C | O | C | O | C | O | C | O | C | O | C | O | C | O | C | O | C | O |
| Population & H. Health | | | × | × | × | × | ✓ | × | ✓ | ✓ | × | × | × | × | × | × | ✓ | ✓ | ✓ | ✓ | × | ✓ | × | ✓ | × | × |
| Landscape & Visual | ✓ | ✓ | | | × | × | × | ✓ | × | × | × | × | × | × | ✓ | × | × | × | × | × | × | × | ✓ | ✓ | × | × |
| MA: Traffic & Transport | ✓ | ✓ | ✓ | ✓ | | | × | × | ✓ | ✓ | ✓ | × | × | × | × | × | ✓ | ✓ | ✓ | ✓ | × | × | × | × | × | × |
| MA: Built Services | ✓ | × | × | × | × | × | | | × | × | ✓ | × | × | ✓ | × | × | × | × | × | × | × | × | × | × | × | × |
| MA: Waste | × | × | × | × | × | × | × | × | | | ✓ | × | × | × | × | × | × | × | × | × | ✓ | ✓ | × | × | × | × |
| Land & Soils | × | × | ✓ | × | ✓ | × | ✓ | ✓ | ✓ | × | | | ✓ | × | × | × | × | × | ✓ | × | × | × | × | × | ✓ | × |
| Water & Hydrology | × | × | × | × | × | × | ✓ | ✓ | × | × | ✓ | ✓ | | | ✓ | × | × | × | × | × | × | ✓ | × | × | × | × |
| Biodiversity | × | × | × | × | × | × | × | × | × | × | ✓ | × | ✓ | ✓ | | | × | × | ✓ | × | × | × | × | × | × | × |
| Coastal Processes | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × |
| Noise & Vibration | ✓ | × | × | × | ✓ | ✓ | × | × | × | × | × | × | × | × | × | × | | | × | × | × | × | × | × | × | × |
| Air Quality | ✓ | ✓ | × | × | ✓ | ✓ | × | × | × | × | ✓ | × | ✓ | × | ✓ | × | × | × | | | ✓ | ✓ | × | × | × | × |
| Climate | × | × | × | × | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | × | × | × | ✓ | × | × | × | × | ✓ | ✓ | | | × | × | × | × |
| CH: Built Heritage | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | | | ✓ | × |
| CH: Archaeology | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | × | ✓ | × | | |

Proposed Inis Cealtra Visitor Experience, Co. Clare.

# CHAPTER 16
# SUMMARY OF MITIGATION MEASURES

## VOLUME II
## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DECEMBER 2024

# Table of Contents

16 Summary of Proposed Mitigation Measures ..... 16-2
16.1 Introduction ..... 16-2
16.2 Incorporated Design Mitigation Measures ..... 16-2
16.3 Mitigation Measures ..... 16-5

# Table of Tables

Table 16-1 Summary of Incorporated Design Phase Mitigation ..... 16-3
Table 16-2 Summary of Demolition & Construction Phase Mitigation ..... 16-6
Table 16-3 Summary of Operational Phase Mitigation ..... 16-13

# 16 Summary of Proposed Mitigation Measures

## 16.1 Introduction

A key objective of the Environmental Impact Assessment process is to identify likely significant environmental impacts at the pre-consent stage and where necessary to propose measures to mitigate or ameliorate such impacts. This chapter of the EIAR summarises the proposed mitigation measures set out in Chapters 4 to 14.

All the mitigation measures proposed within the individual specialists' assessments will be incorporated into the Construction and Environmental Management Plan (CEMP) prior to works commencing on-site.

## 16.2 Incorporated Design Mitigation Measures

The measures outlined in Table 16-1 have been incorporated into the design of the proposed development for the Demolition & Construction and Operational Stage, as appropriate.

