

Environmental Impact Assessment Report

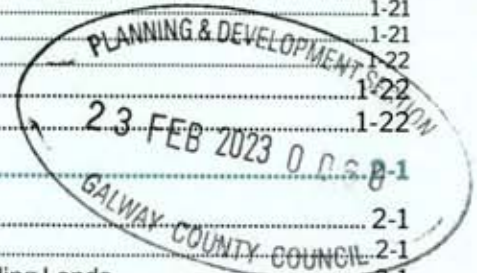
Derryclare Wild Western
Peatland Project, Co.
Galway

Non-Technical Summary, Main Report, and
Technical Appendices

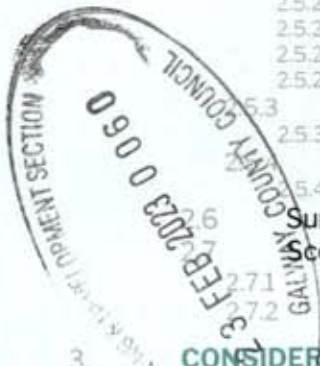


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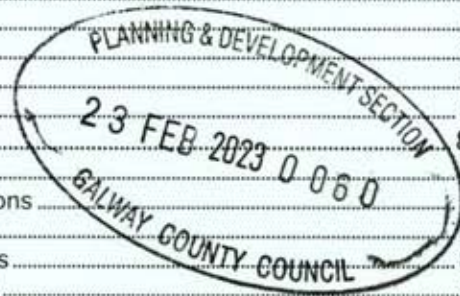


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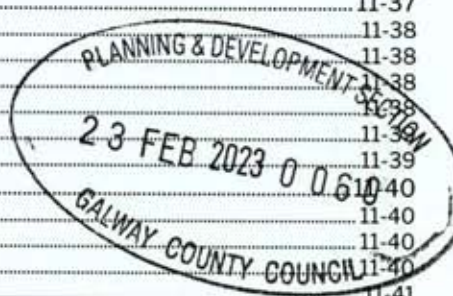
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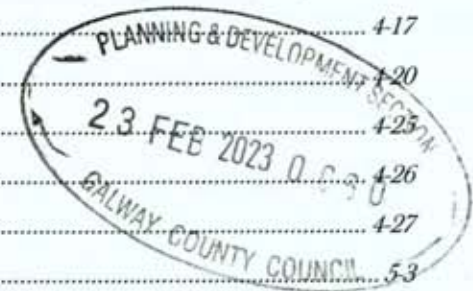


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NON-TECHNICAL SUMMARY

Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared by MKO on behalf of Coillte, which intends to apply to Galway County Council (GCC) for planning permission to restore approximately 343 hectares (ha) of coniferous forestry plantation for the purposes of peatland restoration in the townlands of Derryclare and Cloonnacartan in Co. Galway.

The EIAR Study Area encompasses an area of approximately 567 ha. The footprint of the proposed restoration area measures approximately 343ha.

The applicant for the Proposed Project is Coillte Teoranta (Coillte), a commercial semi-state company operating in forestry, land-based businesses, renewable energy, and panel products. Coillte manages an estate of 440,000 hectares (ha) which equates to 7% of the land area of Ireland. The estate includes 350,000 ha of productive forests and 91,000 ha of open space including areas designated with nature conservation as the primary management objective. In addition, the Coillte estate contains other areas of high conservation value forest where management activities are permitted only where they maintain or enhance such conservation values.

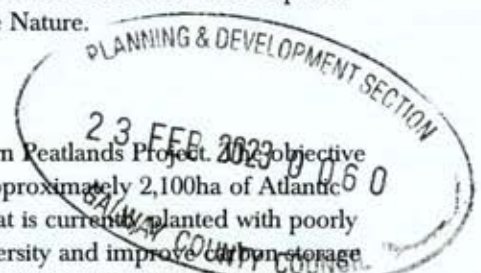
Coillte Nature is the not-for-profit division of Coillte that is dedicated to delivering real impact on the climate and biodiversity crises through innovative projects of scale. The aims of Coillte Nature are to create, restore, regenerate and rehabilitate biodiverse habitats across Ireland, to manage those habitats for ecological and recreational value in perpetuity and, in doing so, to maximise the ecosystem services they provide to people and nature for the benefit of everyone, now and into the future. The Proposed Project is an initiative of and will be under the management of Coillte Nature.

Need for the Development

The Proposed Project is part of Coillte Nature's ongoing Wild Western Peatlands Project. The objective of the Wild Western Peatlands Project is to restore and rehabilitate approximately 2,100ha of Atlantic blanket bog and wet heath along the western seaboard of Ireland - that is currently planted with poorly performing inappropriate spruce and pine forests - to enhance biodiversity and improve carbon storage in the landscape. The Derryclare property was selected to be the pilot site for the Wild Western Peatlands Project as it represents all the expected challenges that are likely to be encountered in the restoration process at one site. Derryclare will act as an important demonstration area for Coillte and other stakeholders in managing the significant challenges posed by inappropriate forestry planting in sensitive western peatland areas and inform how best to manage other similar plantations in the future.

Atlantic blanket bog is a rare and precious habitat which is an important part of our cultural and environmental heritage. These landscapes provide a valuable habitat for many species including several rare plants, birds and invertebrate species. Pools that occur on the flatter areas of blanket bog support many mosses and plants and provide essential habitats for both migrating and resident wetland birds. 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 restore up to 281 hectares of blanket bog and wet heath habitat, as well as up to 62 hectares of native scrub woodland. This section sets out the need for the Proposed Project in the context of Ireland's biodiversity, peatland rehabilitation, native woodland, and climate policy goals and objectives.

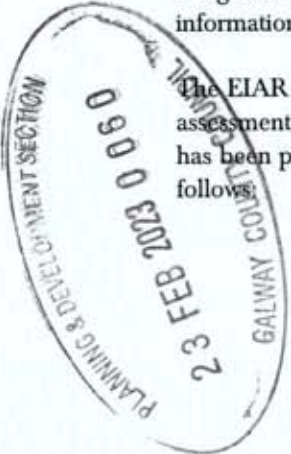


Purpose and Structure of this EIAR

The purpose of the EIAR is to document the current state of the environment in the vicinity of the proposed development site and to quantify the likely significant effects of the Proposed Project on the environment. The EIAR submitted by the applicant provides the relevant environmental information to enable the Environmental Impact Assessment (EIA) to be carried out by the competent authority.

MKO was appointed as planning and environmental consultants on the Proposed Development and commissioned to prepare this EIAR in accordance with the requirements of the Environmental Impact Assessment (EIA) Directive as amended by Directive 2014/52/EU. The EIAR provides information on the receiving environment and assesses the likely significant effects of the project and proposes mitigation measures to avoid or reduce these effects. The function of the EIAR is to provide information to allow the competent authority to conduct the EIA of the Proposed Development.

