

## **Natura Impact Statement**

Proposed Derryclare Wild  
Western Peatlands Project





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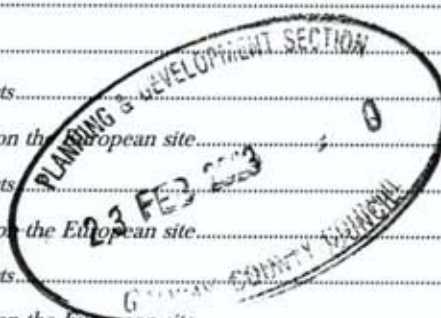




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Appendix 2	.....	Construction Environmental Management Plan
Appendix 3	.....	EIAR Chapter 8; Hydrology and Hydrogeology
Appendix 4	.....	Ecological Report 2021





# 1. INTRODUCTION

## 1.1 Background

McCarthy Keville O'Sullivan Ltd. (MKO) has been appointed to provide the information necessary to allow the competent authority, Galway County Council, to conduct an Article 6(3) Appropriate Assessment of a peatlands restoration project in Derryclare, Co. Galway. An Appropriate Assessment Screening Report has been prepared and is provided in **Appendix 1**. This Article 6(3) Appropriate Assessment Screening Report has identified the European Sites upon which the Proposed Project has the potential to result in significant effects and the pathways by which those effects may occur.

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

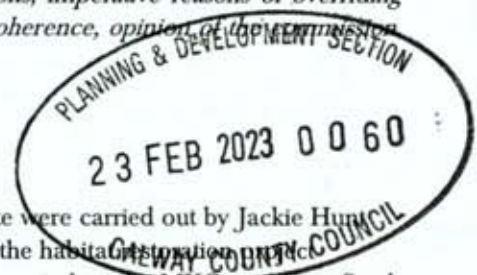
In addition to the guidelines referenced above, the following relevant guidance was considered in preparation of this report:

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

## 1.2 Statement of Authority

Ecological surveys and habitat mapping of the Proposed Project site were carried out by Jackie Hurley (M.Sc.) and Louise Scally (M.Sc., Ph.D.) to assess the feasibility of the habitat restoration project (ANIAR Ecology, 2021). Additional ground truthing surveys were carried out by MKO ecologists Sarah Mullen (B.Sc., Ph.D., ACIEEM) and Pat Roberts (B.Sc. Env.) on the 30<sup>th</sup> of July, 6<sup>th</sup> of August and the 9<sup>th</sup> and 10<sup>th</sup> of September 2021. The site was visited again by Laoise Chambers (B.Sc.) and Patrick O'Boyle (B.Sc., M.Sc.) on the 27<sup>th</sup> of October and 15<sup>th</sup> of November 2022. These additional surveys also aimed to provide additional information on the ecology of the site and surrounding area. All staff have relevant academic qualifications and are competent experts in undertaking multidisciplinary ecological surveys to this level.

This NIS has been prepared by Pádraig Desmond (B.Sc.) and reviewed by Sarah Mullen and Pat Roberts. Pádraig is an ecologist with over 2 years professional experience. Sarah is an experienced ecologist who has over 6 years' professional experience in ecological consultancy and Pat has over 16 years post graduate experience in ecological assessment and reporting.



## Structure and Format of this NIS

The points below provide a summary of the contents detailed in this NIS:

- Section 2 sets out the scope of the NIS by firstly providing a summary of the findings of the Article 6(3) Appropriate Assessment Screening Report. This clearly identifies the European Sites that have the potential to be significantly affected by the Proposed Project and the pathways by which they might be affected. Section Two then identifies the individual Qualifying Interests (QIs) or Special Conservation Interests (SCIs) that have the potential to be affected via the identified pathways for effect.
- Following this, in Section 3, all elements of the proposed project are fully described.
- Section 4 describes the baseline environment with respect to the relevant QI/SCI of the screened in European Sites.
- Section 5 provides an assessment of the potential for adverse effects on the identified European Sites in the absence of mitigation. Mitigation to robustly block any identified pathways for impact is then prescribed.
- Section 6 provides an assessment of residual effects taking into consideration the proposed mitigation.
- In Section 7, the potential in combination effects of the Proposed Project on European Sites, when considered in combination with other plans and projects were assessed.
- A concluding statement is provided in Section 8.





2.

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

The Article 6(3) Appropriate Assessment Screening report identified the potential for the Proposed Project to result in significant effects on the following European Sites:

- The Twelve Bens/Garraun Complex SAC [002031]
- Connemara Bog Complex SAC [002034]
- Connemara Bog Complex SPA [004181]

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

2.1

### The Twelve Bens/Garraun Complex SAC [002031]

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

2.1.1

#### Pathway for Effect

Small Areas of the Proposed Project site are partially within this SAC. Therefore, taking the precautionary approach, there is potential for direct impacts on the following QIs of the SAC via habitat loss/degradation and QI species via disturbance:

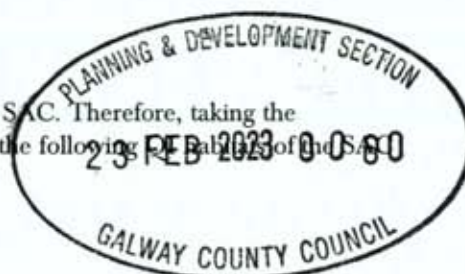
- [1355] Otter *Lutra lutra*
- [7130] Blanket bogs (\* if active bog)
- [7150] Depressions on peat substrates of the Rhynchosporion

No instream works are proposed as part of the Proposed Project. Therefore, there is no potential for direct impact on aquatic receptors, as a result of habitat loss/degradation.

Multiple EPA mapped watercourses drain the Proposed Project site and discharge into Lough Inagh and Derryclare Lough, both of which are adjacent to the Proposed Project site and form part of the SAC. Therefore, there is potential for indirect effects on the following aquatic dependant QIs of the SAC, where they occur outside of the Proposed Project site, via deterioration in water quality arising from run-off of pollutants to surface water during felling and construction activities associated with the Proposed Project.

- [1106] Salmon *Salmo salar*
- [1355] Otter *Lutra lutra*
- [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)

Additionally, there is potential for the release of nutrients into nearby watercourses as a result of the forestry operations associated with the Proposed Project, potentially resulting in the deterioration in water quality.



No pathway for indirect effects on the following QIs of the SAC was identified as a result of the Proposed Project due to either a) the absence of hydrological connectivity between the development and these QIs, b) their terrestrial/coastal nature and/or c) the distance of between the Proposed Project and the known locations of these QIs (as mapped in the SSCOs or Article 17 mapping).

- > [1029] *Margaritifera margaritifera* (Freshwater Pearl Mussel)
- > [1833] *Najas flexilis* (Slender Naiad)
- > [3130] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoetes-Nanojuncetea*
- > [4060] Alpine and Boreal heaths
- > [8110] Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)
- > [8210] Calcareous rocky slopes with *chasmophytic* vegetation
- > [8220] Siliceous rocky slopes with *chasmophytic* vegetation
- > [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

There is no hydrological connectivity between the Proposed Project and populations of freshwater pearl mussel for which the SAC has been designated, which are located in a separate hydrological (The Dawros catchment) and ground water catchment than the Proposed Project site. Therefore, there is no potential for any significant impacts on this QI as a result of the Proposed Project.

There is no hydrological connectivity between the Proposed Project and the known populations of slender naiad for which the SAC is designated. As per the Site-Specific Conservation Objectives (SSCOs) for the SAC, slender naiad is recorded within Loughs Pollacappul and Kylemore, which are located within separate hydrological and groundwater catchments than the Proposed Project. Therefore, there is no potential for likely significant impacts on this QI as a result of the Proposed Project.

Following the detailed ecology surveys of the Proposed Project site, and a review of the Article 17 mapping and the Site-Specific Conservation Objectives (SSCOs), none of the above QI habitats were recorded or mapped within or downstream of the Proposed Project site. Therefore, there is no potential for likely effects on these QI habitats as a result of the Proposed Project.

## 2.2 Connemara Bog Complex SAC [002034]

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

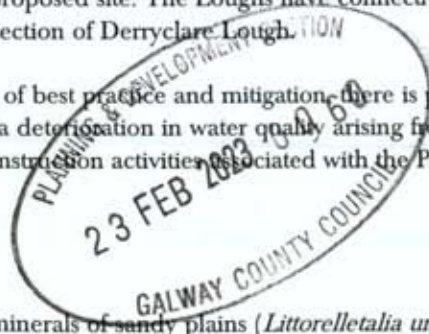
### 2.2.1 Pathway for Effect

There will be no direct effects as the project footprint is located entirely outside the designated site.

There is hydrological connectivity between the Proposed Project and this SAC via multiple EPA mapped watercourses which drain the Proposed Project site and discharge into Lough Inagh and Derryclare Lough, both of which are adjacent to the proposed site. The Loughs have connectivity to the SAC via the Recess River which drains the southern section of Derryclare Lough.

Taking a precautionary approach, and in the absence of best practice and mitigation, there is potential for indirect effects on the following QIs of the SAC via deterioration in water quality arising from run-off of pollutants to surface water during felling and construction activities associated with the Proposed Project:

- > [1106] Salmon *Salmo salar*
- > [1355] Otter *Lutra lutra*
- > [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletea uniflorae*)





- > [3130] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoetes-Nanojuncetea*
- > [3160] Natural dystrophic lakes and ponds
- > [3260] Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation
- > [1833] Slender Naiad *Najas flexilis*

Additionally, there is potential for the release of nutrients into nearby watercourses as a result of the forestry operations associated with the Proposed Project, potentially resulting in the deterioration in water quality.

Taking the precautionary approach, there is potential for indirect effects on ex-situ otter of the SAC via disturbance arising from felling and construction activities associated with the Proposed Project.

No pathway for effect was identified on the following QIs of the SAC as a result of the Proposed Project due to either a) the absence of hydrological connectivity between the Proposed Project and the known locations of these QIs, b) their terrestrial/coastal nature and/or c) the distance between the Proposed Project and the known locations of the QIs, and d), the attenuating properties of the intervening waterbodies.

- > [1150] Coastal lagoons
- > [1170] Reefs
- > [4010] Northern Atlantic wet heaths with *Erica tetralix*
- > [4030] European dry heaths
- > [6410] *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caerulea*)
- > [7130] Blanket bogs (\* if active bog)
- > [7140] Transition mires and quaking bogs
- > [7150] Depressions on peat substrates of the *Rhynchosporion*
- > [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
- > [1065] Marsh Fritillary *Euphydryas aurinia*
- > [7230] Alkaline fens



## 2.3

### Connemara Bog Complex SPA [004181]

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

### 2.3.1

#### Pathway for Effect

The Proposed Project site is within approx. 2.15 km of this SPA. This is within the breeding season core foraging range for ex-situ Merlin and Golden Plover, 5 km and 3 km respectively, as per SNH (2013). The Proposed Project site provides suitable foraging and breeding for these species. Therefore, taking a precautionary approach, a source-pathway-receptor chain for potential impacts on the SPA due to ex situ disturbance of these species has been identified.

There are no records of breeding merlin within the Proposed Project site. Nonetheless conifer plantation and peatland habitats within the site support suitable breeding merlin habitat and therefore, taking a very precautionary approach, there is potential for loss of merlin breeding habitat and direct mortality of merlin during felling operations associated with the Proposed Project.

Taking the above into account, a potential source-pathway-receptor chain for direct ex-situ impacts on the following SCIs of this SPA, where they occur beyond the boundary of the SPA, has been identified, via disturbance and/or habitat loss arising from the felling and construction activities of the Proposed Project:

- > [A098] Merlin (*Falco columbarius*)
- > [A140] Golden Plover (*Pluvialis apricaria*)

The SPA is also designated for the following SCIs:

- > [A017] Cormorant (*Phalacrocorax carbo*)
- > [A182] Common Gull (*Larus canus*)

However, the Proposed Project site does not provide significant suitable foraging or breeding habitat for these SCIs and therefore, no potential impact for effects on the above listed SCIs of the SPA has been identified.





3.

## DESCRIPTION OF PROPOSED PROJECT

3.1

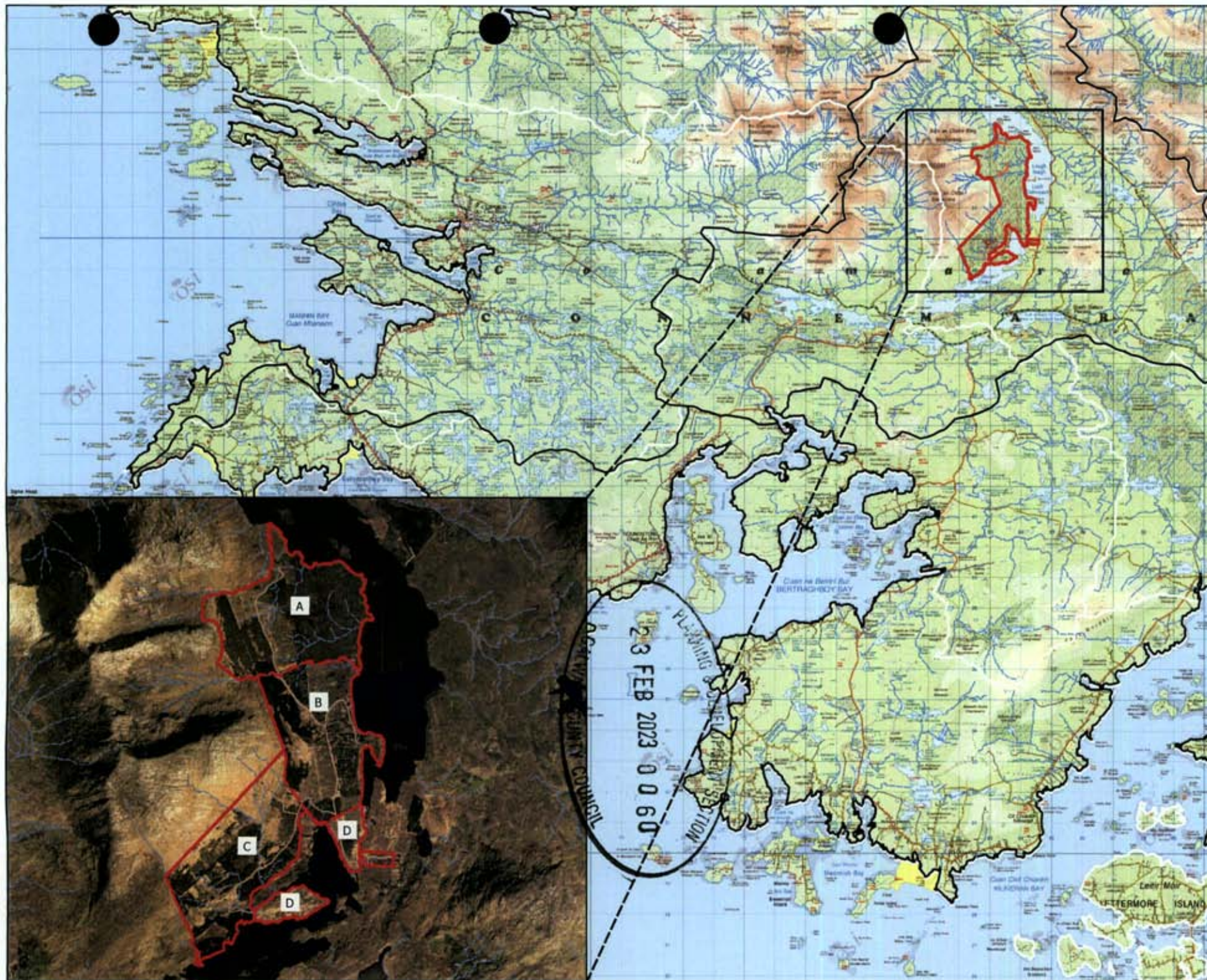
### Site Location

The Coillte property at Derryclare (project site) lies to the west of Lough Inagh and Derryclare Lough in Connemara, Co. Galway, north of the Galway to Clifden Road (N59) (IG: L 83927 50924). The Derryclare property extends to approximately 567 Hectares (ha) on the western slopes of Derryclare and Bencorr mountains. The site is located in the townlands of Derryclare and Cloonnacartan in County Galway.

A site location map is provided in Figure 3-1 which also indicates the three main divisions of the site, Areas A, B, and C, as well as Area D which captures outlying sections of the EIAR Site Boundary. The Proposed Project site in relation EU Designated Sites is given in Figure 3-2.







Map Legend

- Site Boundary
- WFD Watercourses
- WATER Catchments

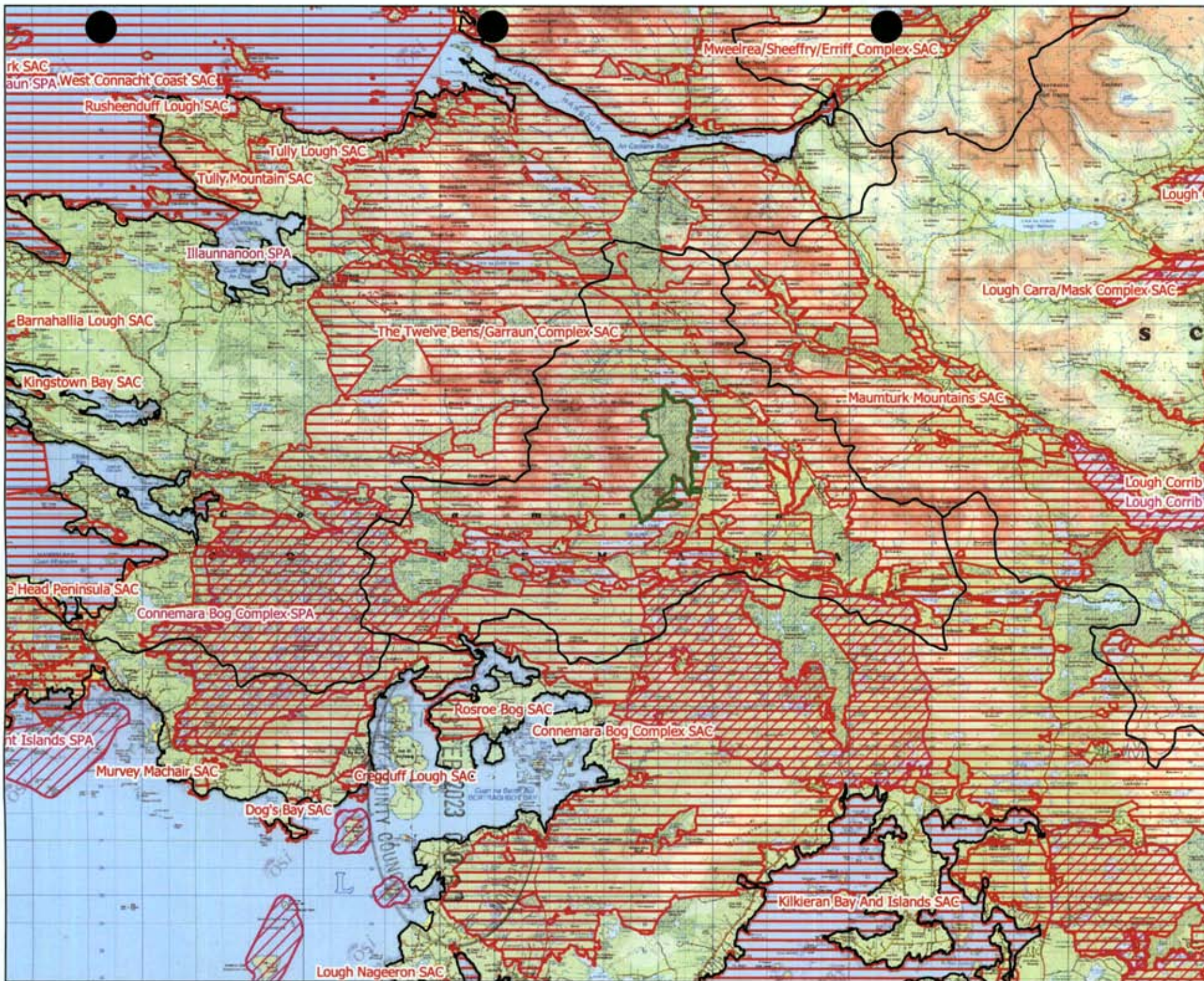


## Site Location

Project Title Proposed Derryclare Wild Western Peatlands Project	
Drawn By PD	Checked By SM
Project No. 210603	Drawing No. 3-1
Scale 1:160000	Date 24.10.2022

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## Map Legend

- Site Boundary
- Special Areas of Conservation (SACs)
- Special Protected Areas (SPAs)
- WFD Catchments



Drawing Title  
European Sites in the wider vicinity of the Proposed Project

Project Title  
Proposed Derryclare Wild Western Peatlands Project

Drawn By <b>PD</b>	Checked By <b>SM</b>
Project No. <b>210603</b>	Drawing No. <b>Figure 3-2</b>
Scale <b>1:180000</b>	Date <b>13/02/2023</b>

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## 3.2

## Characteristics of the Proposed Project

The Proposed Project will include the felling of approx. 343 hectares of conifer plantation within 20 harvest blocks, habitat restoration and enhancement, upgrading of existing road and construction of new temporary access roads, temporary water crossings, the resurfacing of an existing carpark and fencing.

## 3.2.1

### Tree Felling

The Proposed Project focuses on forestry blocks where the pine and spruce have reached maturity and are starting to die off in areas that are suitable for bog restoration or conversion to native woodland over the project period.

The size and shape of the harvest blocks have been designed to align with hydrological sub-catchments, operational considerations in terms of access and brash management and target habitat objectives. The felling sequence aims to ensure all environmental protections are managed, particularly of watercourses and landscape considerations. However, many of the blocks are challenging in terms of the terrain and planning extraction routes to protect the peat soils during the harvest operation. Where possible, the planning of these blocks was in line with current best forestry practice guidelines, with all coupes sizes under 25ha, with the exception of one 36ha block, where for safety reasons it could not be made any smaller. The coupe size was a careful consideration as often most of the trees removed have to come to one or two key extraction points to avoid hotspots (i.e. very wet areas), rock outcrops, steep sections, etc.

A total of approximately 343 hectares of coniferous forestry will be removed in 20 harvest blocks (Table 3-1), spread out over the duration of the plan. The size of the harvest blocks to be felled ranges between 2.35 ha and 36.4 ha for conventional felling, 1.23 ha to 43.07 ha for felling to waste (of previously burnt areas) and 3.76 ha to 42.38 ha for mulching of stunted undeveloped crops. Harvest Plan Maps for each of the proposed harvest blocks are included in Appendix 4.2 of the EIAR which accompanies the planning application.

Table 3-1 Proposed Harvest Blocks

Harvest Block Number	Area (hectares)	Plan Year for Operations	Observations	Harvesting method to be used
GY27_3_09	19.93	2022	Current being felled under licence	Conventional harvesting
GY27_HB0009	24.86	2024	New road needed	Conventional harvesting
GY27_HB0010	22.65	2025	New road needed	Conventional harvesting
GY27_HB0011	17.25	2027	New road needed	Conventional harvesting
GY27_HB0012	36.39	2023	To harvest safely a large coupe is required	Conventional harvesting
GY27_HB0013	11.01	2024	Roaded	Conventional harvesting
GY27_HB0014	43.07	2023	Burnt area	Fell to waste (manual or mechanical)
GY27_HB0015	9.56	2026	New road needed	Conventional harvesting

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GY27_HB0016	3.63	2025	Fell with HB0017	Conventional harvesting
GY27_HB0017	11.56	2025	Fell with HB0016	Conventional harvesting
GY27_HB0018	19.21	2026	New road needed	Conventional harvesting
GY27_HB0020	5.57	2025	Young crop	Conventional harvesting
GY27_HB0021	42.38	2023	Young crop and recently felled	Mulching crop
GY27_HB0022	37.01	2023	Recently felled area	None (Completed under licence)
GY27_HB0023	2.83	2025	Contains large lawson cypress	Conventional harvesting
GY27_HB0024	3.76	2024	Recently replanted with SS	Mulching crop
GY27_HB0027	20.4	2024	Felled, attempt native woodland	None (Completed under licence)
GY27_HB0028	8.76	2024	2nd rotation crop	Conventional harvesting
GY27_HB0029	1.23	2024	2nd rotation crop, fell to waste manual	Conventional harvesting
GY27_HB0030	2.35	2024	2nd rotation crop	Conventional harvesting

## 3.2.2 Habitat Restoration and Enhancement

### 3.2.2.1 Blanket Bog and Wet Heath Restoration

Approximately 278 hectares of existing forestry will be restored to blanket bog and wet heath habitat. This will be achieved through the felling of existing forestry, blocking site drains and where suitable reprofiling of ploughed areas. Areas proposed for bog restoration are shown on Figure 3-3.

### 3.2.2.2 Establishment of Native Pioneer Woodland

Approximately 62.26 hectares of coniferous forestry will be felled and replanted with native pioneer woodland. The proposed native woodland establishment areas are concentrated in areas where the peat depth is shallow and in the more nutrient rich areas, where there may be some potential to establish native woodland. As these sites are all marginal, they all carry a risk of not establishing. Therefore, it is accepted that any failed attempts to establish native woodland will be replaced by a bogland habitat and to achieve this additional subsequent restoration works maybe required per the methodologies described in the accompanying EIAR.

A combination of bare root planting, plug planting, and direct seeding may be used. Deer protection may be required, and a combination of deer and stock fencing and tree shelters will be used. The proposed planting methodology is summarised in Table 3-2, below.

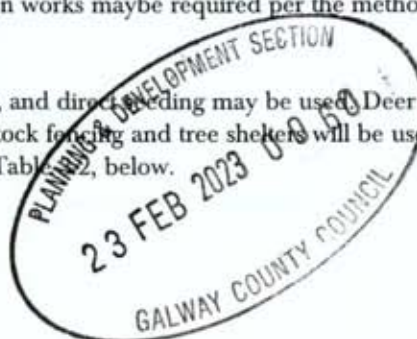
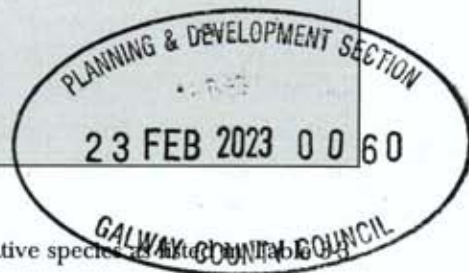


Table 3-2 Pioneer Native Woodland Establishment Methodology

<i>Pioneer Native Woodland</i>	
†Source: Native Woodland Intervention for Remediation of Industrial Cutover Peatlands Pilot Scheme 2021 – 2022.	
<i>Description</i>	<i>Standards†</i>
<p>Apply the same criteria from the Native woodland pilot scheme on cutaway bogs to blanket bogs.</p> <p>Low density pioneer native woodland is to be targeted on peatland sites where the possibility of establishing a native woodland is marginal. These areas should be treated using the normal methods for native woodland establishment, but the expected outcomes can be assessed using a less stringent standard of at least 800 stems/ha over 20% of the site. These marginal sites also carry a risk of not establishing and therefore may require additional restoration works to restore to a bogland habitat if the attempt to establish a pioneer woodland fails.</p> <p><i>Using a mix of planting, cuttings (willow) and seeding to establish native woodland. Seed will be broadcast diluted in sand or grit across the area.</i></p>	<p>Minimum 800 trees per hectare at year 4-6.</p> <p>While it is accepted that some trees will not be evenly spaced, trees must be spread out consistently throughout the area. There will be a mosaic of tree cover and open bog depending on peat depths across the site.</p> <p>(In Derryclare it is recommended to not use any fertiliser application).</p>



The proposed native woodland area will be planted with a range of native species as listed in Table 3-3 below.

Table 3-3 Proposed Native Tree Species to be used.

Common Name	Scientific Name	Drier Area Species Mix	Wetter Area Species Mix
Birch	<i>Betula pubescens</i>	60%	40%
Willow	<i>Salix spp.</i>	20%	60%
Rowan	<i>Sorbus aucuparia</i>	10%	–
Scots pine	<i>Pinus sylvestris</i>	10%	–
Alder	<i>Alnus glutinosa</i>	5%	–

Where seeding is used the seeding schedule provided in Table 3-4 will be used.

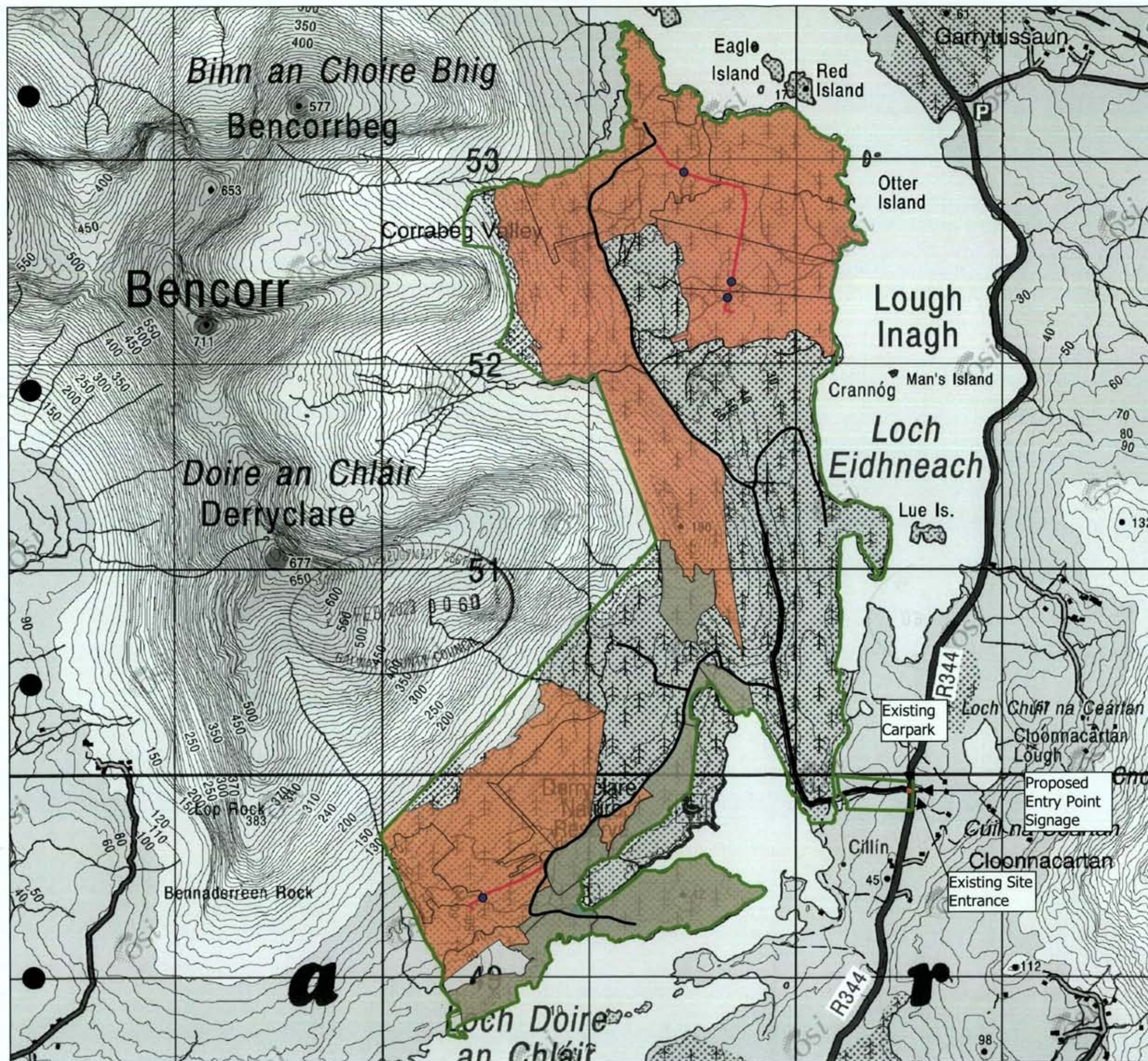


Table 3-4 Seeding Schedule

Seed mix	Rate
Seeding: birch or mix of birch/rowan or mix birch/Scots pine or birch/alder mix	Birch seed application at between 1.4kg/ha-3kg/ha (species rates depend on weight of seeds)







### Map Legend

- Derryclare Site
- Proposed Native Woodland
- Proposed Peatland Restoration
- Existing Forest Road
- Proposed Road Extension
- Watercourse Crossings
- Existing Carpark



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Drawing Title

Proposed Development Layout

Project Title

Derryclare Wild Western Peatland Project

Drawn By

ER

Checked By

TB

Project No.

210603

Drawing No.

Figure 3-3

Scale

1:18,000

Date

2023-02-14



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### 3.2.3 Site Roads

Maximum use has been made of the existing on-site roads in accessing the proposed harvest blocks for timber extraction and bog restoration. All site access roads that are proposed to be used as part of the Proposed Development, both existing and proposed, will be capped with clean stone to minimise the risk of sediment runoff to local water courses. The material required for upgrade and construction of roads within the site will be obtained from local, licenced quarries.

#### 3.2.3.1 Existing Roads

The existing roadways and tracks through the site will be used to access the proposed timber harvest blocks and restoration areas. It is proposed to use 8.23 kilometres of existing on-site roadways as part of the Proposed Development. While some upgrading of these roadways may be required, it is not anticipated any widening of the roadways will be required. Upgrading of the existing roadways will involve the laying of a new surface dressing on the existing section of roadway only where necessary.



Plate 3-1 View of existing site access road



Plate 3-2 View of existing site access road

#### 3.2.3.2 New Temporary Access Roads

In order to access and service the forestry blocks in the northern section of the site one new temporary road extension is required. A temporary road extension is also needed on the southern side to facilitate timber extraction and operational access for restoration works. Having a good road network for all operations is a key mitigation for sediment control and run-off and is a practical necessity for operations. It is proposed the temporary road areas will be reinstated as part of the peatland restoration process.

It is proposed to construct approximately 1.58 kilometres of new temporary roadway as part of the Proposed Development. The routes of the proposed new roads are shown in Figure 3-4. Proposed new temporary access roads will be designed as "Build On-Top Embankment Roads" in accordance with the COFORD (2004) Forest Road Manual – Guidelines for the Design, Construction and Management of Forest Roads.

#### 3.2.3.3 Watercourse Crossings

Along the new temporary road there will be 4 no. temporary water-crossings of natural water courses constructed in order to facilitate the harvesting of the timber at the site. Full details of the proposed crossing methods for each watercourse crossing, along with a map of their locations are provided in Appendix 4-1 of the accompanying EIAR. Additional temporary watercourse crossings of forestry drains may also be required to facilitate timber harvesting. These additional crossings will be accomplished using the same methodology described in Chapter 4: Section 4.7.9 of the accompanying EIAR. However, where possible, all forest drains within the project site will be permanently blocked as part of the proposed peatland restoration. Locations of proposed water crossings are indicated in Figure 3-3 above.





3.2.4

## Visitor Entrance and Car Park Improvement

Access to the site for visitors during the operational phase, will be via the existing site entrance off the R344 road which runs adjacent to the eastern site boundary in the townland of Cloonnacartan.

It is proposed to upgrade the surface dressing of the existing carpark to provide a level, compacted car park surface. It is not intended to delineate individual car parking spaces.

The car park will act as a landing point or trailhead for recreation and amenity users arriving at the site. The car park will provide a safe and easily accessible landing point, allowing visitors to orientate themselves on the site or demount bicycles from cars. A view of the existing car parking area is shown in Plate 3-3.



Plate 3-3 View of existing car park

3.2.5

## Visitor Information Signage

Entry point signage will be provided, at the main site entrance where recreation users can enter the site. The entry point information boards will provide information about the Wild Western Peatlands project and the peatland restoration process. The signage will also indicate the principles of 'Leave No Trace' and information in relation to the flora and fauna present at the site.

3.2.6

## Site Fencing

The proposed native woodland establishment areas will be fenced with deer – and/or stock-proof fencing where necessary.



3.2.7

## Vegetation Control/Invasive Species

A targeted management plan for the control of rhododendron regeneration is required in combination with felling, bog restoration and the establishment of native woodland. Rhododendron removal will be informed by current best practices, and it will be conducted using a combination of methods including nicking live stems with a chainsaw and spraying with glyphosate, manual removal with brush-cutters, manual chainsaw felling and stump treatment using 'Ecoplugs' and the painting and spot spraying of smaller stumps with glyphosate. A Rhododendron Management Plan will be prepared in advance of any works on site.





4.

## CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

The ecological surveys that were undertaken to inform this NIS are fully described in this section. A general description of the ecology of the site of the Proposed Project is provided in the AA Screening Report in **Appendix 1**. The specific surveys that were undertaken to assess the potential effects on the identified European Sites are described below.

4.1

### Ecological Survey Methodologies

4.1.1

#### Desk Study

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

- Review of NPWS Conservation Objectives supporting documents, site synopsis, standard data forms and supporting documents for EU Designated Sites
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA), EPA (Envision), Water Framework Directive (WFD), and Inland Fisheries Ireland (IFI)
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper,
- Inland Fisheries Ireland (IFI) reports, where relevant/available
- Review of NPWS Article 17 metadata and GIS database
- Records from the NPWS web-mapper and review of specially requested records from the NPWS Rare and Protected Species Database for the hectads in which the Proposed Project is located

4.1.2

#### Ecological Surveys

Detailed habitat surveys and mapping of the site were undertaken by Jackie Hunt (M.Sc.) and Louise Scally (M.Sc., Ph.D.) on the following dates:

- 15<sup>th</sup> to 18<sup>th</sup> June 2021
- 7<sup>th</sup> and 16<sup>th</sup> July 2021

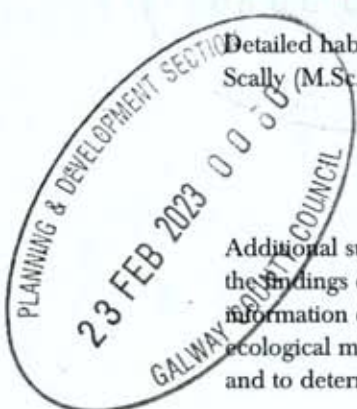
Additional surveys were also undertaken by MKO ecologists to inform the EIAR by ground truthing the findings of the Ecological reporting that was previously undertaken and to provide additional information on the ecology of the site and surrounding area. They also undertook more general ecological multidisciplinary surveys that included an assessment of the significance of the site for fauna and to determine whether further, more detailed surveys for any habitats or species were necessary.

The habitats on site were classified according to Fossitt (2000) and a detailed habitat map of the site was prepared. The results of the previous surveys (ANIAR Ecology, 2021) are given in the ecological report provided in **Appendix 4** of this NIS.

4.1.2.1

#### Ecological Multidisciplinary Walkover Surveys

Multi-disciplinary walkover surveys of the site were undertaken by MKO ecologists on the 30<sup>th</sup> of July, 6<sup>th</sup> of August and the 9<sup>th</sup> and 10<sup>th</sup> of September 2021 and again on the 27<sup>th</sup> of October and 15<sup>th</sup> of November 2022. The aim of the surveys was to ground-truth and update where necessary the results of





the ecological surveys undertaken by Jackie Hunt (M.Sc.) and Louise Scally (M.Sc., Ph.D.) in 2021 (ANIAR Ecology, 2021).

Habitats were identified in accordance with the Heritage Council's 'Guide to Habitats in Ireland' (Fossitt, 2000). Habitat mapping was undertaken with regard to guidance set out in 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2011). Plant nomenclature for vascular plants follows 'New Flora of the British Isles' (Stace, 2010), while mosses and liverworts nomenclature follows 'Mosses and Liverworts of Britain and Ireland - a field guide' (British Bryological Society, 2010).