**Table 16-1 Summary of Incorporated Design Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| Population & Human Health | ▪ The provision of welfare facilities on Inis Cealtra will enhance the comfort of visitors and employees (e.g. guides) on the island, contributing to their amenity and well-being.<br>▪ The proposed development complies with the Building Regulations which provide for the safety and welfare of people in and about buildings.<br>▪ The design incorporates the principles of universal design and the requirements of Part M of the Building Regulations so that the development will be readily accessible to all, regardless of age, ability or disability.<br>▪ The integration of energy efficient measures into the design will provide for a healthy work environment for employees, less dependence on fossil fuels and associated improved air quality<br>▪ The proposed design provides for a highly accessible layout across the scheme including segregated pedestrian walkways will create a high quality environment, together with the enhancements of the public realm and overall layout design will improve the setting of the wider village. |
| Landscape & Visual | The key mitigation measures incorporated in to the design are as follows:<br><u>Inis Cealtra</u><br>▪ Sensitive siting of pods, boardwalks and jetty.<br>▪ Sensitive use of materials<br>▪ Quality of architectural language and materials.<br>▪ Implementation of path design and management<br>▪ Implementation of local and native provenance planting proposals<br>▪ Implementation of landscape and conservation management plan<br><u>Car Park</u><br>▪ Sensitive insertion into the ownership plot patterns of the village<br>▪ Conservation of boundaries and hedgelines<br>▪ Reinstatement of stone boundary wall to main street<br>▪ Incorporation of civic quality and nature based sustainable drainage at entrance<br>▪ Gradation of materials and minimised use of hard surfaces<br>▪ Tree retention and replacement<br>▪ New planting and habitats.<br>▪ Connectivity with the main street and Aistear park<br>▪ Coach parking set back away from the main street<br>▪ Sensitive lighting design<br><u>Visitor Centre</u><br>▪ Sensitive insertion into the ownership plot patterns of the village<br>▪ Conservation of boundaries and hedgelines<br>▪ Reinstatement of stone boundary wall to main street<br>▪ Incorporation of civic quality and nature based sustainable drainage at entrance<br>▪ Gradation of materials and minimised use of hard surfaces<br>▪ Tree retention and replacement<br>▪ New planting and habitats.<br>▪ Connectivity with the main street and Aistear park<br>▪ Coach parking set back away from the main street |

**Table 16-1 Summary of Incorporated Design Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| | ▪ Sensitive lighting design |
| Material Assets:<br>Traffic & Transport | ▪ No incorporated design phase mitigation measures are proposed. |
| Material Assets:<br>Built Services & Waste | ▪ The Village and Harbour Car Park are designed with SuDS features to attenuate and treat surface water, reducing the amount of suspended solids and potential drain blockages.<br>▪ The installation of suitable protection (e.g., silt curtain) around the site boundaries to control and treat any run-off during the works. |
| Land & Soils | ▪ The design of the paths is in line with the principles of minimal intervention to archaeological and natural heritage, which also results in minimum intervention with the land and soils. The paths are all proposed as mown paths to existing ground level with several path options proposed to spread the footfall reducing soil compaction and erosion. These may be phased in different seasons as the intensity of use is observed.<br>▪ The design of the three new staff and public welfare facility 'pods' were designed to be lightweight, freestanding, timber pavilions, raised on timber legs so that their contact with the ground will be minimal, reducing the impact to land and soils.<br>▪ The Village Car Park is designed with SuDS features to attenuate and treat surface water reducing the associated impact on soils |
| Water & Hydrology | ▪ Management of surface water during the operational phases of the development has been considered in detail at the project design stage and has been designed to replicate, insofar as is practicable, the same run-off characteristics for the developed site as existed for pre-development conditions.<br>▪ The proposed drainage design has incorporated several widely used Sustainable Drainage Systems (SUDS) mechanisms to alleviate any potential detrimental effects of stormwater drainage.<br>▪ The dry toilet system used on Inis Cealtra is designed to overcome the logistical challenges of removing solids and liquids.<br>▪ The designated maintenance contractor will ensure that the waste is delivered to the appropriate Uisce Éireann treatment facility. |
| Biodiversity | ▪ Consultation between the design team and the Applicant was conducted on an ongoing basis during the design phase in order to formulate a project design which would avoid, prevent and/or minimise any significant adverse ecological impacts, in so much as was practicably possible.<br>▪ Site design was carried out with cognisance to more sensitive ecological features to minimise the impact of the Proposed Development on Biodiversity and minimise the footprint of the Proposed Development on more ecologically sensitive habitats.<br>▪ The option for the location of the island jetty has been selected due to the presence of marsh habitat at some potential locations, identified to comprise EU Annex I Marsh (GM1) habitat during baseline ecological surveys, to avoid/reduce ecological impacts on habitats and species.<br>▪ The route selected for the proposed seeded/mown gravel paths on the island has been selected to avoid more ecologically sensitive habitats and will be |