The EIAR project team comprises a multidisciplinary team of experts with extensive experience in the assessment of similar developments and in their relevant area of expertise. Each chapter of this EIAR has been prepared by a competent expert in the subject matter. The chapters of this EIAR are as follows:

- 
1. *Introduction*
 2. *Background to the Proposed Project*
 3. *Reasonable Alternatives*
 4. *Description of the Proposed Project*
 5. *Human Beings, Population & Human Health*
 6. *Biodiversity, Flora & Fauna*
 7. *Land, Soils and Geology*
 8. *Hydrology and Hydrogeology*
 9. *Air and Climate*
 10. *Noise and Vibration*
 11. *Archaeology & Cultural Heritage*
 12. *Landscape and Visual*
 13. *Material Assets (including Traffic and Transport)*
 14. *Vulnerability to Major Accidents and Natural Disasters*
 15. *Interactions of the Foregoing*
 16. *Schedule of Mitigation*

A Natura Impact Statement has also been prepared in line with the requirements of the Habitats Directive, and will be submitted to the Planning Authority as part of the planning application documentation.

Background to the Proposed Development

The Background to the Proposed Development chapter presents information on the strategic planning context for the proposed development, the site selection and design process, a description of the proposed development site and its planning history, the assessment of alternatives, scoping and consultation, and the cumulative impact assessment process.

The Coillte property at Derryclare lies to the west of Lough Inagh and Derryclare Lough in Connemara, Co. Galway, north of the Galway to Clifden Road (N59). The site topography ranges between 180m above ordnance datum (m AOD) at its highest point to approximately 10m at its lowest point. The current land-use in Derryclare is dominated by forest cover which was planted primarily in the 1960s following intensive drainage and fertiliser application to establish conifer plantations. The Derryclare property extends to approximately 567 Hectares (ha). The Coillte property is undesignated but fully surrounded by the Twelve Bens/Garraun Complex Special Area of Conservation (Code: IE002031).

This chapter of the EIAR sets out the European, National, Regional and Local planning policies which are of relevance to the planning application. The local planning policy section includes policy sections from Galway County Council, as relevant. Material considerations are also set out. The Proposed Project will help Ireland to meet its obligations and targets relating to the EU Biodiversity Strategy for 2030, proposed EU nature restoration policy, National Biodiversity Objectives, National Climate Objectives, and National Peatlands Strategy.

A scoping document providing details of the application site and the Proposed Project was prepared by MKO and circulated on 11th November 2022 in relation to this EIAR. The scoping document was sent to the agencies, NGOs, and other relevant parties.

This EIAR also considers the potential for cumulative effects from the proposed development with other key existing, permitted or proposed projects.

Consideration of Reasonable Alternatives

This section of the EIAR contains a description of the reasonable alternatives, which are relevant to the proposed project and its specific characteristics, in terms of site location, site layout incorporating size and scale of the project. This section also outlines the design considerations in relation to the felling and peatland restoration. It provides an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

The consideration of alternatives is an effective means of avoiding environmental impacts. As set out in the *Guidelines on The Information to be Contained in Environmental Impact Assessment Reports* (Environmental Protection Agency, 2022), the presentation and consideration of reasonable alternatives investigated is an important part of the overall EIA process.

Taking consideration of the legislation and guidance requirements into account, this section addresses alternatives under the following headings:

- 'Do Nothing' Alternative;
- Alternative Sites;
- Alternative Mitigation Measures.

While environmental considerations have been at the core of the decision-making process for all of the project processes and infrastructure components, it should be noted that the majority of alternative options considered under the headings listed above are unlikely to have had significantly greater environmental effects than the chosen option.

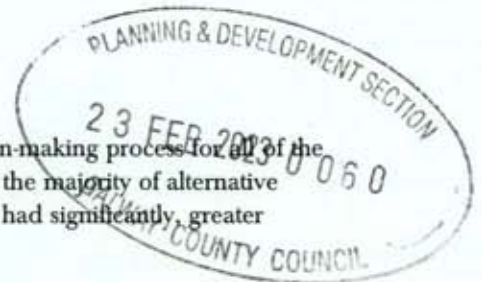
"Do Nothing" Alternative

An alternative land-use option to the proposed peatland restoration project would be to leave the site as it is, with no changes made to existing land-use practices. If the Proposed Project were not to proceed, the current land-use, conifer forestry, at the site would continue.

In implementing the "Do Nothing" alternative, however, the opportunity to restore and rehabilitate the site would be lost, along with the opportunity to better align the landscape of the Proposed Project Site with the surrounding moorland landscape character. In addition, with the implementation of the "do-nothing" alternative the opportunity would be lost to contribute to meeting Ireland's national biodiversity objectives by restoring up to 281 hectares of blanket bog and wet heath habitat.

Alternative Sites


As part of the Wild Western Peatlands Project a consultation process was undertaken with local Coillte management staff, environmental managers and stakeholders who have an in-depth knowledge of local



sites leading to the selection of potential sites suitable for the project. Five high priority sites for the Wild Western Peatlands Project were identified:

- Glentoman & Arduns, Co. Donegal
- Glennamong, Co. Mayo
- Derryclare, Co. Galway
- Cappaghoosh, Co. Galway
- Derrynafula & Coorannel, Co Cork

The Derryclare property was selected to be the pilot site for the Wild Western Peatlands Project as it represents all the expected challenges that are likely to be encountered in the restoration process at one site. Derryclare will act as an important demonstration area for Coillte and other stakeholders in managing the significant challenges posed by inappropriate forestry planting in sensitive western peatland areas and inform how best to manage other similar plantations in the future. The Derryclare property was selected to be the pilot site for the Wild Western Peatlands Project for the following reasons:

- 
- It represents all the expected challenges that are likely to be encountered in the restoration process at one site. Derryclare will act as an important demonstration area for Coillte and other stakeholders in managing the significant challenges posed by inappropriate forestry planting in sensitive western peatland areas and inform how best to manage other similar plantations in the future.
 - The existing forestry entrance, via a local road on the eastern site boundary, can continue to be used without any alterations or road works required.
 - The Proposed Project can comply with the policies and principles outlined in Chapter 1: Introduction (of this EIAR) in terms of the need for additional carbon sinks in Ireland.
 - The Proposed Project can contribute to the achievement of national climate & policy targets.

Alternative Mitigation Measures

The proposed peatland restoration has been designed to avoid negative impacts to natural watercourses on the site and therefore limit the potential for environmental effects on downstream receptors. The proposed peatland restoration will have an overall positive impact on sensitive receptors through habitat enhancement and long-term positive effects on water quality. Forestry best practice will be followed to ensure that sensitive receptors are protected during the construction phase of the Proposed Project, and in particular during the proposed harvesting activities on the site. These practices include avoidance of sensitive area (such as aquatic zones), establishment of buffers on watercourses, and use of brash mats to avoid rutting of soils.

Due to the nature of the Proposed Project the greatest potential for environmental effects exists during the construction phase. During the operational phase there are no significant ongoing emissions to any environmental media (water, air, soil etc.). Further alternative mitigation measures for this phase are therefore not necessary for further consideration.

The alternative to this approach is to further encroach on the environmentally sensitive areas of the site and accept the potential adverse environmental effects associated with this. Mitigation measures could be put in place to compensate for the loss of environmentally sensitive areas; however such an approach would not represent best practice.