Plant nomenclature for vascular plants follows 'New Flora of the British Isles' (Stace, 2010), while mosses and liverworts nomenclature follows 'Mosses and Liverworts of Britain and Ireland - a field guide' (British Bryological Society, 2010).

The survey included a search for indications or suitable habitat for mammals, and additional habitat features for the full range of other protected species that are likely to occur in the vicinity of the Proposed Project (e.g. otter etc.). In addition, an inventory of other species of local biodiversity interest was compiled including invertebrates (butterflies, dragonflies, damselflies, beetles), plants, fungi etc.

During the multi-disciplinary walkover surveys, a search for non-native invasive species was undertaken. The survey focused on the identification of invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (As Amended) (S.I. 477 of 2015).

Other targeted survey methodologies undertaken at the site are described in the following subsections.

#### 4.1.3 Otter Surveys

The Proposed Project is located partially within the Twelve Bens/Garraun Complex SAC [002031], which has been designated for otter. As part of the multidisciplinary survey, a search for indications of otter was carried out. This search was conducted in order to determine the presence or absence of otter within Proposed Project site. This involved a search for all potential indications of otter, as per NRA (2008) (spraint, tracks, couches, holts). Searches were carried along watercourses within the Proposed Project site and on the western banks of Lough Inagh and Derryclare Lough. The otter survey was conducted as per TII (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes).

## 4.2 Results of Ecological Surveys

### 4.2.1 Desk Study Results

#### 4.2.1.1 The Twelve Bens/Garraun Complex SAC [002031]

The site-specific conservation objectives for this SAC (NPWS, Version 1, December 2021) were reviewed. The relevant QIs, for which there is a potential pathway for effect, and their associated conservation objectives are presented in Table 4-1.

Table 4-1 Qualifying Interests and Conservation Objects

Qualifying Interest	Conservation Objective
[1106] Salmon <i>Salmo salar</i>	To maintain the favourable conservation condition of Atlantic Salmon in The Twelve Bens/Garraun Complex SAC
[1355] Otter <i>Lutra lutra</i>	To maintain the favourable conservation condition of Otter in The Twelve Bens/Garraun Complex SAC





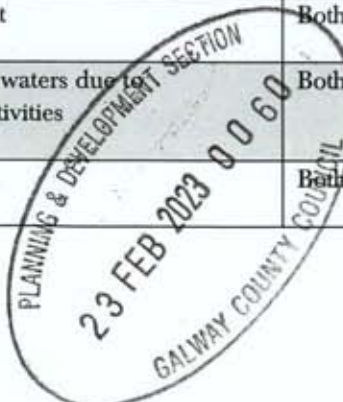
Qualifying Interest	Conservation Objective
[3110] Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> )	To maintain the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) in The Twelve Bens/Garraun Complex SAC
[7130] Blanket bogs (* if active bog)	To restore the favourable conservation condition of Blanket bogs (* if active bog) in The Twelve Bens/Garraun Complex SAC
[7150] Depressions on peat substrates of the Rhynchosporion	To restore the favourable conservation condition of Depressions on peat substrates of the Rhynchosporion in The Twelve Bens/Garraun Complex SAC

#### 4.2.1.1.1 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to impact on the SAC were reviewed and considered in relation to the Proposed Project. These are provided in Table 4-2.

Table 4-2 Site-specific threats, pressures, and activities on the European site

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
H	A04.01.02	intensive sheep grazing	Inside
L	C01.03.01	hand cutting of peat	Inside
L	D01.05	bridge, viaduct	Both
L	E01.03	dispersed habitation	Outside
L	G01.02	walking, horseriding and non-motorised vehicles	Inside
L	G01.04	mountaineering, rock climbing, speleology	Inside
L	G05.01	Trampling, overuse	Inside
L	G05.09	fences, fencing	Inside
L	J01.01	burning down	Inside
M	B02.01.02	forest replanting (non-native trees)	Outside
M	B04	use of biocides, hormones and chemicals (forestry)	Outside
M	C01.03.02	mechanical removal of peat	Both
M	H01.05	diffuse pollution to surface waters due to agricultural and forestry activities	Both
M	I01	invasive non-native species	Both





#### 4.2.1.1.2 Qualifying interests

##### [1106] Salmon *Salmo salar*

As an anadromous fish, Atlantic salmon have a complex life cycle, spending most of their adult life at sea, but spawning, hatchling and juvenile stages are in fresh waters. Spawning in Atlantic salmon can occur throughout the catchment where suitable substrata and flow conditions are present, from the top of the tidal zone up to small headwater streams (Bardonnnet & Baglinière, 2000). Young and spawning salmon are vulnerable to declines in water quality: inputs of nutrients, sediment, and pollutants. In particular, these factors can impact on eggs within spawning redds, reducing survival at this early stage in the lifecycle (Grieg et al., 2005). Additionally, artificial barriers block salmon's upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas.

##### [1355] Otter *Lutra lutra*

Otters utilise freshwater and coastal habitats, such as along rivers, streams, lakes, marshes, estuaries and coasts, where fish and other prey are plentiful. They require suitable bank-side habitat that offers good cover, for holts and lie-up site which they will use during the day. They can breed at any time of year but mostly in spring and summer (Hayden & Harrington, 2000). The otter is listed in Annex II and IV of the Habitats Directive and in Appendix II of the Berne Convention. The main threats to otters are considered to be destruction or degradation of their riverbank habitat, and water pollution, which could impact on prey availability (Reid et al. 2013).

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

Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) are frequent in catchments where peatland overlies acid bedrock and the habitat is best developed on more gentle slopes along sheltered shorelines, while also being found in upland lakes, such as corries (O'Connor, 2015). This lake habitat can co-occur with a number of other Annex I lake habitats, including 3130 and 3160 (O'Connor, 2015). Threats to this habitat include eutrophication, drainage, and other damage to peatland, which can, in turn, impact on the lake through increased organic matter, water colour, turbidity and acidification (NPWS, 2019). According to the SSCO document (NPWS, 2017), the exact distribution of habitat 3110 in the site is unknown, but it is considered to be widespread and of high conservation value.

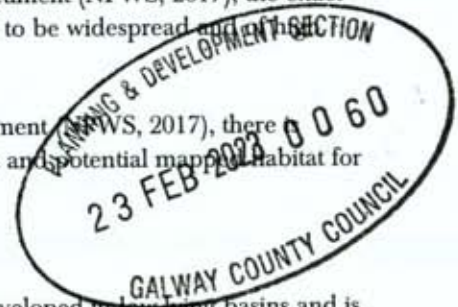
According to map 3 of the site-specific Conservation Objectives document (NPWS, 2017), there is potential hydrological connectivity between the proposed project area and potential mapped habitat for this QI downstream.

##### [7130] Blanket bogs (\* if active bog)

The habitat is documented to occur throughout the SAC. It is best developed in low-lying basins and is present on the flanks of mountains up to an altitude of c.200m. Examples of this habitat can be found at Glenmore, Kylemore, Tooreenacoona, Owenglin, east of the Dawros River, on the western slopes of Bealnascapla Mountain and on the flanks of Cregg Hill (NPWS, 2107). Blanket bog has not been mapped in detail for The Twelve Bens/Garraun Complex SAC, but from current available data the total area of the qualifying habitat is estimated to be approximately 5,325ha, covering 33% of the SAC (NPWS, 2107).

##### [7150] Depressions on peat substrates of the *Rhynchosporion*

The habitat area of this QI has not been mapped in detail for The Twelve Bens/Garraun Complex SAC and thus the total area of the qualifying habitat in the SAC is unknown. The habitat is documented to occur around pools, in wet hollows, quaking areas and in flushed areas within the SAC (NPWS internal files). Examples of this habitat can be found at Tooreenacoona, Glenmore, Kylemore and Owenglin.





#### 4.2.1.2 Connemara Bog Complex SAC [002034]

The site-specific conservation objectives for Connemara Bog Complex SAC [002034] (NPWS, Version 1, December 2021) were reviewed. The relevant QIs and the associated conservation objectives are presented in Table 4-3.

Table 4-3 Qualifying Interests and Conservation Objects

Qualifying Interest	Conservation Objective
[1106] Salmon <i>Salmo salar</i>	To restore the favourable conservation condition of Atlantic Salmon in Connemara Bog Complex SAC
[1355] Otter <i>Lutra lutra</i>	To maintain the favourable conservation condition of Otter in Connemara Bog Complex SAC
[3110] Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> )	To maintain the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> ) in Connemara Bog Complex SAC
[3130] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i>	To maintain the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> in Connemara Bog Complex SAC
[3160] Natural dystrophic lakes and ponds	To maintain the favourable conservation condition of Natural dystrophic lakes and ponds in Connemara Bog Complex SAC
[3260] Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation	To maintain the favourable conservation condition of Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation in Connemara Bog Complex SAC
[1833] Slender Naiad <i>Najas flexilis</i>	To maintain the favourable conservation condition of Slender Naiad in Connemara Bog Complex SAC

#### 4.2.1.2.1 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to impact on the SAC were reviewed and considered in relation to the Proposed Project. These are provided in Table 4-4.

Table 4-4 Site-specific threats, pressures, and activities on the European site

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
H	C01.03.01	Mechanical removal of peat	Inside
H	C01.03.02	Intensive sheep grazing	Inside
H	J01	Fire and fire suppression	Inside
M	A04.01.02	Hand cutting of peat	Inside

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#### 4.2.1.2.2 Qualifying interests

##### [1106] Salmon *Salmo salar*

As an anadromous fish, Atlantic salmon have a complex life cycle, spending most of their adult life at sea, but spawning, hatchling and juvenile stages are in fresh waters. Spawning in Atlantic salmon can occur throughout the catchment where suitable substrata and flow conditions are present, from the top of the tidal zone up to small headwater streams (Bardonnnet & Baglinière, 2000). Young and spawning salmon are vulnerable to declines in water quality: inputs of nutrients, sediment, and pollutants. In particular, these factors can impact on eggs within spawning redds, reducing survival at this early stage in the lifecycle (Grieg et al., 2005).

##### [1355] Otter *Lutra lutra*

Otters utilise freshwater and coastal habitats, such as along rivers, streams, lakes, marshes, estuaries and coasts, where fish and other prey are plentiful. They require suitable bank-side habitat that offers good cover, for holts and lie-up site which they will use during the day. They can breed at any time of year but mostly in spring and summer (Hayden & Harrington, 2000). The otter is listed in Annex II and IV of the Habitats Directive and in Appendix II of the Berne Convention. The main threats to otters are considered to be destruction or degradation of their riverbank habitat, and water pollution, which could impact on prey availability (Reid et al. 2013).

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

Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) are frequent in catchments where peatland overlies acid bedrock and the habitat is best developed on more gentle slopes along sheltered shorelines, while also being found in upland lakes, such as corries (O'Connor, 2015). This lake habitat can co-occur with a number of other Annex I lake habitats, including 3130 and 3160 (O'Connor, 2015). Threats to this habitat include eutrophication, drainage, and other damage to peatland, which can, in turn, impact on the lake through increased organic matter, water colour, turbidity and acidification (NPWS, 2019). According to the SSCO document (NPWS, 2015), the exact distribution of habitat 3110 in the site is unknown, but it is considered to be widespread and of high conservation value.

According to map 6 of the site-specific Conservation Objectives document (NPWS, 2015), there is potential hydrological connectivity between the proposed project area and potential mapping habitat for this QI approx. 3.2km downstream.

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

The clear soft water which characterises this habitat type contains low to moderate levels of plant nutrients and supports a characteristic assemblage of plant species. The vegetation community is characterised by amphibious short perennial vegetation, with shoreweed *Littorella uniflora* being considered as the defining component. This species often occurs in association with water lobelia *Lobelia dortmanna*, bog pondweed *Potamogeton polygonifolius*, quillwort *Isoetes lacustris*, bulbous rush *Juncus bulbosus*, needle spike-rush *Eleocharis acicularis*, alternate water milfoil *Myriophyllum alterniflorum* and floating water bur-reed *Sparganium angustifolium*.

According to map 6 of the site-specific Conservation Objectives document (NPWS, 2015), this QI is mapped in a separate hydrological catchment to the Proposed Project, but it is likely that it occurs elsewhere in the SAC.

##### [3160] Natural dystrophic lakes and ponds

Natural dystrophic lakes and ponds are mainly found in Atlantic and upland blanket bog, and wet heath, and are generally low in botanical species richness, though somewhat higher in invertebrate species richness (O'Connor, 2015). This lake habitat is not considered to co-occur with any of the other





Annex I lake habitats (O'Connor, 2015). Threats to this habitat include eutrophication, drainage and other damage to peatland, which can, in turn, impact on the lake through increased organic matter, water colour, turbidity and sedimentation (NPWS, 2019).

The selection of this SAC for this lake habitat was based on its widespread distribution in areas of low-lying blanket bog; dystrophic ponds being found wherever the peat is deep and the water table high (NPWS, 2015).

According to map 6 of the site-specific Conservation Objectives document (NPWS, 2015), there is no hydrological connectivity between the proposed project area and this qualifying interest. The nearest mapped potential example of this habitat is located approx. 3.4km south-east of the development site. However, according to the site-specific Conservation Objectives document (NPWS, 2015), the exact distribution of this lake habitat within this SAC is unknown.

#### [3260] Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation

Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation (short name: Vegetation of flowing waters) is a habitat of international importance, which is listed on Annex I of the Habitats Directive. The definition of Water courses of plain to montane with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation is very broad, and in practice includes the majority of rivers and streams with notable aquatic plant communities (Kelleher, 2011; Hatton-Ellis & Grieve, 2003). According to the SSCO document (NPWS, 2015), little is known about the distribution of the habitat and its sub-types in the Connemara Bog Complex SAC.

The main pressures on this habitat are water pollution, including sediment, alterations to hydrology, and physical alterations to river channels (NPWS, 2019).

#### [1833] Slender Naiad *Najas flexilis*

*Najas flexilis* is a small, annual, submerged macrophyte of freshwater lakes that is listed on Annex II and IV of the Habitats Directive. In Ireland, the species is also protected under the Wildlife Acts (1976 and 2022), being listed on the Flora Protection Order (S.I. 94 of 2022).

Connemara Bog Complex SAC has more than 1,100 freshwater lakes and ponds (based on the OSI 1:5,000 IG vector dataset WaterPolygons feature class). There are records for *Najas flexilis* from 11 lakes across the site (at least six catchments), although one population is presumed extinct and the status of records from three other lakes is uncertain. It is important to state that the species is likely to be more widespread in the site, as only a small number of the lakes have been surveyed. Supporting documentation to the SSCOs: Conservation objectives supporting document - *Najas flexilis* (Willd.) Rostk. & W.L.E. Schmidt).

### 4.2.1.3 Connemara Bog Complex SPA [004181]

There are no Site-Specific Conservation Objectives available for this SPA. The Generic conservation objectives for Connemara Bog SPA [004181] (NPWS, October 2022) were reviewed. The relevant SCIs are collectively considered under the overall SPAs conservation objective, which is presented in Table 4-5.

Table 4-5 Qualifying Interests and Conservation Objects

Special Conservation Interest	Conservation Objective
[A098] Merlin ( <i>Falco columbarius</i> )	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA
[A140] Golden Plover ( <i>Pluvialis apricaria</i> )	



#### 4.2.1.3.1 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to impact on the SAC were reviewed and considered in relation to the Proposed Project. These are provided in Table 4-6.

Table 4-6 Site-specific threats, pressures, and activities on the European site

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
M	E01.03	dispersed habitation	Outside
H	B	Silviculture, forestry	Outside
L	I01	invasive non-native species	Inside
M	C01.03.02	mechanical removal of peat	Outside
L	D01.02	roads, motorways	Inside
L	G01.02	walking, horse-riding and non-motorised vehicles	Inside

#### 4.2.1.3.2 Special Conservation Interests

- > [A098] Merlin (*Falco columbarius*)
- > [A140] Golden Plover (*Pluvialis apricaria*)

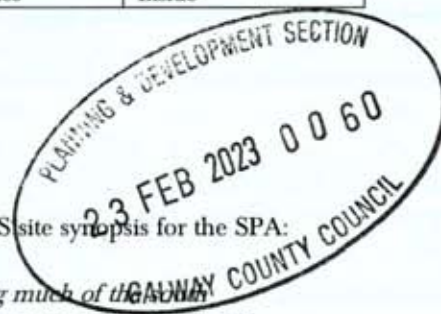
The following relevant information has been extracted from the NPWS site synopsis for the SPA:

*'The Connemara Bog Complex SPA is a large site encompassing much of the Connemara lowlands of Co. Galway. The site consists of three separate areas - north of Roundstone, south of Recess and north-west of Spiddal. It is underlain predominantly by a variety of igneous and metamorphic rocks including granite, schist, gneiss and gabbro. The whole area was glaciated during the last Ice Age which scoured the lowlands of Connemara.*

*The Connemara Bog Complex SPA is characterized by areas of deep peat surrounded by heath-covered rocky outcrops. The deeper peat areas are often bordered by river systems and the many oligotrophic lakes that occur, resulting in an intricate mosaic of various peatland/wetland habitats and vegetation communities; these include Atlantic blanket bog with hummock/hollow systems, inter-connecting pools, Atlantic blanket bog pools, flushes, transition and quaking mires, as well as freshwater marshes, lakeshore, lake and river systems.*

*The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Cormorant, Merlin, Golden Plover and Common Gull.*

*Lough Scannive, located within Roundstone Bog, supports a nationally important breeding population of Cormorant (160 breeding pairs in 2001). Other breeding birds using the site include Merlin and Golden Plover. A partial survey in 2009 recorded 8 pairs of Merlin at various locations throughout the site; 15 breeding locations for this species were recorded at the site in an earlier survey undertaken in 1985/86. A survey of upland birds in 2004 recorded 27 pairs of Golden Plover within the site. The numerous*





lakes scattered throughout the site provide suitable breeding locations for Common Gull (45 pairs in 2000); a survey in 2010 recorded 40 pairs of this species at the site.

The site is also utilised by a wintering population of Greenland White-fronted Goose; small flocks of up to 30 birds have been recorded at various locations within the site. Connemara Bog Complex SPA is of high ornithological importance, in particular for its nationally important breeding populations of Cormorant, Merlin, Golden Plover and Common Gull. It is of note that three of the regularly occurring species, Greenland White-fronted Goose, Merlin and Golden Plover, are listed on Annex I of the E.U. Birds Directive.'

## 4.2.2 Local Hydrology and Hydrogeology

Regionally the Derryclare site is located in the Galway Bay North WFD catchment and Hydrometric area 31 of the Western River Basin District.

This catchment has a total area of 936km<sup>2</sup> and includes the area drained by all streams entering the tidal water between Nimmo's Pier and Syne Head, Co. Galway. The largest urban centre in the catchment is the western part of Galway city, with Bearna and Spiddal being the other main urban centres.

Locally, the site is located within the Recess river sub-catchment (Recess\_SC\_010) and the Recess\_020 WFD river sub-basin. In the vicinity of the site, EPA mapping shows several watercourses (mountain streams) originating on the eastern slopes of Bencorr and Derryclare Mountains. In the north of the site, these watercourses are unnamed and flow to the east from Bencor Mountain into Lough Inagh. To the south, the Derryclare stream (EPA Code: 31D10) flows to the east from Derryclare Mountain and discharges into Lough Inagh. Further south, 3 no. unnamed streams rise on the slopes of Derryclare mountain and flow to the southeast, discharging into Derryclare Lough. Derryclare Lough itself is also fed by the Tooreenacoona river (EPA Code: 31T01) which provides a hydrological connection between Lough Inagh in the north to Derryclare Lough in the south.

Downstream of Derryclare Lough, the Recess River (EPA Code: 31R01) crosses the N59 before discharging into Ballynahinch lake. Ballynahinch Lake is an east-west elongated lake which lies to the south of the Galway to Clifden Road. This lake is noted for salmon and sea-trout fishing. Downstream of Ballynahinch Lake, the Owenmore River flows to the south before it discharges into Roundstone Bay estuary. Further downstream the estuary discharges to the Betraghboy Bay coastal waterbody and the Aran Islands, Galway Bay, Connemara coastal waterbody.

A regional hydrology map is shown in 9-2 of Chapter 8; Hydrology and Hydrogeology of the accompanying EIAR.

### 4.2.2.11 Water Quality

River Basin Management Plans (RBMPs) have been published for all River Basin Districts in Ireland in accordance with the requirements of the Water Framework Directive. The online EPA Envirovision map viewer provides access to water quality information at individual waterbody status for all the River Basin Districts in Ireland. The EPA Envirovision map viewer was consulted on 02/02/2023 regarding the water quality status of the lakes adjacent and downstream and rivers which run within and directly adjacent to the Proposed Project site. The WFD River Waterbody Status 2013 – 2018 for the watercourses which flow through the site have been assessed in Table 6-7.

Table 4-7 Watercourses and waterbodies on site or adjacent to the site with relevant water quality statuses

Name	Location	Status	Risk
Tooreenacoona_010	Located north of proposed site with upstream connectivity.	Moderate	At Risk



Recess_020	Located within and northwest of proposed site with upstream connectivity.	Good	Not at Risk
Recess_030	Located southwest of proposed site with downstream connectivity.	Good	Not at Risk
Lough Inagh	Adjacent to the Proposed Project site	High	Not at Risk
Derryclare Lough	Adjacent to the Proposed Project site	High	Not at Risk
Ballynahinch Lake	Southwest of the Proposed Project site, with downstream connectivity	High	Not at Risk

Status- WFD River Waterbody Status 2013-2018 Risk - WFD River Waterbodies Risk

Table 6-8 illustrates the respective Q-value status results from monitoring stations located along rivers which flow through the site or along rivers which are fed directly by watercourses which flow through or around the site.

Table 4-8 Water quality monitoring stations and associated Q values

Watercourse Name	Sampling Station	Location	Sampling Year	Q-Value & Water Quality Status
Tooreenacooona_010	Bridge u/s Lough Inagh (Upstream of site)	E82445.8 N255514	2021	4, Good
Recess_010	Weir Bridge (Upstream of site)	E83493.57 N247655.35	2021	4, Good
Recess_040	Cloonbeg Bridge (downstream of site)	E75895.45 N246570.53	2021	4-5, High
Recess_040	RECESS - 1 km u/s Toombeola Bridge (downstream of site)	E 75317.8 N 245167	1990	4, Good



### 4.3

## Ecological Survey results

#### 4.3.1

### Description of the Baseline Ecological Environment

Multi-disciplinary walkover surveys of the site were undertaken by MKO ecologists on the 30<sup>th</sup> of July, 6<sup>th</sup> of August and the 9<sup>th</sup> and 10<sup>th</sup> of September 2021 and again on the 27<sup>th</sup> of October and 15<sup>th</sup> of November 2022. The aim of the surveys was to ground-truth and update where necessary the results of the ecological surveys undertaken by Jackie Hunt (M.Sc.) and Louise Scally (M.Sc., Ph.D.) in 2021. The surveys were also undertaken to determine whether any Annex I habitats associated with any nearby SACs or any supporting habitat for QI/SCI species associated with SACs/SPAs were present.

The below habitat descriptions are the findings of the ground truthing exercises carried out by MKO. Where differences have been identified from the previous habitat descriptions carried out by Jackie Hunt and Louise Scally, these have been highlighted below.

Habitats were identified in accordance with the Heritage Council's 'Guide to Habitats in Ireland' (Fossitt, 2000). Habitat mapping was undertaken with regard to guidance set out in 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2011). Plant nomenclature for vascular plants follows 'New Flora of the British Isles' (Stace, 2010), while mosses and liverworts nomenclature follows 'Mosses and Liverworts of Britain and Ireland - a field guide' (British Bryological Society, 2010).



During the multi-disciplinary walkover surveys, a search for non-native invasive species was undertaken. The survey focused on the identification of invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (As Amended) (S.I. 477 of 2015).

Due to its large size, the Proposed Project site is divided into three main divisions, Areas A, B, and C, as well as Area D which captures outlying sections of the Proposed Project.

#### Area A:

Area A, the northernmost section of the site of the Proposed Project, begins on the western slopes of Bencorr mountain, and initially sloped steeply in an easterly direction before flattening towards the shores of Lough Inagh.

The northern section of Area A was dominated by *Lowland blanket bog (PB3)*, that was historically planted but has been felled and not been replanted since 2009 (Aniar, 2021). This habitat was dominated by species such as Purple Moor-grass (*Molinia caerulea*), Ling Heather (*Calluna vulgaris*), and hummocks of *Sphagnum* spp. (Plate 4-1). Other species recorded included Round-Leaved Sundew (*Drosera rotundifolia*), Bell Heather (*Erica cinerea*), Tormetil (*Potentilla erecta*), Small Lousewort (*Pedicularis sylvatica*), Deergrass (*Trichophorum germanicum*), and Beak Sedge (*Rhynchospora alba*). As this section transitions downslope towards Lough Inagh, regenerating native species, including Rowan (*Sorbus aucuparia*), Holly (*Ilex aquifolium*), and Birch (*Betula* spp.), along with Sitka Spruce (*Picea sitchensis*) and *Rhododendron*, become more prevalent.

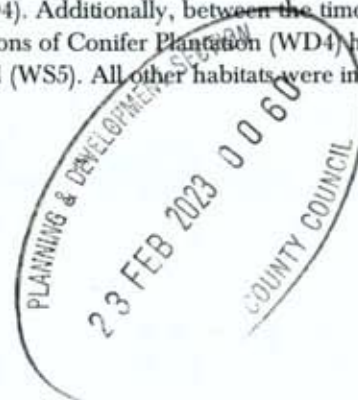
Further south, a small stream rose in relatively close proximity to the shores of Lough Inagh, supporting *Non-calcareous spring (FP2)* habitat, dominated by Common Haircap Moss (*Polytrichum commune*) and *Sphagnum* spp. (Plate 4-2). This habitat also supported regenerating conifers, including Sitka Spruce and Lodgepole Pine (*Pinus contorta*).

Continuing south, an area categorised as *Other artificial lakes and ponds (FL8)*, was identified in a previously excavated area of ground, associated with the construction of the nearby access road (Plate 4-3) which runs throughout a large portion of the Proposed Project site. Following this road south, a large expanse of *Recently-felled woodland (WS5)* is present (Plate 4-4) and, in nearing the boundary between Area A and Area B, an area of *Conifer plantation (WD4)*, consisting of Lodgepole Pine and Sitka Spruce, planted in the 1960s, was recorded.

Also located within Area A and categorised as Conifer plantation (WD4), were numerous stands of failed conifers, previously planted on deep peats in 1963. These deep peat habitats support abundant *Sphagnum* spp., mosses, Ling Heather, Round-leaved Sundew, Bell Heather, Tormetil, Star Sedge (*Carex echinate*), and Purple Moor-grass. *Rhododendron*, in the form of small-to-medium-sized clumps and seedlings was recorded and was noted as being "Occasional" as per the DAFOR scale.

The boundary between Area A and Area B is demarcated by *Eroding upland river (FW1)* habitat (Plates 4-4 & 4-5). Numerous streams are also located throughout Area A, which flowed north and east within the Proposed Project site, discharging into Lough Inagh.

Where the previous habitat description refers to sections of Wet heath and Immature conifer plantation (HH3\_WS2), this has been classified as Conifer plantation WD4). Additionally, between the time of the previous habitat survey and the ground truthing exercise, sections of Conifer Plantation (WD4) have been felled and are now classified as Recently felled woodland (WS5). All other habitats were in accordance with the previous habitat survey and mapping.





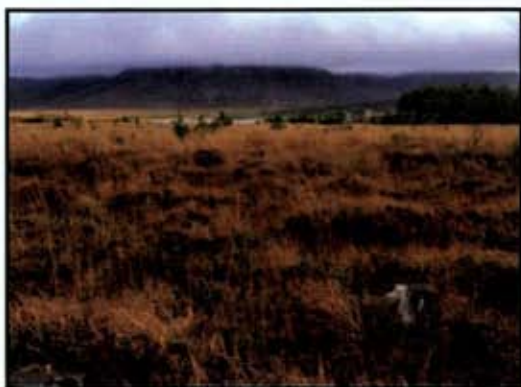


Plate 4-1 Lowland blanket bog (PB3) with Conifer plantation (WD4) and Lough Inagh in distance.



Plate 4-2 Non-calcareous spring (FP2) orientated northeast towards Lough Inagh.



Plate 4-3 Excavated ground categorised as Other artificial lakes and ponds (FL8) habitat.



Plate 4-4 Recently-felled woodland (WS5) and Eroding/upland river (FW1) orientated to the south



Plate 4-5 Eroding/upland river (FW1) orientated to the west.





## Area B:

Area B, the central section of the Proposed Project, is located on the lower flanks of Derryclare mountain, and initially slopes steeply, but then more gradually as it proceeds east towards the shores of Lough Inagh. The area has been extensively modified by afforestation and was dominated by Conifer plantation (WD4) and Recently-felled woodland (WS5).

The eastern and more moderate slopes towards Lough Inagh were dominated by second rotation Conifer plantation. These plantations were predominantly comprised of younger trees (10-20-years old) and were yet to form an entire closed canopy. Furthermore, there are numerous areas within Area B where trees were previously planted and have since failed and/or where the land was too rocky or wet for trees to have been planted. While the peatland habitats underlying these conifer plantations have been modified by previous planting and afforestation, elements of the peatland community remain intact, including such indicator species as Ling Heather, Bell Heather, Tormentil, Star Sedge, Purple Moor-grass, and *Sphagnum* spp. mosses. Drier habitat, in the brash, stems, and stumps of failed forestry support additional species including Broad-leaved Enchanter's Nightshade (*Circaea lutetiana*), European Blackberry (*Rubus fruticosus*), *Polytrichum* spp. and further "dry" mosses. Natural regeneration of conifers was evident and as per the DAFOR scale, *Rhododendron* was considered to be "occasional".

Also located within the area, to the west and towards Derryclare mountain is a rocky summit with unplanted wet heath, categorised as a mosaic of *Wet heath (HH3)* and *Exposed siliceous rock (ER1)* (Plate 4-6). This area has not been previously modified by afforestation and retains a peat depth of <50 cm and a community reflective of wet heath habitat, including Ling Heather, Cross-leaved Heath (*Erica tetralix*), Bell Heather, Tormentil, Purple Moor-grass, Bog Asphodel (*Narthecissus ossifragus*), Small Lousewort (*Pedicularis sylvatica*), Common Cottongrass (*Eriophorum angustifolium*), Black Bog-rush (*Schoenus nigricans*), and *Sphagnum* spp. mosses.

The above habitats were in accordance with the previous habitat survey and mapping.

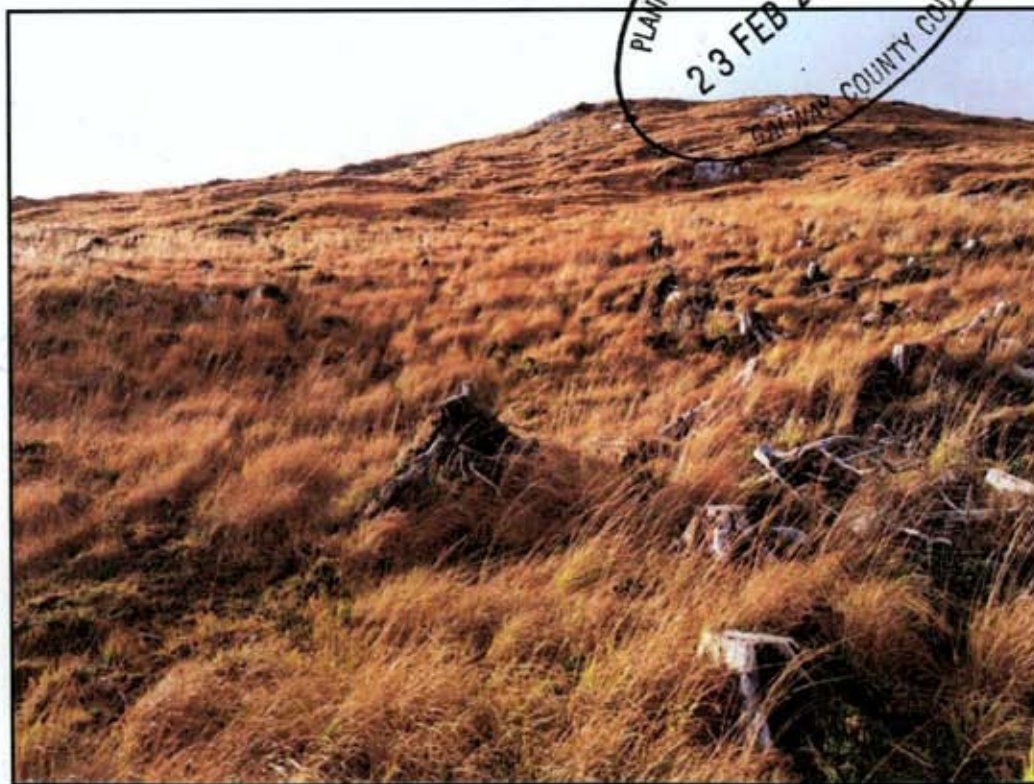


Plate 4-6 Mosaic of Wet heath (HH3) and Exposed siliceous rock (ER1) on the upper slopes of the Derryclare mountain, with Recently-felled woodland (WS5) to the foreground.



### Area C:

Area C is located on the lower flanks of Derryclare mountain and slopes moderately to the east, where it reaches Derryclare Lough. The area has been extensively modified by afforestation and remains largely dominated by Conifer Plantation (WD4) but also supports significant Wet Heath (HH3) and Upland Blanket Bog (PB3) habitat (Plate 4-7).

The first and second rotation conifer plantations present within Area C are largely planted on moderately sloping areas and either blanket bog or a mosaic of blanket bog and wet heath habitat. These plantations are also characterised by the presence of rocky knolls, bare rock, windblown forestry (often dense and extensive in places), and areas of both deeper and shallower peat. As is the case through the majority of the site of the Proposed Project, drains, furrows, and ridges/mounds are common. Significant variation in canopy cover, reflective of variations in peat depth, water-table depth, and the presence of rocky knolls, occurs. As per the DAFOR scale, the abundance of *Rhododendron* within Area C is recorded as being "occasional to rare".

The upper slopes of Area C, on the lower flanks of Derryclare mountain were unplanted and dominated by blanket bog, wet heath, or a mosaic of blanket bog and wet heath habitat. An area of Wet willow alder ash woodland (WN6), located along the access track to the east (Plate 4-8), comprising Willow (*Salix spp.*), Alder (*Alnus glutinosa*), and Birch (*Betula pubescens*), is also located within Area C. On the day of the site visit in October 2022, further harvesting was underway, and a new area of recently-felled woodland had been cleared (Plate 4-9). Additionally, an area categorised as a mosaic of Wet Grassland (GS4) and Scrub (WS1) (Plate 4-10), dominated by Purple Moor-grass, Rushes (*Juncus spp.*), and encroaching Sitka Spruce (*Picea sitchensis*) was located towards the southern extent of the access road located within the area.

During the ground truthing surveys, an area of Wet willow alder ash woodland (WN6) was identified along the site access track within this block, which was not recorded in the previous surveys. All other habitats were in accordance with the previous habitat surveys and mapping.







Plate 4-7 Unplanted upper slopes of Area C, orientated in a south-easterly direction towards Derryclare Lough, comprising Upland blanket bog (PB2) and Wet heath (HH3).

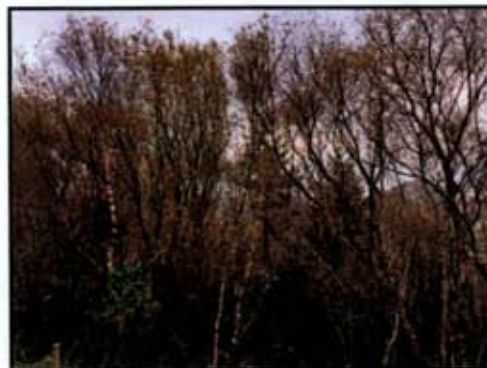


Plate 4-8 Pocket of Scrub (WS1) located to the east of the access road.



Plate 4-9 Area of Recently-felled woodland (WS5) located towards the southern boundary of Area C.



Plate 4-10 Mosaic of Wet grassland (GS4) and Scrub (WS1) with encroaching Sitka Spruce (*Picea sitchensis*) saplings.

### Area D:

Area D encompasses a large peninsula along the south-eastern boundary of the Proposed Project, which extends east and into Derryclare Lough. It also includes lands further north, which separate Derryclare Lough and Lough Inagh. The peninsula was categorised as a mosaic of Conifer Plantation (WD4) and Wet Heath (HH3) (Plate 4-11). Evidence of recent planting was seen in the tree guards placed around saplings to protect them from foraging deer. The area to the north, separating the lakes, comprised a mixture of recently-planted and mature Conifer Plantation (WD4) (Plate 4-12).

The above habitats were in accordance with the previous habitat surveys and mapping.







Plate 4-11 Recently-planted Conifer plantation (WD4) located on the peninsula extending east into Derryclare Lough.

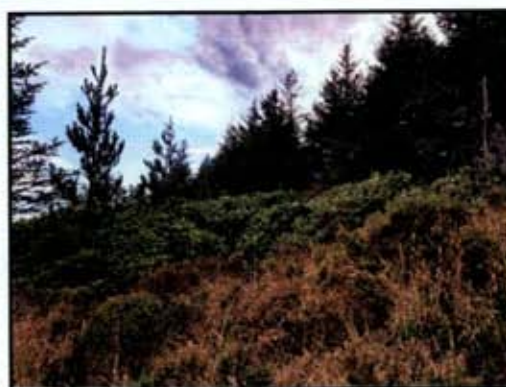


Plate 4-12 Rhododendron recorded during the site visit of the Proposed Project site

A number of watercourses rise within and/or flow through the Proposed Project site and were classified as Upland/eroding rivers and ranged from 1<sup>st</sup> to second order streams. These drained the site to the east and discharge into Lough Inagh and Derryclare Lough, which are adjacent to the eastern boundary of the Proposed Project site. These lakes form part of the Twelve Bens /Garraun Complex SAC [002031] and potentially correspond to the Annex I habitat [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*).

Wet heath and Blanket bog habitats recorded within the Proposed Project site potentially conform to the Annex I listed habitats of the EU Habitats Directive 'Northern Atlantic wet heaths with *Erica tetralix* [4010]' and 'Blanket bogs (if active bog) [7130]', respectively. No additional habitats listed under Annex I of the EU Habitats Directive were recorded within the Proposed Project site.

No species listed on Annex II of the EU Habitats Directive were recorded within the Proposed Project site, however watercourses and lakes within and downstream of the site provide suitable breeding, resting, foraging, and commuting habitat for otter (*Lutra lutra*).

A search for Invasive Alien Species (IAS), with a focus on those listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2011), was also conducted. Rhododendron was frequently to occasionally recorded throughout the Proposed Project site (Plate 4-12).