**Table 16-1 Summary of Incorporated Design Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| | located in Improved Agricultural Grassland (GA1) and Amenity Grassland (GA2) habitat.<br>▪ New staff and public welfare facility 'pods' are lightweight, freestanding, timber pavilions, raised on timber legs so that their contact with the ground will be minimal, reducing the risk of disturbing sensitive archaeology on the island. |
| Noise & Vibration | ▪ As part of the detailed design of the development, plant items with appropriate noise ratings and, where necessary, appropriately selected remedial measures (e.g. enclosures, silencers etc.) will be specified in order that the adopted plant noise criteria is achieved at the facades of sensitive properties, including those within the development itself.<br>▪ In terms of traffic, car park upgrades as part of design will assist to reduce noise from increased traffic. |
| Air Quality & Climate | ▪ No incorporated design phase mitigation measures are proposed. |
| Cultural Heritage: Built Heritage | ▪ Monitoring of the Built Heritage will be undertaken on an ongoing basis.<br>▪ Maintenance of the architectural heritage will be undertaken by the State Body charged with upkeep of the National Monuments.<br>▪ At present there are no guides or wardens on the island and, as such, the presence of staff to monitor, advise and guide visitors is considered to be a positive element of the proposed development. |
| Cultural Heritage: Archaeological Heritage | ▪ The current development proposal has been heavily influenced by the aim of protecting archaeological features (known and unknown).<br>▪ In particular, the island layout (jetty, path and pod locations) evolved to avoid impacts to existing archaeology.<br>▪ Likewise, the method of construction selected, responds directly to the island's archaeology, to ensure minimal intervention.<br>▪ Mitigation through design has been an inherent feature of the design process, so that adverse impacts are avoided or reduced. |

## 16.3 Mitigation Measures

The recommended mitigation measures for the Demolition & Construction and Operational Stages are summarised in Tables 16-2 and 16-3 below.

**Table 16-2 Summary of Demolition & Construction Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| Population & Human Health | ▪ The appointed contractor(s) will update the CEMP submitted with the application after development consent is received, incorporating the environmental mitigation and monitoring measures included in this EIAR and relevant measures attached to a grant of permission.<br>o The CEMP will comply with all appropriate legal and best practice guidance for construction sites.<br>o The purpose of a CEMP is to provide a mechanism for the implementation of the various mitigation measures which are described in this EIAR and to incorporate relevant conditions attached to a grant of permission. The CEMP requires that these measures will be checked, maintained to ensure adequate environmental protection. The CEMP also requires that records will be kept and reviewed as required to by the project team and that the records will be available on site for review by the planning authority.<br>o All construction personnel will be required to understand and implement the requirements of the Contractor's CEMP and shall be required to comply with all legal requirements and best practice guidance for construction sites.<br>o All mitigation and monitoring measures included in the Summary of Mitigation and Monitoring Measures in Chapter 16 of this EIAR will be included in the CEMP and adhered to.<br>▪ The contractor will appoint a liaison officer to ensure that any issues from the local community are dealt with promptly and efficiently during construction. These details will be included in the contractor's CEMP.<br>▪ Construction Working Hours will generally be limited to the hours 08:00 – 19:00 Monday to Friday and 08:00 – 13:00 on Saturday. If works are required outside of these hours, in exceptional circumstances, the planning authority will be notified in advance.<br>▪ Project supervisors for the construction phase (PSCS) will be appointed in accordance with the Health, Safety and Welfare at Work (Construction Regulations) 2013, and a Preliminary Health and Safety Plan will be formulated during the detailed design stage which will address health and safety issues from the design stages, through to the completion of the construction phase.<br>▪ A Resource Waste Management Plan (RWMP) will be prepared and implemented by the Contractor, as necessary. |
| Landscape & Visual | <u>Demolition Phase:</u><br>▪ Provision of standard controls around seasonal and diurnal timing of operations<br>▪ Provision of hoarding<br><u>Construction Phase:</u><br>▪ The building site including a site compound with site offices, site security fencing, scaffolding and temporary works will be visible during the construction phase, from a range of viewpoints around the site. Such elements are generally viewed as temporary and unavoidable features of construction in any setting. The perimeter site hoarding will screen from view much of the construction activity and materials at ground level.<br>▪ Other mitigation measures proposed during this delivery stage of the development, revolve primarily around the implementation of appropriate site |