The best practice design and mitigation measures set out in this EIAR will contribute to reducing any risks and have been designed to break the pathway between the site and any identified environmental receptors. The alternative is to either not propose these measures or propose measures which are not best practice and /or effective and neither of these options is acceptable or sustainable.

Description of the Proposed Development

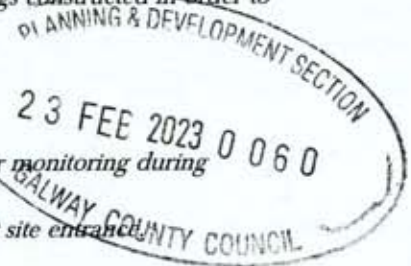
The Coillte property at Derryclare (project site) lies to the west of Lough Inagh and Derryclare Lough in Connemara, Co. Galway, north of the Galway to Clifden Road (N59). The Derryclare property extends to approximately 567 Hectares (ha) on the western slopes of Derryclare and Bencorr mountains. The site is located in the townlands of Derryclare and Cloonnacartan in County Galway (ITM Coordinates for the centre of the site: X 483590, Y 751253).

The Proposed Project comprises:

1. *The felling/removal of some 343 hectares of conifer plantation for the purposes of peatland restoration and the establishment of native woodland.*
 - a. *Measures to restore and rehabilitate approximately 281 hectares of Atlantic blanket bog and heathland that is currently planted with lodgepole pine and Sitka spruce forests and managed for commercial forestry.*
 - b. *Conversion of 62 hectares of conifer forestry to native woodland.*
2. *Main peatland restoration measures will include tree removal, drain blocking (manual and mechanical) and ground reprofiling.*
3. *The control of existing invasive species on site and continued control during the restoration works to prevent their spread.*
4. *Drain-blocking all existing artificial drainage and artificial land drains currently existing within the peatland restoration areas in order to restore the high water table which is necessary for blanket bog growth*
5. *Provision of silt traps at outflows to block the pathway to the Twelve Bens/Garraun Complex Special Area of Conservation.*
6. *Deer fencing to protect 62 hectares of proposed native woodland.*
7. *Provision of a Harvest Management Phasing Plan for the Proposed Project.*
8. *Provision of new internal access road extending to 1.58 km*
9. *Across the site there will be 4 no. temporary water-crossings constructed in order to facilitate the harvesting of the timber at the site.*
10. *Provision of informational signage.*
11. *Resurfacing of up to 8.23 km of existing forestry roads.*
12. *Resurfacing of existing car park to facilitate public access.*
13. *Installation of water monitoring stations for real time water monitoring during operations.*
14. *Cutting of roadside trees to improved sightline visibility at site entrance.*

This application is seeking a ten-year permission in order to allow for the phased completion of the Proposed Project.

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 highly suitable for bog restoration or conversion to native woodland over the initial 6-year 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. Careful planning with the input of harvesting contractors is necessary to ensure the correct layout of felling coupes that can be harvested in a safe manner. With appropriate mitigations, good machine operators and flexibility to cease work during poor weather, all blocks can be harvested safely, with minimal impact on water quality and soils.



A total of approximately 343 hectares of coniferous forestry will be removed in 20 harvest blocks, spread out over the duration of the plan. 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.

Approximately 62.26 hectares of coniferous forestry will be felled and replanted with native scrub woodland. The proposed native woodland establishment areas are concentrated in areas where the peat depths are shallow and in the more nutrient rich areas, where there may be some potential to establish native woodland. 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.

A monitoring and maintenance programme will be put in place following completion of the proposed restoration works. This programme will include the following:

➤ Annual monitoring of tree survival rates will occur in the areas where native woodland has been planted.

➤ A water quality monitoring programme for the site will be implemented.

➤ Invasive species management will continue on an annual basis for at least 4 years following the completion of the construction phase of the project.

➤ Vegetation monitoring plots have been established, and will be used to monitor the impact of project operations to restore and rehabilitate peatland and native woodland (15 baseline vegetation monitoring plots established in August 2021)

Population and Human Health

One of the principal concerns in the development process is that people, as individuals or communities, should experience no diminution in their quality of life from the direct or indirect impacts arising from the construction and operation of a development. In order to assess the population in the vicinity of the site, the Study Area for the Population section of the ELAR is defined in terms of the District Electoral Divisions (DEDs) within which the Proposed Project is located. The project site is located across two DEDs in Co. Galway, namely Bencorr and An Uillinn, which will hereafter be referred to as the 'Study Area' in context of population.

Information used in this study was sourced from the Census of Ireland 2011 and 2016, which is the most recent census, the Census of Agriculture 2010 and from the CSO website, www.cso.ie. Census information is divided into Republic of Ireland, County Galway and the Study Area. The 2016 census data for the Republic of Ireland was consulted as part of the assessment process, and upon comparison with the relevant 2011 data, was found to be consistent. Although, as shown in Chapter 4; between 2011 and 2016 there has been an approximately 9% decrease in population within the project Study Area, as represented in the census data.

There are no key identified tourist attractions pertaining specifically to the site of the proposed development itself. However, the natural landscape and scenic amenity of the area provide opportunities for general outdoor recreation, including walking, cycling and horse-riding. Furthermore, County Galway has a wide range of nationally significant tourism assets, which include the following:

- The Connemara National Park- a walking, cycling, sightseeing, fishing destination and other outdoor activities.
- Kylemore Abbey- A Gothic Church with Victorian Walled Gardens, Craft Shop, Pottery studio, Restaurant and Tea Rooms as well as the Lake and Woodland walks.
- The River Corrib and Lough Corrib – important recreational amenity and fisheries areas.
- Mountain ranges including: the Twelve Bens, Mweelrea Mountains and Maumturk Mountains– important centres for walking, cycling and adventure related activities.

- The Coastline along the Wild Atlantic Way- Scenic coastline and peninsulas and marine related activities including some fine blue flag beaches.
- The Gaeltacht areas which are of significant cultural heritage value and frequently visited by tourists.
- Galway City Museum located in Galway City's famous Spanish Arch has significant cultural heritage and Folklore
- Salthill Promenade Galway City- Blue Flag Beaches and outdoor activities
- The West Galway Peninsula of Renvyle - with its unique visual amenity and landscape character offer potential for walking and cycling and other outdoor activities.
- Aran and Inishbofin Islands and all the other uninhabited islands along the County's coast.
- Galway has rich fertile agricultural land and many bogs and peatlands with a higher than national average land mass of forest and woodland area.
- The Towns and Villages of County Galway where there is significant potential for heritage led tourism.

The Proposed Project will result in a permanent change in the use of the site, from conifer plantation to blanket bog and wet heath. The relatively high water table in the area has also rendered the site suitable for bog restoration, which will maximise the biodiversity value and greenhouse gas fluxes of the site. The final state of the site is in keeping with the rural landscape, and therefore, the impact of the change in land-use is therefore positive due to the replacement of conifer forestry with native woodland and blanket bog.