## 5. ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION

This section of the NIS assesses the potential effects of the Proposed Project on the identified relevant Qualifying Interests/Special Conservation Interests. This assessment is undertaken in the absence of any mitigation and in respect of the conservation objectives of the screened in European Sites. The Conservation Objectives of the European Sites were reviewed on the 16/12/2022. Where Site-Specific Conservation Objectives (SSCOs) were available, these are listed below. Where only generic conservation objectives were available, such as for Connemara Bog SPA, SSCO from other European Sites were adopted for the relevant QIs/SCIs. The Conservation Objectives for all relevant sites are available at the following locations:

### The Twelve Bens/Garraun Complex SAC [002031]

- Site Specific Conservation Objectives; [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO002031.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002031.pdf)

### Connemara Bog Complex SAC [002034]

- Site Specific Conservation Objectives; [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO002034.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002034.pdf)

### Connemara Bog Complex SPA [004181]

- Generic Conservation Objectives; [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO004181.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004181.pdf)

As no SSCO are available for Connemara Bog Complex SPA, the SSCO for merlin for Slieve Aughty Mountains SPA and the SSCO for golden plover for Lough Foyle SPA were used in undertaking this assessment.

- Merlin; Slieve Aughty Mountains SPA [004168] Site Specific Conservation Objectives; [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO004168.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004168.pdf)
- Golden Plover; Lough Foyle SPA [004087] Site Specific Conservation Objectives; [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO004087.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004087.pdf)

Following the initial impact assessment, mitigation is prescribed where necessary to avoid adverse effects on the Conservation Objectives of the relevant QIs/SCIs. These are listed underneath the effect that it mitigates.

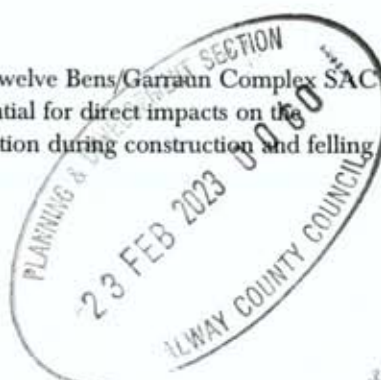
## 5.1 Potential for Effects on European Sites

### 5.1.1 The Twelve Bens/Garraun Complex SAC [002031].

#### 5.1.1.1 Direct Effects on Habitats

Small sections of the Proposed Project site are located within The Twelve Bens/Garraun Complex SAC [002031]. Therefore, taking a precautionary approach, there is potential for direct impacts on the following QI habitats of the SAC via accidental habitat loss/degradation during construction and felling activities associated with the Proposed Project.

- [7130] Blanket bogs (\* if active bog)
- [7150] Depressions on peat substrates of the Rhynchosporion





Taking the precautionary approach, there is potential for the direct loss/degradation of the above QIs of the SAC, as a result of the inadvertent encroachment of machinery into peatland habitats. Therefore, the following measures will be implemented during the construction phase of the Proposed Project to avoid the inadvertent encroachment of machinery into peatland habitat and the potential loss of this habitat.

- Designated site access tracks and extraction routes will be established prior to the construction phase of the Proposed Project. Machinery will use only these marked tracks/routes for entry and exit of the site.
- Where peatland habitat is adjacent to the footprint of the Proposed Project, fencing will be erected between the works area and this habitat to ensure no machinery encroaches.
- All machinery operators will be made aware of the sensitive nature of peatland habitats by the site manager.

As part of the Proposed Project, approx. 281 ha of existing forestry will be restored to blanket bog wet heath habitat. This will be achieved through the felling of existing forestry, blocking site drains and where suitable, reprofiling of ploughed areas. Additionally, approx. 62.26 hectares of coniferous forestry will be felled and replanted with native scrub woodland. Once the construction activities associated with the Proposed Project cease, it is intended that the target peatland and woodland habitats establish during the operational phase of the Proposed Project.

Following the mitigation measures above and considering the targets of the proposed bog restoration project, there is potential for the Proposed Project to result in an overall positive impact on the above QIs of the SAC.

### 5.1.1.2 Direct Effects on Species

The Proposed Project site is partially within The Twelve Bens/Garraun Complex SAC [002031]. Therefore, there is potential for direct impacts on the following QI species of the SAC via disturbance from works associated with the construction phase of the Proposed Project.

- [1355] Otter *Lutra lutra*

No resting or breeding sites for otter were recorded during the multidisciplinary surveys. However, the shores on Lough Inagh and Derryclare Lough, which form part of the Twelve Bens/Garraun Complex SAC, provide suitable foraging, resting, and breeding habitat for otter. There is potential for disturbance to otter during the construction phase of the Proposed Project.

Otter are predominantly crepuscular in nature and are unlikely to be adversely impacted by the proposed works. Works will be confined to daytime hours, thus minimizing potential disturbance related impacts to the species. The NPWS Threat Response Plan for Otter acknowledges that "Little evidence has come to light in recent studies to suggest that disturbance by recreation is a significant pressure." It also identifies that Otter are known to travel significant distances from streams and lakes in search of new territory and feeding areas.

Channin P (2003)<sup>1</sup> provides a literary review with regard to anthropogenic disturbance and refers to several reports which have found that disturbance is not detrimental to Otters (Jefferies (1987), (Durbin 1993), (Green & Green 1997). The report also describes successful breeding in towns, under ferry terminals and under the jetties of one of Europe's largest oil and gas terminals at Sullom Voe in North Scotland.

Irish Wildlife Manual No 23 (National Otter Survey of Ireland 2004/2005) found no significant relationship between disturbance and otter occurrence. In addition, no significant difference in otter presence was found between sites with and without recreational activity. It also states, "the lowest percentage occurrence was found at the sites with the lowest recorded disturbance!" Irish Wildlife Manual No 76 (National Otter Survey of Ireland 2010/2012) notes that the occurrence of Otter was



unaffected by perceived levels of disturbance at the survey sites. It also notes that there is little published evidence demonstrating any consistent relationship between Otter occurrence and human disturbance (Mason & Macdonald 1986, Delibes et al. 1991; Bailey & Rochford, 2006). Best practice disturbance limitation measures will be followed and are detailed below.

- All construction plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1998, and any subsequent amendments.
- Plant machinery will be turned off when not in use. Machines, which are used intermittently, will be shut down during those periods when they are not in use.
- Operating machinery will be restricted to the Proposed Project site boundary.
- Light spills during construction works will be minimised where possible thus reducing the effect on areas outside the Proposed Project, and consequently on fauna of conservation value including otter.

Based on the above review of scientific literature and on the best practice disturbance limitation measures included above the potential for adverse impact on the integrity of the Otter population associated with the Twelve Bens/Garraun Complex SAC [002031] as a result of disturbance from the construction and operational phases of the Proposed Project can be excluded.

### 5.1.1.3 Indirect Effects via Deterioration in Water Quality

In the absence of mitigation, a potential pathway for indirect effects on the below listed QIs of the Twelve Bens/Garraun Complex SAC in the form of deterioration of water quality arising from runoff of pollutants and nutrients into surface waters during felling and construction activities associated with the Proposed Project was identified:

- [1106] Salmon *Salmo salar*
- [1355] Otter *Lutra lutra*
- [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)

#### 5.1.1.3.1 Construction

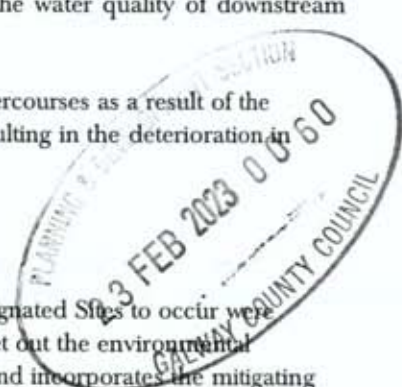
The Proposed Project will include the felling of approx. 343 hectares of conifer plantation within 20 harvest blocks, habitat restoration and enhancement, upgrading of existing road and construction of new temporary access roads, temporary water crossings, the resurfacing of an existing carpark and perimeter fencing, each of which create the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the refueling of felling and construction machinery. There is also a risk of surface water runoff from bare soil and soil storage areas during construction and landscaping works.

Taking a precautionary approach, the release of suspended solids or spillage of fuels during construction and felling activities of the Proposed Project could potentially affect the water quality of downstream European Sites.

Additionally, there is potential for the release nutrients into nearby watercourses as a result of the forestry operations associated with the Proposed Project, potentially resulting in the deterioration in water quality. This is addressed separately in Section 5.3 of this NIS.

#### Mitigation

The pathways that would allow potentially adverse impacts on EU Designated Sites to occur were considered in the design of the Proposed Project. The sections below set out the environmental management framework to be adhered to during the proposed works and incorporate the mitigating





principles to ensure there is no adverse effect on the integrity of European Sites, as described in the CEMP (Appendix 2 to this NIS). All measures for the protection of water quality during the project design are set out in the following subsections. These include comprehensive detail regarding site set up, pollution prevention, hydrocarbon management, construction monitoring.

Additionally, Chapter 8; Hydrology and Hydrogeology of the accompanying EIAR gives comprehensive detail on mitigation by avoidance and mitigation by design. This is included as Appendix 3 of this NIS.

### Mitigation by Design

The design of the Proposed Project, as described in Chapter 4 of the EIAR accompanying this application, sets out very clearly how the Proposed Project has been designed and will be developed in accordance with best industry practice to avoid any significant effects within and outside the site including the prevention of impacts on watercourses. This design includes precautionary mitigation to ensure that the Proposed Project will not adversely affect the integrity of any European sites.

### Site Set up

- Designated site access tracks and extraction routes will be established prior to the construction phase of the Proposed Project. Machinery will use only these marked tracks/routes for entry and exit of the site.
- Prior to the commencement of earthworks, silt fencing will be erected along the perimeter of the proposed works and adjacent watercourses. This will be embedded into the ground adjacent to the perimeter boundary.
- The silt fences will be left in place throughout construction until all exposed soil has revegetated.
- The appointed contractor will be fully briefed by an ecologist as to the sensitive nature of the site and the required mitigation measures.
- A site compound will be established within the site boundary. The exact location of the compound will be established by the contractor and will be located a minimum of 50m from any watercourses. The compound will be used for storage of material, machinery, fuel, and workers facilities.
- All construction materials and substances will be stored in the site compound and the compound will be located a minimum of 50m from any watercourse.

Below summarises the mitigating principals detailed in the CEMP, that will prevent the Proposed Project having an adverse impact on any European Site via runoff of pollutants into surface water systems.

### Pollution Prevention

- Prior to the commencement of earthworks, silt fencing will be erected along the perimeter of the proposed works and adjacent watercourses. This will be embedded into the ground adjacent to the perimeter boundary.
- Excavated spoil (if any) will be stockpiled and contained entirely within the confines of the site boundaries.
- During earthwork activities, the following mitigations will be adhered to:
  - Excavation depths will be kept to a minimum.
  - Material that is not re-used will be transported off site to a designated waste facility.
  - Suitable stone material will be imported to the site to be used as backfill.
  - Stockpiling of soil during construction, should it be required, will take place in designated areas within the site boundary away from any watercourses.
  - A silt fence will be erected around any stockpiling of material to prevent any sediment-laden run-off occurring.



- During restoration of peatland habitats, there will be a 10-meter buffer to adjacent streams/drains and silt fences will be erected downstream of all restoration works including drain blocking and ground re-profiling
- All diesel or petrol pumps required onsite will be operated within bunded units.
- Any requirement for temporary fills or stockpiles will be damped down or covered with polyethylene sheeting as required to avoid sediment release associated with heavy rainfall.
- The design, construction and maintenance of an on-site drainage system can prevent sediment related pollution of nearby surface waters. Ground disturbance will be kept to a minimum, water from excavations will be filtered, other sediment trapping technologies such as silt fences can prevent sediment leaving the site. Exposed surfaces will be re-vegetated as soon as possible following construction.
- The minimum number of soil/subsoils and bedrock material will be removed from site. Soil may be reused for landscaping elsewhere on the site.
- Where possible, earthworks will not be carried out during periods of heavy rainfall.

#### Refuelling, Fuel and Hazardous Materials Storage

- Storage/refuelling will be located in and carried out in a designated area of the proposed site, located a suitable distance from excavation works. Bunded tanks will be used, and these should be inspected for leaks regularly. Spill kits will be available on site and staff should be trained in their use and in spill control. All spills shall be diverted for collection and not discharged into waterbodies without treatment and other best management practices.
- Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment.
- Minimal refuelling or maintenance of construction vehicles or plant will take place on site. Off-site refuelling will occur at a controlled fuelling station.
- On-site refuelling will take place by direct refuelling from the delivery truck or from fuel stored within a bunded fuel tank. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.
- Vehicles will never be left unattended during refuelling. Only dedicated trained and competent personnel will carry out refuelling operations and plant refuelling procedures shall be detailed in the contractor's method statements.
- The small volume of fuels, lubricants and hydraulic fluids that will be stored at the site will be placed within an appropriately bunded storage area within the boundaries of the Proposed Project site.
- Storage bunds/trays, if required will be constructed of an impermeable membrane (HDPE Plastic) and will have the adequate capacity to contain the volume of the liquids contained therein, if a leak/spillage does occur from one of the storage vessels.
- The storage area will contain a small bund lined with an impermeable membrane in order to prevent any contamination of the surrounding soils and vegetation.
- All site plant will be inspected at the beginning of each day prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. All major repair and maintenance operations will take place off site.
- Potential impacts caused by spillages etc. during the construction phase will be reduced by keeping spill kits and other appropriate equipment on-site.
- Spill kits will be used to deal with any accidental spillage in and outside the refuelling area. Spill control measures as outlined fully in the CEMP accompanying this application will be adhered to.
- Harmful materials such as fuels/chemicals shall be stored on site for use in connection with the construction works only. These materials shall be stored in a safe and controlled manner such as within an appropriately sized bunded unit. Fuels/chemicals will be stored for periods in line with the manufacturer's recommendations.



### Spill Control Measures

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

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

### Temporary water crossings

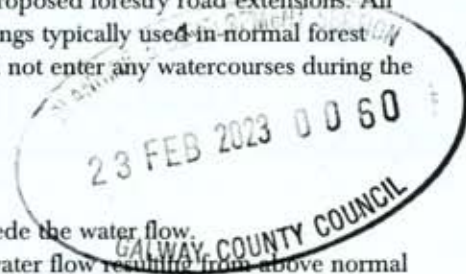
Temporary watercourse crossing points are required along the proposed forestry road extensions. All watercourse crossings will comprise of standard log bridge crossings typically used in normal forest operations. There are no instreams proposed and machinery will not enter any watercourses during the construction phase of the Proposed Project.

The temporary log bridge crossings will be installed as follows:

- Ensure the construction of the bridge will not impede the water flow.
- Ensure bridging is able to cope with increases in water flow resulting from above normal rainfall.
- Ensure the movement of fish is not impeded
- Ensure crossings points are constructed at right angles to the water flow.
- On sloping ground temporary bridges will be constructed in a 'Hump Back' fashion. This will reduce the risk of silt flowing down the wheel ruts and directly entering the stream/drain being crossed. However it is of primary importance to ensure that there is no run-off to the stream on either side of the bridge. Consequently any run-off must be diverted onto a buffer strip at a suitable point well above the stream.
- The machine track leading to the bridge must be very well brashed and tracks should not be allowed to develop that can act as water channels down to the stream (see examples in Figure 10. above)
- Bridging logs should be placed from top of bank to top of bank to ensure that the natural stream banks are left intact.

### Clear felling Operations

The project will adhere to all best practice water protection measures, set out in the Forest Harvesting & the Environment Guidelines (DAFM, 2000) and Felling & Reforestation Standards (v. Oct. 2019). Mitigation measures will include:





#### Exclusion zones for machinery

- Exclusion zones will be implemented, to ensure that machines will not traverse close to aquatic zones during forestry operations.
- With respect to exclusion zones, measures outlined in Section 6.1 of the Standards for Felling & Reforestation, (DAFM, 2019), will be adhered to.

#### Silt and sediment control during felling and reforestation

- Barrier silt traps with geotextile and/or small logs will be deployed to control movement of silt/sediment, as specified in Section 7 of the Standards for Felling & Reforestation, (DAFM, 2019).

#### Extraction and removal of felled timber

- Extraction routes will be carefully designed to avoid soil disturbance and brash mats will be put in place to protect soils.
- Locate timber landing bays at least 50m from the nearest aquatic zone.
- All measures outlined in section 9 of the Standards for Felling & Reforestation (DAFM, 2019) will be adhered to.

#### Brash management

- Brash mats will be put in place to facilitate movement of machinery around the project area but will avoid proximity to relevant watercourses and aquatic zones as far as possible.
- Extraction racks will be aligned to the contour where possible, reducing the rate of water flow towards the receiving waters.
- Extra brash will be applied as required along extraction racks and at timber stacking areas, to accommodate higher levels of machine tracking, using extra lengths of timber to protect sensitive locations.
- No snedding (delimbing) will be carried out within environmental setbacks along aquatic zones/relevant watercourses.

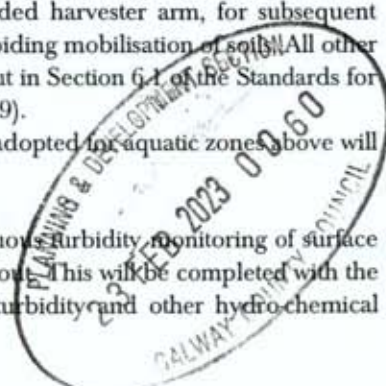
#### Monitoring & Contingency Planning

- Regular monitoring will take place within this site during the operation phase and contingency plans will be implemented in the event of unavoidable incident, e.g. as a result of heavy rainfall, as specified in Section 12 of the Standards for Felling & Reforestation, (DAFM, 2019).

#### Other Mitigation

- During felling and extraction, a minimum 10m exclusion zone will be applied along the edge of any aquatic zone on or adjoining site. Machine traffic and timber stacking will not be permitted within this zone. Trees within the reach of the harvester arm will be felled by harvester, and snedded and bunched outside the exclusion zone. Trees outside machine reach will be felled manually. Felled trees will be winched out of the exclusion zone where appropriate and safe to do so, or removed by extended harvester arm, for subsequent snedding and processing outside the exclusion zone avoiding mobilisation of soils. All other requirements relating to water exclusion zones, as set out in Section 6.1 of the Standards for Felling & Reforestation will be adhered to (DAFM, 2019).
- Regarding relevant watercourses, the same mitigations adopted for aquatic zones above will be applied for relevant watercourses".

Throughout the construction phase of the Proposed Project, continuous turbidity monitoring of surface watercourse downstream of the proposed project site will be carried out. This will be completed with the installation of automated water quality probes which will record turbidity and other hydro-chemical





parameters at regular intervals (typically every 15 minutes). These probes will be installed in natural watercourses downstream of work areas.

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

#### Wastewater Disposal

- A self-contained port-a-loo with an integrated waste holding tank will be used at the site compounds, maintained by the providing contractor, and removed from site on completion of the construction works; No foul water will be discharged on-site during the construction.

After implementation of best practice and preventive measures as described above, together with measures already incorporated in the project design, there is no potential for adverse effects on the Twelve Bens/Garraun Complex SAC due to deterioration of water quality. The measures ensure that the proposed works do not prevent or obstruct any of the QIs and SCIs from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

### 5.1.1.4 Operation

As a result of the change of land use, from commercial forestry to restored peatland and woodland habitats, existing pressures on water quality will be lessened as a result of the Proposed Project. Post construction phase of the Proposed Project, all forestry activities including felling, replanting, and timber extraction will cease, reducing the potential for the runoff of pollutants into downstream watercourses. Additionally, the blocking of drains will reduce hydrological connectivity from the Proposed Project site to the Twelve Bens/Garraun Complex SAC, further reducing the potential for runoff of pollutants into the SAC.

Therefore, there is no potential for adverse effects on the integrity of the Twelve Bens/Garraun Complex SAC due to deterioration of water quality as a result of the operational phase of the Proposed Project.

### 5.1.2 Connemara Bog Complex SAC [002034]

#### 5.1.2.1 Direct Effects

There will be no direct effects on Connemara Bog Complex SAC [002034] as the project footprint is located entirely outside the designated site.

#### 5.1.2.2 Indirect Effects via Deterioration in Water Quality

Taking a precautionary approach, and in the absence of best practice and mitigation, a potential pathway for indirect effects on the below listed QIs of Connemara Bog Complex SAC [002034] was identified in the form of deterioration of water quality arising from runoff of pollutants and nutrients during felling and construction activities associated with the Proposed Project:

- [1106] Salmon *Salmo salar*
- [1355] Otter *Lutra lutra*
- [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- [3130] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea*
- [3160] Natural dystrophic lakes and ponds





- > [3260] Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation
- > [1833] Slender Naiad *Najas flexilis*

#### 5.1.2.2.1 Construction

The Proposed Project will include the felling of approx. 343 hectares of conifer plantation within 20 harvest blocks, habitat restoration and enhancement, upgrading of existing road and construction of new temporary access roads, temporary water crossings, the resurfacing of an existing carpark and perimeter fencing, each of which create the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the refueling of felling and construction machinery. There is also a risk of surface water runoff from bare soil and soil storage areas during construction and landscaping works.

Taking a precautionary approach, the release of suspended solids or spillage of fuels during construction and felling activities of the Proposed Project could potentially affect the water quality of downstream European Sites.

#### Mitigation

Section 5.1.1.3.1 above provides the standard best practice and mitigation measures that will be adhered to in order to prevent the deterioration of water quality as a result of runoff of pollutants arising from the construction phase of the Proposed Project.

#### 5.1.2.2.2 Operation

As a result of the change of land use, from commercial forestry to restored peatland and woodland habitats, existing pressures on water quality will be lessened as a result of the Proposed Project. Post construction phase of the Proposed Project, all forestry activities including felling, replanting, fertilizer application, and timber extraction will cease, reducing the potential for the runoff of pollutants into downstream watercourses. Additionally, the blocking of drains will reduce hydrological connectivity from the Proposed Project site to Connemara Bog Complex SAC [002034], further reducing the potential for runoff of pollutants into the SAC.

Therefore, there is no potential for adverse effects on the integrity of Connemara Bog Complex SAC [002034] due to deterioration of water quality as a result of the construction or operational phase of the Proposed Project.

#### 5.1.2.3 Indirect Effects via Disturbance

Taking the precautionary approach, there is potential for indirect effects on ex-situ otter of Connemara Bog Complex SAC [002034] via disturbance arising from felling and construction activities associated with the Proposed Project. Section 5.1.1.2 above assesses the potential for significant impacts as a result of disturbance on this QI of the SAC and details mitigations which will be adhered to during construction and felling activities of the Proposed Project. Considering the above, the potential for adverse impact on the integrity of the Otter population associated with Connemara Bog Complex SAC [002034] as a result of disturbance from the construction and operational phases of the Proposed Project can be excluded.





## 5.1.3 Connemara Bog Complex SPA [004181]

### 5.1.3.1 Habitat loss

The works are located entirely outside of the Connemara Bog Complex SPA. There will be no loss of supporting habitat for any of the SCI species within the SPA.

The proposed development site is located within 2.15 km of Connemara Bog Complex SPA. This is within the core foraging range for merlin and golden plover, both of which are SCI species of the SPA. The Proposed Project site provides potential suitable foraging habitat for both of these species, i.e. blanket bog and heath but no works are proposed within any peatland habitat. However, taking an extremely precautionary approach, there is potential for loss of foraging habitat for these species as a result of the inadvertent encroachment of machinery into peatland habitats. Therefore, the following measures will be implemented during the construction phase of the Proposed Project to avoid the inadvertent encroachment of machinery into peatland habitat and the potential loss of this habitat.

- Designated site access tracks and extraction routes will be established prior to the construction phase of the Proposed Project. Machinery will use only these marked tracks/routes for entry and exit of the site.
- Where peatland habitat is adjacent to the footprint of the Proposed Project, fencing will be erected between the works area and this habitat to ensure no machinery encroaches.
- All machinery operators will be made aware of the sensitive nature of peatland habitats by the site manager.

The Proposed Project involves measures to restore and rehabilitate approximately 281 ha of blanket bog and wet heath habitat that is currently planted with conifer plantation. This will have an overall positive effect on the peatland habitats within the site. As merlin and golden plover are known to forage on upland peatland habitats, there is potential for the Proposed Project to result in increased foraging habitat for these species outside of the SPA. Therefore, no mitigation is required.

The Proposed Project will include the felling of approx. 343 hectares of conifer plantation within 20 harvest blocks. No merlin were recorded during the site visits and there are no records of breeding merlin from within the Proposed Project site. From a precautionary perspective, conifer plantation within the proposed development site has potential to provide suitable nesting habitat for this SCI. Although the development site is located outside the boundaries of the SPA, taking an extremely precautionary approach, there is potential for the felling activities associated with the proposed development to result in loss of merlin nesting habitat if undertaken in the absence of best practice and mitigation.

Following a precautionary approach, a pre-commencement survey will be carried out to identify whether merlin are nesting within the Proposed Project site. This will be undertaken within the merlin breeding season (1st March to 31st August inclusive) prior to the commencement of felling. Should active nests be identified, an exclusion zone of 500m will be established until the end of the breeding season.

### 5.1.3.2 Disturbance

Activities associated with the Proposed Project include the felling of conifer plantations, habitat restoration and enhancement, upgrading of existing road and construction of new temporary access roads, temporary water crossings, the resurfacing of an existing carpark and fencing. These activities all require the use of heavy machinery and increased anthropogenic activity. There is, therefore, potential for the Proposed Project to result in disturbance to SCIs of the SPA which utilise habitats within the Proposed Project site. These include merlin and golden plover.



Peatland habitats within the Proposed Project site potentially provide suitable foraging habitat for golden plover. However, these sections of peatlands are delineated by woodlands and this species favours more open habitats. Therefore, no pathway for significant effects on populations of golden plover outside the boundary of Connemara Bog Complex SPA was identified as a result of disturbance arising from the construction or operational phases of the Proposed Project, due to the abundance of more favourable habitat in the wider environment.

Merlin are known to forage within open peatland habitat adjacent to conifer plantations. However, no merlin were recorded during the site visits and there are no records of breeding merlin from within the Proposed Project site. Considering there are no records of merlin within the Proposed Project site, and the abundance of suitable foraging habitat for merlin in the wider environment, no pathway for significant effects on populations of merlin outside the boundary of Connemara Bog Complex SPA was identified as a result of disturbance arising from the construction or operational phases of the Proposed Project.

Taking the precautionary approach, the following best practice mitigation measures will be adhered to during the construction phase of the Proposed Project:

- Disturbance limitation measures will be adhered to, which include the following:
  - All plant and equipment for use will comply with Statutory Instrument No 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996".
  - Plant machinery will be turned off when not in use.
  - Operating machinery will be restricted to the proposed works site area.
  - Construction works will be limited to daylight hours and artificial lighting to facilitate works will not be permitted.

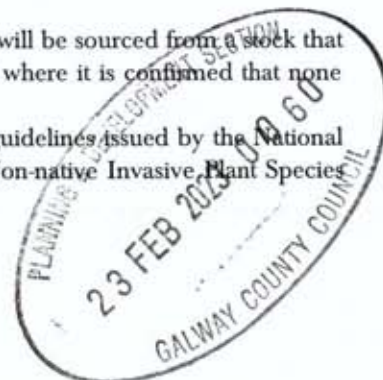
## 5.2 Vegetation Control/Invasive Species

The Third Schedule invasive species *Rhododendron ponticum* was recorded throughout the site. From a precautionary perspective, a pre-construction invasive species survey will be undertaken as part of the proposed project. This will provide updated data in advance of any construction given the intervention time period between the original survey work and any future grant of permission/ construction. Section 4.7.10 of the accompanying EIAR details measures to control and manage this invasive species. Additionally, a Rhododendron Management Plan will be prepared in advance of any works on site. Below outlines standard best practices procedures to be implemented to ensure there is no further spread of this invasive species.

### 5.2.1 Proposed Mitigation Measures

Best practice measures in relation to invasive species are described below:

- Good construction site hygiene will be employed to prevent introduction of problematic invasive alien plant species (e.g. Japanese knotweed, Rhododendron, Giant Rhubarb etc.) by thoroughly washing forestry works machinery prior to entering the site.
- Where any soil or construction stone is required on the site, this will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.
- The treatment and control of invasive alien species will follow guidelines issued by the National Roads Authority – The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads (NRA 2010).





## 5.2.2 Residual Impact

No impact.

### 5.2.2.11 Significance of Effects

With the above mitigation in place and following the management plan to be prepared in advance of any works, there will be no significant effect with regard to Third Schedule invasive species as a result of the proposed projects.

## 5.3 Clear Felling and Nutrient Release to Surface Waters

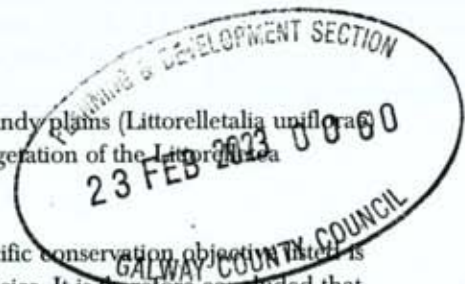
The proposed works associated with this project will involve similar forestry felling activities to those currently undertaken at the site. These activities involve the felling of discreet blocks of forestry throughout the site periodically over a number of years and the construction and maintenance of the infrastructure necessary to facilitate such felling. The proposed works will be subject to the mitigation measures that are set out in Section 5 of this NIS. These are the same or similar to those measures that have been and would be put in place when undertaking normal forestry practices but also include additional, precautionary measures which involve site set up and pollution prevention.

The Site-Specific Conservation Objectives document for the adjacent 12 Bens Garraun Complex SAC confirms that those habitats and species that could potentially be affected by the proposed felling and construction of infrastructure are all in Favourable Conservation Status. These habitats and species include:

- > 1106 Salmon *Salmo salar*
- > 1355 Otter *Lutra lutra*
- > 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- > [3130] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletalia uniflorae* and/or *Isoeto-Nanojuncetea*

It is noted that in the case of each listed habitat and species, the specific conservation objective is to 'Maintain' the favourable conservation status of that habitat or species. It is therefore concluded that the existing forestry felling and associated activities have not resulted in any of the potential receptors failing to achieve favourable conservation status. As the proposed felling works associated with the proposed restoration project do not represent a material change to the current felling practice on the site, there is no potential for the proposed project to result in any deterioration in the conservation status of any of the identified receptors.

In addition, it should be noted that the proposed project will not involve any further drainage, fertilisation or forestry activities in the long term that could result in any of the relevant Qualifying Interests failing to maintain favourable conservation status. On the contrary, the proposed restoration project has the potential to reduce any existing pressures on the relevant Conservation Objectives in the long term through the return of more natural hydrological processes throughout the site.





## 6. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The potential for adverse effects on each of the individual Qualifying Interests (QIs) and Special Conservation Interests (SCIs) that were identified as being at risk of potential effects in this NIS are assessed in this section in view of the Conservation Objectives of those habitats and species.

### 6.1 The Twelve Bens/Garraun Complex SAC [002031]

As described in Section 5 of this NIS, the proposed works associated with the construction phase of the Proposed Project have the potential to result in habitat loss/degradation, disturbance, and/or deterioration in surface water quality, potentially affecting the following QIs of the Twelve Bens/Garraun Complex SAC:

- [1355] Otter *Lutra lutra*
- [7130] Blanket bogs (\* if active bog)
- [1106] Salmon *Salmo salar*
- [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- [7150] Depressions on peat substrates of the Rhynchosporion

Mitigation measures have been incorporated into the Proposed Project for the avoidance of impact as fully described in Section 5 of this NIS. The potential for residual adverse effect on these QI habitats and species has therefore been assessed in the following subsections.

#### 6.1.1 [1355] Otter *Lutra lutra*

An assessment of the Proposed Project against the nominated attributes and targets for otter, as per the Site-Specific Conservation Objectives (NPWS, 2011), is provided in Table 6-1.

Table 6-1 Targets and attributes associated with nominated site-specific conservation objectives for otter

Attribute	Target	Assessment
Distribution	No significant decline	<p>No indications of otter, i.e. spraints, tracks, holts, couches, were identified within the Proposed Project site. Map 6 of the SSCOs for the Twelve Bens Garraun Complex SAC show that otter utilise Lough Inagh and Derryclare lough, both of which are adjacent to the Proposed Project site.</p> <p>However, considering the proposed works there is no pathway for impact which could lead to a decline in the distribution of this species associated with the Proposed Project. Where potential impacts on otter were identified via disturbance and habitat degradation, these pathways have been robustly blocked with mitigations provided in Section 5 above.</p>



Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 854.66ha	There will be no decline in the extent of terrestrial or freshwater habitat associated with the Proposed Project. There will be no instream works. The only identified pathway for effect on otter habitat is via indirect surface water deterioration. This was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, Chapter 6 of the EIAR, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3) are proposed to avoid all water pollution during construction, operation, and decommissioning.
Extent of marine habitat	No significant decline. Area mapped and calculated as 53.81ha	
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 382.7km	
Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 540.7ha	
Couching sites and holts	No significant decline	No couches or holts were identified within the development site boundary, and none were identified in the vicinity of the proposed works. There will be no decline in couching or holt sites associated with the Proposed Project.
Fish biomass available	No significant decline	There will be no decline in availability of fish biomass associated with the Proposed Project. Pathways that would allow impacts to occur were considered in the design of the Proposed Project and a range of measures, outlined in Section 5, are proposed to avoid all water pollution during construction.
Barriers to connectivity	No significant increase	The Proposed Project will not result in any barrier to connectivity within or outside the SAC.

6.1.1.1

### Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect the QI otter associated with the Twelve Bens/Garraun Complex SAC [002031].

6.1.2

### [7130] Blanket bogs (\* if active bog)

An assessment of the Proposed Project against the nominated attributes and targets for blanket bogs, as per the Site-Specific Conservation Objectives (NPWS, 2011), is provided in Table 6-2.

Table 6-2 Targets and attributes associated with nominated site-specific conservation objectives for blanket bogs.

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in blanket bog habitat area or distribution as a result of the Proposed Project. The footprint of the Proposed Project is located entirely outside blanket bog habitat and measures given in Section 5 above block the potential for inadvertent encroachment of machinery into these habitats.
Habitat distribution	No decline, subject to natural processes	



Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range	The Proposed Project involves the restoration of blanket bog and wet heath habitats in place of existing conifer plantations. This will include the blocking of drains, encouraging the regeneration of peatland habitat. This has the potential to impact positively on the ecosystem function of blanket bog within the SAC.
Ecosystem function: peat formation	At least 99% of the total Annex I blanket bog area is active	
Ecosystem function: hydrology	Natural hydrology unaffected by drains and erosion	
Natural hydrology unaffected by drains and erosion	Maintain variety of vegetation communities, subject to natural processes	
Vegetation composition: positive indicator species	Number of positive indicator species present at each monitoring stop is at least seven	There will be no alteration in vegetation composition as a result of the Proposed Project. The Proposed Project involves the restoration of peatland habitats in place of conifer plantation. There are no works proposed within existing blanket bog habitats.  Measures given in Section 5 above block the potential for inadvertent encroachment of machinery into these habitats.
Vegetation composition: lichens and bryophytes	Vegetation composition: lichens and bryophytes	
Vegetation composition: potential dominant species	Cover of each of the potential dominant species less than 75%	
Cover of each of the potential dominant species less than 75%	Total cover of negative indicator species less than 1%	
Vegetation composition: non-native species	Cover of non-native species less than 1%	
Cover of non-native species less than 1%	Cover of scattered native trees and shrubs less than 10%	
Cover of scattered native trees and shrubs less than 10%	Less than 10% of the Sphagnum cover is crushed, broken and/or pulled up	
Vegetation structure: signs of browsing	Last complete growing season's shoots of ericoids, crowberry ( <i>Empetrum nigrum</i> ) and bog-myrtle ( <i>Myrica gale</i> ) showing signs of browsing collectively less than 33%	





Vegetation structure: burning	No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning	
Physical structure: disturbed bare ground	Cover of disturbed bare ground less than 10%	There will be no alteration in physical structure as a result of the Proposed Project. The Proposed Project involves the restoration of peatland habitats in place of conifer plantation. There are no works proposed within existing blanket bog habitats.  Blocking of drains and reprofiling will potentially restore natural blanket bog physical structure as the water table will be raised and active bog functioning will return.  Measures given in Section 5 above block the potential for inadvertent encroachment of machinery into these habitats.
Physical structure: drainage	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%	
Physical structure: erosion	Less than 5% of the greater bog mosaic comprises erosion gullies and eroded areas	
Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	No works associated with the Proposed Project will be carried out in existing blanket bog habitat so there will be no impact on indicators of local distinctiveness.

#### 6.1.2.1 Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect the blanket bogs associated with the Twelve Bens/Garraun Complex SAC [002031].

#### 6.1.3 [1106] Salmon *Salmo salar*

An assessment of the Proposed Project against the nominated attributes and targets for salmon, as per the Site-Specific Conservation Objectives (NPWS, 2011), is provided in Table 6-3.

Table 6-3 Targets and attributes associated with nominated site-specific conservation objectives for salmon.

Attribute	Target	Assessment
Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary	There are no permanent water crossings associated with the Proposed Project. Where temporary crossings are proposed, these will be clear span of all water courses using logs from adjacent forestry.  There will be no barriers to connectivity as a result of the Proposed Project.
Adult spawning fish	Conservation limit (CL) for each system consistently exceeded	There will be no decline in the population structure of salmon, associated with the Proposed Project. Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in
Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	

Out-migrating smolt abundance	No significant decline	Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction, operation, and decommissioning.
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes	There will be no decline in the number or distribution of redds, associated with the Proposed Project. There are no instream works proposed as part of the Proposed Project. Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction, operation, and decommissioning.
Water quality	At least Q4 at all sites sampled by EPA	There will be no decline water quality, associated with the Proposed Project. Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction, operation, and decommissioning.

### 6.1.3.1 Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect the QI salmon associated with the Twelve Bens/Garraun Complex SAC [002031].

### 6.1.4 [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)

An assessment of the Proposed Project against the nominated attributes and targets for Oligotrophic waters containing very few minerals of sandy plains, as per the Site-Specific Conservation Objectives (NPWS, 2011), is provided in Table 6-4.

Table 6-4 Targets and attributes associated with nominated site-specific conservation objectives for Oligotrophic waters containing very few minerals of sandy plains.

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in habitat area or distribution associated with the Proposed



Habitat distribution	No decline, subject to natural processes	Project. There are no instream works proposed as part of the Proposed Project.  Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction, operation, and decommissioning.
Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution	There will be no change in vegetation composition or typical species associated with the Proposed Project. There are no instream works proposed as part of the Proposed Project.  Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction, operation, and decommissioning.
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	
Vegetation distribution: maximum depth	Maintain maximum depth of vegetation, subject to natural processes	
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	<p>There will be no change in hydrological regimes or water quality associated with the Proposed Project. There are no instream works proposed as part of the Proposed Project.</p> <p>Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction, operation, and decommissioning.</p> <p>As a result of in the change of land use, from commercial forestry to restored peatland and woodland habitats, existing pressures on water quality will be lessened as a result of the Proposed Project. Post construction phase of the Proposed Project, all forestry activities including felling, replanting, fertilizer application, and timber extraction will cease,</p>
Lake substratum quality	Maintain appropriate substratum type, extent and chemistry to support the vegetation	
Water quality: transparency	Maintain appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	
Water quality: nutrients	Maintain the concentration of nutrients in the water column at sufficiently low levels to support the habitat and its typical species	
Water quality: phytoplankton biomass	Maintain appropriate water quality to support the habitat, including high chlorophyll a status	
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	

Water quality: attached algal biomass	Maintain trace/absent attached algal biomass	reducing the potential for the runoff of pollutants into downstream watercourses. Additionally, the blocking of drains will reduce hydrological connectivity from the Proposed Project site, further removing the potential for runoff of pollutants into downstream watercourses.
Water quality: macrophyte status	Maintain/restore high macrophyte status	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	
Water colour	Maintain appropriate water colour to support the habitat	
Dissolved organic carbon (DOC)	Maintain appropriate organic carbon levels to support the habitat	
Turbidity	Maintain appropriate turbidity to support the habitat	
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3110	There will be no decline in fringing habitat associated with the Proposed Project. This habitat is location downstream of the Proposed Project and therefore, there is no potential for loss of fringe habitats.