**Table 16-2 Summary of Demolition & Construction Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| | management procedures during the construction works – such as the control of lighting, storage of materials, placement of site offices and compounds, control of vehicular access, and effective dust and dirt control measures, etc. Such mitigation will be set out in the Construction Management Plan prepared for the scheme.<br>▪ The Construction Management Plan to be prepared by the appointed contractor, and agreed with the Local Authority prior to the commencement of any construction works, will deal with all issues related to the construction, delivery and management of the scheme during the construction stage and will ultimately include details on the following:<br>o Daily and weekly working hours;<br>o Agreed haul routes for incoming materials;<br>o Licensed hauliers to be used;<br>o Disposal sites;<br>o Travel arrangements for construction personnel;<br>o Appropriate on-site parking arrangements for construction personnel to prevent overspill parking on the local road network;<br>o Temporary construction entrances to be provided;<br>o Wheel wash facilities if required;<br>o Road cleaning and sweeping measures to be put in place if required;<br>o Temporary construction signage to be put in place and maintained.<br>▪ The planning application includes an Outline Construction Management Plan, prepared by MWP Consulting Engineers, which outlines a range of construction phase mitigation measures, many of which are relevant to the reduction of the temporary impacts on the landscape and visual environment during the construction phase. |
| Material Assets:<br>Traffic & Transport | ▪ The proposed **Construction Traffic Management Plan (CTMP)** and **Construction and Environmental Management Plan (CEMP),** which form part of the proposal, outline the commitments and mitigation measures to be implemented during the construction phase of the proposed development.<br>▪ When the construction contractor is appointed, an updated CTMP will be submitted to Clare County Council, for approval, prior to the commencement of construction.<br>▪ Traffic and transport monitoring is not required, as the predicted traffic volumes and effects are identified in **Chapter 5 Material Assets: Traffic & Transport** of this EIAR. |
| Material Assets:<br>Built Services & Waste | ▪ The appointed contractor will be obliged to consult the **Construction and Environmental Management Plan (CEMP)**, which includes a **Surface Water Management Plan (SWMP) EMP-1** for implementation of mitigation measures to prevent impacts damage to existing infrastructure and over ground infrastructure and watercourses.<br>▪ Prior to excavation the Contractor will ensure that adequate silt management methods are implemented and that silt controls are in place as recommended in CEMP and SWMP.<br>▪ All silt controls will be checked on a regular basis in accordance with a monitoring schedule outlined in the CEMP and SWMP. |

**Table 16-2 Summary of Demolition & Construction Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| | ▪ The Appointed Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with ESB Networks.<br>▪ The construction compound will include an enclosed wastewater management system (holding tank). This will be emptied on a regular basis as required by a licensed contractor for treatment and disposal.<br>▪ All works in the vicinity of the telecommunications providers infrastructure will be carried out in ongoing consultation with the relevant provider and will be in compliance with any requirements or guidelines that are included in the CEMP.<br>▪ Effective waste management and minimisation, reuse, recycling and disposal of waste material generated during the construction phase of the proposed development |
| Land & Soils | ▪ A site-specific **Construction & Environmental Management Plan (CEMP)** will be developed and implemented during the construction phase. Implementation of the measures outlined in this plan will ensure that the potential impacts of the proposed development do not occur during the construction phase.<br>▪ Install any bunding and/or run-off controls where required such as installation of suitable protection (e.g., silt curtain) around the site boundaries to control and treat any run-off during the works<br>▪ Weather conditions and typical seasonal weather variations will be taken account of when planning stripping of topsoil and excavations.<br>▪ All oils, fuels, paints and other chemicals will be stored in a bunded containment area.<br>▪ The construction compound will include an enclosed wastewater management system (holding tank). This will be emptied on a regular basis as required by a licensed contractor for treatment and disposal. |
| Water & Hydrology | ▪ A site-specific **Construction & Environmental Management Plan (CEMP)** will be developed and implemented during the construction phase. Implementation of the measures outlined in this plan will ensure that the potential impacts of the proposed development do not occur during the construction phase.<br>▪ Install any bunding and/or run-off controls where required such as installation of suitable protection (e.g., silt curtain) around the site boundaries to control and treat any run-off during the works<br>▪ Weather conditions and typical seasonal weather variations will be taken account of when planning stripping of topsoil and excavations.<br>▪ All oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area. Refuelling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any surface water inlets (where not possible to carry out such activities off site).<br>▪ Concrete batching will take place off site and wash down and wash out of concrete trucks will take place in the secure compound.<br>▪ The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tankered off site to a licensed facility until a connection to the public foul drainage network has been established. |