Biodiversity

Between July 2021 and September 2022, a range of ecological survey work has been undertaken to provide comprehensive information on all ecological aspects of the location of the Proposed Development and the surrounding area. These surveys included detailed assessment of the site in terms of protected habitats and species. The studies and survey work undertaken provide a comprehensive inventory of the flora and fauna of the study area

The proposed development site is bisected by a public access road. This road all associated hard standing areas as well as the bordering footpaths. The northern portion of the proposed development site is dominated by Scrub habitat. A small path has been worn through the area of scrub. The portions of the proposed development site bordering the bisecting public access road and the road within the north-western boundary are classified as Scattered trees and parkland. The southern portion of the proposed development site is dominated by artificial habitats classified as a mosaic of Spoil and bare ground and Recolonising bare ground. Habitats bordering the proposed development site are artificial in nature and consist of Recolonising bare ground as well as Buildings and artificial surfaces.

There are currently no open surface watercourses or drains on the site. However, the Knocknacarra Stream rises to the north of the site at Letteragh and flows southward over a distance of 3km to the sea. A large portion of the lower reach of the Knocknacarra Stream is culverted almost to its sea outfall at Rusheen Bay near Blakes Hill at Salthill. A tributary stream which formerly ran through the site was culverted and realigned to form the surface water sewer network as part of a nearby development in 1996. The culverted tributary and culverted Knocknacarra stream which both form part of the existing storm sewer network flow through the proposed development site and along the eastern boundary of the proposed development site. Storm water runoff from within the site ultimately discharges to Galway Bay Complex SAC and Inner Galway Bay SPA via the culverted tributary, Knocknacarra stream and Rusheen Bay.

A large stand of Himalayan knotweed is present within the proposed development. Himalayan knotweed is listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011). An invasive species management plan has been prepared for the

management of the Himalayan knotweed infestation within the proposed development site and is being submitted as a part of this project.

Effects upon flora and fauna as a result of removal of vegetation during the construction phase of development would constitute a permanent slight negative on the habitat within the site. Mitigation in the form of a Landscaping Plan has been prepared for the Proposed Development to ameliorate any habitat loss and to maintain connectivity with the wider landscape.

Adverse effects upon nationally designated sites and Ramsar sites as a result of the proposed development are not anticipated, given that impacts to groundwater and surface waters will be prevented, or mitigated where necessary, during the construction of the proposed development. Like any construction project, measures will be in place to prevent and mitigate any effect upon groundwater and surface water resources and these have been detailed in the hydrology chapter of this EIAR and the accompanying CEMP in Appendix 4-2.

Adverse effects upon European Sites are discussed within the Natura Impact Statement which accompanies this report. The NIS concluded that the proposed development, by itself or in combination with other plans and projects, in light of best scientific knowledge in the field, will not adversely affect the integrity of European sites, and no reasonable scientific doubt remains as to the absence of such adverse effects. No significant effects upon biodiversity, flora and fauna as a result of the proposed development are anticipated, given that the proposed development is carried out in compliance with procedures of best practice, and that mitigation is duly applied where necessary.

Land, Soils and Geology

This chapter provides a baseline assessment of the environmental setting of the Proposed Project in terms of land, soils, and geology, and discusses the potential impacts that the construction and operation of the Proposed Project will have. Where required, appropriate mitigation measures to limit any identified potentially significant impacts to soils and geology are recommended and an assessment of residual impacts and significance of effects provided.

The project site lies to the west of Lough Inagh and Derryclare Lough in Connemara, Co. Galway. The site lies to the north of the N59 which joins Galway in the east to Clifden in the west. The site is owned by Coillte and was planted with coniferous forestry plantations in the 1960s.

The Derryclare Wild Western Peatlands Project aims to restore and rehabilitate ~281 hectares (ha) of Atlantic Bog and heathland at the project site that is currently planted with lodgepole pine and Sitka spruce plantations and managed for commercial forestry. The project site will comprise of felling of the existing forestry plantations and a series of rehabilitation works, including drain blocking and ground reprofiling, designed to restore the peatland habitats at the project site.

The felling and restoration works associated with the project will be completed over period 7 years (2023- 2029). During this period a total of 281 hectares of commercial forestry will be felled and harvested with the proposed target habitat type for this area identified as being blanket bog / wet heath. Furthermore, a total of 62 hectares of commercial forestry will be felled and harvested with the proposed target habitat being native pioneer woodland.

The peat depth information for site ranges from 0.1 – 4.7m (refer to Figure 7 2), with an average peat depth of 1.17m. The peat deposits at the site are underlain largely by gravelly silt/clay mineral soils and/or shallow bedrock. These glacial tills are underlain by schists and quartzites.

The Proposed Project will typically involve felling, bog restoration measures (drain blocking and/or reprofiling) and native woodland establishment (planting, cuttings and seeding). Storage and handling of hydrocarbons/chemicals will be carried out using best practice methods. Measures to prevent peat

and subsoil erosion during excavation and reinstatement will be undertaken to prevent negative water quality effects.

No significant effects on the land and soils and geology environment are anticipated during construction, operation phases of the Proposed Project.

Our assessment confirms there will be no cumulative effects on land soil and geology environment as a result of the Proposed Project.

Hydrology and Hydrogeology

This chapter of the EIAR identifies, describes, and assesses the potential effects of the Proposed Project on the local hydrological and hydrogeological environment (surface water and ground water).

The project site is located in the Coillte property at Derryclare, which lies to the west of Lough Inagh and Derryclare Lough in Connemara, Co. Galway. The overall Coillte landholding at Derryclare is ~567 hectares (ha). The project site was planted with Sitka Spruce and Lodgepole Pine in the 1960s. Currently the project site is dominated by coniferous forests which are of low to moderate productivity. The project site lies on the eastern slopes of Derryclare and Bencorr mountains with topography sloping steeply to the east. The western section of the project site contains the steepest gradients while the eastern section is comparatively flatter.

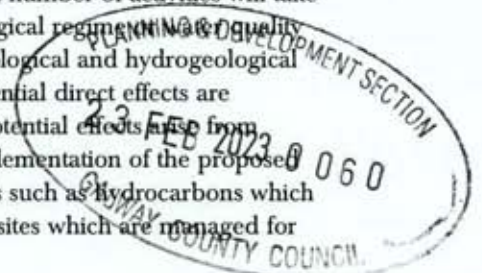
On a regional scale, the project site is located within the Galway Bay North catchment and Hydrometric area 31 of the Western River Basin District. More locally, the project site is located within the Recess river sub-catchment. The project site lies immediately to the west of the of Lough Inagh and Derryclare Lough and is drained by several mountain streams which dissect the project site and discharge into these lakes.

During each phase of the Proposed Project (construction and operation) a number of activities will take place at the project site which will have the potential to affect the hydrological regime and water quality at the project site or downstream. The main potential effects on the hydrological and hydrogeological environment will occur during the construction phase while very few potential direct effects are envisaged during the operational phase of the Proposed Project. These potential effects arise from sediment input and nutrient release during felling operations and the implementation of the proposed restoration measures. Potential effects may also arise from other pollutants such as hydrocarbons which will be present at the project site. These potential effects are similar to all sites which are managed for commercial forestry.