#### 6.1.4.1 Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect the QI Oligotrophic waters containing very few minerals of sandy plains associated with the Twelve Bens/Garraun Complex SAC [002031].

#### 6.1.5 [7150] Depressions on peat substrates of the Rhynchosporion

An assessment of the Proposed Project against the nominated attributes and targets for Depressions on peat substrates of the Rhynchosporion, as per the Site-Specific Conservation Objectives (NPWS, 2011), is provided in Table 6-5.

Table 6-5 Targets and attributes associated with nominated site-specific conservation objectives for Depressions on peat substrates of the Rhynchosporion

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in this habitat area or distribution as a result of the Proposed Project. The footprint of the Proposed Project is located entirely outside peatland habitat and measures given in Section 5 above block the potential for inadvertent encroachment of machinery into these habitats.
Habitat distribution	No decline, subject to natural processes	

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Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range	<p>The Proposed Project involves the restoration of blanket bog and wet heath habitats in place of existing conifer plantations. This will include the blocking of drains, encouraging the regeneration of peatland habitat. This has the potential to impact positively on the ecosystem function of this QI within the SAC.</p> <p>The Proposed Project will not result in any negative impact in Depressions on peat substrates of the Rhynchosporion ecosystem function or natural hydrology</p>
Vegetation composition: positive indicator species	Number of positive indicator species at each monitoring stop is at least five	<p>There will be no alteration in vegetation composition as a result of the Proposed Project. The Proposed Project involves the restoration of peatland habitats in place of conifer plantation. There are no works proposed within existing peatland habitats.</p> <p>Measures given in Section 5 above block the potential for inadvertent encroachment of machinery into these habitats.</p>
Vegetation composition: <i>Rhynchospora</i> spp.	Total cover of white beaked sedge ( <i>Rhynchospora alba</i> ) and brown beaked sedge ( <i>R. fusca</i> ) at least 10%	
Vegetation composition: potential dominant species	Cover of each of the potential dominant species individually less than 35%	
Vegetation composition: negative indicator species	Total cover of negative indicator species less than 1%	
Vegetation composition: non-native species	Cover of non-native species less than 1%	
Vegetation composition: native trees and shrubs	Cover of scattered native trees and shrubs less than 10%	
Vegetation structure: Sphagnum condition	Less than 10% of the Sphagnum cover is crushed, broken and/or pulled up	
Vegetation structure: signs of browsing	Last complete growing season's shoots of ericoids, crowberry ( <i>Empetrum nigrum</i> ) and bog-myrtle ( <i>Myrica gale</i> ) showing signs of browsing collectively less than 33%	
Vegetation structure: burning	No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning	



Physical structure: disturbed bare ground	Cover of disturbed bare ground less than 10%	There will be no alteration in physical structure as a result of the Proposed Project. The Proposed Project involves the restoration of peatland habitats in place of conifer plantation. There are no works proposed within existing peatland habitats.  Measures given in Section 5 above block the potential for inadvertent encroachment of machinery into these habitats.
Physical structure: drainage	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%	
Physical structure: erosion	Less than 5% of the greater bog mosaic comprises erosion gullies and eroded areas	
Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	No works associated with the Proposed Project will be carried out in existing Depressions on peat substrates of the Rhynchosporion habitat so there will be no impact on indicators of local distinctiveness.

### 6.1.5.1 Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect the QI Depressions on peat substrates of the Rhynchosporion associated with the Twelve Bens/Garraun Complex SAC [002031].

## 6.2 Connemara Bog Complex SAC [002034]

- > [1106] Salmon *Salmo salar*
- > [1355] Otter *Lutra lutra*
- > [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- > [3130] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoetes-Nanojuncetea*
- > [3160] Natural dystrophic lakes and ponds
- > [3260] Water courses of plain to montane levels with the *Ranunculum fluitantis* and *Callitriche-Batrachion* vegetation

### 6.2.1 [1106] Salmon *Salmo salar*

An assessment of the Proposed Project against the nominated attributes and targets for salmon, as per the Site-Specific Conservation Objectives (NPWS, 2011), is provided in Table 6-5.

Table 6-6 Targets and attributes associated with nominated site-specific conservation objectives for salmon.

Attribute	Target	Assessment
Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary	There are no permanent water crossings associated with the Proposed Project. Where temporary crossings are proposed these will be clear span of all water courses using logs from adjacent forestry.  There will be no barriers to connectivity as a result of the Proposed Project.



Adult spawning fish	Conservation limit (CL) for each system consistently exceeded	There will be no decline in the population structure of salmon, associated with the Proposed Project. Where a potential pathway for effect via indirect surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction, operation, and decommissioning.
Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	
Out-migrating smolt abundance	No significant decline	
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes	There will be no decline in the number or distribution of redds, associated with the Proposed Project. There are no instream works proposed as part of the Proposed Project. Where a potential pathway for effect via indirect surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction, operation, and decommissioning.
Water quality	At least Q4 at all sites sampled by EPA	There will be no decline water quality, associated with the Proposed Project. Where a potential pathway for effect via indirect surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction, operation, and decommissioning.

6.2.1.1

## Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect salmon associated with the Connemara Bog Complex SAC [002034].

6.2.2

## [1355] Otter *Lutra lutra*

An assessment of the Proposed Project against the nominated attributes and targets for otter, as per the Site-Specific Conservation Objectives (NPWS, 2011), is provided in Table 6-6.

Table 6-7 Targets and attributes associated with nominated site-specific conservation objectives for otter.

Attribute	Target	Assessment
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Distribution	No significant decline	No indications of otter, i.e. spraints, tracks, holts, couches, were identified within the Proposed Project site. As per the relevant SSCOs, otters' range within the SAC is estimated to be 93.6%.  However, considering the proposed works, there is no impact pathway which could lead to a decline in the distribution of this species for which the SAC has been designated associated with the Proposed Project.
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 854.66ha	There will be no decline in the extent of terrestrial or freshwater habitat associated with the Proposed Project. The only identified pathway for effect on otter habitat is via indirect surface water deterioration. This was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, Chapter 6 of the EIAR, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3) are proposed to avoid all water pollution during construction, operation, and decommissioning.
Extent of marine habitat	No significant decline. Area mapped and calculated as 53.81ha	
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 382.7km	
Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 540.7ha	
Couching sites and holts	No significant decline	No couches or holts were identified within the development site boundary, and none were identified in the vicinity of the proposed works. There will be no decline in couching or holt sites associated with the Proposed Project.
Fish biomass available Fish biomass available	No significant decline	There will be no decline in availability of fish biomass associated with the Proposed Project. Pathways that would allow impacts to occur were considered in the design of the Proposed Project and a range of measures, outlined in Section 5, are proposed to avoid all water pollution during construction.

#### 6.2.2.1 Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect otter associated with the Connemara Bog Complex SAC [002034].

#### 6.2.3 [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflora*)

An assessment of the Proposed Project against the nominated attributes and targets for Oligotrophic waters containing very few minerals of sandy plains, as per the Site-Specific Conservation Objectives (NPWS, 2011), is provided in Table 6-7.





Table 6-8 Targets and attributes associated with nominated site-specific conservation objectives for Oligotrophic waters containing very few minerals of sandy plains.

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in habitat area or distribution associated with the Proposed Project. There are no instream works proposed as part of the Proposed Project.
Habitat distribution	No decline, subject to natural processes	
Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution	Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction, operation, and decommissioning.
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	
Vegetation distribution: maximum depth	Maintain maximum depth of vegetation, subject to natural processes	
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	There will be no change in hydrological regimes or water quality associated with the Proposed Project. There are no instream works proposed as part of the Proposed Project.
Lake substratum quality	Maintain appropriate substratum type, extent and chemistry to support the vegetation	
Water quality: transparency	Maintain appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	
Water quality: nutrients	Maintain the concentration of nutrients in the water column at sufficiently low levels to support the habitat and its typical species	
Water quality: phytoplankton biomass	Maintain appropriate water quality to support the habitat, including high chlorophyll a status	

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Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	Proposed Project. Post construction phase of the Proposed Project, all forestry activities including felling, replanting, fertilizer application, and timber extraction will cease, removing the potential for the runoff of pollutants into downstream watercourses. Additionally, the blocking of drains will remove hydrological connectivity from the Proposed Project site, further removing the potential for runoff of pollutants into downstream watercourses.
Water quality: attached algal biomass	Maintain trace/absent attached algal biomass	
Water quality: macrophyte status	Maintain/restore high macrophyte status	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	
Water colour	Maintain appropriate water colour to support the habitat	
Dissolved organic carbon (DOC)	Maintain appropriate organic carbon levels to support the habitat	
Turbidity	Maintain appropriate turbidity to support the habitat	There will be no decline in fringing habitat associated with the Proposed Project. This habitat is downstream of the Proposed Project so there is no potential for loss of fringe habitats.
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3110	

#### 6.2.3.1 Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect Oligotrophic waters containing very few minerals of sandy plains associated with the Connemara Bog Complex SAC [002034].

#### 6.2.4 [3130] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflora* and/or *Isoeto-Nanojuncetea*

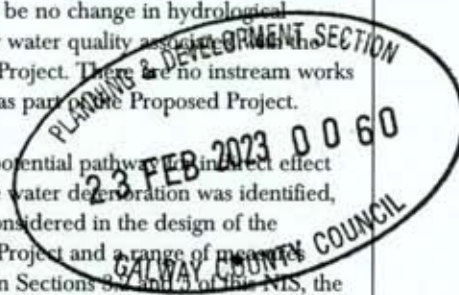
An assessment of the Proposed Project against the nominated attributes and targets for Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflora* and/or *Isoeto-Nanojuncetea*, as per the Site-Specific Conservation Objectives (NPWS, 2011), is provided in Table 6-8.

Table 6-9 Targets and attributes associated with nominated site-specific conservation objectives for Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflora* and/or *Isoeto-Nanojuncetea*.

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in habitat area or distribution associated with the Proposed



Habitat distribution	No decline, subject to natural processes	Project. There are no instream works proposed as part of the Proposed Project.  Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction, operation, and decommissioning.
Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution	There will be no change in vegetation composition or typical species associated with the Proposed Project. There are no instream works proposed as part of the Proposed Project.  Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction, operation, and decommissioning.
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	
Vegetation distribution: maximum depth	Maintain maximum depth of vegetation, subject to natural processes	
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	<p>There will be no change in hydrological regimes or water quality associated with the Proposed Project. There are no instream works proposed as part of the Proposed Project.</p> <p>Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction.</p> <p>As a result of the change of land use, from commercial forestry to restored peatland and woodland habitats, existing pressures on water quality will be removed as a result of the Proposed Project. Post construction phase of the Proposed Project, all forestry activities including felling, replanting, fertilizer application, and timber extraction will cease, removing the potential for the runoff of pollutants into downstream watercourses. Additionally, the blocking of drains will remove hydrological connectivity from the Proposed Project site,</p>
Lake substratum quality	Maintain appropriate substratum type, extent and chemistry to support the vegetation	
Water quality: transparency	Maintain appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	
Water quality: nutrients	Maintain the concentration of nutrients in the water column at sufficiently low levels to support the habitat and its typical species	
Water quality: phytoplankton biomass	Maintain appropriate water quality to support the habitat, including high chlorophyll a status	
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	
Water quality: attached algal biomass	Maintain trace/absent attached algal biomass	



Water quality: macrophyte status	Maintain/restore high macrophyte status	further removing the potential for runoff of pollutants into downstream watercourses.
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	
Water colour	Maintain appropriate water colour to support the habitat	
Dissolved organic carbon (DOC)	Maintain appropriate organic carbon levels to support the habitat	
Turbidity	Maintain appropriate turbidity to support the habitat	
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3130	There will be no decline in fringing habitat associated with the Proposed Project. This habitat is downstream of the Proposed Project so there is no potential for loss of fringe habitats.

#### 6.2.4.1 Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea associated with the Connemara Bog Complex SAC [002034].

#### 6.2.5 [3160] Natural dystrophic lakes and ponds

An assessment of the Proposed Project against the nominated attributes and targets for Natural dystrophic lakes and ponds, as per the Site-Specific Conservation Objectives (NPWS, 2011), is provided in Table 6-9.

Table 6-10 Targets and attributes associated with nominated site-specific conservation objectives for Natural dystrophic lakes and ponds

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	<p>There will be no decline in habitat area or distribution associated with the Proposed Project. There are no instream works proposed as part of the Proposed Project.</p> <p>Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction.</p>
Habitat distribution	No decline, subject to natural processes	



Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution	<p>There will be no change in vegetation composition or typical species associated with the Proposed Project. There are no instream works proposed as part of the Proposed Project.</p> <p>Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction.</p>
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	
Vegetation distribution: maximum depth	Maintain maximum depth of vegetation, subject to natural processes	
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	<p>There will be no change in hydrological regimes or water quality associated with the Proposed Project. There are no instream works proposed as part of the Proposed Project.</p> <p>Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction.</p> <p>As a result of the change of land use from commercial forestry to restoration of peatland and woodland habitats, existing pressures on water quality will be removed as a result of the Proposed Project. Post construction, all of the Proposed Project, all forestry activities including felling, replanting, fertilizer application, and timber extraction will cease, removing the potential for the runoff of pollutants into downstream watercourses. Additionally, the blocking of drains will remove hydrological connectivity from the Proposed Project site, further removing the potential for runoff of pollutants into downstream watercourses.</p>
Lake substratum quality	Maintain appropriate substratum type, extent and chemistry to support the vegetation	
Water quality: transparency	Maintain appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	
Water quality: nutrients	Maintain the concentration of nutrients in the water column at sufficiently low levels to support the habitat and its typical species	
Water quality: phytoplankton biomass	Maintain appropriate water quality to support the habitat, including high chlorophyll a status	
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	
Water quality: attached algal biomass	Maintain trace/absent attached algal biomass	
Water quality: macrophyte status	Maintain/restore high macrophyte status	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	
Water colour	Maintain appropriate water colour to support the habitat	

Dissolved organic carbon (DOC)	Maintain appropriate organic carbon levels to support the habitat	
Turbidity	Maintain appropriate turbidity to support the habitat	
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3160	There will be no decline in fringing habitat associated with the Proposed Project. This habitat is downstream of the Proposed Project so there is no potential for loss of fringe habitats.

### 6.2.5.1 Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect Natural dystrophic lakes and ponds associated with the Connemara Bog Complex SAC [002034].

### 6.2.6 [3260] Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation

An assessment of the Proposed Project against the nominated attributes and targets for Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation, as per the Site-Specific Conservation Objectives (NPWS, 2011), is provided in Table 6-10.

Table 6-11 Targets and attributes associated with nominated site-specific conservation objectives for Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation.

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decline in habitat area or distribution associated with the Proposed Project. This habitat was not recorded within the Proposed Project site and no instream works are proposed.
Habitat distribution	No decline, subject to natural processes	
Hydrological regime: river flow	Maintain appropriate hydrological regimes	There will be no change to hydrological regimes, substratum composition, or water quality associated with the Proposed Project. This habitat was not recorded within the Proposed Project site and no instream works are proposed.  Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 3 of this NIS, the project CEMP (Appendix 2 of this NIS) and
Hydrological regime: groundwater discharge	Maintain appropriate hydrological regimes	
Substratum composition: particle size range	Maintain appropriate substratum particle size range, quantity and quality, subject to natural processes	



Water quality	Maintain appropriate water quality to support the natural structure and functioning of the habitat	Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction.
Vegetation composition: typical species	Typical species of the relevant habitat sub-type should be present and in good condition	There will be no change in vegetation composition or typical species associated with the Proposed Project. This habitat was not recorded within the Proposed Project site and no instream works are proposed.  Where a potential pathway for indirect effect via surface water deterioration was identified, this was considered in the design of the Proposed Project and a range of measures (outlined in Sections 3.2 and 5 of this NIS, the project CEMP (Appendix 2 of this NIS) and Chapter 8 'Hydrology and Hydrogeology of the associated EIAR (Appendix 3 of this NIS)) are proposed to avoid all water pollution during construction.
Floodplain connectivity: area	Area of active floodplain at, and upstream of the habitat, necessary to support all sub-types of the habitat, should be maintained	There will be no decline in floodplain connectivity as a result of the Proposed Project. The Proposed Project includes the felling of conifer plantations and the restoration of peatland habitats. No barrier to this area from Lough Inagh or Derryclare Lough are proposed.
Riparian habitat: area	Maintain the area and condition of fringing habitats necessary to support the habitat and its sub-types	There will be no decline in riparian habitat associated with the Proposed Project. This habitat was not recorded within the Proposed Project site so there is no potential for loss of Riparian habitat.

### 6.2.6.1 Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation associated with the Connemara Bog Complex SAC [002034].

### 6.2.7 1833 Slender Naiad *Najas flexilis*

An assessment of the Proposed Project against the nominated attributes and targets for Slender Naiad, as per the Site-Specific Conservation Objectives (NPWS, 2011), is provided in Table 6-12.

Table 6-12 Targets and attributes associated with nominated site-specific conservation objectives for Slender Naiad

Attribute	Target	Assessment
Population extent	No change to the spatial extent of <i>Najas flexilis</i> within each lake, subject to natural processes. See map 9 for known locations	There will be no decline in population structure or distribution associated with the Proposed Project. This species was not

Population depth	No change to the depth range of <i>Najas flexilis</i> within each lake, subject to natural processes	recorded within the Proposed Project site and no instream works are proposed.
Population viability	No decline in plant fitness, subject to natural processes	Where potential pathways for impact on water quality have been identified, these have been robustly blocked through mitigations provided in Section 5 of this report.  There are no instream works proposed as part of the Proposed Project, and given to mitigations that protect water quality, there is no potential for impacts on habitat extent.
Population abundance	No change to the cover abundance of <i>Najas flexilis</i> , subject to natural processes	
Species distribution	No decline, subject to natural processes	
Habitat extent	No decline, subject to natural processes	
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat for the species	
Lake substratum quality	Maintain appropriate substratum type, extent and chemistry to support the populations of the species	There will be no change to hydrological regimes, substratum quality, or water quality or water chemistry associated with the Proposed Project. This species was not recorded within the Proposed Project, there are no instream works proposed, and where potential pathways for impact on suitable habitat for this species have been identified, these have been robustly blocked through mitigations provided in Section 5 of this report.
Water quality	Maintain appropriate water quality to support the populations of the species	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the populations of <i>Najas flexilis</i> , subject to natural processes	
Water colour	Maintain appropriate water colour to support the populations of <i>Najas flexilis</i>	
Associated species	Maintain appropriate associated species and vegetation communities to support the populations of <i>Najas flexilis</i>	
Fringing habitat: area	Maintain the area and condition of fringing habitats necessary to support the populations of <i>Najas flexilis</i>	This species was not recorded within the Proposed Project site and no instream works are proposed. Where potential pathways for impact on water quality have been identified, these have been robustly blocked through mitigations provided in Section 5 of this report.  There will be no alteration to associated species of <i>Najas flexilis</i> communities and there will be no loss of fringing habitat.

#### 6.2.7.1 Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect Slender Naiad associated with the Connemara Bog Complex SAC [002034].



6.3

## Connemara Bog Complex SPA [004181]

- > [A098] Merlin (*Falco columbarius*)
- > [A140] Golden Plover (*Pluvialis apricaria*)

As no SSCOs are available for Connemara Bog Complex SPA, the SSCOs for merlin for Slieve Aughty Mountains SPA [004168] and the SSCOs for golden plover for Lough Foyle SPA [004087] were used in undertaking this assessment.

6.3.1

### [A098] Merlin (*Falco columbarius*)

An assessment of the Proposed Project against the nominated attributes and targets for merlin, as per the Site-Specific Conservation Objectives for Slieve Aughty Mountains SPA [004168] (NPWS, 2011), is provided in Table 6-11.

Table 6-13 Targets and attributes associated with nominated site-specific conservation objectives for merlin.

Attribute	Target	Assessment
Population size	The breeding population is stable or increasing	The proposed project is entirely outside the SPA so there is no potential for impacts on this SCI within the SPA.
Productivity rate	Productivity rate	<p>No merlin were recorded and there are no records of breeding merlin within the Proposed Project site.</p> <p>Taking the precautionary approach, a pre-commencement survey will be carried out to ensure no breeding merlin are located within the site. Should breeding merlin be located, mitigations are detailed in Section 5 above.</p> <p>There will be no decline in population size or productivity rates of merlin associated with the Proposed Project.</p> <p>There will be no significant loss of breeding habitat as a result of the Proposed Project.</p>
Distribution: extent of available nesting options within the SPA	Sufficient availability of suitable nesting sites throughout the SPA to maintain the population	<p>There will be no decline of available nesting options within the SPA associated with the Proposed Project.</p> <p>The Proposed Project site is entirely outside the boundary of the SPA.</p>
Extent and condition of suitable open habitats for foraging	Sufficient availability of suitable foraging habitat across the SPA to support the targets relating to population size, productivity rate and range	<p>There will be no decline of suitable open habitats for foraging associated with the Proposed Project. There will be no loss of open peatland or wet grassland habitat as a result of the Proposed Project.</p> <p>The restoration of peatland habitat in place of conifer plantation has potential to result in an increase in suitable open habitat for foraging for merlin.</p>

Disturbance to breeding sites	Disturbance occurs at levels that does not significantly impact upon breeding merlin	Following the prescribed pre-commencement surveys and the mitigation provided should breeding merlin be identified, there is no potential for disturbance to breeding merlin sites.
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### 6.3.1.1 Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect the SCI species merlin associated with the Connemara Bog Complex SPA [004181].

### 6.3.2 [A140] Golden Plover (*Pluvialis apricaria*)

An assessment of the Proposed Project against the nominated attributes and targets for golden plover, as per the Site-Specific Conservation Objectives for Lough Foyle SPA [004087] (NPWS, 2011), is provided in Table 6-13.

Table 6-14 Targets and attributes associated with nominated site-specific conservation objectives for golden plover.

Attribute	Target	Assessment
Population trend	Long term population trend stable or increasing	The proposed project is entirely outside the SPA so there is no potential for impacts on this SCI within the SPA.  No golden plover were recorded within the Proposed Project site. Taking the precautionary approach, disturbance mitigation measures are provided in Section 5 above. There will be no decline in population trends or distribution associated with the Proposed Project.
Distribution	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	

### 6.3.2.1 Determination on potential for adverse effects

Based on the above and following implementation of mitigations and best practice measures that are outlined in Sections 3 and 5 of this report it can be concluded, in view of best scientific knowledge and based on objective information, that the Proposed Project will not adversely affect the SCI species golden plover associated with the Connemara Bog Complex SPA [004181].





7.

## CUMULATIVE EFFECTS

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination impacts on European Sites was conducted. This assessment focuses on the potential for cumulative in-combination effects on the European Sites where potential for adverse effects was identified at the screening stage (**Appendix 1**). This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects.

7.1

### Plans

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

- > Galway County Development Plan 2022 – 2028
- > Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032
- > National Biodiversity Action Plan 2017-2021
- > Draft National Biodiversity Action Plan 2023 - 2027

The review focused on policies and objectives that relate to European sites. None of the objectives reviewed had the potential to result in cumulative adverse effects on any European Site.



## 7.1.1 Plans

Table 7-1 Review of plans

Plans	Key Policies/Issues/Objectives Directly Related to European Sites, Biodiversity and Sustainable Development in The Zone of Influence	Assessment of development compliance with policy
Galway County Development Plan 2022-2028	<p><b>NHB 1 Natural Heritage and Biodiversity of Designated Sites, Habitats and Species</b></p> <p>Protect and where possible enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts) and extend to any additions or alterations to sites that may occur during the lifetime of this plan.</p> <p>Protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI 94 of 1999).</p> <p>Support the protection, conservation and enhancement of natural heritage and biodiversity, including the protection of the integrity of European sites, that form part of the Natura 2000 network, the protection of Natural Heritage Areas, proposed Natural Heritage Areas, Ramsar Sites, Nature Reserves, Wild Fowl Sanctuaries (and other designated sites including any future designations) and the promotion of the development of a green/ ecological network.</p>	<p>The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. No potential for cumulative impacts when considered in conjunction with the current proposal were identified.</p> <p>There will be no impact on designated sites as a result of deterioration in water quality. Best practice preventative measures will be implemented to avoid effects on water quality, as outlined in Section 5.2.1 of this report. There will be no adverse effects on sensitive aquatic receptors listed as QIs/SCIs of European Sites, as a result of the works associated with the Proposed Project.</p> <p><b>There will be no adverse effects on sensitive habitat or species receptors listed as QIs/SCI.</b></p>
	<b>NHB 2 European Sites and Appropriate Assessment</b>	





Plans	Key Policies/Issues/Objectives Directly Related to European Sites, Biodiversity and Sustainable Development in The Zone of Influence	Assessment of development compliance with policy
	<p>To implement Article 6 of the Habitats Directive and to ensure that Appropriate Assessment is carried out in relation to works, plans and projects likely to impact on European sites (SACs and SPAs), whether directly or indirectly or in combination with any other plan(s) or project(s). All assessments must be in compliance with the European Communities (Birds and Natural Habitats) Regulations 2011. All such projects and plans will also be required to comply with statutory Environmental Impact Assessment requirements where relevant.</p> <p><b>NHB 3 Protection of European Sites</b></p> <p>No plans, programmes, or projects etc. giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects).</p>	
<p>Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032</p>	<p><b>Regional Policy Objective 5.5</b> – Ensure efficient and sustainable use of all our natural resources, including inland waterways, peatlands, and forests in a manner which ensures a healthy society a clean environment and there is no net contribution to biodiversity loss arising from development supported in this strategy. Conserve and protect designated areas and Natural Heritage Area. Conserve and protect European sites and their integrity.</p> <p><b>Regional Policy Objective 5.7</b> - Ensure that all plans, projects and activities requiring consent arising from the RSES are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate</p>	<p>The strategy was reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. No potential for cumulative impacts when considered in conjunction with the current proposal were identified.</p> <p>There will be no adverse effects on any of QIs/SCIs of any European Site, as a result of the Proposed Project. The proposed project has been designed to avoid any effect on surface or ground water outside the development site.</p> <p><b>There will be no adverse effects on sensitive habitat or species receptors listed as QIs/SCI.</b></p>

Plans	Key Policies/Issues/Objectives Directly Related to European Sites, Biodiversity and Sustainable Development in The Zone of Influence	Assessment of development compliance with policy
National Biodiversity Action Plan 2017-2021	<b>Target 6.2</b> - Sufficiency, coherence, connectivity, and resilience of the protected areas network substantially enhanced by 2020.	The action plans were comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity, protected species and designated sites.
Draft National Biodiversity Action Plan 2023 - 2027	<p>Objective 2 - Meet Urgent Conservation and Restoration Needs</p> <p>Introduction to this Objective</p> <p>Outcome 2A: The protection of existing designated areas and species is strengthened and conservation and restoration within the existing protected area network are enhanced.</p> <p>Outcome 2B: Biodiversity and ecosystem services in the wider countryside are conserved</p>	<p>The Proposed Project has been designed in order to avoid likely significant effect on biodiversity. Where the potential for adverse effect on biodiversity has been identified, mitigation will be implemented as prescribed within this chapter to ensure that there is no significant impact.</p> <p>Where pathways for effects on European Sites have been identified, mitigation shall also be implemented to ensure that there are no significant effects.</p> <p>No potential for negative cumulative impacts when considered in conjunction with the current proposal were identified.</p>





7.2

## Other Projects

A review of the Galway County Council online planning application mapping system within a 2km buffer of the subject site within the past 5 years has been undertaken. The 2km radius is considered a reasonable distance to capture sufficient information on the planning history of the surrounding area given its rural nature. The planning history laid out in Table 7-2 displays the Planning History within the site vicinity.

Table 7-2 Planning History within the site vicinity

Planning Reference Number	Description	Applicant	Decision
2193	Permission sought for the erection of a new 30m multi-user telecommunications support structure carrying 9 No. antennas, 6 No. communication dishes, 8 No. remote radio units, 3 No. lighting finials and 5 No. outdoor cabinets and all enclosed within a security compound by a 2.4m high palisade fence with a 4m access gate, site access and site works. The development will provide significant improvements in voice and broadband data services along the N59 National Road and the R340 and R344 Regional Roads	Cignal Infrastructure Ltd.	Granted (10/05/2021) subject to 9 conditions
201078	For a new dwelling house and garage/shed and to replace existing septic tank with a new wastewater treatment system and to demolish existing dwelling house with all associated works and ancillary services. Gross floor space of proposed works; 204sqm (house) 60sqm (garage)	Cathal Staunton	Granted (15/03/2021) subject to 10 conditions
191879	To demolish an old house, and a new house, sewage system and garage. Gross floor space of proposed works: 191 sqm. Gross floor space for any demolition: 40 sqm	Festus O Toole	Granted (16/03/2020) subject to 12 conditions
181719	For an agricultural building and yard with all associated works and ancillary services. A Natura Impact Statement for the Proposed Project will be submitted with this application. Gross floor space of proposed works: 352.2 sqm	Cathal Staunton	Granted (11/03/2019) subject to 10 conditions
191669	For development of site at Eir Exchange, Lissoughter, Recess. The development will consist of the replacement of an existing telecommunications support structure (overall structure height of 18 meters), together with adjacent equipment cabinet, previously granted under	Eircom Limited	Granted (17/12/2019) subject to 9 conditions

Planning Reference Number	Description	Applicant	Decision
	planning reference no. 13/436, with a proposed new lattice tower structure (overall structure height of 22 metres) carrying the telecommunications equipment transferred from the existing structure and the addition of new telecommunications antennas, dishes and associated equipment, together with ground equipment cabinets, new wall and fencing		
18338	For the demolition of existing dwelling house, construction of a new dwelling house, domestic garage and a new effluent treatment system. Gross floor space of proposed works 238.8 sqm. Gross floor space of demolition 66.3 sqm.	Patrick & Ciara Burke	Refused (16/08/2018)
171026	To (1) demolish existing stone structure on site, previously granted under PI Ref No. 08/2093 and 13/1223, (2) Permission to retain and complete existing blockwork structure on site on revised house plans (3) relocate proposed site entrance (4) Permission to construct a new domestic garage as well as all ancillary site works. Gross floor space of proposed works 106.10sqm, demolition 74sqm	Robert Needham & Megan Burke	Granted (05/03/2018) subject to 12 conditions
171381	Permission (previous ref. no. 11/387) for an existing development consisting of an existing 24-metre-high telecommunications support structure, antennas, equipment container and associated equipment within a fenced compound and access track. The development forms part of Vodafone Ireland Limited's existing GSM and 3G Broadband telecommunications network.	Vodafone Ireland Limited	Granted on (18/12/2017) subject to 7 conditions

## 7.2.1

### Conclusion of Cumulative Assessment

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

In the review of the projects that was undertaken, no connection, that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts



resulting from the combination of the various projects and plans in association with the Proposed Project.

Taking into consideration the reported residual impacts from other plans and projects in the area, as assessed in Tables 7-1 & 7-2 above, and the predicted impacts with the current proposal, no residual cumulative impacts have been identified with regard to any European Site.



8.

## CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites whether considered individually or in combination with other plans and projects.

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

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





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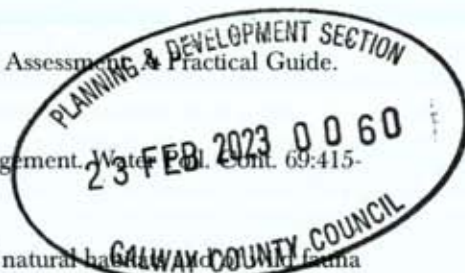
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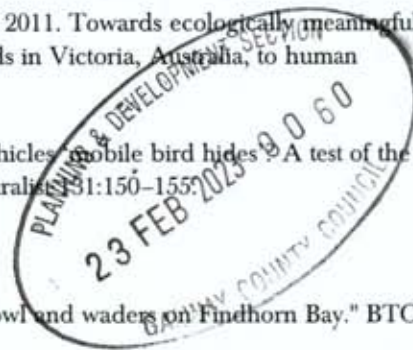
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## APPENDIX 1

### APPROPRIATE ASSESSMENT SCREENING REPORT







## Article 6 (3) Appropriate Assessment Screening Report

Proposed Derryclare Wild  
Western Peatlands Project





## DOCUMENT DETAILS

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Document File Name: **AASR - F - 2023.02.08 - 210603**

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Planning and  
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Consultants

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# 1. INTRODUCTION

## 1.1 Background

MKO has been appointed to provide the information necessary to allow the competent authority, Galway County Council, to conduct an Article 6(3) Screening for Appropriate Assessment of a peatlands restoration project in Derryclare, Co. Galway.

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

The assessment in this report is based on ecological surveys carried out by Jackie Hunt and Louise Scally to assess the feasibility of the habitat restoration project. Additional ground truthing surveys were carried out by MKO ecologists Sarah Mullen (B.Sc., Ph.D., ACIEEM) and Pat Roberts (B.Sc. Env.) on the 30<sup>th</sup> of July, 6<sup>th</sup> of August and the 9<sup>th</sup> and 10<sup>th</sup> of September 2021. The site was visited again by Laoise Chambers (B.Sc.) and Patrick O' Boyle (B.Sc., M.Sc.) on the 27<sup>th</sup> of October and 15<sup>th</sup> of November 2022. These additional surveys also aimed to provide additional information on the ecology of the site and surrounding area. This report specifically assesses the potential for the Proposed Development to result in significant effects on European sites in the absence of any best practice, mitigation, or preventative measures.

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

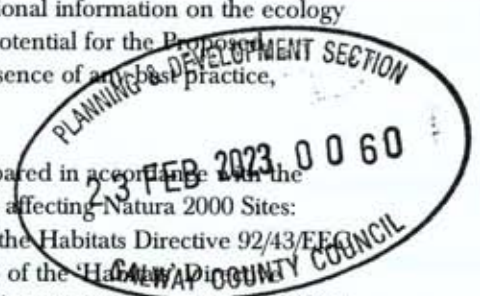
In addition to the guidelines referenced above, the following relevant documents were also considered in the preparation of this report:

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

## 1.2 Appropriate Assessment

### 1.2.1 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be





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

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

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

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

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

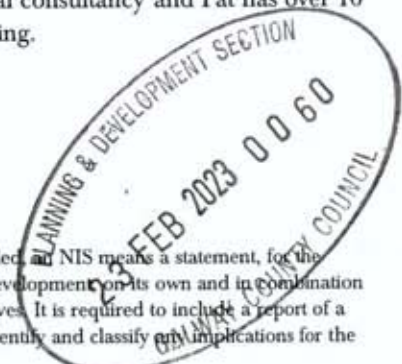
This Article 6(3) Appropriate Assessment Screening Report has been prepared in compliance with the provision of section 177U of the Planning & Development Act 2010 as amended.

## Statement of Authority

Ecological surveys and habitat mapping of the Proposed Project site were carried out by Jackie Hunt (M.Sc.) and Louise Scally (M.Sc., Ph.D.) to assess the feasibility of the habitat restoration project. Additional ground truthing surveys were carried out by MKO ecologists Sarah Mullen (B.Sc., Ph.D., ACIEEM) and Pat Roberts (B.Sc. Env.) on the 30<sup>th</sup> of July, 6<sup>th</sup> of August and the 9<sup>th</sup> and 10<sup>th</sup> of September 2021. The site was visited again by Laoise Chambers (B.Sc.) and Patrick O' Boyle (B.Sc., M.Sc.) on the 27<sup>th</sup> of October and 15<sup>th</sup> of November 2022. These additional surveys also aimed to provide additional information on the ecology of the site and surrounding area. All staff have relevant academic qualifications and are competent experts in undertaking multidisciplinary ecological surveys to this level.

This AASR has been prepared by Pádraig Desmond (B.Sc.) and reviewed by Sarah Mullen and Pat Roberts. Pádraig is an ecologist with over 2 years professional experience. Sarah is an experienced ecologist who has over 6 years' professional experience in ecological consultancy and Pat has over 16 years post graduate experience in ecological assessment and reporting.

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





## 2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

### 2.1 Site Location

The Proposed Development site is located within Coillte lands in west County Galway, approx. 13 km southeast of Letterfrack (IG: L 83927 50924) and is adjacent to Lough Inagh and Derryclare Lough. The site is accessed via a forestry road turning west off the R344. A location map for the Proposed Development site is given in Figure 2-1.

### 2.2 Characteristics of the Proposed Development

#### 2.2.1 Description of the project

The Proposed Development will include the felling of approx. 343 hectares of conifer plantation within 20 harvest blocks, habitat restoration and enhancement, upgrading of existing road and construction of new temporary access roads, temporary water crossings, the resurfacing of an existing carpark and fencing.

The below sections give an overview of the Proposed Development components. Further details are provided in the accompanying NIS.

##### 2.2.1.1 Tree Felling

The Proposed Development focuses on forestry blocks where the pine and spruce have reached maturity and are starting to die off in areas that are suitable for bog restoration or conversion to native woodland over the project period.

##### 2.2.1.2 Habitat Restoration and Enhancement

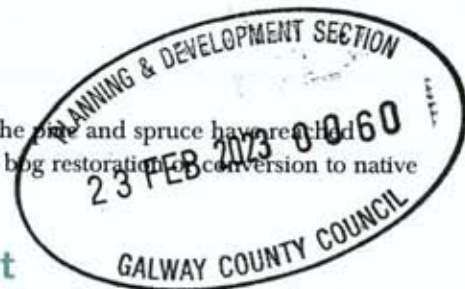
Approximately 281 hectares of existing forestry will be restored to blanket bog and wet heath habitat. This will be achieved through the felling of existing forestry, blocking site drains and where suitable reprofiling of ploughed areas. Additionally, approximately 62.26 hectares of coniferous forestry will be felled and replanted with native pioneer woodland.

##### 2.2.1.3 Site Roads

Maximum use has been made of the existing on-site roads in accessing the proposed harvest blocks for timber extraction and bog restoration. All site access roads that are proposed to be used as part of the Proposed Development, both existing and proposed, will be capped with clean stone to minimise the risk of sediment runoff to local water courses. The material required for upgrade and construction of roads within the site will be obtained from local, licenced quarries.

##### 2.2.1.4 Watercourse Crossings

Along the new temporary road there will be 4 no. temporary water-crossings of natural water courses constructed in order to facilitate the harvesting of the timber at the site. Full details of the proposed crossing methods for each watercourse crossing, along with a map of their locations are provided in Appendix 4-1 of the accompanying EIAR. Additional temporary watercourse crossings of forestry



drains may also be required to facilitate timber harvesting. These additional crossings will be accomplished using the same methodology described in Chapter 4: Section 4.7.9 of the accompanying EIAR. However, where possible, all forest drains within the project site will be permanently blocked as part of the proposed peatland restoration.

### 2.2.1.5 Visitor Entrance and Car Park Improvement

It is proposed to upgrade the surface dressing of the existing visitor carpark to provide a level, compacted car park surface. It is not intended to delineate individual car parking spaces.

### 2.2.1.6 Site Fencing

The proposed native woodland establishment areas will be fenced with deer – and/or stock-proof fencing where necessary.