**Table 16-2 Summary of Demolition & Construction Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| Biodiversity | Demolition Phase:<br>▪ Management of Alien Invasive Plant Species (IAPS): To reduce the risk of the introduction or spread of IAPS within the area, management and control measures will be implemented on-site during the demolition phase in accordance with best practice guidance.<br>▪ Protection of Habitats: Measures will be implemented throughout the demolition phase to prevent disturbance of sensitive sites such as Lough Derg (Shannon) SPA and immediately adjacent ecologically sensitive woodland habitats.<br>Construction Phase:<br>▪ CEMP: A preliminary **Construction Environmental Management Plan (CEMP)** has been prepared to accompany the planning application, and a detailed CEMP will be developed by the appointed contractor and submitted to the Planning Authority for agreement and approval prior to construction works commencing.<br>▪ Project Ecologist/ECoW: A suitably qualified and experienced Project Ecologist/Ecological Clerk of Works (ECoW) will be employed during the construction phase of the project, who will be awarded a level of authority and will be allowed to stop construction activity if there is potential for adverse environmental effects other than those predicted and mitigated for in the EIAR.<br>▪ Temporary Site Compound/Parking: Parking will only take place within designated parking areas on the mainland. The site compound including designated parking areas will be located at least 50 m from any watercourse/waterbody.<br>▪ Construction Runoff and Sediment Control: Best practice mitigation measures will be implemented to limit construction runoff and control the contamination of clean water with sediment.<br>▪ Pilling in Stream: Measures such as a continuous silt curtain will be implemented during pilling in stream works to contain any silty water generated during the works and minimise ecological impacts.<br>▪ Management of Fuel/Oil/Etc.: Measures will be implemented throughout the construction stage to prevent contamination of the soil from oil and/or petrol leakages.<br>▪ Management of Concrete on the Mainland: Measures will be implemented during the concrete pouring phase to prevent contamination from the pouring of concrete during extreme/prolonged rainfall or the washout of plant.<br>▪ Management of Construction Waste: Appropriate management of all non-hazardous and hazardous wastes on-site will be undertaken to minimise potential for environmental impacts.<br>▪ Storage of Materials: The storage of materials, spoil, containers, stockpiles and waste should follow best practice at all times and be restricted to designated areas only.<br>▪ Bio-Security: Measures will be implemented throughout the construction stage to reduce the risk of the introduction or spread of invasive species within the area.<br>▪ Management of Alien Invasive Plant Species (IAPS): To reduce the risk of the introduction or spread of IAPS within the area, management and control |

**Table 16-2 Summary of Demolition & Construction Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| | measures will be implemented on-site during the construction phase in accordance with best practice guidance.<br>▪ Protection of Habitats: The area of proposed works will be kept to the minimum necessary to minimise disturbance to habitats and flora. Vegetation removal within the Site will be minimised and restricted to those areas of vegetation which have been identified for removal. During site reinstatement, any bare areas of ground at the Site will be planted.<br>▪ Protection of Fauna: **Chapter 10 Biodiversity** of this EIAR specifies a number of measures to protect fauna, including (inter alia):<br>▪ Prohibiting the clearance of vegetation during the period March 1st to 31st August, inclusive, in accordance with Section 40 of the Wildlife Acts.<br>▪ Undertaking pre-construction bird, bat, otter and badger surveys of the Site prior to the commencement of any works.<br>▪ The use of appropriate lighting to minimise impacts on local bat populations. |
| Noise & Vibration | **Noise:**<br>Demolition Phase:<br>▪ No significant effects are predicted at noise sensitive locations (NSLs).<br>▪ Nonetheless, best practice measures for construction noise mitigation should also be applied during demolition works, as outlined below under Construction Phase.<br>Construction Phase:<br>▪ The contractor will ensure that all best practice noise control methods will be used, as necessary, to ensure impacts to nearby residential noise sensitive locations are not significant, in accordance with BS 5228 Part 1, as outlined in **Chapter 11 Noise & Vibration** of this EIAR.<br>▪ Screening though use of temporary hoarding will be employed as an additional measure to all other forms of noise control where required.<br>▪ Normal working times will be limited to 07:00 to 1900hrs Monday to Friday and 08:00 to 13:00hrs Saturday, with no work on Sundays and bank holidays. Works will not be undertaken outside these working hours without the written permission of Clare County Council<br>▪ Temporary hoarding and sequencing of works will reduce noise impacts on nearby residents and ecological receptors from tree felling. Felling activities will be scheduled to avoid sensitive breeding or nesting periods for birds, typically from April to July, and as many mature trees will be retained as possible to maintain a natural noise buffer.<br>▪ During piling, noise reduction can be achieved by enclosing the driving system of piling plant in an acoustic shroud, and by fitting an exhaust silencer system or acoustic canopy to diesel engines.<br>▪ Piling works are recommended to be conducted in early autumn or late spring to avoid the main breeding and wintering periods for bird activity.<br>▪ Continuous live noise surveys will be undertaken for the duration of the construction phase to ensure that construction site activities comply with noise limit criteria and do not cause excessive nuisance at NSLs.<br>**Vibration:** |