Surface water drainage measures, pollution control measures and other preventative measures have been incorporated into the project design to minimise significant negative effects on downstream water quality. Proven and effective measures to mitigate the risk of releases of sediment and nutrients in runoff have been proposed and will ensure that no significant effects will occur. Preventative pollution measures which also include fuel management have been incorporated into the construction and Environmental Management Plan, which is presented in Appendix 4-3 of this EIAR.

Overall the Proposed Project presents no likely significant effects to surface water (quality or flows) and groundwater (quality or quantity) provided that the proposed mitigation measures are implemented.

No significant construction or operation phase cumulative effects on any surface or groundwater bodies will result from the proposed felling and restoration proposals at Derryclare.



Air and Climate

Due to the nature of the development, the general character of the surrounding environment and publicly available information on air quality, air quality sampling, was deemed to be unnecessary for the EIAR.

Air Quality

The Environmental Protection Agency (EPA) has designated four Air Quality Zones for Ireland:

- > Zone A: Dublin City and environs
- > Zone B: Cork City and environs
- > Zone C: 16 urban areas (cities and large towns) with population greater than 15,000
- > Zone D: Remainder of the country.

These zones were defined to meet the criteria for air quality monitoring, assessment and management described in the Framework Directive and Daughter Directives. The site of the Proposed Project lies within Zone D, which represents rural areas. The EPA publishes Air Monitoring Station Reports for monitoring locations in all four Air Quality Zones. The most recent report on air quality in Ireland, 'Air Quality in Ireland 2020' was published by the EPA in 2021. The air quality in the vicinity of the Proposed Development site is typical of that of rural areas in Ireland.

Dust is a common emission from construction sites and requires management. Mitigation measures have been developed to reduce any potential dust levels. There will be no significant effects on air quality as a result of the Proposed Project.

Climate

Ireland has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Claremorris, Co. Mayo, is the nearest weather and climate monitoring station to the Proposed Development site that has meteorological data recorded for the 30-year period from 1971 – 2000. The monitoring station is located approximately 55 km northeast of the project site.

Meteorological data recorded at Claremorris over the 30-year period from 1971 – 2000 shows that the wettest months are October, November, December and January, with April being the driest month. July was shown to be the hottest month with a mean temperature of 15 degrees Celsius. The mean annual wind speed at the station is 8.7 metres per second. The 30-year annual average rainfall is 1173.6 mm/yr. this is considered to be above average when compared to the annual average rainfall for Dublin (Merrion Square) which recorded annual average rainfall of 730 mm/yr over the same period.

Bogs and peatlands are unique habitats that are known to store substantial amounts of carbon. Peat consists of the remains of partially decomposed plants because the rate of plant production exceeds the rate of decay due to the waterlogged conditions in peatlands, this in turn allows the accumulation of carbon in the form of peat. The vegetation on peat bogs will serve to store carbon through slow absorption of CO₂ from the atmosphere when it is alive. When the vegetation dies, in the acidic waterlogged conditions of bogs and peatlands, the organic material does not decompose fully, and the organic carbon is retained in the ground. Due to this, carbon is accumulated and stored rather than being broken down or released into the atmosphere. The Proposed Project has been designed to restore up of 281 hectares of currently drained and forested blanket bog to a functioning condition. The project will result in a permanent, slight, positive effect on the climate as a result of the reduced carbon dioxide emissions from the Proposed Project following restoration.

Noise and Vibration

The Noise and Vibration section of this EIAR evaluates the likely significant and residual impacts of Derryclare Wild Western Peatlands Project, located close to Recess in Connemara, Co. Galway, in terms of noise and vibration during both the Construction Phase (forestry felling and peatland restoration) and Operational Phase (maintenance and monitoring).

Noise and vibration impacts associated with the Proposed Project during the construction phase have been estimated based on the types of machinery typically employed in the site preparation and establishment phase of the project.

A desktop GIS assessment was used to identify potential noise sensitive locations within 200 metres of the Proposed Project. **Error! Reference source not found.** shows existing noise sensitive locations within 200 metres of Proposed Project. There are three Noise Sensitive Locations (NSLs) within 200m of the Proposed Project. None of these NSLs are within 200m of the main works areas. The nearest school is Ionad Pobail Mâm Éan Teo national school located approximately 3 kilometres southeast of the site in the townland of Lissoughter, Co. Galway.

As there are no mandatory noise limits for construction noise in Ireland, account must be taken of the technical feasibility of the Proposed Project, the trade-off between the noise level and the duration of the noise exposure when setting criteria for construction noise.

For the Proposed Project, reference has been made to the TII Guidance document Guidelines for the Treatment of Noise and Vibration in National Road Schemes (TII, 2004) for appropriate criteria. The TII guidelines define construction noise limits to be applied to the façade of dwellings. Whilst this document is specifically intended for the purposes of New National Road Schemes, in the absence of other national guidelines relating to the specific project under consideration, the guidelines are relevant to determine the potential noise impacts of the Proposed Project.

Tractors, excavators, timber harvesting machines, and timber forwarders are likely to be the only plant used on site during the construction phase, along with trailers and attachments, including tree shears, mulchers, and forwarders. HGVs will also be present during construction phase for the removal of harvested timber from the site. Due to the nature of the activities undertaken, there is potential for noise impacts at nearby noise-sensitive properties. Similar activities already occur at this site as part of ongoing forestry operations in Derryclare. However, the likely residual impact will be temporary, imperceptible, and of neutral effect on sensitive noise receptors as a result of the construction phase of the project. Based on the analysis in this chapter of the EIAR it is determined that there will be no significant noise and vibration effects associated with the Proposed Project.

Landscape and Visual

The emphasis in the Landscape and Visual chapter is on the likely significant direct and indirect effects of the Proposed Project. The chapter includes the Landscape and Visual Impact Assessment (LVIA) methodology, a description of the Proposed Development and the existing landscape based on relevant guidance. It includes a description of the landscape policy in the study area in which the Proposed Development Site is located.

The landscape of the site and wider area is described in terms of its existing character, which includes a description of landscape value, the susceptibility of the landscape to change and a determination of landscape sensitivity. The landscape and visual impact assessment of the Proposed Development uses representative viewpoints. The potential impacts in both landscape and visual terms are then assessed, including cumulative impacts.

Overall, the Proposed Project will result in multiple landscape and visual effects within the Proposed Project Site itself and the wider LVIA Study Area. The Proposed Project will transition the landcover of

Specifically, there will be landscape effects associated with the construction/restoration activities occurring at various parts of the site over the multi-year process of land use and landcover change. There may be some minor localised negative landscape effects associated with activities involved in the felling of trees resulting from the use of large machinery and the noise created. However, these activities are generally consistent with the continued use of the site for commercial forestry in a Do-Nothing Scenario, so limited additional negative landscape effects are envisioned in this regard, beyond what would be normally expected to occur under common commercial forestry operations. In addition, as the site transitions in phases to a restored bogland habitat and native scrub woodland there will be positive landscape effects associated with the construction phase of the Proposed Project as the landscape begins to better align with the character of the surrounding landscape considering the change in landcover that will occur.

There will be visual effects associated with the construction/restoration activities occurring at various parts of the site over the multi-year process of land use and landcover change. In terms of the predicted visual quality of the Proposed Project, however, whether a visual effect is deemed to be positive, negative or neutral, this involves a degree of subjectivity. What appears to be a positive effect to one viewer could be deemed to be a negative effect by another viewer.