### 2.2.1.7 Vegetation Control/Invasive Species

A targeted management plan for the control of rhododendron regeneration is required in combination with felling, bog restoration and the establishment of native woodland. Rhododendron removal will be informed by current best practices, and it will be conducted using a combination of methods including nicking live stems with a chainsaw and spraying with glyphosate, manual removal with brush-cutters, manual chainsaw felling and stump treatment using 'Ecoplugs' and the painting and spot spraying of smaller stumps with glyphosate. A Rhododendron Management Plan will be prepared in advance of any works on site.

## 2.2.2 Description of the Baseline Ecological Environment

Detailed habitat surveys and mapping of the site were undertaken by Jackie Hunt (M.Sc.) and Louise Scally (M.Sc., Ph.D.) on the following dates:

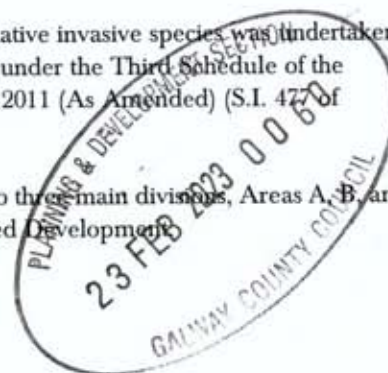
- > 15<sup>th</sup> to 18<sup>th</sup> June 2021
- > 7<sup>th</sup> and 16<sup>th</sup> July 2021

Additional surveys were also undertaken by MKO ecologists to inform the EIAR by ground truthing the findings of the Ecological reporting that was previously undertaken and to provide additional information on the ecology of the site and surrounding area. They also undertook more general ecological multidisciplinary surveys that included an assessment of the significance of the site for fauna and to determine whether further, more detailed surveys for any habitats or species were necessary.

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

During the multi-disciplinary walkover surveys, a search for non-native invasive species was undertaken. The survey focused on the identification of invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (As Amended) (S.I. 477 of 2015).

Due to its large size, the Proposed Development site is divided into three main divisions, Areas A, B, and C, as well Area D which captures outlying sections of the Proposed Development.





### Area A:

Area A, the northernmost section of the site of the Proposed Development, begins on the western slopes of Bencorr mountain, and initially sloped steeply in an easterly direction before flattening towards the shores of Lough Inagh.

The northern section of Area A was dominated by *Lowland blanket bog (PB3)* which was dominated by species such as Purple Moor-grass (*Molinia caerulea*), Ling Heather (*Calluna vulgaris*), and hummocks of *Sphagnum* spp. (Plate 2-1). As this section transitions downslope towards Lough Inagh, regenerating native species, including Rowan (*Sorbus aucuparia*), Holly (*Ilex aquifolium*), and Birch (*Betula* spp.), along with Sitka Spruce (*Picea sitchensis*) and *Rhododendron*, become more prevalent.

Further south, a small stream rose in relatively close proximity to the shores of Lough Inagh, supporting *Non-calcareous spring (FP2)* habitat, dominated by Common Haircap Moss (*Polytrichum commune*) and *Sphagnum* spp. (Plate 2-2).

Continuing south, an area categorised as *Other artificial lakes and ponds (FL8)*, was identified in a previously excavated area of ground (Plate 2-3). Further south, large sections of *Recently-felled woodland (WS5)* (Plate 2-4) and *Conifer plantation (WD4)* were recorded. Failed sections of conifer plantation were also recorded.

The boundary between Area A and Area B is demarcated by *Eroding upland river (FW1)* habitat (Plates 2-4 & 2-5). Numerous streams are also located throughout Area A, which flowed north and east within Area A, discharging into Lough Inagh.





Plate 2-1 Lowland blanket bog (PB3) with Conifer plantation (WD4) and Lough Inagh in distance.



Plate 2-2 Non-calcareous spring (FP2) orientated northeast towards Lough Inagh.



Plate 2-3 Excavated ground categorised as Other artificial lakes and ponds (FL8) habitat.



Plate 2-4 Recently-felled woodland (WS5) and Eroding/upland river (FW1) orientated to the south

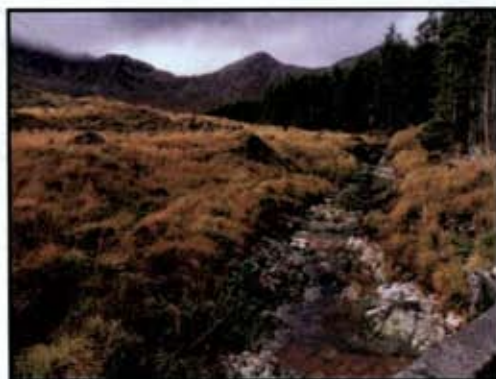


Plate 2-5 Eroding/upland river (FW1) orientated to the west.





## Area B:

Area B, the central section of the Proposed Development site, is located on the lower flanks of Derryclare mountain, and initially slopes steeply, but then more gradually as it proceeds east towards the shores of Lough Inagh. The area has been extensively modified by afforestation and was dominated by Conifer plantation (WD4) and Recently-felled woodland (WS5).

Also located within the area, to the west and towards Derryclare mountain is a rocky summit with wet heath, categorised as a mosaic of *Wet heath (HH3)* and *Exposed siliceous rock (ER1)* (Plate 2-6). This area has not been previously modified by afforestation and retains a peat depth of <50 cm and a community reflective of wet heath habitat.

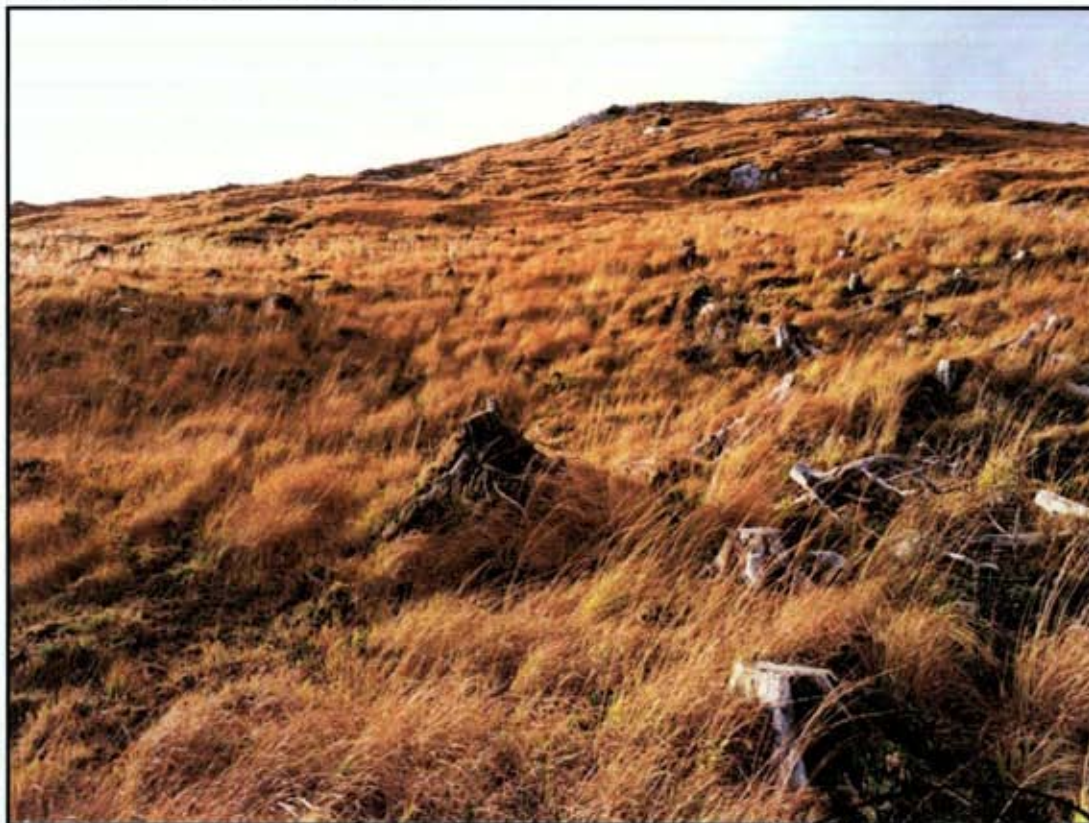


Plate 2-6 Mosaic of Wet heath (HH3) and Exposed siliceous rock (ER1) on the upper slopes of the Derryclare mountain, with Recently-felled woodland (WS5) to the foreground.



### Area C:

Area C is located on the lower flanks of Derryclare mountain and slopes moderately to the east, where it reaches Derryclare Loch. The area has been extensively modified by afforestation and remains largely dominated by Conifer Plantation (WD4) but also supports significant Wet Heath (HH3) and Upland Blanket Bog (PB3) habitat (Plate 2-7).

The upper slopes of Area C, on the lower flanks of Derryclare mountain were unplanted and dominated by blanket bog, wet heath, or a mosaic of blanket bog and wet heath habitat. An area of Wet willow alder ash woodland, located along the access track to the east (Plate 2-8) is also located within Area C. Recently felled woodland (WS5) was also recorded within Area C (Plate 2-9). Additionally, an area categorised as a mosaic of Wet Grassland (GS4) and Scrub (WS1) (Plate 2-10), dominated by Purple Moor-grass, Rushes (*Juncus spp.*), and encroaching Sitka Spruce (*Picea sitchensis*) was recorded.



Plate 2-7 Unplanted upper slopes of Area C, orientated in a south-easterly direction towards Derryclare Loch, comprising Upland blanket bog (PB2) and Wet heath (HH3).



Plate 2-8 Pocket of wet willow alder ash woodland (WN6) located to the east of the access road.



Plate 2-9 Area of Recently-felled woodland (WS5) located towards the southern boundary of Area C.



Plate 2-10 Mosaic of Wet grassland (GS4) and Scrub (WS1) with encroaching Sitka Spruce (*Picea sitchensis*) saplings.

### Area D:

Area D encompasses a large peninsula along the south-eastern boundary of the Proposed Development, which extends east and into Derryclare Loch. It also includes lands further north, which separate Derryclare Loch and Lough Inagh. The peninsula was categorised as a mosaic of Conifer Plantation (WD4) and Wet Heath (HH3) (Plate 2-11). Evidence of recent planting was seen in the tree guards placed around saplings to protect them from foraging deer. The area to the north, separating the lakes, comprised a mixture of recently-planted and mature Conifer Plantation (WD4) (Plate 2-12).

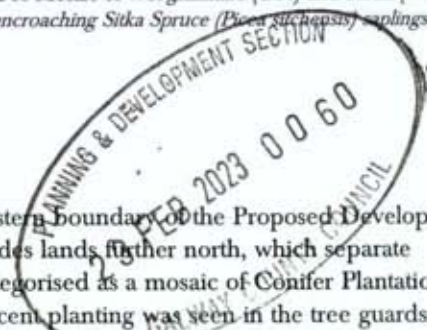






Plate 2-11 Recently-planted Conifer plantation (WD4) located on the peninsula extending east into Derryclare Loch.



Plate 2-12 Rhododendron recorded during the site visit of the Proposed Development site

A number of watercourses rise within and/or flow through the Proposed Development site and were classified as Upland/eroding rivers and ranged from 1<sup>st</sup> to second order streams. These drained the site to the east and discharge into Lough Inagh and Derryclare Lough, which are adjacent to the eastern boundary of the Proposed Development site. These lakes form part of the Twelve Bens /Garraun Complex SAC [002031] and potentially correspond to the Annex I habitat [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*).

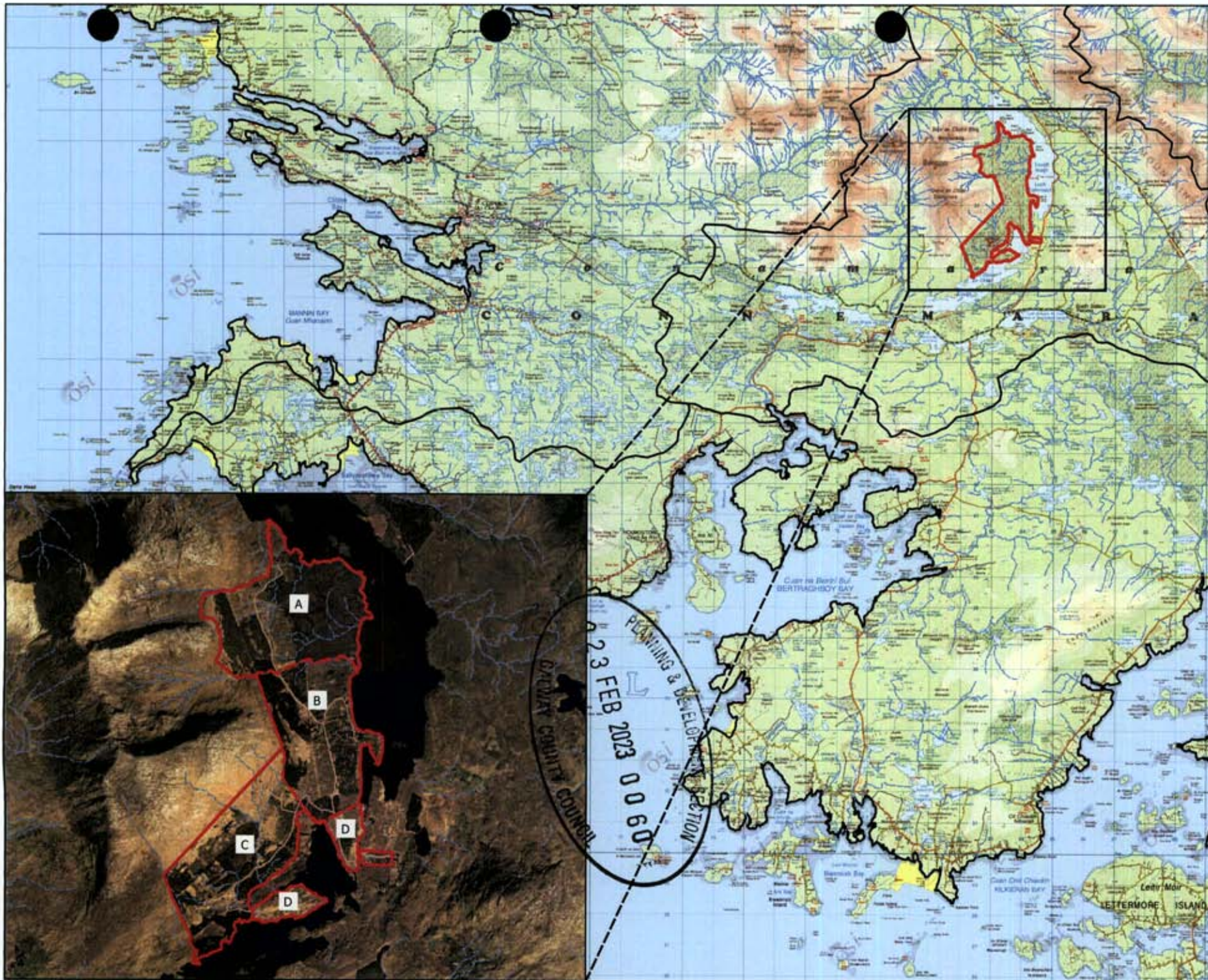
Wet heath and Blanket bog habitats recorded within the Proposed Development site potentially conform to the Annex I listed habitats of the EU Habitats Directive 'Northern Atlantic wet heaths with *Erica tetralix* [4010]' and 'Blanket bogs (if active bog) [7130]', respectively. No additional habitats listed under Annex I of the EU Habitats Directive were recorded within the Proposed Development site.

No species listed on Annex II of the EU Habitats Directive were recorded within the proposed development site, however watercourses and lakes within and downstream of the site provide suitable breeding, resting, foraging, and commuting habitat for otter (*Lutra lutra*).

A search for Invasive Alien Species (IAS), with a focus on those listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2011), was also conducted. Rhododendron was frequently to rarely recorded throughout the Proposed Development site (Plate 0012).







Map Legend

- Site Boundary
- WFD Watercourses
- WATER Catchments



## Site Location

Project Title Proposed Derrylare Wild Western Peatlands Project	
Shown By PD	Checked By SM
Project No. 210603	Drawing No. 2-1
Scale 1:160000	Date 24.10.2022

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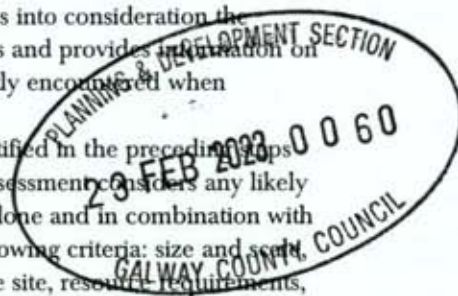


### 3. IDENTIFICATION OF RELEVANT EUROPEAN SITES

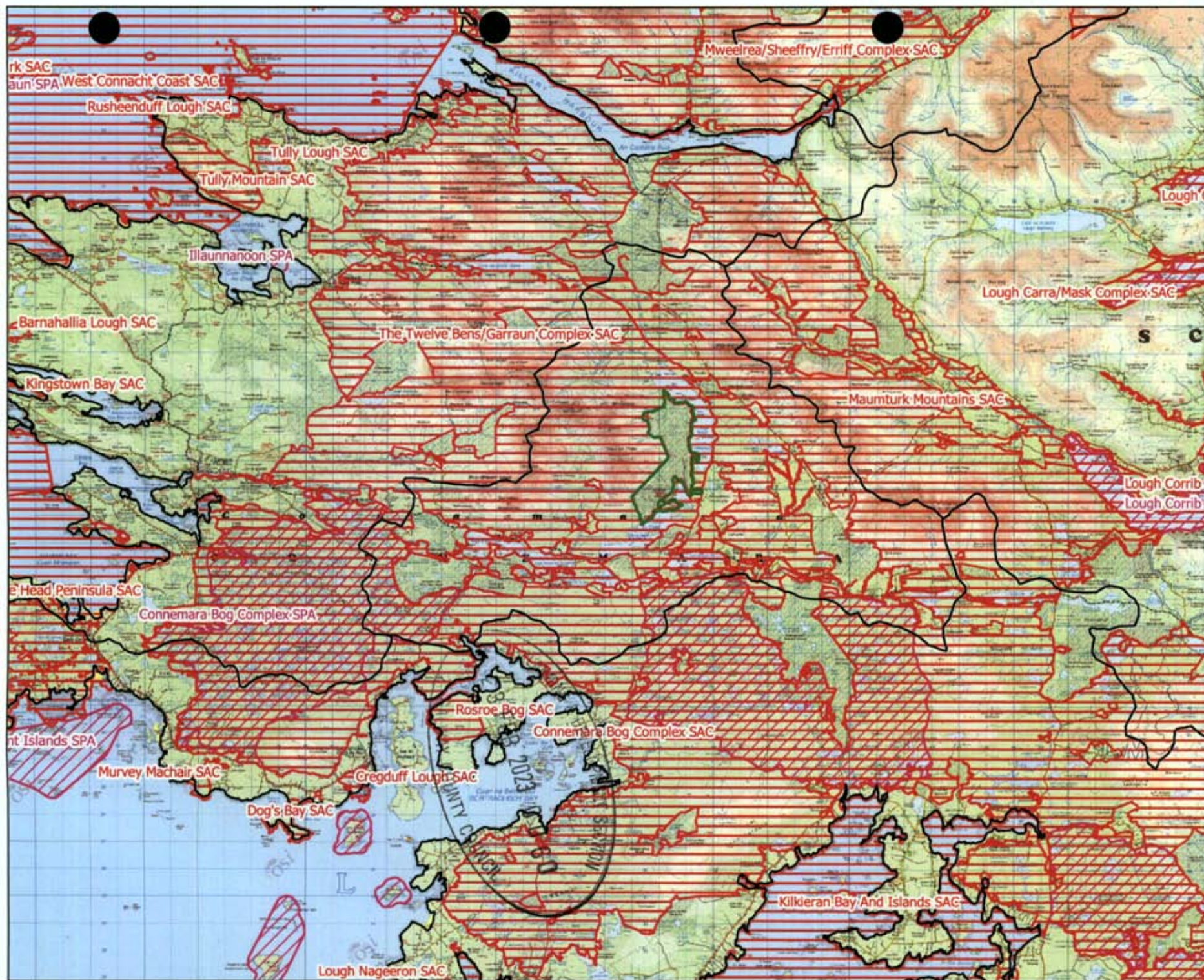
#### 3.1 Identification of the European Sites within the Likely Zone of Impact

The following methodology was used to establish which European Sites are within the Likely Zone of Impact of the Proposed Development:

- Initially the most up to date GIS spatial datasets for European designated sites and water catchments were downloaded from the NPWS website ([www.npws.ie](http://www.npws.ie)) and the EPA website ([www.epa.ie](http://www.epa.ie)) on the 11/01/2023. The datasets were utilized to identify European Sites which could feasibly be affected by the Proposed Development.
- All European Sites that could potentially be affected were identified using a source-pathway - receptor model. To provide context for the assessment, European Sites surrounding the development site are shown on Figure 3-1. Information on these sites according to the site-specific conservation objectives is provided in Table 3-2. Sites that were further away from the proposed development were also considered but no complete source-pathway-receptor chain for significant effect was identified for any other European Site.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the site of the Proposed Development and any European Sites. The hydrological catchments are also shown in Figure 3-1.
- In relation to Special Protection Areas, in the absence of any specific European or Irish guidance in relation to such sites, the Scottish Natural Heritage (SNH) Guidance, 'Assessing Connectivity with Special Protection Areas (SPA)' (2016) was consulted. This document provides guidance in relation to the identification of connectivity between Proposed Development and Special Protection Areas. The guidance takes into consideration the distances species may travel beyond the boundary of their SPAs and provides information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects.
- Table 3-1 provides details of all relevant European Sites as identified in the preceding steps and assesses which are within the likely Zone of Impact. The assessment considers any likely direct or indirect impacts of the Proposed Development, both alone and in combination with other plans and projects, on European Sites by virtue of the following criteria: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this screening assessment.
- The site synopses and conservation objectives of these sites, as per the NPWS website ([www.npws.ie](http://www.npws.ie)), were consulted and reviewed at the time of preparing this report.
- Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Impact and further assessment is required.







# Map Legend

- Site Boundary
- Special Areas of Conservation (SACs)
- Special Protected Areas (SPAs)
- WFD Catchments



Drawing Title  
European Sites in the wider vicinity of the Proposed Project

Project Title  
Proposed Derryclare Wild Western Peatlands Project

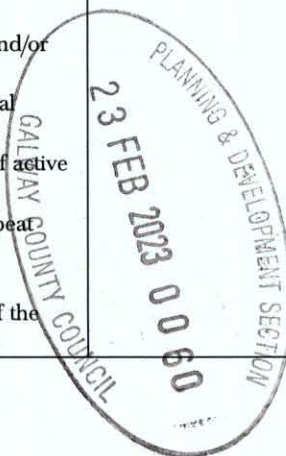
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Project No. 210603	Drawing No. 3-1
Scale 1:180000	Date 13/02/2023

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

European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, <a href="http://www.npws.ie">www.npws.ie</a> on the 11/01/2023	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
<b>Special Areas of Conservation (SAC)</b>			
<p>The Twelve Bens/Garraun Complex SAC [002031]</p> <p><b>Distance:</b> 0.0 km</p>	<ul style="list-style-type: none"> <li>&gt; [1029] Freshwater Pearl Mussel <i>Margaritifera margaritifera</i></li> <li>&gt; [1106] Salmon <i>Salmo salar</i></li> <li>&gt; [1355] Otter <i>Lutra lutra</i></li> <li>&gt; [1833] Slender Naiad <i>Najas flexilis</i></li> <li>&gt; [3110] Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</li> <li>&gt; [3130] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i></li> <li>&gt; [4060] Alpine and Boreal heaths</li> <li>&gt; [7130] Blanket bogs (* if active bog)</li> <li>&gt; [7150] Depressions on peat substrates of the <i>Rhynchosporion</i></li> <li>&gt; [8110] Siliceous scree of the montane to snow levels</li> </ul>	<p>Detailed conservation objectives for this site, (Version 1, July 2017), were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>Small Areas of the Proposed Development site are partially within this SAC. Therefore, there is potential for direct impacts on the QI habitats of the SAC via habitat loss/degradation and on the QI species via disturbance and loss/degradation of suitable habitat.</p> <p>Multiple EPA mapped watercourses drain the Proposed Development site and discharge into Lough Inagh and Derryclare Lough, both of which are adjacent to the proposed site and form part of the Twelve Bens/Garraun Complex SAC. There is potential for indirect effects on the QIs of the SAC, via deterioration in water quality arising from run-off of pollutants to surface water during felling and construction activities associated with the proposed development.</p> <p>There is potential for indirect effects on faunal QIs of the SAC via disturbance arising from felling and construction activities associated with the proposed development.</p> <p>Therefore, in absence of best practice and mitigation, there is potential for the Proposed Development to result in likely significant effects on this SAC.</p>



European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 11/01/2023)	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
	<ul style="list-style-type: none"> <li>(<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>)</li> <li>&gt; [8210] Calcareous rocky slopes with <i>chasmophytic</i> vegetation</li> <li>&gt; [8220] Siliceous rocky slopes with <i>chasmophytic</i> vegetation</li> <li>&gt; [91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</li> </ul>		Therefore, the European Site is located within the Likely Zone of Impact and further assessment is required.
<p>Maumturk Mountains SAC [002008]</p> <p>Distance; approx. 0.47 km</p> <p>Hydrological Distance; approx. 0.6 km across Lough Inagh</p>	<ul style="list-style-type: none"> <li>&gt; [1106] Salmon <i>Salmo salar</i></li> <li>&gt; [1833] Slender Naiad <i>Najas flexilis</i></li> <li>&gt; [3110] Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</li> <li>&gt; [4010] Northern Atlantic wet heaths with <i>Erica tetralix</i></li> <li>&gt; [4060] Alpine and Boreal heaths</li> <li>&gt; [7130] Blanket bogs (* if active bog)</li> <li>&gt; [7150] Depressions on peat substrates of the <i>Sphynchosporion</i></li> <li>&gt; [8220] Siliceous rocky slopes with <i>chasmophytic</i> vegetation</li> </ul>	Detailed conservation objectives for this site, (Version 1, July 2017), were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a>	<p>There will be no direct effects as the project footprint is located entirely outside the designated site.</p> <p>No source-pathway-receptor chain for potential indirect impacts on the QIs of the SAC has been identified.</p> <p>The SAC is located upstream of the Proposed Development and therefore there is no potential for indirect effects due to the run-off of pollutants during the development.</p> <p>Given the terrestrial distance of 0.47 km between the Proposed Development site and the SAC, and the nature and scale of the Proposed Development, there is no potential for indirect effects on the QI habitats of the SAC.</p> <p>No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>

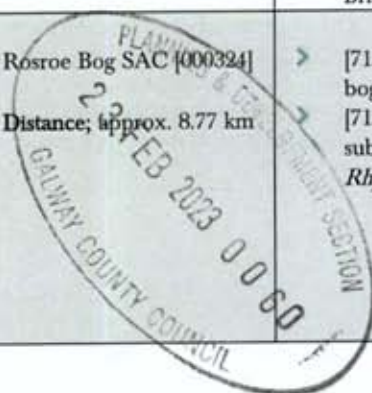
PLANNING & DEVELOPMENT  
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GALWAY COUNTY COUNCIL



European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 11/01/2023)	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
<p>Connemara Bog Complex SAC [002034]</p> <p>Distance; approx. 1.45 km</p> <p>Hydrological distance; approx. 6.1 km downstream</p>	<ul style="list-style-type: none"> <li>➤ [1065] Marsh Fritillary <i>Euphydryas aurinia</i></li> <li>➤ [1106] Salmon <i>Salmo salar</i></li> <li>➤ [1150] Coastal lagoons</li> <li>➤ [1170] Reefs</li> <li>➤ [1355] Otter <i>Lutra lutra</i></li> <li>➤ [1833] Slender Naiad <i>Najas flexilis</i></li> <li>➤ [3110] Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</li> <li>➤ [3130] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i></li> <li>➤ [3160] Natural dystrophic lakes and ponds</li> <li>➤ [3260] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation</li> <li>➤ [4010] Northern Atlantic wet heaths with <i>Erica tetralix</i></li> <li>➤ [4030] European dry heaths</li> </ul>	<p>Detailed conservation objectives for this site, (Version 1, October 2015), were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>There will be no direct effects as the project footprint is located entirely outside the designated site.</p> <p>There is hydrological connectivity between the Proposed Development and this SAC via multiple EPA mapped watercourses which drain the Proposed Development site and discharge into Lough Inagh and Derryclare Lough, both of which are adjacent to the proposed site. The Loughs have connectivity to the SAC via the Recess River which drains the southern section of Derryclare Lough.</p> <p>Taking a precautionary approach, and in the absence of best practice and mitigation, there is potential for indirect effects on the SAC via deterioration in water quality arising from run-off of pollutants to surface water during felling and construction activities associated with the proposed development.</p> <p>Taking the precautionary approach, there is potential for indirect effects on ex-situ otter of the SAC via disturbance arising from felling and construction activities associated with the proposed development.</p> <p>Therefore, the European Site is located within the Likely Zone of Impact and further assessment is required.</p>




European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 11/01/2023	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
	<ul style="list-style-type: none"> <li>&gt; [6410] <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)</li> <li>&gt; [7130] Blanket bogs (* if active bog)</li> <li>&gt; [7140] Transition mires and quaking bogs</li> <li>&gt; [7150] Depressions on peat substrates of the <i>Rhynchosporion</i></li> <li>&gt; [7230] Alkaline fens</li> <li>&gt; [91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</li> </ul>		
Rosroe Bog SAC [000324] Distance; approx. 8.77 km	<ul style="list-style-type: none"> <li>&gt; [7130] Blanket bogs (* if active bog)</li> <li>&gt; [7150] Depressions on peat substrates of the <i>Rhynchosporion</i></li> </ul>	Detailed conservation objectives for this site, (Version 1, May 2017), were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a>	<p>There will be no direct effects as the project footprint is located entirely outside the designated site.</p> <p>The QI habitats for which the site is designated are terrestrially based. Additionally, there is no hydrological connectivity between the proposed development and this SAC and they located in separate hydrological catchments. Taking the above into account, there is no potential for indirect effects on the QIs of the SAC as a result of the Proposed Development.</p>






European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, <a href="http://www.npws.ie">www.npws.ie</a> on the 11/01/2023	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
			No pathway for effect was identified and the site is not within the Likely Zone of Impact.
<p>Mweelrea/Sheeffry/Erriff Complex SAC [001932]</p> <p>Distance; approx. 9.03 km</p>	<ul style="list-style-type: none"> <li>&gt; [1013] Geyer's Whorl Snail <i>Vertigo geyeri</i></li> <li>&gt; [1014] Narrow-mouthed Whorl Snail <i>Vertigo angustior</i></li> <li>&gt; [1029] Freshwater Pearl Mussel <i>Margaritifera margaritifera</i></li> <li>&gt; [1106] Salmon <i>Salmo salar</i></li> <li>&gt; [1150] Coastal lagoons</li> <li>&gt; [1210] Annual vegetation of drift lines</li> <li>&gt; [1330] Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>)</li> <li>&gt; [1355] Otter <i>Lutra lutra</i></li> <li>&gt; [1395] Petalwort <i>Petalophyllum ralfsii</i></li> <li>&gt; [1410] Mediterranean salt meadows (<i>Juncetalia maritimi</i>)</li> <li>&gt; [1833] Slender Naiad <i>Najas flexilis</i></li> <li>&gt; [2110] Embryonic shifting dunes</li> </ul>	<p>Detailed conservation objectives for this site, (Version 1, October 2017), were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>There will be no direct effects as the project footprint is located entirely outside the designated site.</p> <p>There is no hydrological connectivity between the Proposed Development site and this SAC, which is located in different hydrological and groundwater catchments to the Proposed Development. Given the nature and scale of the works, the terrestrial distance, and the absence of connectivity, no pathway for indirect effects was identified between the Proposed Development and the SAC.</p> <p>No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>



European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 11/01/2023)	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
	<ul style="list-style-type: none"> <li>&gt; [2120] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</li> <li>&gt; [2150] Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>)</li> <li>&gt; [2170] Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)</li> <li>&gt; [21A0] Machairs (* in Ireland)</li> <li>&gt; [3110] Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</li> <li>&gt; [3130] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i></li> <li>&gt; [3160] Natural dystrophic lakes and ponds</li> <li>&gt; [3260] Water courses of plain to montane levels with the <i>Ranunculum fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation</li> <li>&gt; [4010] Northern Atlantic wet heaths with <i>Erica tetralix</i></li> <li>&gt; [4030] European dry heaths</li> </ul>		







European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 11/01/2023)	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
	<ul style="list-style-type: none"> <li>➤ [4060] Alpine and Boreal heaths</li> <li>➤ [5130] <i>Juniperus communis</i> formations on heaths or calcareous grasslands</li> <li>➤ [6430] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels</li> <li>➤ [7130] Blanket bogs (* if active bog)</li> <li>➤ [7140] Transition mires and quaking bogs</li> <li>➤ [7150] Depressions on peat substrates of the <i>Rhynchosporion</i></li> <li>➤ [7220] Petrifying springs with tufa formation (<i>Cratoneurion</i>)</li> <li>➤ [7230] Alkaline fens</li> <li>➤ [8110] Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>)</li> <li>➤ [8210] Calcareous rocky slopes with <i>chasmophytic</i> vegetation</li> <li>➤ [8220] Siliceous rocky slopes with <i>chasmophytic</i> vegetation</li> </ul>		

European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, <a href="http://www.npws.ie">www.npws.ie</a> on the 11/01/2023)	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
<p>Kilkieran Bay And Islands SAC [002111]</p> <p>Distance; approx. 11.99 km</p>	<ul style="list-style-type: none"> <li>➤ [1140] Mudflats and sandflats not covered by seawater at low tide</li> <li>➤ [1150] Coastal lagoons</li> <li>➤ [1160] Large shallow inlets and bays</li> <li>➤ [1170] Reefs</li> <li>➤ [1330] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)</li> <li>➤ [1355] Otter <i>Lutra lutra</i></li> <li>➤ [1365] Harbour seal <i>Phoca vitulina</i></li> <li>➤ [1410] Mediterranean salt meadows (<i>Juncetalia maritimi</i>)</li> <li>➤ [1833] Slender Naiad <i>Najas flexilis</i></li> <li>➤ [21A0] Machairs (* in Ireland)</li> <li>➤ [6510] Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>)</li> </ul>	<p>Detailed conservation objectives for this site, (Version 1, February 2014), were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>There will be no direct effects as the project footprint is located entirely outside the designated site.</p> <p>There is no hydrological connectivity between the Proposed Development site and this SAC, which is located in different hydrological and groundwater catchments to the Proposed Development. Given the terrestrial distance, nature and scale of the works and the absence of connectivity, no pathway for indirect effects was identified between the Proposed Development and the SAC.</p> <p>No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>
<p>Lough Corrib SAC [000297]</p> <p>Distance; approx. 13.33 km</p>	<ul style="list-style-type: none"> <li>➤ [1029] Freshwater Pearl Mussel <i>Margaritifera margaritifera</i></li> <li>➤ [1092] White-clawed Crayfish <i>Austropotamobius pallipes</i></li> </ul>	<p>Detailed conservation objectives for this site, (Version 1, April 2017), were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>There will be no direct effects as the project footprint is located entirely outside the designated site.</p> <p>There is no hydrological connectivity between the Proposed Development site and this SAC, which is located in</p>



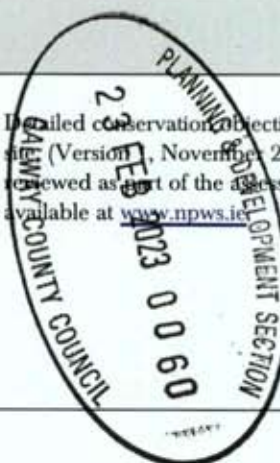


European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 11/01/2023)	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
	<ul style="list-style-type: none"> <li>&gt; [1095] Sea Lamprey <i>Petromyzon marinus</i></li> <li>&gt; [1096] Brook Lamprey <i>Lampetra planeri</i></li> <li>&gt; [1106] Salmon <i>Salmo salar</i></li> <li>&gt; [1303] Lesser Horseshoe Bat <i>Rhinolophus hipposideros</i></li> <li>&gt; [1355] Otter <i>Lutra lutra</i></li> <li>&gt; [1393] Slender Green Feather-moss <i>Drepanocladus vernicosus</i></li> <li>&gt; [1833] Slender Naiad <i>Najas flexilis</i></li> <li>&gt; [3110] Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</li> <li>&gt; [3130] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i></li> <li>&gt; [3140] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.</li> <li>&gt; [3260] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and</li> </ul>		<p>different hydrological and groundwater catchments to the Proposed Development. Given the nature and scale of the works and the absence of connectivity, no pathway for indirect effects was identified between the Proposed Development and the SAC.</p> <p>No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>

European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 11/01/2023)	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
	<p><i>Callitriche-Batrachion</i> vegetation</p> <ul style="list-style-type: none"> <li>&gt; [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites)</li> <li>&gt; [6410] <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)</li> <li>&gt; [7110] Active raised bogs</li> <li>&gt; [7120] Degraded raised bogs still capable of natural regeneration</li> <li>&gt; [7150] Depressions on peat substrates of the <i>Rhynchosporion</i></li> <li>[7210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i></li> <li>&gt; [7220] Petrifying springs with tufa formation (<i>Cratoneurion</i>)</li> <li>&gt; [7230] Alkaline fens</li> <li>[8240] Limestone pavements</li> <li>&gt; [91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</li> </ul>		



European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, <a href="http://www.npws.ie">www.npws.ie</a> on the 11/01/2023)	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
	> [91D0] Bog woodland		
West Connacht Coast SAC [002998]  Distance; approx. 13.41 km	> [1349] Common Bottlenose Dolphin <i>Tursiops truncatus</i>	Detailed conservation objectives for this site, (Version 1, November 2015), were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a>	There will be no direct effects as the project footprint is located entirely outside the designated site.  There is no hydrological connectivity between the Proposed Development site and this SAC, which is located in different hydrological and groundwater catchments to the Proposed Development. Given the nature and scale of the works and the absence of connectivity, no pathway for indirect effects was identified between the Proposed Development and the SAC.  No pathway for effect was identified and the site is not within the Likely Zone of Impact.
Cregduff Lough SAC [001251]  Distance; approx. 13.48 km	> [1833] Slender Naiad <i>Najas flexilis</i> > [7140] Transition mires and quaking bogs	Detailed conservation objectives for this site (Version 1, November 2021), were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a>	There will be no direct effects as the project footprint is located entirely outside the designated site.  There is no hydrological connectivity between the Proposed Development site and this SAC, which is located in different hydrological and groundwater catchments to the Proposed Development. Given the nature and scale of the works and the absence of connectivity, no pathway for indirect effects was identified between the Proposed Development and the SAC.