**Table 16-2 Summary of Demolition & Construction Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| | ▪ Vibration from demolition and construction activities will be limited to the values set out in **Chapter 11 Noise & Vibration** of this EIAR. |
| Air Quality & Climate | ▪ A **Construction Traffic Management Plan (CTMP)** will be implemented as part of the overall **Construction and Environmental Management Plan (CEMP)**. Measures in the CTMP will include:<br>▪ Limiting vehicle speeds on the construction site;<br>▪ All vehicles exiting the site will make use of wheel wash facilities prior to entering onto public roads, to ensure mud and other wastes are not tracked onto public roads. Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.<br>▪ Topsoil and other dusty material being moved onsite will be transported in covered trucks, where the likelihood of emitting dust is high, and during dry weather conditions the area of removal will be sprayed with water from a mobile tanker on a regular basis to control dust emissions;<br>▪ Exhaust emissions from vehicles operating within the site, including trucks, excavators, diesel generators or other plant equipment, will be minimised through regular servicing; and<br>▪ Public roads outside the Proposed Scheme will be regularly inspected for soiling associated with traffic movements/construction activities<br>▪ A **Construction Dust Management Plan (CDMP)** will be implemented. Measures in the CDMP will include:<br>▪ During very dry periods, spraying surfaces with water will control dust emissions from heavily trafficked locations;<br>▪ During periods of very high winds (gales), construction activities likely to generate significant dust emissions should be postponed until the gale has subsided.<br>▪ Site hoarding will be installed minimising the likelihood of dust impacts off-site. |
| Cultural Heritage: Built Heritage | <u>Demolition Phase:</u><br>▪ Some archaeological mitigation is considered necessary in demolition of the fisherman's hut on the island. Removal of the concrete plinth on which the hut is constructed should be monitored by a suitably qualified archaeologist.<br><u>Construction Phase:</u><br>▪ Construction of the new sections of the jetty should be monitored by a suitably qualified archaeologist.<br>▪ Prior to locating the exact position of the test bores and subsequent piles for the jetty, these sections of the lakebed should be subject to an underwater excavation.<br>▪ It is not anticipated that any artefacts or structures of archaeological significance will be located, but it is advisable that this take place in advance of piling.<br>▪ Similarly, the areas of lakebed which have to be excavated or dredged as part of the breakwater construction should be subject to underwater excavation/ screening as part of the construction programme.<br>▪ Archaeological monitoring of scrub removal in advance of the screw piling for the pods should be undertaken, with the location of each pile screened as part of the construction. |

**Table 16-2 Summary of Demolition & Construction Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| Cultural Heritage:<br>Archaeological Heritage | Demolition Phase:<br>▪ Some archaeological mitigation is considered necessary in demolition of the fisherman's hut on the island. Removal of the concrete plinth on which the hut is constructed should be monitored by a suitably qualified archaeologist.<br>▪ Demolition works to remove sections of the central embankment on the surface car park site on Main Street should be monitored by a suitably qualified archaeologist.<br>Construction Phase:<br>▪ Construction of the new sections of the jetty should be monitored by a suitably qualified archaeologist.<br>▪ Prior to locating the exact position of the test bores and subsequent piles for the jetty, these sections of the lakebed should be subject to an underwater excavation.<br>▪ It is not anticipated that any artefacts or structures of archaeological significance will be located, but it is advisable that this take place in advance of piling.<br>▪ Should any unexpected features of archaeological significance be encountered in the course of monitoring or advance excavation as required, measures will be put in place via condition.<br>▪ These conditions would, in all likelihood, state that works in the immediate vicinity should cease until consultation and agreement on detailed mitigation with National Monuments staff is reached.<br>▪ Similarly, the areas of lakebed which have to be excavated or dredged as part of the breakwater construction should be subject to underwater excavation/ screening under Ministerial Consent as part of the construction programme.<br>▪ Archaeological monitoring of scrub removal and excavation of each location by a suitably qualified archaeologist in advance of the screw piling for the pods should be undertaken, with the location of each pile screened as part of the construction.<br>▪ Archaeological monitoring of topsoil clearance to subsoil in the surface car park at Main Street should be undertaken. |