There may be some minor localised negative visual effects associated with activities involved in the felling of trees resulting from the use of large machinery on the slopes of Derryclare, where there will be open views toward felling activities. However, these activities are generally consistent with the continued use of the site for forestry in a Do-Nothing Scenario, so limited additional negative visual effects are envisioned in this regard, beyond what would be normally expected to occur under common forestry operations. In addition, as the site transitions in phases to a restored bogland habitat and native scrub woodland there will be positive visual effects associated with the construction phase of the Proposed Project as the landcover begins to better align with the character of the surrounding moorland landscape when viewed from sensitive locations such as the viewing area for Protected View No. 15 in the Galway County Development Plan and from the Western Way walking route and the local road network (including the designated Galway Clifden Scenic Route).

Once the multi-year construction/restoration phase has been completed, the landcover of the Proposed Project Site will have been converted to one of restored bogland habitat and native scrub woodland. The example images shown in Section 12.5.2 provide an example of the types of landscape and visual effects that are likely to arise as a result of the Proposed Project. The images indicate that following the construction/restoration, the landcover of the Proposed Project Site will more closely align with the character of the blanket bog and wet heath habitats surrounding the site.

The landscape of the Proposed Project Site was determined in Section 12.3.4 to have a High landscape value and Medium landscape sensitivity (see tables in Section 12.2.2) on account of the nature of the Proposed Project as an agent for positive landscape change. The magnitude of change associated with the Proposed Project is considered to be Substantial as a result of the dramatic change in landcover of the site, from a conifer dominated forestry site to a site dominated by restored bogland habitat and native scrub woodland. This amounts to a Significant, Direct, Permanent, Positive landscape effect on the Proposed Project Site.

The landscape sensitivity of the wider LVIA Study Area is designated as Iconic in the GCDP, and the landscape character area within which the Proposed Project Site is located (Uplands Bog Landscape LCT) is noted for its “extensive areas of exposed rock, uplands and blanket bog”. The sensitivity of the landscape character of the wider landscape is considered to be Medium in relation to the Proposed

Project, for the same reasons as outlined for the Proposed Project Site itself in Section 12.3.4, namely that the overall landscape character has a strong ability to accommodate the Proposed Project as this is aligned with the landscape character of the wider area and the achievement of planning policies/strategies (i.e. the preservation and enhancement of the distinctive landscape character of this area outlined in policy LCM1 from the GCDP quoted above). The magnitude of change associated with the Proposed Project is considered to be Substantial as a result of the dramatic change in landcover of the site (a large area of land amounting to 343ha), from a conifer forestry site within a sensitive location within the Uplands Bog Landscape LCT to restored bogland habitat and native scrub woodland. This amounts to a Significant, Direct, Permanent, Positive landscape effect on the Uplands Bog Landscape LCT.

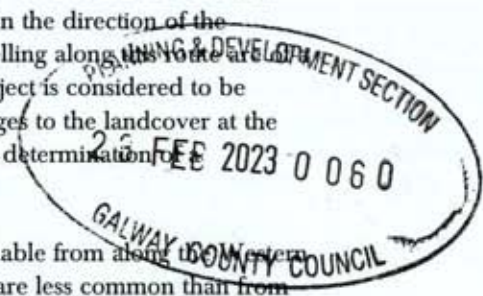
In all views of the site the Proposed Project would result in a change in landcover of the Proposed Project Site to a restored bogland habitat and native scrub woodland, which will better align with the other landscape elements within the view of this moorland landscape (see the images in Section 12.5.2 for example). The highest sensitivity visual receptor within the LVIA Study Area is designated Protected View No. 15, with the forestry of the site located within the focus of protected scenic views from this location. The sensitivity of this receptor is deemed to be High, with a Slight magnitude of change likely to occur. This results in a determination of a Moderate, Direct, Permanent, Positive visual effect on this designated Protected View.

Similarly, the Galway Clifden Scenic Route is deemed to be a High sensitivity visual receptor, with a Slight magnitude of change likely to occur. This results in a determination of a Moderate, Direct, Permanent, Positive visual effect on this designated Scenic Route. The majority of the open views towards the Proposed Project are experienced from the R344 Regional Road which runs to the east of the Proposed Project Site through the valley created by the 12 Bens and the Maumturk Mountains. This transport route is not designated as a scenic route but there are expansive views of the 12 Bens and Maumturk Mountains available along the entirety of the route, including in the direction of the Proposed Project Site. It is therefore considered that visual receptors travelling along this route are of High sensitivity. The magnitude of change as a result of the Proposed Project is considered to be Moderate from a number of locations along this road with dramatic changes to the landcover at the foot of Derryclare Mountain and Bencorr likely to occur. This results in a determination of a Significant, Direct, Permanent, Positive visual effect on this road.

There are also multiple expansive views of the Proposed Project Site available from along the Western Way waymarked walking route. Views of the site from the Western Way are less common than from the R344 Regional Road, which is also located to the east of the site, and given that the Western Way is located further from the site, the Proposed Project will occupy a smaller extent within the view. Given the scenic quality of the views available from this section of the Western Way and the extent to which users of the waymarked route will be focused on views in the direction of the Proposed Project, the sensitivity of receptors travelling along this route is considered to be High. The magnitude of change as a result of the Proposed Project is considered to be Moderate from a number of locations along this waymarked route, with dramatic changes to the landcover at the foot of Derryclare Mountain and Bencorr likely to occur in the background of these views. This results in a determination of a Significant, Direct, Permanent, Positive visual effect on this waymarked walking route.

Cultural Heritage

The Cultural Heritage section of this EIAR has been prepared by prepared by Miriam Carroll and Annette Quinn of Tobar Archaeological Services. This chapter comprises an assessment of the potential impact of a proposed bog restoration Project at Derryclare, Co. Galway on the Cultural Heritage resource. Cultural heritage includes archaeology, architectural heritage and any other tangible assets. The assessment was based on comprehensive desktop research and field inspection of the Proposed Project site.



No recorded monuments are located within the Proposed Project site and no significant direct or indirect impacts to the archaeological or cultural heritage resource have been identified. The implementation of mitigation measures in the form of a post clear-felling walk-over survey and a wade and metal detection survey of the temporary watercourse crossings is recommended, with the results of same informing any further mitigation which may be required such as preservation in situ, archaeological monitoring, etc. Any potential direct impacts to the archaeological resource will be effectively mitigated through the implementation of the recommended mitigation measures. No Protected Structures or NIAH structures are located within the Proposed Project site boundary or in the immediate vicinity of same. No direct or indirect effects to the surrounding built heritage resource are identified.

Material Assets

Traffic

An assessment was undertaken to determine the traffic effects of any additional traffic movements that will be generated on the surrounding road network due to the proposed removal of approximately 343 ha of coniferous forestry for the purposes of peatland-restoration and native woodland establishment at Derryclare, Co Galway.