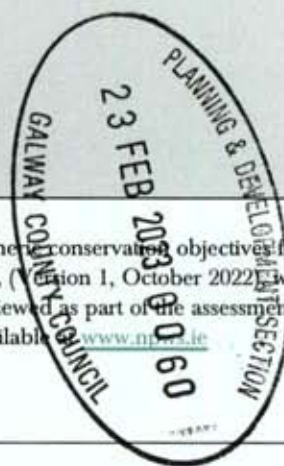


European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, <a href="http://www.npws.ie">www.npws.ie</a> on the 11/01/2023)	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
			No pathway for effect was identified and the site is not within the Likely Zone of Impact.
<b>Special Protection Area (SPA)</b>			
<p>Connemara Bog Complex SPA [004181]</p> <p>Distance; approx. 2.15 km</p>	<ul style="list-style-type: none"> <li>&gt; [A017] Cormorant (<i>Phalacrocorax carbo</i>)</li> <li>&gt; [A098] Merlin (<i>Falco columbarius</i>)</li> <li>&gt; [A140] Golden Plover (<i>Pluvialis apricaria</i>)</li> <li>&gt; [A182] Common Gull (<i>Larus canus</i>)</li> </ul>	<p>Generic conservation objectives for this site, (Version 1, October 2022), were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>The Proposed Development site is within approx. 2.15 km of this SPA. This is within the breeding season core foraging range for ex-situ Merlin and Golden Plover, 5 km and 3 km respectively, as per SNH (2013). The Proposed Development site provides suitable foraging and breeding for these species. Therefore, a source-pathway-receptor chain for potential impacts on ex-situ SCIs of this SPA has been identified, via disturbance and habitat loss arising from the construction phase of the Proposed Development</p> <p><b>Therefore, the European Site is located within the Likely Zone of Impact and further assessment is required.</b></p>
<p>Lough Corrib SPA [004042]</p> <p>Distance; approx. 3.43 km</p>	<ul style="list-style-type: none"> <li>&gt; [A051] Gadwall (<i>Anas strepera</i>)</li> <li>&gt; [A056] Shoveler (<i>Anas clypeata</i>)</li> <li>&gt; [A059] Pochard (<i>Aythya ferina</i>)</li> <li>&gt; [A061] Tufted Duck (<i>Aythya fuligula</i>)</li> </ul>	<p>Generic conservation objectives for this site, (Version 1, October 2022), were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>There will be no direct effects as the project footprint is located entirely outside the designated site.</p> <p>There is no hydrological connectivity between the Proposed Development site and this SPA, which is located in different hydrological and groundwater catchments to the Proposed Development. Therefore, there is no potential for indirect</p>

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European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, <a href="http://www.npws.ie">www.npws.ie</a> on the 11/01/2023	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
	<ul style="list-style-type: none"> <li>&gt; [A065] Common Scoter (<i>Melanitta nigra</i>)</li> <li>&gt; [A082] Hen Harrier (<i>Circus cyaneus</i>)</li> <li>&gt; [A125] Coot (<i>Fulica atra</i>)</li> <li>&gt; [A140] Golden Plover (<i>Pluvialis apricaria</i>)</li> <li>&gt; [A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>)</li> <li>&gt; [A182] Common Gull (<i>Larus canus</i>)</li> <li>&gt; [A193] Common Tern (<i>Sterna hirundo</i>)</li> <li>&gt; [A194] Arctic Tern (<i>Sterna paradisaea</i>)</li> <li>&gt; [A395] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)</li> <li>&gt; [A999] Wetland and Waterbirds</li> </ul>		<p>effects on the SPA via run off of pollutants and deterioration of water quality.</p> <p>The site is located outside the core foraging range and maximum range for hen harrier and Greenland white-fronted goose, as per Scottish Natural Heritage (2013). And therefore, there is no potential for disturbance/displacement of this species.</p> <p>Given the nature and scale of the works, the terrestrial distance between the SPA and Proposed Development site, and the absence of connectivity, no pathway for indirect effects was identified between the Proposed Development and the SPA.</p> <p>No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>
<p>Illaunnanoon SPA [004221]</p> <p>Distance; approx. 14.13 km</p>	<ul style="list-style-type: none"> <li>&gt; [A191] Sandwich Tern (<i>Sterna sandvicensis</i>)</li> </ul>	<p>General conservation objectives for this site, (Version 1, October 2022) were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>There will be no direct effects as the project footprint is located entirely outside the designated site.</p> <p>There is no hydrological connectivity between the Proposed Development site and this SPA, which is located in different hydrological and groundwater catchments to the Proposed Development.</p>



European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 11/01/2023	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
			<p>The Proposed Development site does not provide suitable supporting habitat for the sandwich tern, the single SCI of the SPA and therefore, there is no potential for disturbance/displacement of this species.</p> <p>Given the nature and scale of the works, the terrestrial distance between the SPA and Proposed Development site, and the absence of connectivity, no pathway for indirect effects was identified between the Proposed Development and the SPA.</p> <p>No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>
<p>Slyne Head to Ardmore Point Islands SDA [004159]</p> <p>Distance approx. 14.64 km</p>	<p>[A045] Barnacle Goose (<i>Branta leucopsis</i>)</p> <p>[A191] Sandwich Tern (<i>Sterna sandvicensis</i>)</p> <p>[A194] Arctic Tern (<i>Sterna paradisaea</i>)</p> <p>[A195] Little Tern (<i>Sterna albilabris</i>)</p>	<p>Generic conservation objectives for this site, (Version 1, October 2022), were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>There will be no direct effects as the project footprint is located entirely outside the designated site.</p> <p>There is no hydrological connectivity between the Proposed Development site and this SPA, which is located in different hydrological and groundwater catchments to the Proposed Development. Therefore, there is no potential for deterioration of water quality due to run-off of pollutants arising from the Proposed Development.</p> <p>The Proposed Development site does not provide suitable supporting habitat for the SCIs of the SPA and therefore,</p>



European Sites and distance from Proposed Development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 11/01/2023)	Conservation Objectives	Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination
			<p>there is no potential for disturbance/displacement of this species.</p> <p>Given the nature and scale of the works, the terrestrial distance between the SPA and Proposed Development site, and the absence of connectivity, no pathway for indirect effects was identified between the Proposed Development and the SPA.</p> <p>No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>



### 3.2 European Sites with the Potential to be Significantly Affected by the Proposed Development

Taking the precautionary approach, a potential pathway for indirect effects on the QIs/SCIs of the following European sites was identified as a result of surface water deterioration arising from the construction and operational phases of the development:

- > The Twelve Bens/Garraun Complex SAC [002031]
- > Connemara Bog Complex SAC [002034]
- > Connemara Bog Complex SPA [004181]

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

Where the potential for significant effects on European Sites has been identified in the preceding sections of this document, there is potential for the Proposed Development to result in in-combination effects from other plans or developments in the vicinity of the Proposed Development site. Plans and projects in the vicinity of the Proposed Development site were reviewed to assess any potential in-combination impacts on European Sites and have been listed in the accompanying NIS.

Where no pathway for effect on a particular European Site was identified, there is no potential for effects to occur as a result of the Proposed Development when considered on its own. Therefore, it cannot contribute to any in-combination effects on that site when considered in combination with other plans and projects and no further assessment is required.





4.

## ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING STATEMENT AND CONCLUSIONS

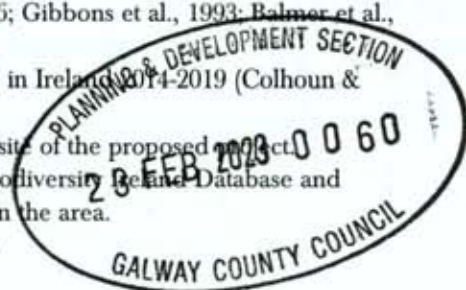
The findings of this Screening Assessment are presented following the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2021) and Managing Natura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

4.1

### Data Collected to Carry Out Assessment

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

- > Review of NPWS Site Synopses, Conservation Objectives for the European Sites
- > Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.
- > Review of online web-mappers: National Parks and Wildlife Service (NPWS), Teagasc, EPA, Water Framework Directive (WFD), Geological Survey of Ireland (GSI), Inland Fisheries Ireland (IFI), Irish Wetland Bird Survey I-WeBS, and Geohive online Environmental Sensitivity Mapping tool
- > Review of specially requested records from the NPWS Rare and Protected Species Database for the hectads which overlap with the study area.
- > Review of Bird Atlases: (Sharrock, 1976; Lack, 1986; Gibbons et al., 1993; Balmer et al., 2013).
- > Review of Birds of Conservation Concern (BoCCI) in Ireland 2014-2019 (Colhoun & Cummins, 2013)
- > Review of OS maps and aerial photographs of the site of the proposed project.
- > Review of relevant databases including National Biodiversity Data Base and available literature of previous surveys conducted in the area.
- > Review of other plans and projects within the area.



4.2

### Concluding Statement

It cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the Proposed Development, individually or in combination with other plans and projects, would be likely to have a significant effect on the following European Site and their QIs/SCIs;

- > The Twelve Bens/Garraun Complex SAC [002031]
- > Connemara Bog Complex SAC [002034]
- > Connemara Bog Complex SPA [004181]

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

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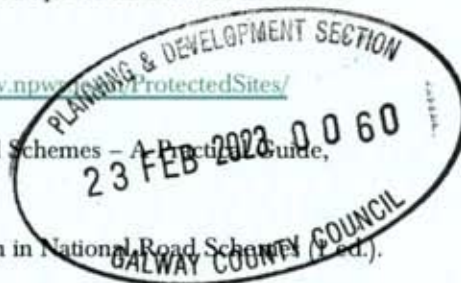
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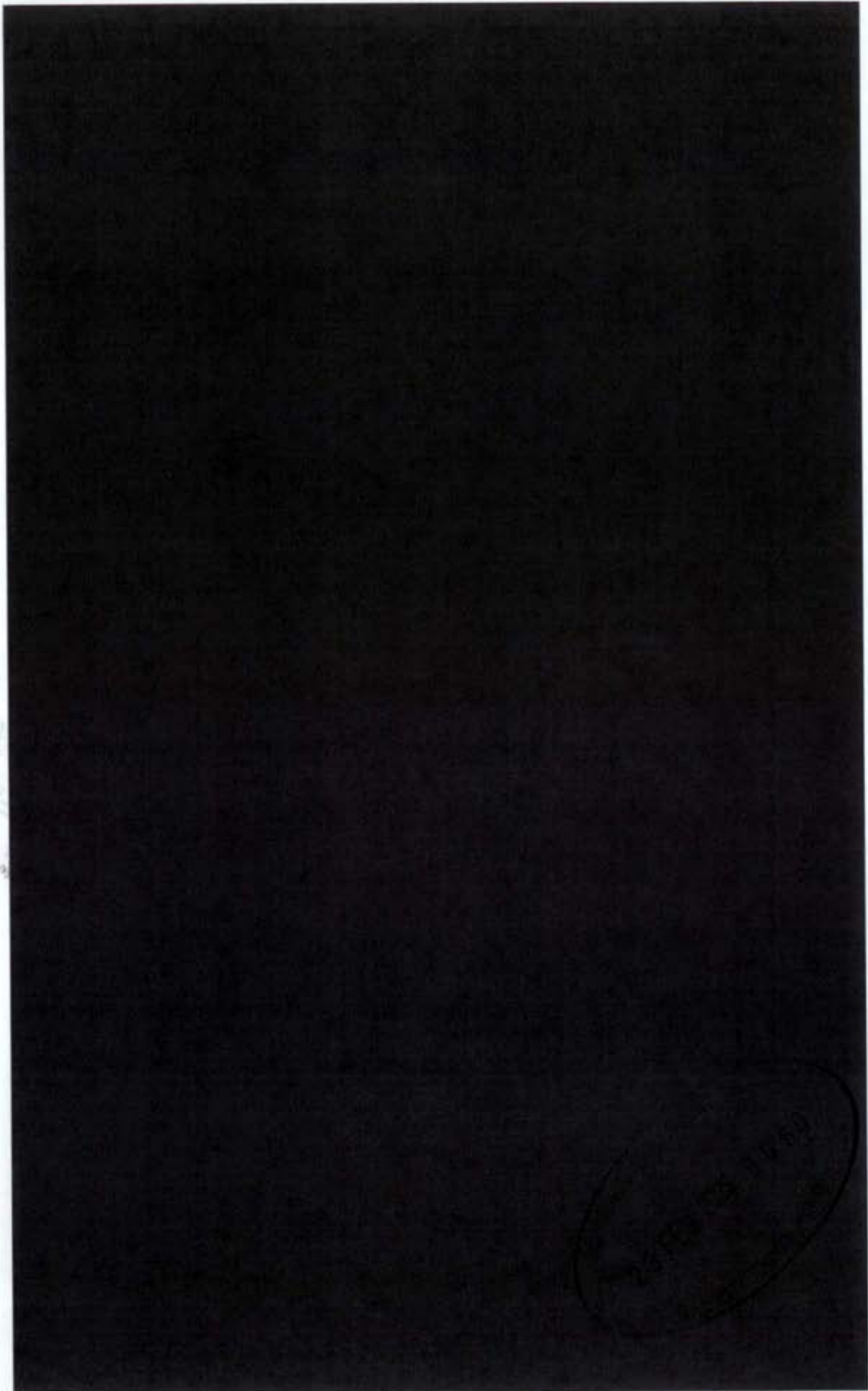
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## APPENDIX 2

### CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN



**Construction and  
Environmental  
Management Plan**

Derryclare Wild Western  
Peatlands Project







## DOCUMENT DETAILS

Client: **Coillte Nature**

Project Title: **Derryclare Wild Western Peatlands Project**

Project Number: **210603**

Document Title: **Construction and Environmental Management Plan**

Document File Name: **CEMP F – 2023.02.10 - 210603**

Prepared By: **MKO  
Tuam Road  
Galway  
Ireland  
H91 VW8 4**



Rev.	Status	Date	Author(s)	Approved By
01	Draft	05/01/2023	ER	TB
02	Draft	27/01/2023	ER	TB
03	Draft	09/02/2023	ER	TB
03	Final	10/02/2023	ER	TB

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# INTRODUCTION

This Construction & Environmental Management Plan (CEMP) has been prepared by MKO on behalf of Coillte Nature who intend to submit a planning application to Galway County Council for proposed restoration works at the Coillte property at Derryclare (project site), Co. Galway.

The CEMP provides the environmental management framework to be adhered to during the pre-commencement and construction phases of the restoration works and it incorporates the mitigating principles to ensure that the work is carried out in a way that minimises the potential for any environmental impacts to occur. The CEMP has been informed by and takes account of the accompanying documents which have been prepared for the Proposed Project.

All measures identified in this Construction Environmental Management Plan, which will be finalised subsequent to any permission granted and updated prior to construction will include all mitigation measures identified to be adhered to during the pre-commencement and construction phases of the development.

The CEMP to be prepared by the appointed contractor will be a single, amalgamated document that can be used during the construction phase of the project, as a single consolidated point of reference relating to all construction, environmental and drainage requirements for the Planning Authority, developer and contractors alike. The CEMP may evolve over further iterations as the construction works progress, but at all times must meet or exceed the standards and requirements set out in this document. It will be the contractor's current version of the CEMP, which at any point in time, will guide the construction activities on site and the implementation of which will be audited during construction by the Coillte Site Manager/Environmental Manager.

## Background to the Development

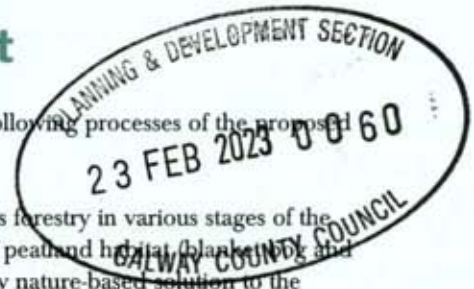
A Description of the Project Report prepared by MKO outlines the following processes of the proposed peatland restoration.

The Proposed Project involves the felling of 343 hectares of coniferous forestry in various stages of the forestry cycle. The Proposed Project will restore up to 281 hectares of peatland habitat (blanket bog and wet heath) in the felled area. Peatland restoration is one of the primary nature-based solution to the biodiversity and climate crisis in Ireland, as blanket bogs accumulate and store carbon as well as possessing unique habitats with high biodiversity value.

These peatlands also store and filter water, playing a vital role in the management of water catchments. The Proposed Project will also include the establishment of up to 62 hectares of native pioneer woodland on areas cleared of coniferous forestry.

The proposed new native woodland will be established adjoining the existing Derryclare Nature Reserve, where appropriate, thereby maximising biodiversity, water and climate benefits. A detailed description of the project and the proposed harvesting, peatland restoration, and native woodland establishment techniques are provided in Chapter 4 of this EIAR.

All works will be completed within the confines of the site layout map are included in Figure 2-1 and Figure 2-2 below.





## Scope of the Construction and Environmental Management Plan

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

The report is divided into Seven sections as outlined below:

- Section 1 provides a brief introduction as to the scope of the report.
- Section 2 outlines the Site and Project details, detailing the objectives of this plan along with providing an overview of construction methodologies that will be adopted throughout the project.
- Section 3 sets out details of the environmental controls on site which addresses, water quality protection measures, invasive species management, waste management, and noise and dust controls.
- Section 4 sets out a fully detailed implementation plan for the environmental management of the project outlining the roles and responsibilities of the project team. The Emergency Response Plan to be adopted in the event of an emergency with respect to site health and safety, and environmental protection is also included in this section.
- Section 5 consists of a summary table of all mitigation proposals to be adhered to during the project.
- Section 6 consists of a summary table of all monitoring proposals to be adhered to during the project.
- .
- Section 7 outlines the proposals for reviewing compliance with the provisions of this report.



2.

## SITE AND PROJECT DETAILS

2.1

### Site Location and Development Description

The Coillte property at Derryclare (project site) lies to the west of Lough Inagh and Derryclare Lough in Connemara, Co. Galway, north of the Galway to Clifden Road (N59). The Derryclare property extends to approximately 571 Hectares (ha) on the western slopes of Derryclare and Bencorr mountains. The site is located in the townlands of Derryclare and Cloonnacartan in County Galway.

During the construction phase, the site will be accessed via the existing entrance off R344 road from the N59 at Recess to the N59 at Kylesmore which runs in a north-south directions along the eastern side of the site in the townland of Glenard. The R344 connects to the N59 approximately 2km south of the site entrance. All timber extracted from the site will be transported from the R344 to the N59. Following the completion of restoration works at the site, the site entrance will also be used for monitoring and maintenance activities, ongoing forestry activities on the property, and by the visiting public.

The Proposed Project site is drained by the Derryclare stream and other unnamed first order streams, which discharge into Lough Inagh and Derryclare Lough, both of which are designated as pNHA and are adjacent to the Proposed Project site. Therefore, there is potential for indirect impacts on this pNHA via deterioration in water quality arising from the runoff of pollutants into surface water systems, during the construction phase of the Proposed Project.

There is upstream hydrological connectivity between this Designated Site and the Proposed Project site via the Tooreenacoona stream and other unnamed first order streams which discharge into Lough Inagh and Derryclare Lough. Therefore, there is potential for indirect impacts on this pNHA via deterioration in water quality arising from the runoff of pollutants into surface water systems, during the construction phase of the Proposed Project.

The Proposed Project site drains into Lough Inagh and Derryclare Lough, to the east, both of which are located within the Ballynahinch WFD hydrological catchment. A search of the wildlife website on the 04/11/2022 found Inland Fisheries Ireland (IFI) Fish stock survey reports for surveys carried out in 2019. These are summarized below.

The Proposed Project site is partially located within the Twelve Bens/Garraun Complex SAC [002031]. There is upstream hydrological connectivity to the Maumturk Mountains SAC [002008] and downstream hydrological connectivity to the Connemara Bog Complex SAC [002034].

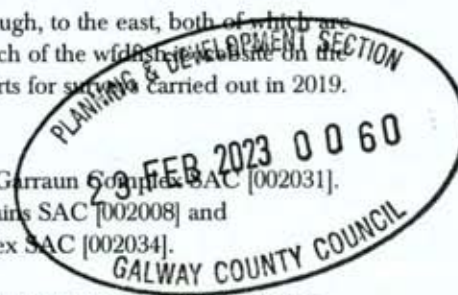
A layout of the site once the proposed restoration works are carried out is shown in Figure 2-2 below.

2.2

### Objectives

The following key objectives will inform the final detailed design should the Proposed Project secure planning permission and proceed to the construction phase:

- Ensure the construction phase impact of restoration work is kept to a minimum on the local environment, watercourses and wildlife;
- Comply with all relevant water quality legislation;
- Ensure restoration works and activities are completed in accordance with mitigation and the best practice approach presented in the Environmental Impact Assessment Report (EIAR) and associated planning documentation;
- Ensure restoration works and activities are completed in accordance with all planning conditions for the project;







# Map Legend

Derryclare Site Boundary



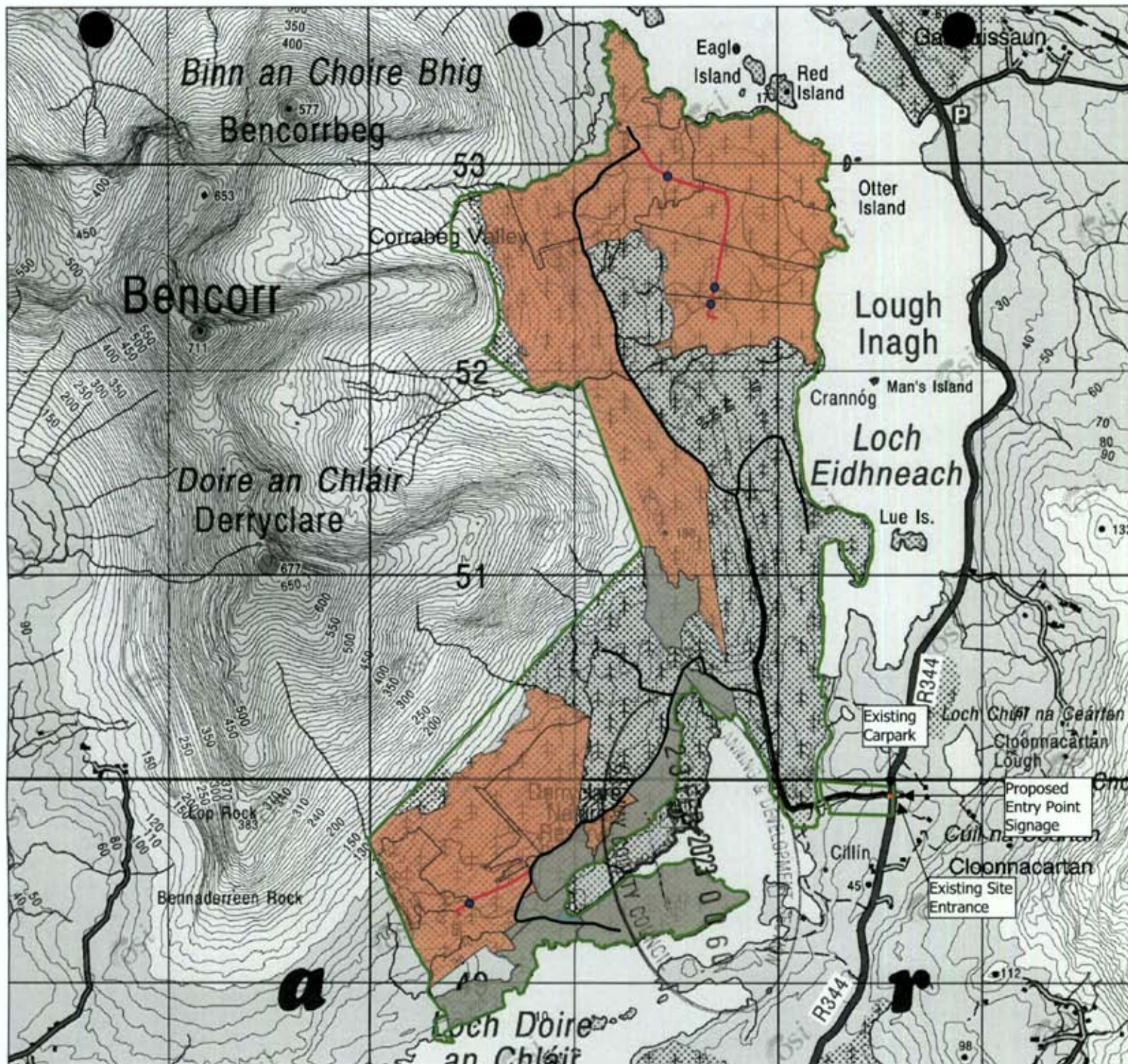
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Drawing Title	
Site Location	
Project Title	
Derryclare Wild Western Peatland Project	
Drawn By	Checked By
ER	TB
Project No.	Drawing No.
210603	Figure 2-1
Scale	Date
1:50,000	2023-02-14



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## Map Legend

- Derryclare Site
- Proposed Native Woodland
- Proposed Peatland Restoration
- Existing Forest Road
- Proposed Road Extension
- Watercourse Crossings
- Existing Carpark



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Drawing Title

Project Site Layout

Project Title

Derryclare Wild Western Peatland Project

Drawn By

ER

Checked By

TB

Project No.

210603

Drawing No.

Figure 2-2

Scale

1:18,000

Date

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## 2.3 Construction Management

### 2.3.1 Introduction

The appointed contractors for the construction phase of the Proposed Project will be required to comply with this CEMP and any revisions made to this document throughout the construction phase. An overview of the anticipated Construction Methodologies is provided below.

### 2.3.2 Overview of the Proposed Construction Methodology

The EIAR for the Proposed Project includes construction methodologies for various elements of work to be undertaken as part of the project. These construction methodologies are reproduced in the following sub-sections but will be superseded by an appointed contractor's construction method statements, which will form part of the CEMP. The contractor's construction method statements will be prepared to take account of the detailed engineering, geotechnical and drainage design which will be prepared prior to commencement of construction and all requirements of this CEMP.

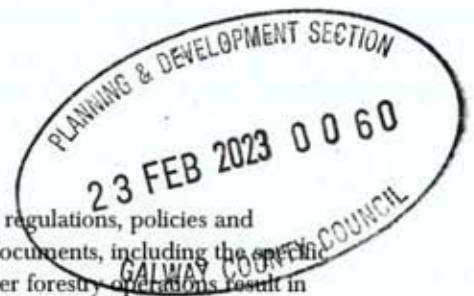
The proposed anticipated construction methodology is summarised under the following main headings:

- Forest Service Best Practice
- Floating Road/Build On-Top Road Construction
- Tree Felling
- Tree Planting
- Seeding Methodology
- Tree Protection
- Bog Restoration
- Site Drainage
- Temporary Watercourse Crossings
- Vegetation Control/Invasive Species Management

#### 2.3.2.1 Forest Service Best Practice

Forestry operations will conform to current best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte and DAFM guidance documents, including the specific guidelines listed below, to ensure that felling, planting, seeding and other forestry operations result in minimal potential negative impacts to the receiving environment.

- Forestry Standards Manual (Forest Service, 2015)
- Environmental Requirements for Afforestation (Forest Service, 2016a)
- Land Types for Afforestation (Forest Service, 2016b)
- Forest Protection Guidelines (Forest Service, 2002)
- Forest Operations and Water Protection Guidelines (Coillte, 2013)
- Forestry and Water Quality Guidelines (Forest Service, 2000b)
- Forestry and the Landscape Guidelines (Forest Service, 2000c)
- Forestry and Archaeology Guidelines (Forest Service, 2000d)
- Forest Biodiversity Guidelines (Forest Service, 2000e)
- Forests and Water, Achieving Objectives under Ireland's River Basin Management Plan 2018-2021 (DAFM, 2018)
- Coillte Planting Guideline SOP
- A Guide to Forest Tree Species Selection and Silviculture in Ireland (Horgan et al., 2003)
- Management Guidelines for Ireland's Native Woodlands. Jointly published by the National Parks & Wildlife Service (Cross and Collins, 2017)
- Native Woodland Scheme Framework (Forest Service, 2018)
- Code of Best Forest Practice (Forest Service, 2000)





- Standards for Felling and Reforestation (Forest Service, 2019)

### 2.3.2.2 Built on Top Embankment Roads (Floating Roads)

The proposed forestry road extensions in the north and south of the site will be constructed as floating roads over peat. Floating roads minimise impact on the peat, particularly peat hydrology, and significantly reduce the volumes of peat requiring management as there is no excavation required and no peat arisings are generated. On embankment roads, the natural vegetation is left untouched as it contributes to the bearing strength of the site. Trees growing on the road line should be felled close to ground level and stumps left *in situ*. Where available, closely spaced, felled poles (delimbed trees), covered with brash can be spread across the formation base width to help load distribution.

The following methodology includes procedures that are to be included in the construction to minimise any adverse impact on peat stability:

- Prior to commencing floating road construction movement monitoring posts will be installed in areas where the peat depth is greater than three metres.
- Trees growing on the road line will be felled close to ground level and stumps left *in situ*.
- Base geogrid to be laid directly onto the existing peat surface along the line of the road in accordance with geogrid provider's requirements.
- Road construction to be in accordance with appropriate design from the designer.
- The typical make-up of the new floated access road is 500 to 750mm of selected granular fill with 2 no. layers of geogrid.
- Stone delivered to the floating road construction shall be end-tipped onto the constructed floating road. Direct tipping of stone on to the peat shall not be carried out.
- To avoid excessive impact loading on the peat due to concentrated end-tipping all stone delivered to the floating road shall be tipped over onto at least a ten metres length of constructed floating road.
- Where it is not possible to end-tip over a 10m length of constructed floating road then dumpers delivering stone to the floating road shall carry a reduced stone load (not greater than half full) until such time as end-tipping can be carried out over a ten metre length of constructed floating road.
- Following end-tipping a suitable bull-dozer or excavator shall be employed to spread and place the tipped stone over the base geogrid along the line of the road.
- A final surface layer shall be placed over the floating road, as per design requirements, to provide a road profile.
- The surface profile should be maintained as settlement proceeds, preferably by the re-distribution of existing formation material rather than by the addition of further material.

### 2.3.2.3 Tree Felling

#### 2.3.2.3.1 Conventional Machine Harvesting

The felling of standing trees in the harvest blocks (HB) will be undertaken by a timber harvesting machine. Extraction of the logs to the forest road will be carried out using a forwarder machine. Both the harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines. Furthermore, these machines will traverse the site along specified routes ("racks"), over brash mats comprised of deposited branches, off-cuts from tree stems and tops of trees. This is to distribute machine weight and to provide further soil protection from compaction, rutting and erosion. Timber will be stacked by the forwarder at points (loading bays) along the forest road, for subsequent collection by haulage trucks and onward transportation by road to the customer for processing.

As it fells trees and progresses into the harvest block (HB), the harvester will collect the brash produced by the felling and delimbing of individual trees, and place it in front of the machine, in advance of it moving further forward along the rack. These brash mats will also be used by the forwarder, as it will remain on the racks as it traverses the site. Both machines may travel over the same section of the rack



several times. Therefore, racks will be monitored and fresh brash will be gathered by the forwarder and applied to racks to ensure that they remain effective, as required. The harvester machine will cut standing trees within the HB using a combined chainsaw and grapple (referred to as a 'harvester head') located at the end of a hydraulic boom. This head fells each tree and then strips (or 'delimbs') the stem of branches. The merchantable timber will be cross cut into sawlog and pulpwood log products of various lengths from 1.6 to 5.5m. These logs will be temporarily deposited on either side of the brash-protected rack from where the harvester will operate and over which, the harvester and the forwarder will travel as they traverse the HB. The racks will be generally parallel to each other throughout the HB, spaced so that the harvester can fell those trees within its reach on both sides. The location of racks will avoid any waterlogged and potentially sensitive areas of the site, and machines will not travel within the aquatic or other exclusion zones of this HB.

Felled timber along the racks will be subsequently collected by the forwarder, which uses a hydraulic grapple arm to load timber into a receiving bunk in its powered trailer. Once the bunk is full, the forwarder will traverse the site along a rack to a stacking bay located beside the forest road, where it will then offload the timber to form (or add to an existing) timber stack, for collection by the haulage truck. At no stage will the forwarder exceed its loading capacity and traverse overloaded across the site.

#### 2.3.2.3.2 **Fell to Waste**

The felling of standing trees in the harvest blocks (HB) will be undertaken by a timber harvesting machine. The process is the same as outlined in section 4.7.3.1 above, except only the harvester is involved and all felled trees are not extracted to roadside but are instead either left in the rack or on the forest floor. Fell to waste will occur in areas where the timber density is low and there is no merchantable timber and usually occurs where the trees are dead or dying.

#### 2.3.2.3.3 **Mulching Crop**

Mulching will occur on crops that are undeveloped or young and not large enough to be felled using a conventional forest harvester. Mulching typically breaks up the tree into small chips. Mulching machines can vary from tractor mounted attachments to flail heads mounted on a small excavator.

#### 2.3.2.4 **Tree Planting Methodology**

Planting will be carried out manually. The main forms of planting rooted material are set out below and a proposed planting schedule can be found in Section 4.5.2.2 of this document. A combination of all the planting methods described below may be used on the site as conditions dictate. All planting should be to root collar depth or slightly deeper, and trees should be firm and upright with their roots hanging vertically and well spread out.

#### 2.3.2.4.1 **Ground Preparation: Windrow, Scrap Mounding and Mounding**

After the timber harvesting operation is complete and prior to replanting, windrowing will be undertaken. In this operation a tracked excavator will gather together the brash (branches, stem off-cuts and tree tops), previously distributed along racks during the timber harvesting operation, into a series of linear rows distributed throughout the site. The purpose of windrowing is to provide a cleaner site for subsequent replanting.

Scrap mounding is the preferred cultivation method for the native woodland establishment, and it occurs when a tracked excavator will be used to create small mounds of soil. No additional drainage channels are installed. The mound creates a favourable planting site for young nursery trees by loosening compacted soil, removing excessive surface water and creating a raised planting position to lessen the effect of competing vegetation. These factors contribute to plant survival and the development of a stable and healthy forest into the future.



Mounding is similar to scrap mounding except that regular new drainage channels are installed at 10-12m intervals to improve site drainage. Similar to scrap mounding, the mound creates a favourable planting site for young nursery trees by loosening compacted soil, removing excessive surface water and creating a raised planting position to lessen the effect of competing vegetation, with the added benefits of additional drainage provided by the mound drains. As the establishment of new native woodland is targeting the areas with shallow peat depths, it is not envisaged that mounding will be extensively used.

Following the scrap mounding or mounding operation, replanting will be undertaken. Replanting will be an entirely manual operation; an opening will be made in the centre of each mound with a spade and the roots of the sapling placed in the opening. The loose soil will then be backed filled with the spade, ensuring that it is upright and straight and finally firmed in by foot around the plant.

#### 2.3.2.4.2 **Slit Planting**

The spade is used to make a vertical slit in the ground. The tree roots are carefully positioned into the slit by hand to ensure that roots are equally spaced in the vertical slit created. The slit is closed by foot and firmed up, ensuring the tree is vertical and upright. It is important to ensure that roots are not bent over, as this can lead to poor development, e.g. J-shaped root.

#### 2.3.2.4.3 **Angle Notch Planting: L notch or T notch**

A double slot is made using a suitable planting spade. The slots can either be "L" or "T" shaped and should be approx. 15cm deep as illustrated in Figure 4-8 below. The purpose of the double slot is to lift up the peat and create space to allow the roots to be distributed evenly. Once the tree has been positioned in the slot and the roots have been pushed in fully by hand, the plant is pulled up slightly to allow the roots to hang down to ensure the correct planting depth is achieved. The spade is subsequently removed and the soil is firmed with the ball of the foot. The angle notch planting methodology is illustrated in Figure 4-9, below.

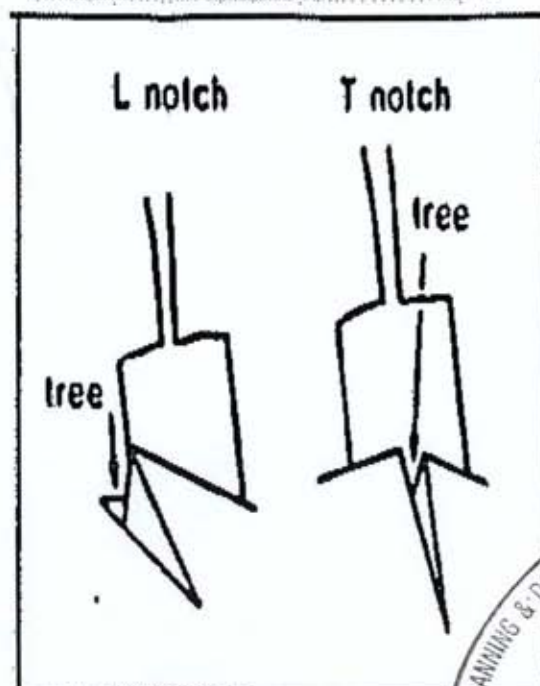


Figure 2-3 L" and "T" Planting Notches





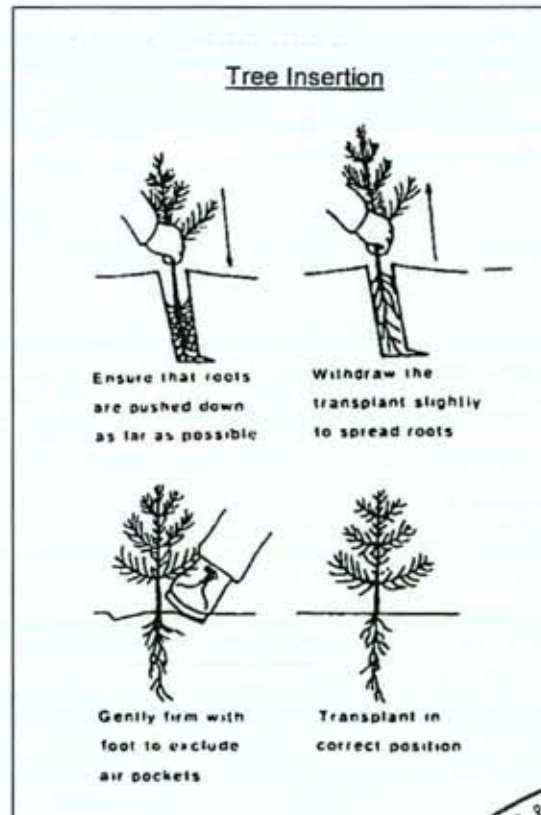


Figure 2-4 Angle Notch Planting Steps

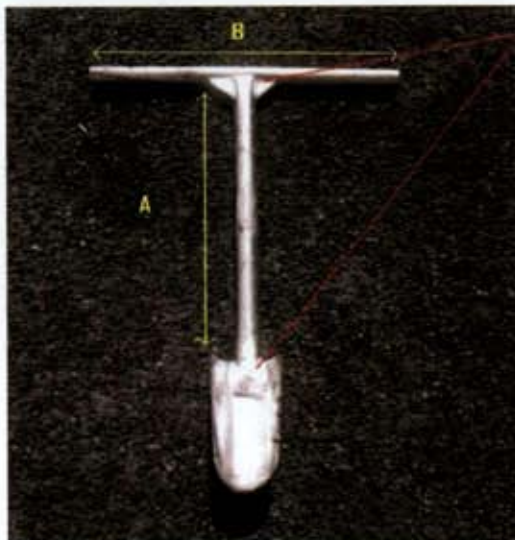


#### 2.3.2.4.4 Plug planting (semi-circular spade)

This planting method is appropriate for use on all peat soil types and can be used on mounded ground or when planting directly into the flat. Also, use of the semi-circular spade (Figure 4-10 below) is not confined to peats, it will work on any soils provided it is not too compact or stony. This technique is different to any other type of planting and its use should be demonstrated to planting staff. The methodology is illustrated in Plate 4-8.