**Table 16-3 Summary of Operational Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| Population & Human Health | ▪ A Visitor Management Plan (VMP) has been prepared and submitted under separate cover. It sets out the envisaged structure and responsibilities for the management of the proposed development during operation.<br>▪ Clare County Council, via Clare Tourism DAC, will manage and operate the Inis Cealtra Visitor Experience, inclusive of the Visitor Centre, new car park facilities off Main Street, and the welfare facilities on Inis Cealtra. Boat tour operators will be licenced, awarded by tender by Clare County Council on a 3-year basis. The café in the Visitor Centre will be operated by lease.<br>▪ The measures in the VMP include establishment of the Inis Cealtra Management Group, to have oversight both in terms of the strategic management of the island and the operational management of the island. This group, led by Clare County Council, will include the Office of Public Works (OPW), National monuments Service (NMS), Waterways Ireland (WWI) and Department of Housing, Local Government and Heritage.<br>▪ The Inis Cealtra Community Forum will be established to represent the local community in the management of the island and visitor experience, including local access provision.<br>▪ The VMP details a comprehensive suite of measures that will be implemented during operation, to ensure effective site management and visitor access management. Local access protocols will be adopted as follows:<br>o Members of the local community and members of Lough Derg Anglers will be able to land for free with a permit-style approach. A register of those with a local connection and members of the Anglers will be retained by Clare County Council.<br>o A discounted permit system will be available to established local tourism businesses for island access, managed by Clare County Council.<br>o Access will remain to St Mary's and St Caiman's burial grounds and pre-existing plots for burial purposes. Access for visitors will be restricted during burials.<br>▪ To ensure the ongoing safety of visitors and employees on the island, a risk assessment and safety plan will be developed annually for Inis Cealtra.<br>▪ For the purpose of this assessment, all measures set out in the Visitor Management Plan are adopted and shall be implemented in full, except as otherwise required by a condition of planning permission. |
| Landscape & Visual | ▪ Implementation of appropriate management and maintenance of building forms<br>▪ Implementation of the landscape and conservation management and maintenance of each site_ |
| Material Assets:<br>Traffic & Transport | ▪ The proposed development includes a detailed **Visitor Management Plan (VMP)**. Visitor capacity will be limited, and visitor access will be on a booked basis only, with pre booking online and a timed visitor entry system to stagger visitor arrivals. The VMP will control visitor traffic generation volumes and times and is part of the proposal.<br>▪ Total operational staff numbers for Phase 1 will be up nine staff, including up to two additional staff with the permitted Old Rectory development. Total |