The Proposed Project will generate relatively low numbers of additional HGV trips to and from the site. It is estimated that the activity will take place between the years 2023 and 2028 inclusive with the increased activity typically taking place over a 3 month period in each year. During these periods it is estimated that a minimum of 2 additional loads (or 4 x 2 way movements) and a maximum of 10 additional loads (or 20 x 2-way movements) will be generated per day. It is also estimated that a maximum of 4 additional car trips to and from the site will be generated by staff during these periods.

It is noted that background traffic volumes on the R344 are low and the local network will operate well within capacity up to and beyond the year 2028.

In traffic terms it is estimated that the impact of the Proposed Project will have a negative impact on the surrounding road network, that the impact will be short term (lasting 6 years) and that the severity will range from imperceptible in year 2023 to slight from 2024 to 2028.

Improvements at the existing forestry access junction on the R344 are proposed in order to formalise the junction and to improve visibility for drivers.

Land Use and Other Material Assets

This section of the EIAR sets out the impact assessment of the proposed development with regard to land use and other material assets.

Land-use on the site will change from commercial conifer forestry to blanket bog, wet heath and native woodland. The use of the proposed lands for the restoration of peatland and native woodland habitats will have a positive effect on the economic assets of the site as it will increase its value as a local amenity. Furthermore, the establishment of peatland will increase the ecosystem services values of the site by increasing the range of habitats and biodiversity on the site. The proposed project will have a long term, significant, positive effect on land use.

There are no above ground or underground services located within the proposed restoration areas. Therefore, the proposed project will have no impact on above ground or underground telecommunications networks, power infrastructure, or other services. There will be no impact on other material assets as a result of the proposed project. The proposed project will have no significant effects on other material assets.

Vulnerability to Natural Disaster

This section of the Environmental Impact Assessment Report (EIAR) describes the likely significant effects on the environment arising from the vulnerability of the proposed Derryclare project to risks of major accidents and/or natural disasters.

Major accidents or natural disasters are hazards which have the potential to affect the Project and consequently have potential impacts on the environment. These include accidents during construction and operation caused by operational failure and/or natural hazards. The assessment of the risk of major accidents and/or disaster considers all factors defined in the EIA Directive that have been considered in this EIAR, i.e., population and human health, biodiversity, land, soil (peat stability), water, air and climate and material assets, cultural heritage and the landscape.

A site-specific risk assessment was undertaken to identify and quantify risks focusing on unplanned, but possible and plausible events occurring during the construction and operation of the Project. The approach to identifying and quantifying risks associated with the Project by means of a site-specific risk assessment is derived from the EPA 'Guidance on Assessing and Costing Environmental Liabilities' document¹. The following steps were taken as part of the site-specific risk assessment:

- Risk identification
- Risk classification, likelihood and consequence; and
- Risk evaluation

The scenario with the highest risk score in terms of the occurrence of major accident and/or disaster was identified as 'Contamination' of the Project site and risk of 'Wildfire' during the construction and operational phases.

The Project has been designed in accordance with the best practice measures set out in this EIAR and, as such, mitigation against the risk of major accidents and/or disasters is embedded through the design.

The risk of a major accident and/or disaster during the construction of the Project is considered 'low' in accordance with the 'Guide to Risk Assessment in Major Emergency Management' (DoEHLG, 2010).

It is considered that when the mitigation and monitoring measures outlined in the EIAR and EMP are implemented and adhered to there will not be significant residual effect(s) associated with the construction, and operational of the Project.

Interaction of the Foregoing

The preceding sections of this Environmental Impact Assessment Report (EIAR) identify the potential environmental impacts that may occur in terms of Population and Human Health, Biodiversity, Land Soils and Geology, Water, Air and Climate, Noise & Vibration, Landscape & Visual, Cultural Heritage and Material Assets (including Traffic), as a result of the proposed development. All of the potential impacts of the proposed development and the measures proposed to mitigate them have been outlined in the preceding sections of this report. However, for any project with the potential for significant environmental impact there is also the potential for interaction amongst these impacts. The result of interactive impacts may either exacerbate the magnitude of an impact or ameliorate it.

A matrix is presented in Table 15-1 to identify interactions between the various aspects of the environment already discussed in this report. The matrix highlights the occurrence of potential positive or negative impacts of the proposed development. The matrix is symmetric, with each environmental

¹ EPA (2014) Guidance on assessing and costing environmental liabilities. Available at https://www.epa.ie/publications/compliance-enforcement/licensees/reporting/financial_provisions/EPA_OEE_Guidance_and_Assessing_WEB.pdf

component addressed in the previous sections of this report being placed on both axes of a matrix, and therefore, each potential interaction is identified twice. Interaction in the matrix does not imply a cumulative impact.

Interactions have been identified between effects on Population and Human Health and effects on Noise and Vibration, Air and Climate, Hydrology and Hydrogeology, and Landscape and Visual. Interactions have been identified between effects on Biodiversity, Flora and Fauna with effects on Soils and Geology, Hydrology and Hydrogeology, Noise and Vibration. Interactions have been identified between effects on Soils and Geology with effects on Hydrology and Hydrogeology. Interactions have been identified between effects on Air and Climate with effects on Material Assets.

Where any potential interactive effects have been identified, appropriate mitigation is included in the relevant sections (Sections 4-12) of the EIAR.

In general, there are no significant negative effects associated with the Proposed Project or potential interactions. The Proposed Project has been designed to ensure it is in keeping with its surrounds, has limited potential for environmental emissions and will have a generally positive effect biodiversity, water quality, landscape, and human beings. Where any potential negative impacts have been identified during the assessment process, these impacts have been avoided or reduced by design and the proposed mitigation measures, as presented throughout the EIAR and highlighted in Chapter 15.

The potential for interaction of effects has been assessed throughout this EIAR, as part of the impact assessment process. While the work on all parts of the EIAR was not carried out by MKO, the entire project and all the work of all sub-consultants was managed and coordinated by the company. This EIAR was edited and collated by MKO as an integrated report of findings from the impact assessment process, by all relevant experts, and effects that potentially interact have been assessed in detail in the individual chapters of the EIAR and summarised in Chapter 15.

Schedule of Mitigation Measures

All mitigation measures relating to the pre-commencement and construction phases of the proposed development are set out in the relevant chapters of the EIAR and Construction Environmental Management Plan (CEMP) submitted as part of this project.

It is intended that the CEMP will be updated where required prior to the commencement of the development, to include all mitigations measures, conditions and or alterations to the EIAR and application documents should they emerge during the course of the planning process and would be submitted to the Planning Authority (Galway County Council) for written approval.

All mitigation measures proposed for the project are outlined in Table 16-1. The mitigation measures have been grouped together according to their environmental field/topic.

The mitigation and monitoring proposals are set out in separate tables in the CEMP (Appendix 4-3) for clarity and tracking of the pre-commencement survey requirements. Where particular monitoring proposed is considered to be a measure of mitigation, it has been included in the consolidated table for all mitigation measures proposed in Chapter 16. The mitigation proposals are set out in tabular format to provide an easy to audit list that can be reviewed and reported on during the future phases of the project.