The following methodology is used for plug planting with a semi-circular spade:

- > Identify planting position
- > Match spade size to plant size.
- > Hold spade at an angle to hips - hollow side facing operator
- > Tilt handle away from operator.
- > Insert spade into ground.
- > Swing through 180° in one movement.
- > Withdraw spade applying pressure at the same time so removing plug at an angle towards the operator.
- > Place plant in planting hole with straight back of stem against straight side of plug hole (to ensure straightness), ensuring no bent, crushed or folded roots.
- > Replace plug and hold plant while firming with sole of foot or toe.
- > Ensure plant is straight / Upright.
- > Test for firmness using thumb and middle finger.



Note; reinforced locations for extra strength.

Spades should be galvanised to prevent rust.

#### Average Dimensions

A: 55cm

B: 45cm

Figure 2-5 Semi-Circular Planting Spade



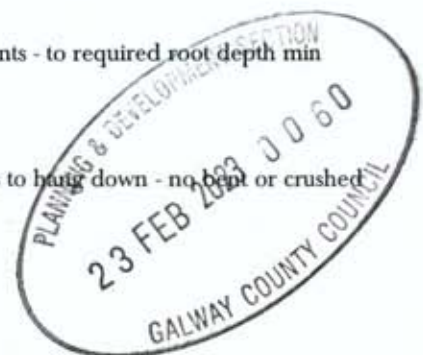
Plate 2-1 Plug Planting Methodology

### 2.3.2.4.5 Pit Planting

A spade is used to dig a hole and the tree roots placed in the centre. Soil is placed around the tree and firmed in, ensuring that it is upright and straight. This form of planting can be used in sensitive sites where no ground preparation has taken place. It may also be appropriate for steep slopes where other preparation methods may lead to sediment run off.

The following methodology is used for pit planting:

- > Identify planting position
- > Remove 7cm sod from top of pit
- > Open pit using minimum number of spade movements - to required root depth min 20cm X 20cm.
- > Ensure planting face is straight
- > Ensure soil loosening at bottom of pit
- > Place tree in pit against planting face and allow roots to hang down - no bent or crushed roots.
- > Back fill soil holding tree.
- > Pull plant up slightly and firm with sole of foot
- > Replace top sod inverted
- > Ensure correct planting depth is achieved
- > Ensure plant is straight and upright
- > Test for firmness using thumb and middle finger





- Ensure straight lines using pole lines if necessary
- Ensure correct spacing

### 2.3.2.5 Seeding Methodology

Seeding will be carried out in either April/May or autumn/early winter (October to November) depending on site conditions. Seeding will be accomplished either manually with a handheld broadcast seeder or by tractor/quad and fertiliser spinner. The spread method will depend on the size and accessibility of the seeding location. Only native or local seed sources will be used in the project. Seed will be mixed with appropriately sized sand/grit at the rates provided in Table 4-6. The purpose of the grit is to aid in the distribution of the seed and to reduce seed losses due to wind. The proposed seeding rates are summarised in Table 4-6 below.

Table 2-1 Proposed Seeding Rates

Species	Target Density (Seeds/Ha)	Viable seed per Kg	Seed Quantity per Ha (Kg)	Grit (Kg/Ha)
Downy birch	1,000,000	826,000	1.21	12.11
Alder	44,000	212,000	0.21	1.04
Rowan	93,000	345,000	0.27	0.54
Scots pine	4,100	127,000	0.03	0.16
Totals	1,141,100	1,510,000	1.72	13.85



### 2.3.2.6 Tree Protection

Fencing will be installed around the native woodland establishment areas to protect planted broadleaves. A detail drawing of the proposed deer proof fencing is included in Appendix 4-1 of this EIAR.

Tree shelters may also be used instead of fencing to protect planted broadleaves in some areas. The project will use newly developed shelters which biodegrade much faster than normal shelters. A specification sheet for the proposed tree shelters is provided as Appendix 4-4 of this EIAR.

### 2.3.2.7 Bog Restoration Techniques

The proposed bog restoration will follow current best practices and include the techniques recommended in NatureScot's Peatland ACTION - Technical Compendium - Restoration - 4 Artificial Drains and 8 Forest to Bog Restoration (NatureScot, 2022) and best practice established from other bog restoration projects in Ireland. The proposed restoration techniques that will be implemented are discussed below.

#### 2.3.2.7.1 Furrow and Drain Blocking

The blocking of bog drains is a very important part of the bog restoration process. In designing effective drain blocking measures the following factors should be considered jointly:

- Blocking materials,
- Slope and size of the drains,
- Ground conditions and accessibility, and
- Cost

The most common drain blocking materials are the onsite peat dams and plastic sheet piling. Recent bog restoration projects are leaning more towards using peat dams, with the use of plastic dams becoming less common. Wooden dams (planks, plywood & timber logs) will also be used. Peat dams are generally effective but less so where the depth of solid peat at the base of the drain is  $\leq 50$  cm. It would be difficult to get sufficient materials for peat dams in this case. Plastic dam would be the most appropriate option in this case. The longevity of wooden dams is a concern, because the dams become leaky over time. Wooden dams will be used in smaller ditches which, over time, will become blocked due to natural sedimentation and re-filling. Therefore, the decomposition of the wooden dams are not a problem in these locations.

Current best practice indicates that slope and sizes of the drains are the deciding factors in selecting the types of dam material as well as the spacing of the dams within the drains. Peat dams are usually only effective on a shallow slope ( $<10^\circ$  gradient). Steeper drains could pose significant erosion risks, therefore where this gradient is exceeded plastic dams should be used. Peat dams are also not suitable for the large size drains (drain cross sectional area  $> 0.7$  m<sup>2</sup>). The ideal dam spacing depends on drain slope and volume of water; drains on steeper slopes and with greater catchment area draining into them should be blocked at shorter intervals as the volume of flows within the drains will be higher. Dams will be installed such that the water level in the bog is maintained within 10 cm of the bog surface which means that a dam is required for each 10 cm fall in the bog surface. The dam spacing should be between 7.5 m and 20 m on flatter ground, however, the frequency of dams should increase to between 5 m and 7 m on steeper ground.

The construction machinery access to some of the site areas may be problematic due to presence of saturated soils and steep topography. This will have to be assessed on a site-by-site basis by the contractor and land managers as appropriate. Where the machinery accessibility is limited, or deemed unsafe, plastic dams are more suitable as they are easier to install manually.

Based on the above considerations, it is recommended to first block the main collector artificial drains which are located nearest the natural watercourse followed by the strategic placement of silt traps to trap suspended solids in runoff from the work areas. The restoration works will then commence upslope at the highest point and work systematically downslope towards the natural watercourse. The natural watercourses which drain the site naturally will not be blocked. Ideally, where suitable the site should also be reprofiled as this is the most effective restoration method that does not require as much drain blocking. However, if reprofiling is not suitable, then continue to block the drains systematically back from the watercourse. It is also recommended to block the smaller artificial drains (mainly furrows) in the moderately flat areas using the felled timber logs (i.e. log dams). Roadside drains will not be blocked in order to avoid flooding, but they will have regular silt traps installed. All outlets of the collector/peripheral drains (excluding relevant watercourses) to adjacent natural watercourses will be blocked. A layout plan of the proposed drain blocking measures using log, peat and plastic dams, across the entire site area are provided Appendix 4-5. Final decisions on the method of drain blocking will be made based on observable conditions in the field. The following drain blocking methods will be used as appropriate.

### 2.3.2.7.2 Plastic Dams

This section provides the proposed methodology for the installation of plastic piling dams on ditches less than 1.5m wide. Plastic piling is light, versatile and slots together on site. If properly installed, plastic piling dams can form a good watertight seal that will last for decades. Generally, dams are placed at between 10 and 20 metre intervals on flat ground but would need to be closer depending on slope. It is expected that the final water level from the lower dam will rise half-way up the upstream dam. The final



water level should be at the peat surface or no more than 20cm below the surface. Plastic piling dams will typically be used in the following situations:

- On ground that is too soft/saturated and/or unstable to allow safe machine access.
- On portions of the site that are inaccessible by machine.
- On active drains that are partially infilled with vegetation but hold too much water to allow effective installation of peat dams.

The methodology for the installation of plastic dams is provided below:

1. *Hammer piles in starting from the centre of the ditch*
2. *Position the longest pile in the deepest part of the drain. Use a sharp spade to pre-cut the outline of each pile in the surface vegetation. Push the pile into the peat using your own weight.*
3. *Ensure that the piles remain vertical as it will become increasingly difficult to insert piles if they lean in any direction. Using a mel, drive the pile deeper and when firm guide adjacent piles into their cams, repeating the process. Continue until all piles are firm in the peat.*
4. *Piling will only create a good seal if driven into at least 75cm of solid peat, usually found below the 50 cm of soft peat in the base of the ditch.*
5. *The top edge of the pile may require shielding from the metal of the mel. Several methods are used but the most effective is a timber batten resting on the pile.*
6. *Shape the dam to form a gently curving upstream 'C' shape at the ends. This shape assists dam strength and increases the amount of water retained. The dam must extend well into the banks of the ditch. A rule of thumb is the extensions into the bank on each side, equal the width of the ditch. On slopes, the wings of the dam can be angled down the slope to re-distribute water over the site and reduce pressure behind the dam.*
7. *Continue driving the piles starting at the centre, until all piles are approximately 30cm above bank level. Leave the dam to fill with water, as the last firming is best done with water behind the dam to lubricate the piles. Finally, hammer the piles until they are more than 10cm above the ground surface. The dams should not be visible above the vegetation. If they are too high after installation, then the tops of the piling should be trimmed off to make sure that the dams blend in with the landscape. Do not hammer the piles below the ground level, as this reduces the amount of water held and spread across the adjacent peatland.*

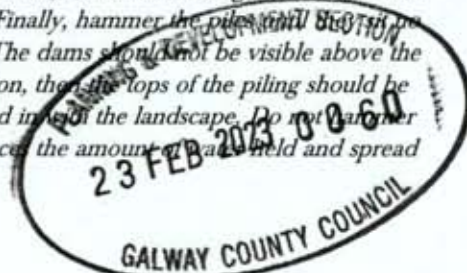
### 2.3.2.7.3 Peat Dams

#### Installing peat dams using an excavator

Construction of peat dams will be achieved using a low ground pressure excavator with a moderate to long bucket reach to reduce movements. It is important that operators are experienced at working on deep peat and are made aware of the specific risks one may encounter. It is a good idea for the operator to walk the site before bringing the machine on. On wet parts of the bog, the excavator may need to travel on bog mats.

Method:

1. *Remove the turfs from the surface of the in ditch borrow pit and the dam location, and place to the side.*
2. *Clean out/push away from dam location the unconsolidated peat and debris.*
3. *Key the dam into the sides of the ditch, with a 0.5 to 1 metre indent on both sides.*
4. *Use consolidated peat from an in-ditch borrow pit upstream to create the dam. Avoid leaving steep sided or deep holes behind the dam, as these can be dangerous to livestock.*



5. *On a sloping site, shallow swales that extend out (or on one side) from behind the dam can be added to re-direct water from the ditch line.*
6. *Regularly compact the peat in the dam with the back of the excavator bucket to ensure an effective seal.*
7. *When the dam is 50cm above the surface place the vegetation turfs across the top of the dam (and in swale if present) and press with the bucket to ensure good contact between the turf and the peat.*

#### 2.3.2.7.4 Log Dams

Log dams will be used to block smaller ditches in low gradient areas. The ditches over time will be blocked due to natural sedimentation and re-filling, therefore the decomposition of the wooden dam is not a problem.

##### Installing log dams using an excavator

Construction of log dams will be achieved using a low ground pressure excavator (or equivalent) with a moderate to long bucket reach to reduce movements. It is important that operators are experienced at working on deep peat and are made aware of the specific onsite risks that may be encountered. It is a good idea for the operator to walk the site before bringing the machine on. On wet parts of the bog, the excavator may need to travel on bog mats.

##### Method:

1. *Logs should be a minimum of 20cm in diameter*
2. *Logs should be cut to approximately 3 times the width of the ditch to be blocked.*
3. *Use excavator to move create a shallow depression on either side of ditch. Place excavated material to the side.*
4. *Log should be placed across the ditch at right angles and seated in the depression.*
5. *The excavator bucket should be used to push the log into the bed to the ditch ensure good contact between the log and the peat.*
6. *Cover the ends of the logs with the previously excavated material and tap down with excavator bucket.*

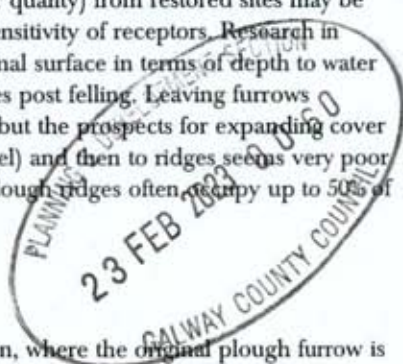
#### 2.3.2.7.5 Surface Smoothing and Re-Profiling

Bog restoration techniques should reverse the impact of the ridge-furrow cultivation process which will continue to persist post-felling, to assist with the raising of the bog water table within the underlying peat mass, where bog functioning may have been damaged by the afforestation process. Methods comprising various surface smoothing techniques, and furrow/drain blocking or a combination of both have been shown to have good potential in accelerating the restoration of blanket bog habitat. A variety of techniques can be used depending on the site conditions.

The key principles are 'enough and no more' and aim to minimise compaction and disturbance. Mitigation measures to manage surface run-off (particularly water quality) from restored sites may be necessary, depending on the method used, site conditions and sensitivity of receptors. Research in Scotland shows a clear differentiation between ridge-furrow original surface in terms of depth to water table and therefore rates of recolonisation of specialist bog species post felling. Leaving furrows untreated may allow bog vegetation to colonise them over time, but the prospects for expanding cover of bog vegetation onto plough shoulders (the original surface level) and then to ridges seems very poor and the restoration process would likely take a very long time. Plough ridges often occupy up to 50% of the plantation surface area.

#### 2.3.2.7.6 Drain Reprofiling

Reprofiling the site is a relatively new approach to bog restoration, where the original plough furrow is levelled off, thus effectively removing the need to block the drain. Blocking main drains and plough





furrows alone is unlikely to raise the bog water table sufficiently in many situations. Reprofilng and levelling of the plough ridges can speed up the process and lead to more effective rewetting and recolonisation of bog vegetation across the whole surface. Infilling of main drains can use stumps, root plates, drain spoil and excavated peat as required to create the seal. In combination with damming, drain reprofiling is used to further reduce water loss down artificial drains, to remove incised drain features which can be dangerous for livestock and game, and to reduce erosion of exposed peat sides of drains. It makes the profile of the drains shallower which can make them safer for animals and humans.

Reprofilng should always be carried out in conjunction with damming to reduce waterflow down a drain. There are three general techniques:

1. *Pushing the edges of the drain into the drain line using the back of the excavator bucket.*
2. *Re-turving the drain line, which is more like hag reprofiling, when turves are stretched from the drain side into the drain channel, with borrowed turves used from either side of the drain if required.*
3. *Use of a rollerball.*



Plate 2-2 Examples of blocked and reprofiled drains on peatland in Scotland

#### 2.3.2.7.7 Stump Flipping and Surface Smoothing

Stump flipping is the process of carefully prying the root plate of a stump from the bog surface and turning it upside down in the adjacent furrow. Using a low ground pressure excavator with a toothed bucket the root plate of a stump is carefully dug up, flipped and pushed into the adjacent furrow. The plough ridges are then reprofiled by sliding the ridge material carefully into the furrows with the excavator bucket, ensuring any vegetation remains on top.

#### 2.3.2.7.8 Stump Mulching

Stump mulching involves the removal of the stump using a stump removal attachment fitted to an excavator. This process is similar to stump removal, except that the stump is mulched instead of flipped before the ground is reprofiled.

#### 2.3.2.7.9 Cross-Tracking

Once the surface of the ground has been reprofiled as described above, the excavator then tracks over the bog surface and the weight of the machine will compress the surface (cross tracking). The aim is to level the ground and retain as much of the bog vegetation as possible and not to bring up sub-surface peat to the surface which takes longer to revegetate. The use of a low ground pressure excavator with wide tracks is recommended (1.9m or greater) as it more effective and it will reduce compaction of the site.

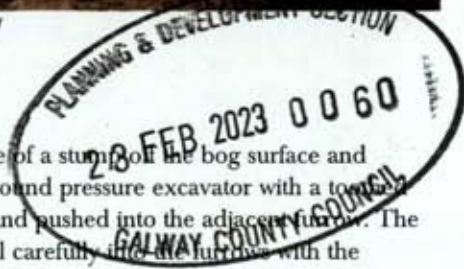






Plate 2.3 Recently ground smoothed peat on a site in Scotland (May 2022)

### 2.3.2.8 Site Drainage

No new site drainage is proposed as part of this project. Existing drains will be blocked as part of the overall restoration plan for the site. During felling and bog restoration operations silt traps will be strategically installed at the outfalls of existing forestry drains. These traps will provide surface water settlement for runoff from the restoration areas to prevent sediment from entering watercourses. In addition, the proposed blocking of the drain network at each felling block will also provide attenuation. A detailed Surface Water Management Plan for the Proposed Project is provided as Appendix 4.5 of this EIAR.

### 2.3.2.9 Temporary Watercourse Crossing Methodology

There is a total of 4 no. temporary watercourse crossing points required along the proposed forestry road extensions. All proposed crossings are considered minor considering the flow and volume of water identified therein during the site investigation in November 2022. All watercourse crossings will comprise of standard log bridge crossings typically used in normal forest operations.

The temporary log bridge crossings will be installed as follows:

- a) Ensure the construction of the bridge will not impede the water flow.
- b) Ensure bridging is able to cope with increases in water flow resulting from above normal rainfall.
- c) Ensure the movement of fish is not impeded
- d) Ensure crossings points are constructed at right angles to the water flow.
- e) On sloping ground temporary bridges should be constructed in a 'Hump Back' fashion. This will reduce the risk of silt flowing down the wheel ruts and directly entering the stream/drain being crossed. However, it is of primary importance to ensure that there is no run-off to the stream on either side of the bridge. Consequently, any run-off must be diverted onto a buffer strip at a suitable point well above the stream.
- f) The machine track leading to the bridge must be very well brashed and tracks should not be allowed to develop that can act as water channels down to the stream (see examples in Plate 4-11 below)
- g) Bridging logs should be placed from the top of bank to the top of the opposite bank to ensure that the natural stream banks are left intact.

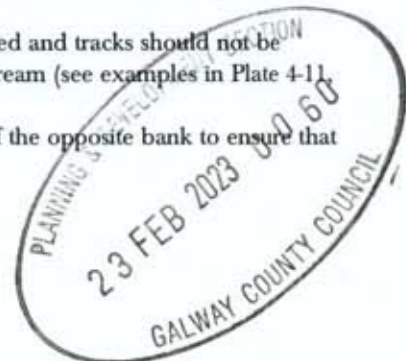






Plate 2-4 Examples of temporary stream crossings

### 2.3.2.10 Vegetation Control/Invasive Species

As part of the ecological survey, the location and extent of invasive species and conifer regeneration were mapped. *Rhododendron* is the main invasive species. Currently there are well established clumps and regeneration is evident to varying degrees across the property. The threat of it spreading is very significant in the coming years, particularly in areas that are cleared of trees, and where the peat is disturbed. A targeted management plan for the control of *Rhododendron* regeneration is required in combination with felling, bog restoration and the establishment of native woodland. *Rhododendron* removal will be conducted using best current practice including injecting stems with glyphosate, manual removal with brush-cutters, manual chainsaw felling and stump treatment using 'Ecoplugs'.

Invasive species control will be carried out each year for at least five years following the completion of restoration works. *Rhododendron* removal will be informed by current best practices, and it will be conducted using a combination of the methods described below. If necessary, other methods may also be used at the discretion of the site forester.

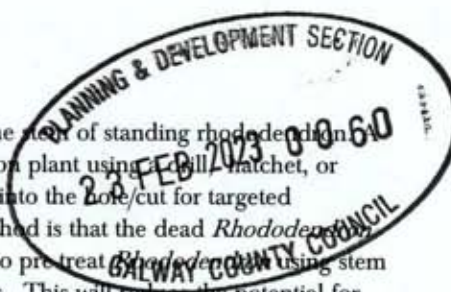
#### 2.3.2.10.1 Stem Injection

This method involves the application of herbicide directly into the stem of standing *Rhododendron*. A hole or cut will be made in the stem of the standing *Rhododendron* plant using a bill, hatchet, or chainsaw. A suitable glyphosate based herbicide will be inserted into the hole/cut for targeted application and translocation to the root. A drawback of this method is that the dead *Rhododendron* may persist in situ for 10-15 years. For this reason it is proposed to pre-treat *Rhododendron* using stem injection in all proposed harvest blocks prior to felling operations. This will reduce the potential for *Rhododendron* spread as a result of the fragment dispersal of live material during the felling process. Dead *Rhododendron* will be cleared as part of the felling process.

#### 2.3.2.10.2 Cut and Stump Treatment

Bushes above 1.3 m in height will be cut to ground level using a chainsaw/brush-cutter. Material will be heaped in stacks or chipped, away from cut stumps. Avoid burying branches where they will have the opportunity to re-sprout.

Stump treatment will occur directly after cutting. Given the sensitivity of the site stumps shall generally be treated using Ecoplugs as described in Section 4.8.11.3, below. For small stems (<3cm in diameter) the freshly cut stumps shall be treated by direct application of glyphosate (using 20% solution of water, marker dye, and glyphosate). This should be applied using a paint brush within 30 minutes of cutting and no later than 12 hours after cutting. Ecoplugs will be used on large diameter stumps.



Any necessary work near aquatic zones must be carried out by an operator who has PA6 (AW) certification and using only a product that has been designated for aquatic use i.e. Roundup Biactive or Ecoplugs. Spraying/stump treatment operations to take place only in dry weather.

#### 23.2.10.3 **Spot spray**

Regrowth of rhododendron and any emergent seedlings (under 1.3 m) will be spot sprayed with a suitable glyphosate product and surfactant (preferably within 2 years after the initial operation). This should be carried out between early May to late September. This will be applied by qualified contractors and utilising an appropriate product mix (refer to product labels).

Any necessary work adjacent to aquatic zones needs to be carried out by operators with PA6 (AW) certification and using only a product that is designated for aquatic use, e.g. Roundup Biactive. Spot spraying must be undertaken during dry, windless conditions.

#### 23.2.10.4 **Use of Ecoplugs**

Stump treatment will occur directly after cutting. In sensitive sections of the site, or adjacent to watercourses stumps shall be treated using Ecoplugs. The stump will be drilled to insert the Ecoplug, i.e. 1 Ecoplug (as Ecoplug Max® 4 (680 g kg<sup>-1</sup> glyphosate); Monsanto, 2009) per 3cm of stump diameter. Equivalent of 0.068 g a.i. glyphosate per cm of stump diameter.

Any necessary work near aquatic zones must be carried out by an operator who has PA6 (AW) certification and using only product that has been designated for aquatic use.





3.

## ENVIRONMENTAL MANAGEMENT

3.1

### Introduction

This CEMP has been prepared and presented as a standalone document and includes all sediment and erosion control measures required to complete the proposed restoration project. The sediment and erosion control proposals will be developed further prior to the commencement of construction; however, any such improvements will be in line with the principles set out here and will also be in full compliance with the planning consent and mitigation measures as presented in the EIAR, NIS, and all other relevant planning documents. The following sections give an overview of the sediment and erosion control measures, dust and noise control measures and a waste management plan for the site.

3.2

### Environmental Setbacks

The Interim Standards for Felling & Reforestation (DAFM, 2019) stipulates the application of setbacks for various environmental receptors, based on the stipulations under the Environmental Requirements for Afforestation (DAFM, 2016). Setbacks will be implemented along watercourses present on site. There will be no mechanical disturbance of these setbacks, nor will they be entered into by any machinery or receive any pesticide or herbicide application.

A minimum 10m setback will be established along all aquatic zones and 5m setbacks will be established along all relevant watercourses and water hotspots. The setback distance will be increased with increasing slope per the Table 2.2 below. Greater set back distances will be employed at particularly sensitive hotspots on a case-by-case basis.



*Table 3-1 Environmental Setback Distances*

Average slope leading to the aquatic zone		Buffer zone width on either side of the aquatic zone	Buffer zone width for highly erodible soils
Moderate	(0 – 15%)	10m	15m
Steep	(15 – 30%)	15m	20m
Very Steep	(>30%)	20m	25m

There will be no fuels or fertiliser stored within 50m of an aquatic zone or within 20m of all other water features.

### 3.3

## Protecting Water Quality

Prior to the commencement of any subsequent construction activities, the necessary mitigation measures will be put in place to ensure that no silt laden water runoff generated at the site will flow to nearby watercourses thus ensuring the protection of surface water during the works. This will involve delineating between drainage systems. Surface waters will be managed to ensure the minimisation of run off from areas where ground disturbing activities occur does not result in silt laden water entering the existing drainage network. Stockpiled material will be located a minimum of 50m from watercourses and if deemed necessary will be surrounded by silt fencing where there is a risk of run-off during prolonged periods of rainfall.

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

### 3.3.1

## Prevention Pollution Control Measures

The following measures will be put in place to prevent the transportation of silt laden water or pollutants from entering the wider environments including watercourses:

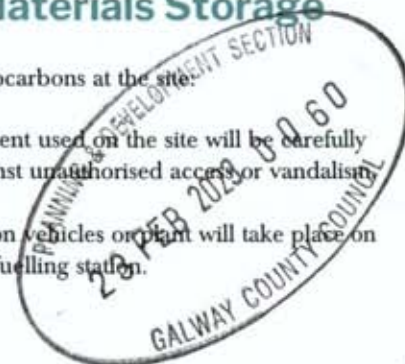
- All temporary fills or stockpiles will be damped down or covered with polyethylene sheeting as required to avoid sediment release associated with heavy rainfall.
- Prior to the commencement of earthworks, silt fencing will be strategically erected along adjacent watercourses. All diesel or petrol pumps required onsite will be operated within bunded units.
- The design, construction and maintenance of an on-site drainage system specified in the ELAR will prevent sediment related pollution of nearby surface waters. Where possible, earthworks will not be carried out during periods of heavy rainfall.

### 3.3.2

## Refuelling, Fuel and Hazardous Materials Storage

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

- Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism and provided with spill containment.
- Minimal refuelling or maintenance of construction vehicles or plant will take place on site. Off-site refuelling will occur at a controlled fuelling station.

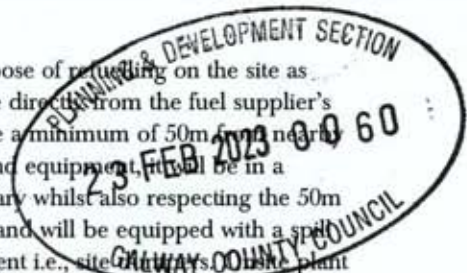




- On-site refuelling will take place by direct refuelling from the delivery truck or from fuel stored within a bunded fuel tank. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.
- Vehicles will never be left unattended during refuelling. Only dedicated trained and competent personnel will carry out refuelling operations and plant refuelling procedures shall be detailed in the contractor's method statements.
- The small volume of fuels, lubricants and hydraulic fluids that will be stored at the site will be placed within an appropriately bunded storage area within the boundaries of the Proposed Project site.
- Storage bunds/trays, if required will be constructed of an impermeable membrane (HDPC Plastic) and will have the adequate capacity to contain the volume of the liquids contained therein, if a leak/spillage does occur from one of the storage vessels.
- The storage area will contain a small bund lined with an impermeable membrane in order to prevent any contamination of the surrounding soils and vegetation.
- All site plant will be inspected at the beginning of each day prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. All major repair and maintenance operations will take place off site.
- Potential impacts caused by spillages etc. during the construction phase will be reduced by keeping spill kits and other appropriate equipment on-site.
- Spill kits will be used to deal with any accidental spillage in and outside the refuelling area. Spill control measures as outlined fully in the CEMP accompanying this application will be adhered to.
- Harmful materials such as fuels/chemicals shall be stored on site for use in connection with the construction works only. These materials shall be stored in a safe and controlled manner such as within an appropriately sized bunded unit. Fuels/chemicals will be stored for periods in line with the manufacturer's recommendations.

### 3.3.3 Spill Control Measures

It is not proposed to store any large volumes of oils/fuels for the purpose of refuelling on the site as refuelling of large plant equipment will be carried out where possible directly from the fuel supplier's delivery truck at a designated refuelling location on site which will be a minimum of 50m from nearby watercourses. Where fuel is required to be stored for smaller plant and equipment, it will be in a bunded fuel tank will be stored within the confines of the site boundary whilst also respecting the 50m watercourse buffer. It will be positioned on an impermeable surface and will be equipped with a spill kit. This bunded fuel tank will be used for smaller plant and equipment i.e., site office, site plant (excavator) will be refuelled by an external contractor who will call to site as required. Road vehicles will not be refuelled at the site.



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

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate, such as drains or watercourses.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.



- Notify the applicant immediately giving information on the location, type and extent of the spill so that they can take appropriate action and further investigate the incident to ensure it has been contained adequately.
- External consultants will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The applicant will notify the appropriate regulatory body such as Galway County Council if deemed necessary.

3.4

## Dust Control

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

- Site roads/site entrances with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- 
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind.
- Water misting will be utilised on-site as required to mitigate dust in dry weather conditions.
- The transport of road stone or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary.
- Daily inspection of construction sites to examine dust measures and their effectiveness.

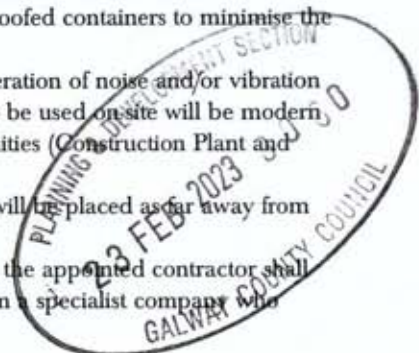
3.5

## Noise and Vibration Control

The operation of plant and machinery, including construction vehicles, is a source of potential noise impacts. Noise levels shall be kept below those levels specified in the National Roads Authority – “Guidelines for the Treatment of Noise and Vibration in National Roads Schemes” or additional limits as imposed by Galway County Council. The Proposed Projects shall comply with BS 5228 “Noise Control on Construction and open sites Part 1: Code of practice for basic information and procedures for noise control.” During the works, any plant introduced to the site will not be excessively noisy. Exhaust and silencer systems on plant will be maintained in a satisfactory condition and operating correctly at all times. Defective silencers will be immediately replaced.

Proposed measures to control noise include:

- Construction equipment for use outdoors shall comply with the European Communities Regulations– Noise Emission by Equipment for Use Outdoors – SI 241 - 2006.
- Diesel generators, if utilised will be enclosed in sound proofed containers to minimise the potential for noise impacts.
- Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All construction plant and equipment to be used on site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations.
- Plant with the potential of generating noise or vibration will be placed as far away from sensitive properties as permitted by site constraints.
- If work activities have the potential to result in vibration, the appointed contractor shall source vibration monitoring equipment immediately from a specialist company who specialise in monitoring equipment.





- Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works.
- Compressors, if utilised will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machines, which are used intermittently, will be shut down during those periods when they are not in use.
- Training will be provided by the Site Management to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation.

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

The proposed construction working hours will be limited where possible to daylight working hours Monday to Saturday. Construction will not take place at the site on Sundays or Public Holidays.

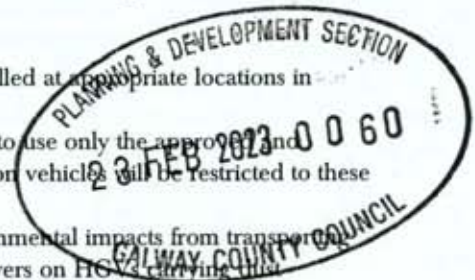
Deviation from these times will only be allowed in exceptional circumstances and when other relevant third parties i.e., nearby homeowners have been notified and have agreed to works taking place during such time periods.

### 3.6

## Traffic Management Proposals

The proposed traffic management measures to be adopted during the construction works are summarised below. Please note that this is not an exhaustive list, and it will be updated accordingly by the appointed contractor in consultation with the local authority.

- Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction site access locations.
- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes.
- Appropriate vehicles will be used to minimise environmental impacts from transport of construction material, for example the use of dust covers on HGVs carrying this producing material.
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds.
- Parking of site vehicles will be managed and will not be permitted on public road, unless proposed within a designated area that is subject to traffic management measures and agreed with Galway County Council.
- All vehicles will be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol or diesel. All scheduled maintenance will not be carried out on the public highway.



The site will be accessed exclusively from the existing entrance at the south-east corner of the site boundary. As Coillte operate an open forest policy, the site will remain accessible to users. However, as works progress, parts of the site will be closed off to the public, where high impact works are occurring. Appropriate signage to be used to inform the public.

### 3.7

## Invasive Species Management

During the multidisciplinary surveys carried out by MKO, a search for Invasive Alien Species (IAS), with a focus on those listed under the Third Schedule of the European Communities (Birds and Natural



Habitats) Regulations 2011 (S.I. No. 477 of 2011) was conducted by a suitably qualified ecologist. Invasive species were found on site as part of site investigations and walkovers (See section 6.5.1.9 of Chapter 6 of this EIAR). A detailed invasive species management plan will be prepared. The treatment and control of invasive alien species will follow guidelines issued by the National Roads Authority – The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads (NRA 2010) and the Environment Agency (2013) – The Knotweed Code of Practice: Managing Japanese Knotweed on Development Sites (Version 3, amended in 2013). To prevent the introduction of any invasive species to the site best practice control methods are summarised in the following sections

### 3.7.1

## Site Management

An invasive species management plan will be prepared, and the following measures will be adopted. Careful preparation of the site and planning of the works is crucial to successfully prevent the introduction of invasive species. The following list of guidelines, which is not exhaustive, shall be followed by all on-site personnel. Only those who have been inducted into biosecurity measures on-site may enter the contaminated zones within the works areas.

### 3.7.2

## Establishing Good Site Hygiene

- A risk assessment and method statement must be provided by the Contractor prior to commencing works.
- A suitably qualified ecologist, forester, or equivalent will be on site to monitor and oversee the implementation of invasive species remedial works.

Plant and equipment which is operated within an area for the management of materials in contaminated areas will be decontaminated prior to relocating to a different works area. The decontamination procedures will take account of the following:

- Personnel may only clean down if they are familiar with the plant and rhizome material and can readily identify it.
- Decontamination will only occur within designated wash-down areas.
- Vehicles will be cleaned using stiff-haired brush and pressure washers, paying special attention to any areas that might retain rhizomes e.g., wheel treads and arches.
- All run-offs will be isolated and treated as contaminated material. This will be disposed of in already contaminated areas.

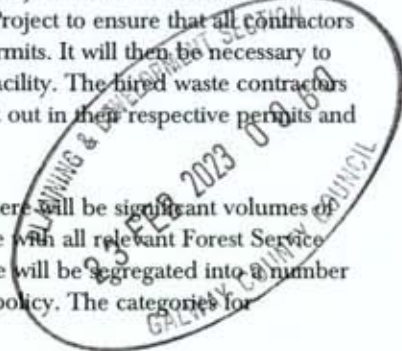
### 3.8

## Waste Management

The Waste Management Acts 1996 to 2011 and its subsequent amendments provide for measures to improve performance in relation to waste management, recycling and recovery. The Act also provides a regulatory framework for meeting higher environmental standards set out by other national and EU legislation.

The Act requires that any waste related activity must have all necessary licenses and authorisations. It will be the duty of the Waste Manager on the site of the Proposed Project to ensure that all contractors hired to remove waste from the site have valid Waste Collection Permits. It will then be necessary to ensure that the waste is delivered to a licensed or permitted waste facility. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits and authorisations.

Given the nature of the Proposed Project it is not anticipated that there will be significant volumes of waste generated. Forestry activities will be carried out in accordance with all relevant Forest Service guidance and regulations. Minor amounts of waste generated on site will be segregated into a number of waste categories in accordance with a general waste segregation policy. The categories for







segregation will include timber, plastics, and metals. This material will be removed by authorised waste collection contractors for recycling and recovery at various licensed facilities.



4.

## ENVIRONMENTAL MANAGEMENT, IMPLEMENTATION AND EMERGENCY RESPONSE

4.1

### Environmental Manager

The Coillte Site Manager will also fulfil the role of Environmental Manager for the project. In general, this Environmental Manager will maintain responsibility for monitoring the works and Contractors/Sub-contractors from an environmental perspective. The Environmental Manager will act as the regulatory interface on environmental matters by liaising with Galway County Council and other statutory bodies as required. The duties of the appointed Environmental Manager are summarised as follows:

- Maintain and update as required the Construction Phase CEMP and supporting environmental documentation and review/approval of contractor method statements.
- Undertake inspections and reviews to ensure the works are carried out in compliance with the CEMP.
- Monitor the implementation of the CEMP, particularly all proposed/required Environmental Monitoring.
- Advise site management/contractor/sub-contractors on:
  - Prevention of environmental pollution and improvement to existing working methods.
  - Changes in legislation and legal requirements affecting the environment.
  - Suitability and use of plant, equipment and materials to prevent pollution.
  - Environmentally sound methods of working and systems to identify environmental hazards.
- Ensure proper mitigation measures are initiated and adhered to during the construction phase.
- Liaise with Project Team and present the findings of site audits/inspections that are completed.
- Ensure adequate arrangements are in place for site personnel to identify potential environmental incidents.
- Ensure that details of environmental incidents are communicated in a timely manner to the relevant regulatory authorities, initially by phone and followed up as soon as is practicable by email.
- Support the investigation of incidents of significant, potential or actual environmental damage, and ensure corrective actions are carried out, recommend means to prevent recurrence and communicate incident findings to relevant parties.
- Identify environmental training requirements and arrange relevant training for all levels of site-based staff/workers.





## 4.2 Emergency Response Plan

### 4.2.1 Emergency Response

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

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

### 4.2.2 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Manager will lead the emergency response which makes him responsible for activating and coordinating the emergency response procedure. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 4-1. In a situation where the Site Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command outlined in Figure 4-1. This will be updated throughout the various stages of the project.