**Table 16-3 Summary of Operational Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| | operational staff numbers for Phase 2 will be up 20 staff, including up to 13 additional staff with the permitted Old Rectory development.<br>▪ Total operational staff numbers will be significantly less than the 75 employees threshold identified by the Clare County Development Plan 2023-2029 for a **Mobility Management Plan**.<br>▪ Traffic and transport monitoring is not required, as the predicted traffic volumes and effects are identified in **Chapter 5 Material Assets: Traffic & Transport** of this EIAR. |
| Material Assets:<br>Built Services & Waste | ▪ A contractor will be appointed to manage the maintenance of the foul system and waste removal from the site.<br>▪ Water supply and wastewater services will be managed by Uisce Éireann and any issues reported as soon as feasible.<br>▪ Periodic monitoring and maintenance of proposed drainage network which includes periodic cleaning out of gully pots & drainage channel sumps and cleaning out of pipes if/when blockages occur.<br>▪ The appointed contractor will ensure that the **Waste Management Plan (WMP)** contained within the **Construction and Environmental Management Plan (CEMP)** is updated and implemented. |
| Land & Soils | ▪ Where and when heavy footfall expected, potential mitigation measures to be used include the widening of mown paths, the addition of crushed aggregate mixed with topsoil, and the rotation of paths used.<br>▪ A contractor will be appointed to manage the maintenance of the foul system and waste removal from the island.<br>▪ Periodic monitoring and maintenance of proposed drainage network which includes Class 1 Bypass Petrol Interceptors. |
| Water & Hydrology | ▪ No operational phase mitigation measures are proposed. |
| Biodiversity | <u>Protection of Bats/Lighting Plan</u><br>▪ Potential impacts to bats and other fauna have been taken into consideration at design stage with regard to the operational phase Lighting Plan which is proposed for the development.<br>▪ Specific measures to avoid unnecessary external artificial lighting and minimise the incidence of light spill from the Proposed Development onto adjacent areas once operational have been incorporated into the proposed Lighting Plan to reduce potential impacts.<br>▪ **Chapter 10 Biodiversity** of this EIAR sets out guidelines, taken from the Bat Conservation Trust 2023 'Guidance Note 08/23', which have been incorporated into the proposed Lighting Plan for the development.<br><u>Biodiversity Signage</u><br>▪ Signage is to be erected at various locations to include along the Island and mainland Visitors Centre to highlight the presence of more sensitive habitats which occur along the island paths.<br>▪ Signage will also be erected in relation to fauna, including species of conservation interest which could or are likely to occur in the vicinity of the development. |

**Table 16-3 Summary of Operational Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| | ▪ This signage will encourage visitors to the area to be cognisant of the sensitive nature of these habitats and will educate visitors as to the sensitivity of bird species to disturbance.<br>▪ Signage will direct visitors to the area to keep dogs on leads and follow 'Leave No Trace' principles.<br><u>Protection of Water Quality during Operation</u><br>▪ For the SuDS strategy to work as designed it is important that the entire drainage system is well maintained. It will be the responsibility of the site management team to ensure the drainage system is maintained. The recommended programme of maintenance for the proposed storm water network and foul water network will be adhered to.<br>▪ The toilet composting system is be monitored on a daily basis to ensure that the tank is emptied at the intervals necessary to ensure that the system functions correctly.<br>▪ There is to be no disposal of wastes on the island. Wastes are to be removed and stored in fully-sealed plastic containers for removal from the island by boat. These waste containers are to be secured adequately during transport to reduce risk of accidental spillage. Wastes are to be disposed of appropriately at a suitably-licensed facility on the mainland.<br>▪ It is recommended that signage be erected at the location of the toilets to inform members of the public of the presence of breeding birds in the general area and requesting that people do not linger or gather unnecessarily at the location to reduce any potential disturbance to breeding birds. |
| Noise & Vibration | <u>Noise</u><br>▪ To mitigate noise from the Mountshannon Village Car Park and Harbour Car Park, speed limits will be implemented to reduce tire and engine noise.<br><u>Vibration</u><br>▪ No operational phase mitigation measures are proposed. |
| Air Quality & Climate | ▪ Operational phase impacts are mitigated by the **Visitor Management Plan (VMP),** which forms part of the proposal. |
| Cultural Heritage: Built Heritage | ▪ No operational phase mitigation measures are proposed.<br>▪ Monitoring of Built Heritage will be undertaken on an ongoing basis with maintenance of the architectural heritage by the State Body charged with upkeep of the National Monuments.<br>▪ The archaeological heritage will be monitored as outlined in the **Conservation and Landscape Management Plan (C&LMP)**.<br>▪ While responsibility for the upkeep of the National Monuments rests with the Office of Public Works, staff on the island will be provided by Clare County Council, who will run the Visitor Facility.<br>▪ At present, there are no guides or wardens on the island; as such, the presence of staff to monitor, advise and guide visitors is considered to be a positive element of the proposed development. |
| Cultural Heritage: Archaeological Heritage | ▪ Operational phase mitigation measures will take place as part of the implementation of the **Landscape and Conservation Management Plan (L&CMP)** and the **Visitor Management Plan (VMP)**. |

**Table 16-3 Summary of Operational Phase Mitigation**

| Aspect | Mitigation |
|---|---|
| | ▪ Monitoring of archaeological heritage will be undertaken on an ongoing basis, as outlined in the L&CMP and VMP. |