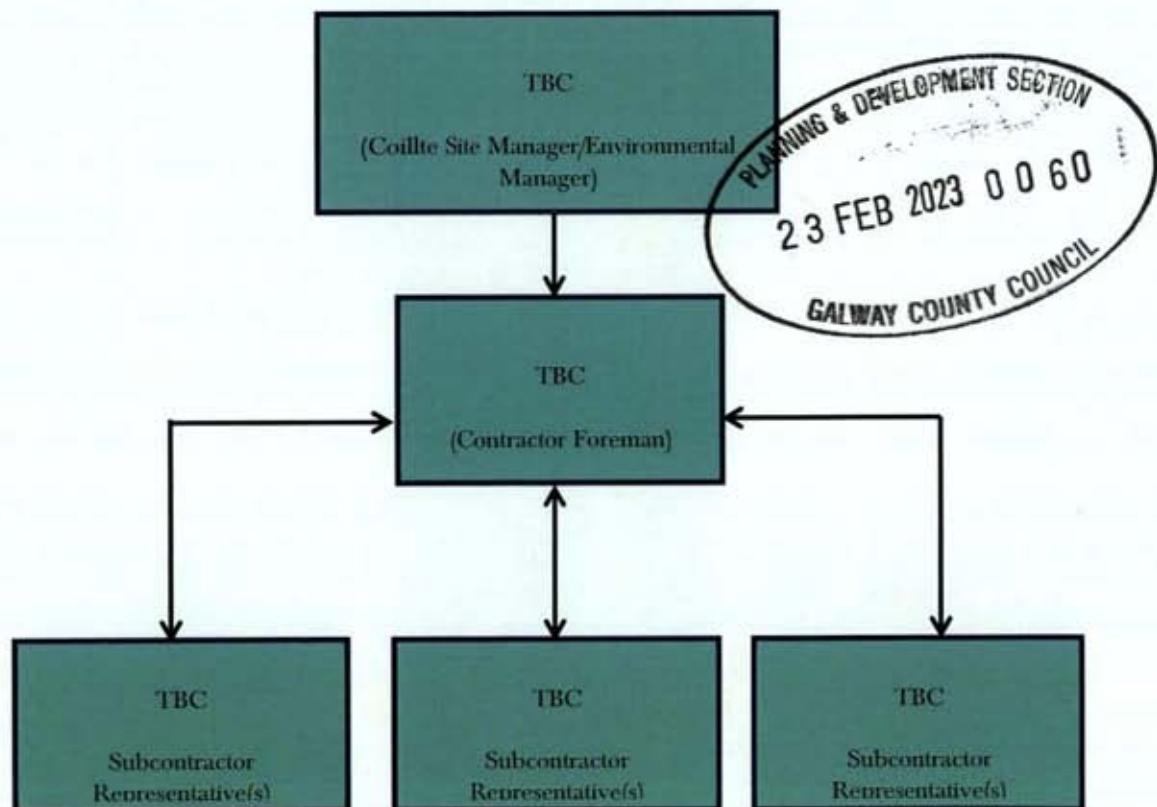


Figure 4-1 Emergency Response Procedure Chain of Command

## 4.2.3 Initial Steps

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

Table 4-1 Hazard Associated with Potential Emergency Situations

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

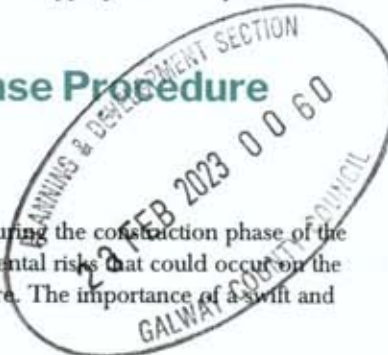
In the event of an emergency situation associated with, but not restricted to, the hazards outlined in Table 4-1 the Site Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, that have been injured or are at risk of injury.
- Where necessary, sound the emergency siren/foghorn that activates an emergency evacuation on the site.
- Make safe the area if possible and ensure that there no identifiable risk exists with regard to dealing with the situation e.g., if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone if he is unable to do so. If delegating the task, ensure that they follow the procedures for contacting the emergency services as set out in Section 4.2.6.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g., cordon off an area where an incident associated with electrical issues has occurred.
- Contact any regulatory body or service provider as required e.g., ESB Networks the numbers for which as provided in Section 4.2.6.
- Contact the next of kin of any injured personnel where appropriate. The procedure for this is outlined in Section 4.2.6.

## 4.2.4 Environmental Emergency Response Procedure

## 4.2.4.1 Spill Control Measures

Every effort will be made to prevent an environmental incident during the construction phase of the Proposed Project. Oil/fuel spillages are one of the main environmental risks that could occur on the proposed site which will require an emergency response procedure. The importance of a swift and





effective response in the event of such an incident occurring cannot be over emphasised. The following procedures should be followed in the event of such an incident.

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

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

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

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

## 4.2.5 Contacting the Emergency Services

### 4.2.5.1 Emergency Communications Procedure

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

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

- Know the location of the emergency and the number you are calling from. This may be asked and answered a couple of times but do not get frustrated. Even though many emergencies call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for some reason you are disconnected, at least emergency crews will know where to go and how to call you back.
- Wait for the call-taker to ask questions, then answer clearly and calmly. If you are in danger of assault, the dispatcher or call-taker will still need you to answer quietly, mostly "yes" and "no" questions.
- If you reach a recorded message, listen to what it says. If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.
- Let the call-taker guide the conversation. He or she is typing the information into a computer and may seem to be taking forever. There is a good chance, however, that emergency services are already being sent while you are still on the line.
- Follow all directions. In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly, and ask for clarification if you do not understand.
- Keep your eyes open. You may be asked to describe victims, suspects, vehicles, or other parts of the scene.
- Do not hang up the call until directed to do so by the call taker.

All staff members will know the address and location of the site as it may be necessary to liaise with the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services.

#### 4.2.5.2 Contact Details

Table 4-2 Emergency Contacts

Hazard	Emergency Situation
Emergency Services – Ambulance, Fire, Gardai	999/112
Doctor – Elm Tree, Clifden	09530930
Hospital – Clifden District Hospital, Clifden	09521301
ESB Emergency Services	1850 372 999
Bórd Gais Emergency	1850 20 50 50
Gardai – Clifden Garda Station	09522500
Health and Safety Coordinator - Health & Safety Services	TBC
Health and Safety Authority	1890 289 389
Project Supervisor Construction Stage (PSCS): TBC	TBC
Project Supervisor Design Stage (PSDS): TBC	TBC





Hazard	Emergency Situation
Client – Coillte	0818 367 378

#### 4.2.5.3 Procedure for Personnel Tracking

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

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

#### 4.2.5.4 Induction Checklist

Table 4-3 provides a list of items highlighted in this ERP which must be included or obtained during the mandatory site induction of all personnel that will work on the site. This will be updated throughout the various stages of the project.

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

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



### 4.3 Water Quality and Monitoring

#### 4.3.1 Pre-Construction Baseline Monitoring

Baseline water quality field testing and laboratory analysis will be undertaken where required prior to commencement of felling and construction at the site. The baseline monitoring programme will be subject to agreement with Galway County Council.

Analysis will be for a range of parameters with relevant regulatory limits along with Environmental Quality Standards (EQSs) and sampling will be undertaken for each watercourse e.g. at SW1, SW2, SW3 & SW4 as outlined in Figure 9-2 of the EIAR on a monthly basis.

Pre-commencement baseline sampling will be completed on at least two occasions, and these should coincide with low flow and high flow stream conditions. The high flow sampling event will be undertaken after a period of sustained rainfall, and the low flow event will be undertaken after a dry spell.

#### 4.3.2 Construction Phase Monitoring

##### 4.3.2.1 Daily Visual Inspections

Daily visual inspections of drains and outfalls will be performed during the construction period to ensure suspended solids are not entering streams and rivers on site, to identify any obstructions to channels and to allow appropriate maintenance of the drainage regime. Should the suspended solids levels measured during construction be higher than the background levels, the source will be identified and additional mitigation measures implemented.

The following periodic inspection regime will be implemented:

Daily general visual inspections of site operations and inspections of watercourses within the active works area will be carried out by the Environmental Manager or a suitably qualified and competent person as delegated by the Environmental Manager;

Inspections to include all elements of drainage infrastructure to ensure the system is operating correctly. Any changes, such as discolouration, odour, oily sheen or litter will be noted and corrective action implemented. High risk locations such as settlement ponds will be inspected daily. Daily inspections checks will be completed on plant and equipment, and materials such as straw bales or oil absorbent materials which may need replacement;

Event based inspections by the Environmental Manager as follows:

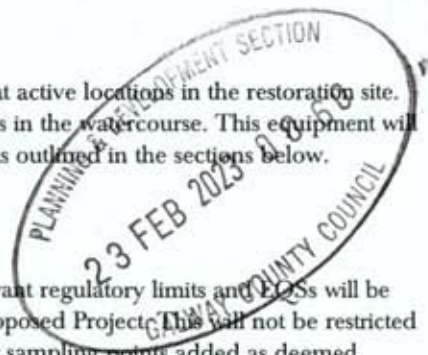
- >10 mm/hr (i.e. high intensity localised rainfall event);
- >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
- Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week).
- Monthly site inspections by the / Environmental Manager or a suitably qualified and competent person during construction phase;
- Quarterly site inspections by the / Environmental Manager after construction for a period of one year following the construction phase; and,
- A written record will be maintained or available on-site within this Construction Environmental Management Plan (CEMP) which will be maintained on-site during the construction phase.

##### 4.3.2.2 Continuous Turbidity Monitoring

Turbidity monitors or sondes can be installed where required at active locations in the restoration site. The sondes will provide continuous readings for turbidity levels in the watercourse. This equipment will be supplemented by daily visual monitoring at their locations as outlined in the sections below.

##### 4.3.2.3 Monthly Laboratory Analysis

Baseline laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken as per the water monitoring programme for the Proposed Project. This will not be restricted to just these locations around the development site with further sampling points added as deemed necessary by the Environmental Manager in consultation with the Site Manager.





#### 4.3.2.4 Monitoring Parameters

The analytical determinants of the chemical water monitoring programme (including limits of detection and frequency of analysis) will be as per S.I. No. 272 of 2009 European Communities Environmental Objectives (Surface Waters) Regulations and European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009. The likely suite of determinants will include:

- > pH (field measured)
- > Electrical Conductivity (field measured)
- > Temperature (field measured)
- > Dissolved Oxygen (field measured)
- > Total Phosphorus
- > Chloride
- > Nitrate
- > Nitrite
- > Total Nitrogen
- > Ortho-Phosphate
- > Ammonia N
- > Biochemical Oxygen Demand
- > Total Suspended Solids
- > Turbidity
- > Dissolved organic carbon
- > Heavy metals

#### 4.3.3 Surface Water Monitoring Reporting

Visual inspection and laboratory analysis results of water quality monitoring shall assist in determining the requirements for any necessary improvements in drainage controls and pollution prevention measures implemented on site.

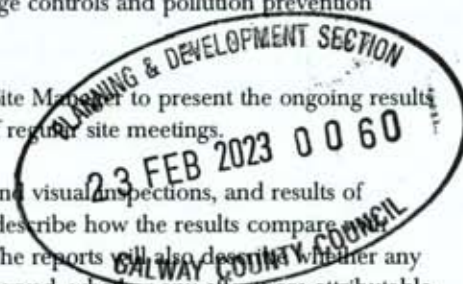
It will be the responsibility of the Environmental Manager/Site Manager to present the ongoing results of water quality and weather monitoring at or in advance of regular site meetings.

Reports on water quality will consider all field monitoring and visual inspections, and results of laboratory analysis completed for that period. Reports will describe how the results compare to baseline data as well as previous reports on water quality. The reports will also describe whether any deterioration or improvement in water quality has been observed, whether any effects are attributable to construction activities and what remedial measures or corrective actions have been implemented.

#### 4.3.4 Post Construction Monitoring

##### 4.3.4.1 Monthly Laboratory Analysis Sampling

Monthly sampling for laboratory analysis for a range of parameters adopted during pre-commencement and construction phases will continue for six months after construction. The Project Hydrologist will monitor and advise on the readings being received from the testing laboratory.



5.

## MITIGATION PROPOSALS

The Mitigation Measures which will be implemented are presented in this section of the CEMP. The CEMP will be finalised subsequent to whatever permission is granted by Galway County Council and will be updated prior to construction to include, *inter alia*, any additional requirements pursuant to relevant planning conditions imposed.

By presenting the mitigation proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during future phases of the project.

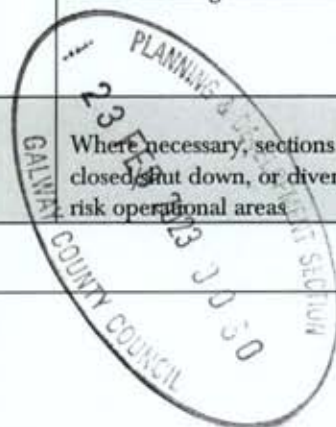




Table 5-1 Mitigation Measures for the Pre-commencement and Construction Phases

Ref. No.	Mitigation Measure	Audit Result	Action Required
<b>Pre-Commencement Phase</b>			
MM1	All site activities will be provided for in an Environmental Management Plan, prepared prior to the commencement of any operations onsite. The environmental management plan will set out all measures necessary to ensure works are carried out in accordance with the mitigation measures set out in the EIAR and will set out the monitoring and inspections procedures and frequencies.		
MM2	A designated environmental manager will oversee the site works and implementation of the Environmental Management Plan and provide on-site advice on the mitigation measures as necessary to ensure the project proceeds as intended. The level, detail and frequency of reporting expected from the environmental manager for the project manager, and any Authorities or other Agencies, will be agreed by all parties prior to commencement of construction, and may be further adjusted as required during the course of the project.		
MM3	The works programme for the groundworks part of the construction phase of the project will also take account of weather forecasts and predicted rainfall in particular.		
MM4	<p>Baseline water quality field testing and laboratory analysis will be undertaken where required prior to commencement of felling and construction at the site. The baseline monitoring programme will be subject to agreement with Galway County Council.</p> <p>Analysis will be for a range of parameters with relevant regulatory limits along with Environmental Quality Standards (EQSs) and sampling will be undertaken on a monthly basis.</p> <p>Additional baseline sampling will be completed on at least two occasions, and these should coincide with low flow and high flow stream conditions during on-site operations. The high flow sampling event</p>		

Ref. No.	Mitigation Measure	Audit Result	Action Required
	will be undertaken after a period of sustained rainfall, and the low flow event will be undertaken after a prolonged dry spell.		
MM5	A pre-construction invasive species survey will be undertaken a part of the proposed project. This will provide updated data in advance of any construction given the intervention time period between the original survey work and any future grant of permission/ construction. Measures will be in place to prevent the spread of these species during the proposed works. In addition, all necessary precautions will be taken to prevent the introduction of invasive species to the site from elsewhere.		
MM6	Pre-treatment of Rhododendron will be undertaken on all harvest blocks in the year prior to harvesting.		
MM7	The procedures for the implementation of the mitigation measures outlined in the EMP and their effectiveness and completion is typically audited by way of an Environmental Management Plan Audit Report. The EMP Audit Report effectively lists all mitigation measures prescribed in any of the planning documentation and any further mitigation measures proposed during the detailed design stage and this allows all mitigation measures to be audited on a systematic and regular basis.		
MM8	Where necessary, sections of trails or waymarked areas, recreation areas and car parks will be closed, shut down, or diversions put in place, to prevent members of the public from trespassing in high risk operational areas.		
Construction Phase			





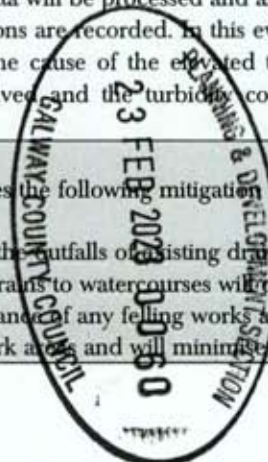
Ref. No.	Mitigation Measure	Audit Result	Action Required
<b>Construction Management</b>			
MM9	<p>On-site refuelling of machinery will be carried out at dedicated refuelling locations using a mobile double skinned fuel bowser. The fuel bowser, a double-axle custom-built refuelling trailer will be re-filled off site and will be towed around the site by a 4x4 jeep to where machinery is located. It is not practical for all machinery to travel back to a single refuelling point, given the size of the excavators, etc. that will be used during construction. The 4x4 jeep will also carry fuel absorbent material and pads in the event of any accidental spillages. The fuel bowser will be parked on a level area in the construction compound when not in use.</p> <p>Only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays, spill kits and fuel absorbent mats will be used during all refuelling operations.</p>		
MM10	<ul style="list-style-type: none"> <li>&gt; Signage will be erected prior to commencement of operations</li> <li>&gt; General safety signage and prohibitive notices will be erected wherever necessary</li> </ul>		
MM11	Public roadways and rights of way will be kept free of debris and will be restored to pre-operations conditions.		
MM12	All Forest Service guidelines and Health and Safety legislation will be adhered to during all forestry-related activities. In addition to this, all Coillte Health and Safety guidelines will also be adhered to.		
<b>Water Quality and Drainage</b>			



Ref. No.	Mitigation Measure	Audit Result	Action Required																
MM13	<p>The setback distance from sensitive hydrological features ensures that adequate room is maintained for the proposed mitigation measures (discussed below) which are properly installed and operate effectively. The buffer/setback zone will:</p> <ul style="list-style-type: none"> <li>➤ Avoid physical damage (river/stream banks and river/stream beds) to watercourses and the associated release of sediment;</li> <li>➤ Avoid and minimise peat/soil disturbance and compaction within close proximity to surface watercourses;</li> <li>➤ Avoid and minimise the entry of suspended sediment from works into watercourses; and,</li> <li>➤ Avoid and minimise the entry of suspended sediment from the drainage system into watercourses, achieved in part by ending drain discharge outside the buffer zone and allowing percolation across the vegetation within the buffer zone.</li> </ul> <table border="1"> <thead> <tr> <th colspan="2">Average slope leading to the aquatic zone</th><th>Buffer zone width on either side of the aquatic zone</th><th>Buffer zone width for highly erodible soils</th></tr> </thead> <tbody> <tr> <td>Moderate</td><td>(0 – 15%)</td><td>10m</td><td>15m</td></tr> <tr> <td>Steep</td><td>(15 – 30%)</td><td>15m</td><td>20m</td></tr> <tr> <td>Very Steep</td><td>(&gt;30%)</td><td>20m</td><td>25m</td></tr> </tbody> </table>	Average slope leading to the aquatic zone		Buffer zone width on either side of the aquatic zone	Buffer zone width for highly erodible soils	Moderate	(0 – 15%)	10m	15m	Steep	(15 – 30%)	15m	20m	Very Steep	(>30%)	20m	25m		
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MM14	All machinery will be operated by suitably qualified personnel;																		
MM15	Checking and maintenance of roads and culverts will be on-going through any felling operations. No tracking of vehicle through watercourses will occur, as vehicles will use road infrastructure and existing watercourse crossing points. Where possible, existing drains will not be disturbed during felling works;																		



Ref. No.	Mitigation Measure	Audit Result	Action Required
MM16	<p>Machines will traverse the site along specified off-road routes (referred to as racks);</p> <ul style="list-style-type: none"> <li>&gt; The location of racks will be chosen to avoid waterlogged and potentially sensitive areas;</li> <li>&gt; Brash mats will be placed on the racks to support the vehicles on soft ground, reducing peat and mineral soil disturbance and erosion, and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place when they become heavily used and worn. Provision should be made for brash mats along all off-road routes, to protect the soil from compaction and rutting.</li> </ul>		
MM17	Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall.		
MM18	Continuous turbidity monitoring of surface watercourse downstream of the proposed work areas will be completed throughout the construction phase of the Proposed Project. This will be completed with the installation of automated water quality probes which will record turbidity and other hydrochemical parameters at regular intervals (typically every 15 minutes). These probes will be installed in natural watercourses downstream of work areas. The data will be processed and analysed at regular intervals and work will cease if elevated turbidity concentrations are recorded. In this event, all upstream silt traps and drainage routes will be inspected to identify the cause of the elevated turbidity levels. Work will not recommence until any issues have been resolved and the turbidity concentrations have returned to background concentrations.		
MM19	<p>To avoid potential sedimentation of watercourses the following mitigation measures will be employed:</p> <ul style="list-style-type: none"> <li>&gt; Silt fences will be installed at the outfalls of existing drains downstream of works areas. No direct discharge of such drains to watercourses will occur. Sediment traps and silt fences will be installed in advance of any felling work and will provide surface water settlement for runoff from work areas and will minimise sediment from entering</li> </ul>		



Ref. No.	Mitigation Measure	Audit Result	Action Required
	<p>downstream watercourses. Accumulated sediment will be carefully disposed of at pre-selected peat disposal areas. Where possible, all new silt traps will be constructed on even ground and not on sloping ground;</p> <ul style="list-style-type: none"> <li>➤ In areas particularly sensitive to erosion it will be necessary to install double or triple sediment traps and increase buffer zone width. These measures will be reviewed on site during construction;</li> <li>➤ Double silt fencing will also be installed down slope of felling areas which are located in close proximity to streams and/or relevant watercourses;</li> <li>➤ Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded;</li> </ul>		
MM20	Timber will be stacked in dry areas, and outside watercourse buffer zones. Straw bales and check dams to be emplaced on the down gradient side of timber storage/processing sites;		
MM21	Works will be carried out during periods of no, or low rainfall, in order to minimise entrainment of exposed sediment in surface water runoff;		
MM22	Refuelling or maintenance of machinery will not occur within 50m of an aquatic zone or within 20m of any other hydrological feature. Mobile bowser, drip kits, qualified personnel will be used where refuelling is required;		
MM23	Branches, logs or debris will not be allowed to build up in aquatic zones. All such material will be removed when harvesting operations have been completed, but care will be taken to avoid removing natural debris deflectors.		
MM24	Silt traps will be strategically placed down-gradient of felling areas within forestry drains near streams. The main purpose of the silt traps and drain blocking is to slow water flow, increase residence time, and allow settling of silt in a controlled manner.		



Ref. No.	Mitigation Measure	Audit Result	Action Required
MM25	<p>The works programme for the felling operations will also take account of weather forecasts and predicted rainfall in particular. Operations will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.</p> <p>The following forecasting systems are available and will be used on a daily/weekly basis, as required, to allow site staff to direct proposed and planned construction activities:</p> <ul style="list-style-type: none"> <li>➤ General Forecasts: Available on a national, regional and county level from the Met Éireann website (<a href="http://www.met.ie/forecasts">www.met.ie/forecasts</a>). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates;</li> <li>➤ MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale;</li> <li>➤ 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events;</li> <li>➤ Rainfall Radar Images: Images covering the entire country are freely available from the Met Éireann website (<a href="http://www.met.ie/latest/rainfall_radar.asp">www.met.ie/latest/rainfall_radar.asp</a>). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive; and,</li> <li>➤ Consultancy Service: Met Éireann provide a 24-hour telephone consultancy service. The forecaster will provide an interpretation of weather data and give the best available forecast for the area of interest.</li> </ul> <p>Using the safe threshold rainfall values will allow planned works to be safely executed (from a water quality perspective) in the event of forecasting an impending high rainfall intensity event. Works will be suspended if forecasting suggests any of the following is likely to occur:</p> <ul style="list-style-type: none"> <li>➤ &gt;10 mm/hr (i.e. high intensity local rainfall events);</li> <li>➤ &gt;25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,</li> </ul>		



Ref. No.	Mitigation Measure	Audit Result	Action Required
	<ul style="list-style-type: none"> <li>&gt; half monthly average rainfall in any 7 days.</li> </ul>		
MM26	<p>The following items shall be carried out during inspection pre-felling and after:</p> <ul style="list-style-type: none"> <li>&gt; Communication with tree felling operatives in advance to determine whether any areas have been reported where there is unusual water logging or bogging of machines;</li> <li>&gt; Inspection of all areas reported as having unusual ground conditions;</li> <li>&gt; Inspection of main drainage ditches and outfalls. During pre-felling inspections, the main drainage ditches shall be identified. Ideally the pre-felling inspection shall be carried out during rainfall;</li> <li>&gt; Following tree felling all main drains shall be inspected to ensure that they are functioning;</li> <li>&gt; Extraction tracks near drains need to be broken up and diversion channels created to ensure that water in the tracks spreads out over the adjoining ground;</li> <li>&gt; Culverts on drains exiting the site will be unblocked; and,</li> <li>&gt; All accumulated silt will be removed from drains and culverts, and silt traps, and removed material will be deposited away from watercourses to ensure that it will not be carried back into the trap or stream during subsequent rainfall events.</li> </ul>		
MM27	<p>In order to protect downstream surface water quality during bog restoration works the following measures will be implemented:</p> <ul style="list-style-type: none"> <li>&gt; Use of aquatic buffer zones, including at least a 10m buffer to watercourses, and a 5m buffer to relevant watercourses;</li> <li>&gt; All machinery operators will be experienced;</li> <li>&gt; The project site will be walked before a machine goes off-road;</li> <li>&gt; Bog mats will be used where the excavator is required to travel over wet ground;</li> <li>&gt; A low ground pressure excavator with wide tracks (1.9m or greater recommended) will be used to reduce compaction of the peat and subsoils;</li> </ul>		

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Ref. No.	Mitigation Measure	Audit Result	Action Required
	<ul style="list-style-type: none"> <li>➤ Silt traps will be installed at the outfalls of existing forestry drains downstream of the work areas before any works commence. These traps will prevent sediment from entering downstream watercourses;</li> <li>➤ Silt fences will be inspected and maintained for the duration of the works;</li> <li>➤ Works will be suspended or scaled back prior to and following periods of heavy, intense and/or prolonged rainfall;</li> <li>➤ During drain blocking the main collector drains nearest the natural watercourse will be blocked first and silt traps will be inserted as required. Then the operators shall begin work at the highest point and work systematically downslope towards the watercourse; and,</li> <li>➤ All outlets of the collector and peripheral drains will be blocked.</li> </ul>		
MM28	<p>During invasive species management operations the following mitigation measures are proposed:</p> <ul style="list-style-type: none"> <li>➤ Any spraying or stump treatment shall only take place in dry weather;</li> <li>➤ Any work near aquatic zones will be completed by an operator who has PA6 (AW) certification;</li> <li>➤ Any work near aquatic zones must be completed using a product designated from aquatic use such as ecoplugs or bioactive roundup; and,</li> <li>➤ Spraying will be undertaken during dry calm weather.</li> </ul>		
MM29	<ul style="list-style-type: none"> <li>➤ All site access roads (existing and proposed) to be used as part of the Proposed Project will be capped with clean stone to minimize the risk of sediment runoff to surface waters;</li> <li>➤ The upgrade of the existing road network will only be completed where necessary using local stone compatible with on-site geological materials;</li> <li>➤ The proposed new roads will be designed as "Build On-Top Embankment Roads" in accordance with the COFORD (2013) Forest Road Manual - Guidelines for the Design, Construction and Management of Forest Roads;</li> <li>➤ These proposed new floating roads will minimize effect on peat hydrology and water quality as there is no requirement for excavation and/or spoil generation. The</li> </ul>		

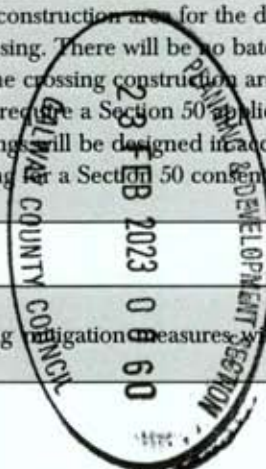
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Ref. No.	Mitigation Measure	Audit Result	Action Required
	proposed roads will be created on the existing ground surface by adding crushed stone on a geogrid material.		
MM30	<p>In order to avoid accidental spillage of hydrocarbons the following mitigation measures will be implemented:</p> <ul style="list-style-type: none"> <li>➤ There will be no fuels or herbicides stored within 50m of an aquatic zone or within 20m of all other water features.</li> <li>➤ All road-going vehicles will be refuelled off-site;</li> <li>➤ On-site re-fuelling will be required for forestry and excavator machinery which will be based continuously at the project site;</li> <li>➤ The on-site refuelling will be undertaken using a mobile double skinned bowser with spill kits kept on site for accidental leakages or spillages;</li> <li>➤ The bowser will be refilled off-site and towed around the site by a 4x4 jeep;</li> <li>➤ The 4x4 jeep will carry absorbent materials and pads in the event of accidental spillages;</li> <li>➤ The fuel bowser will be parked on a level area on the construction compound when not in use;</li> <li>➤ Only designated trained operatives will be authorised to refuel plant on-site;</li> <li>➤ Taps, nozzles or valves associated with refuelling equipment will be fitted with a lock system;</li> <li>➤ Fuels storage on-site will be minimised. All storage areas will be bunded appropriately for the duration of the construction phase. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses and pipes will be contained within the bunded area;</li> <li>➤ Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage;</li> <li>➤ The plant used during construction will be regularly inspected for leaks and fitness for purpose; and,</li> <li>➤ An emergency response plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan (which is contained in Appendix 4.3).</li> </ul>		

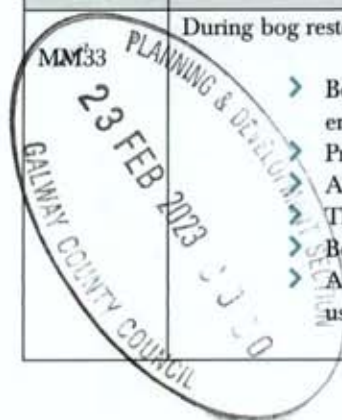
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Ref. No.	Mitigation Measure	Audit Result	Action Required
MM31	<p>The following mitigation measures are proposed:</p> <ul style="list-style-type: none"> <li>➤ All proposed crossings will comprise of standard log-bridge crossings which are typically used in normal forestry operations;</li> <li>➤ Any guidance / mitigation measures proposed by the OPW or Inland Fisheries Ireland will be incorporated into the design of the proposed crossings;</li> <li>➤ As a further precaution, near stream construction work, will only be carried out during the period permitted by Inland Fisheries Ireland for in-stream works according to the Eastern Regional Fisheries Board (2016) guidance document "Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters", i.e., May to September inclusive. This time period coincides with the period of lowest expected rainfall, and therefore minimum runoff rates. This will minimise the risk of entrainment of suspended sediment in surface water runoff, and transport via this pathway to surface watercourses (any deviation from this will be done in discussion with the IFI);</li> <li>➤ During the stream crossing construction work double row silt fences will be emplaced immediately down-gradient of the construction area for the duration of the construction of the bog-bridge crossing. There will be no batching or storage of cement allowed in the vicinity of the crossing construction areas; and,</li> <li>➤ All new river/stream crossings will require a Section 50 application (Arterial Drainage Act, 1945). The river/stream crossings will be designed in accordance with OPW guidelines/requirements on applying for a Section 50 consent.</li> </ul>		
<b>Peat, Soils and Bedrock</b>			
MM32	To avoid erosion of subsoils and peat, the following mitigation measures will be implemented during felling operations:		

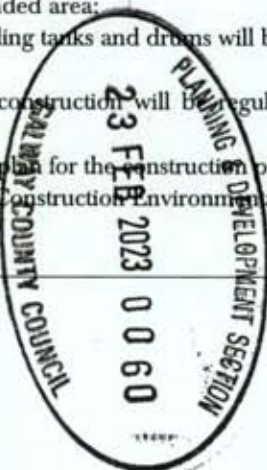


Ref. No.	Mitigation Measure	Audit Result	Action Required
	<ul style="list-style-type: none"> <li>➤ Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff;</li> <li>➤ The harvester and the forwarder are designed specifically for the forest environment and are low ground pressure machines;</li> <li>➤ All machinery will be operated by suitably qualified personnel;</li> <li>➤ These machines will traverse the site along specified off-road routes (referred to as racks or brash mats);</li> <li>➤ Brash mats will be placed on all routes off the forest road to support the vehicles on soft ground, reducing peat and mineral soil disturbance, compaction and erosion and avoiding the formation of rutted areas, in which surface water ponding can occur;</li> <li>➤ As felling progresses, the harvester will collect brash produced by the felling and place it in front of the machine before it advances forward along the rack;</li> <li>➤ The condition of the racks will be continually monitored and fresh brash will be applied when the brash mat becomes heavily used and worn, ensuring that the mat remains effective throughout the construction phase; and,</li> <li>➤ The location of racks will be chosen to avoid wet and potentially sensitive areas.</li> </ul>		
MM33	<p>During bog restoration works the following mitigations measures are proposed:</p> <ul style="list-style-type: none"> <li>➤ Before any works are completed silt fences will be installed to limit the movement of entrained sediment in surface water runoff;</li> <li>➤ Proposed off-road routes will be walked in advance of any machinery;</li> <li>➤ All machinery operators will be experienced;</li> <li>➤ The site will be walked before a machine goes off-road;</li> <li>➤ Bog mats will be used where the excavator is required to travel over wet ground; and,</li> <li>➤ A low ground pressure excavator with wide tracks (1.9m or greater recommended) will be used to reduce compaction of the peat and subsoils.</li> </ul>		





Ref. No.	Mitigation Measure	Audit Result	Action Required
MM34	All proposed planting works at the project site will be in accordance with the best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte and DAFM guidance documents to ensure minimal potential negative effects on the local peat, soil and subsoil environment.		
MM35	<p>In order to avoid accidental spillage of hydrocarbons the following mitigation measures will be implemented:</p> <ul style="list-style-type: none"> <li>➤ All road-going vehicles will be refuelled off-site;</li> <li>➤ On-site re-fuelling will be required for forestry and excavator machinery which will be based continuously at the site;</li> <li>➤ The on-site refuelling will be undertaken using a mobile double skinned bowser with spill kits kept on site for accidental leakages or spillages;</li> <li>➤ The bowser will be refilled off-site and towed around the site by a 4x4 jeep;</li> <li>➤ The 4x4 jeep will carry absorbent materials and pads in the event of accidental spillages;</li> <li>➤ The fuel bowser will be parked on a level area on the construction compound when not in use;</li> <li>➤ Only designated trained operatives will be authorised to refuel plant on-site;</li> <li>➤ Taps, nozzles or valves associated with refuelling equipment will be fitted with a lock system;</li> <li>➤ Fuels stored on-site will be minimised. All storage areas will be bunded appropriately for the duration of the construction phase. All bunded areas will be fitted with a storm drainage system and an appropriate oil interceptor. Ancillary equipment such as hoses, pipes will be contained within the bunded area;</li> <li>➤ Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage;</li> <li>➤ The plant used during construction will be regularly inspected for leaks and fitness for purpose; and,</li> <li>➤ An emergency response plan for the construction phase to deal with accidental spillages will be contained within the Construction Environmental Management Plan (which is contained in Appendix 4.3).</li> </ul>		



Ref. No.	Mitigation Measure	Audit Result	Action Required
MM36	<p>To minimise the risk of peat instability or failure, the following mitigation measures are proposed in relation to the new floating roads:</p> <ul style="list-style-type: none"> <li>➤ Prior to commencing floating road construction, movement monitoring posts will be installed in areas where the peat depth is greater than three metres.</li> <li>➤ Trees growing on the road line will be felled close to ground level and stumps left <i>in situ</i>.</li> <li>➤ Base layer of geogrid to be laid directly onto the existing peat surface along the line of the road in accordance with geogrid provider's requirements.</li> <li>➤ Road construction to be in accordance with appropriate design from the designer.</li> <li>➤ The typical make-up of the new floated access road is 500 to 750mm of selected granular fill with 2 no. layers of geogrid.</li> <li>➤ Locally-derived stone delivered to the floating road construction shall be end-tipped onto the constructed floating road. Direct tipping of stone on to the peat shall not be carried out.</li> <li>➤ To avoid excessive impact loading on the peat due to concentrated end-tipping all stone delivered to the floating road shall be tipped over at least a ten-metre length of constructed floating road.</li> <li>➤ Where it is not possible to end-tip over a 10m length of constructed floating road, dumpers delivering stone to the floating road shall carry a reduced stone load (not greater than half full) until such time as end-tipping can be carried out over a ten-metre length of constructed floating road.</li> </ul> <p>Following end-tipping a suitable bull-dozer or excavator shall be employed to spread and place the tipped stone over the base geogrid along the line of the road.</p> <ul style="list-style-type: none"> <li>➤ A final surface layer shall be placed over the floating road, as per design requirements, to provide a road profile.</li> <li>➤ The surface profile should be maintained as settlement proceeds, preferably by the re-distribution of existing formation material rather than by the addition of further material.</li> </ul>		

Biodiversity – Flora and Fauna



Ref. No.	Mitigation Measure	Audit Result	Action Required
MM37	Locate timber - stacking bays at least 50m from the nearest aquatic zone.		
MM38	All measures outlined in section 9 of the Standards for Felling & Reforestation (DAFM, 2019) will be adhered to.		
MM39	<p>Brash Management:</p> <ul style="list-style-type: none"> <li>Brash mats will be put in place to facilitate movement of machinery around the project area but will avoid proximity to relevant watercourses and aquatic zones as far as possible.</li> <li>Extraction racks will be aligned to the contour where possible, reducing the rate of water flow to the receiving waters.</li> <li>Extra brash will be applied along extraction racks and at timber stacking areas, to accommodate higher levels of machine tracking, using extra lengths of timber to protect sensitive locations.</li> <li>No snedding (delimbing) will be carried out within environmental setbacks along aquatic zones/relevant watercourses.</li> <li>During felling and extraction, a minimum 50m exclusion zone will be applied along the edge of any aquatic zone on or adjoining site. Machine traffic and timber stacking will not be permitted within this zone. Trees within the reach of the harvester arm will be felled by harvester, not snedded and bunched outside the exclusion zone. Trees outside machine reach will be felled manually. Felled trees will be winched out of the exclusion zone where appropriate and safe to do so, or removed by extended harvester arm, for subsequent snedding and processing outside the exclusion zone to avoid mobilisation of soils. All other requirements relating to water exclusion zones, as set out in Section 6.1 of the Standards for Felling &amp; Reforestation will be adhered to (DAFM, 2019).</li> <li>There will be no cleaning of any machinery within 50m of an aquatic zone.</li> </ul>		

Ref. No.	Mitigation Measure	Audit Result	Action Required
MM40	<p>The following mitigations and best practice measures will be applied during the construction phase to avoid encroachment on peatland habitats;</p> <ul style="list-style-type: none"> <li>➤ Where ground re-profiling is required, a 10-meter buffer will be applied where only drain blocking and manual conifer removal or ring barking will occur.</li> <li>➤ All machinery operators will be made aware of the sensitive nature of peatland habitats by the site manager.</li> </ul>		
MM41	<p>The following mitigations and best practice measures will be applied during the construction phase to avoid encroachment into existing woodland habitats;</p> <ul style="list-style-type: none"> <li>➤ Where woodland habitats are located adjacent to felling and construction activities associated with the fencing will be erected between the works area and this habitat to ensure no machinery encroaches onto the woodland habitat.</li> </ul> <p>All machinery operators will be made aware of the sensitive nature of woodland habitats by the site manager.</p>		
MM42	<p>Following a precautionary approach, a pre-commencement survey will be carried out to identify whether merlin are nesting within the Proposed Project site. This will be undertaken within the merlin breeding season (1st March to 31st August inclusive) prior to the commencement of felling. Should active nests be identified, an exclusion zone of 500m will be established until the end of the breeding season.</p>		
MM43	<p>Disturbance limitation measures will be adhered to, which include the following:</p> <ul style="list-style-type: none"> <li>➤ All plant and equipment for use will comply with Statutory Instrument No 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996".</li> <li>➤ Plant machinery will be turned off when not in use.</li> </ul>		



Ref. No.	Mitigation Measure	Audit Result	Action Required
	<ul style="list-style-type: none"> <li>Operating machinery will be restricted to the proposed works site area.</li> <li>Construction works will be limited to daylight hours and artificial lighting to facilitate works will not be permitted.</li> </ul>		
MM44	<p>Following a precautionary approach, a pre-commencement red squirrel survey for each felling block will be carried in advance of felling, to identify whether any breeding red squirrel or dreys are located within that felling block. Surveys will be carried out as per NRA guidance (NRA, 2009, Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Dublin: National Roads Authority).</p> <p>Should active dreys be identified within the felling block to be felled, the following mitigations and best practice procedures will be followed to ensure that no breeding red squirrel sites are impacted:</p> <ul style="list-style-type: none"> <li>avoid clearfelling in the breeding season from February – September. Where this is not possible, zone felling away from the any identified dreys up to the end of June.</li> </ul> <p>Additionally, the following measures will be followed on a precautionary basis:</p> <ul style="list-style-type: none"> <li>As the proposed felling will result in a temporary reduction of food resources, supplementary feeding of red squirrel will be carried out if necessary.</li> </ul>		
MM45	<p>An invasive species Management Plan will be produced to ensure sufficient management of Rhododendron is carried out within the site and that there is no continued spread as a result of the Proposed Project.</p>		