1 INTRODUCTION

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared by MKO on behalf of Coillte, which intends to apply to Galway County Council (GCC) for planning permission to restore approximately 343 hectares (ha) of coniferous forestry plantation for the purposes of peatland restoration in the townlands of Derryclare and Cloonnacartan in Co. Galway. A site location map is included as Figure 1-1.

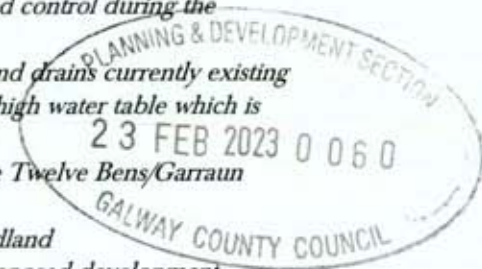
This EIAR which is prepared to accompany the planning application will assess all project components of the proposed works that will be submitted within the planning application to GCC. All elements of the proposed works included as part of the planning application will henceforth be referred to as the 'Proposed Project' throughout the EIAR.

1.2 Brief Description of the Project

Coillte Teoranta (the Applicant) is seeking planning permission to remove approximately 343 hectares of coniferous forestry plantation for the purposes of peatland restoration at Derryclare in Co. Galway. The project site lies to the west of Lough Inagh and Derryclare Lough in Connemara, Co. Galway, approximately 2.5 km north of the Galway to Clifden road (N59) at Recess. The Proposed Project is located within the townlands of Derryclare and Cloonnacartan.

The project will consist of the following:

1. *The felling/removal of some 343 hectares of conifer plantation for the purposes of peatland restoration and the establishment of native woodland.*
 - a. *Measures to restore and rehabilitate approximately 281 hectares of Atlantic blanket bog and heathland that is currently planted with lodgepole pine and Sitka spruce forests and managed for commercial forestry.*
 - b. *Conversion of 62 hectares of conifer forestry to native woodland.*
2. *Main peatland restoration measures will include tree removal, drain blocking (manual and mechanical) and ground reprofiling.*
3. *The control of existing invasive species on site and continued control during the restoration works to prevent their spread.*
4. *Drain-blocking all existing artificial drainage and artificial land drains currently existing within the peatland restoration areas in order to restore the high water table which is necessary for blanket bog growth*
5. *Provision of silt traps at outflows to block the pathway to the Twelve Bens/Garraun Complex Special Area of Conservation.*
6. *Deer fencing to protect 62 hectares of proposed native woodland*
7. *Provision of a Harvest Management Phasing Plan for the proposed development.*
8. *Provision of new internal access road extending to 1.58 km*
9. *Across the site there will be 4 no. temporary water-crossings constructed in order to facilitate the harvesting of the timber at the site.*
10. *Provision of informational signage.*
11. *Resurfacing of up to 8.23 km of existing forestry roads.*
12. *Resurfacing of existing car park to facilitate public access.*
13. *Installation of water monitoring stations for real time water monitoring during operations.*
14. *Cutting of roadside trees to improved sightline visibility at site entrance.*



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 scrub 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 planting techniques are provided in Chapter 4 of this EIAR.

References to Proposed Project

For the purposes of this EIAR, where the 'Proposed Project' is referred to, this relates to all the project components described in detail in Chapter 4 of this EIAR. Where 'The Site' is referred to, this relates to the primary study area for the project, as delineated by the EIAR Study Area in green as shown on Figure 1-1. Individual topics for assessment purposes, i.e., each chapter, indicate the study area used for that topic. The actual site boundary for the purposes of the planning permission application occupies a smaller area within the primary EIAR Site Boundary.

The EIAR Study Area encompasses an area of approximately 567 ha. The footprint of the proposed restoration area measures approximately 343ha. This accounts for approximately 60.7% of the primary EIAR study area. The planning area boundary for the Proposed Project measures approximately 348 hectares and includes all restoration areas, access roads, and the existing car park.

The Applicant

The applicant for the Proposed Project is Coillte Teoranta (Coillte), a commercial semi-state company operating in forestry, land-based businesses, renewable energy and panel products. Coillte manages an estate of 440,000 hectares (ha) which equates to 7% of the land area of Ireland. The estate includes 350,000 ha of productive forests and 91,000 ha of open space including areas designated with nature conservation as the primary management objective. In addition, the Coillte estate contains other areas of high conservation value forest where management activities are permitted only where they maintain or enhance such conservation values.

Coillte Nature is the not-for-profit division of Coillte that is dedicated to delivering real impact on the climate and biodiversity crises through innovative projects of scale. The aims of Coillte Nature are to create, restore, regenerate and rehabilitate biodiverse habitats across Ireland, to manage those habitats for ecological and recreational value in perpetuity and, in doing so, to maximise the ecosystem services they provide to people and nature for the benefit of everyone, now and into the future. The Proposed Project is an initiative of and will be under the management of Coillte Nature.



Map Land

ETAR Site Boundary



Site Location

Project Title Derryclare Wild Western Peatland Project	
Drawn By ER	Checked By TB
Project No. 210603	Drawing No. Figure 1-1
Scale 1:50,000	Date 07.02.23

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1.4

Need for the Project

1.4.1

Overview

The proposed Derryclare Wild Western Peatland Project is part of Coillte Nature's ongoing Wild Western Peatlands Project. The objective of the Wild Western Peatlands Project is to restore and rehabilitate approximately 2,100ha of Atlantic blanket bog and wet heath along the western seaboard of Ireland - that is currently planted with poorly performing inappropriate spruce and pine forests - to enhance biodiversity and improve carbon storage in the landscape. The Derryclare property was selected to be the pilot site for the Wild Western Peatlands Project as it represents all the expected challenges that are likely to be encountered in the restoration process at one site. Derryclare will act as an important demonstration area for Coillte and other stakeholders in managing the significant challenges posed by inappropriate forestry planting in sensitive western peatland areas and inform how best to manage other similar plantations in the future.

Atlantic blanket bog is a rare and precious habitat which is an important part of our cultural and environmental heritage. These landscapes provide a valuable habitat for many species including several rare plants, birds and invertebrate species. Pools that occur on the flatter areas of blanket bog support many mosses and plants and provide essential habitats for both migrating and resident wetland birds. 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 restore up to 281 hectares of blanket bog and wet heath habitat, as well as up to 62 hectares of native scrub woodland. This section sets out the need for the Proposed Project in the context of Ireland's biodiversity, peatland rehabilitation, native woodland, and climate policy goals and objectives.

1.4.2

National Biodiversity Objectives

In 2019 the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) reported that, on a global scale, biodiversity loss continues in an unprecedented manner (IPBES 2019). Land, ocean, atmosphere and biosphere are being altered to an unparalleled degree Globally, seventy-five per cent of the land surface has been significantly altered, 66 per cent of the ocean area is experiencing increasing cumulative impacts, and over 85 per cent of wetlands (area) has been lost. Unless action is taken to reduce the intensity of drivers of biodiversity loss, there will be a further acceleration in the global rate of species extinction, which is already at least tens to hundreds of times higher than it has averaged over the past 10 million years (IPBES 2019).

According to data from the 2019 Article 17 Overview Report on the Status of EU Protected Habitats and Species (DCHG, 2019) 85% of EU protected habitats in Ireland are reported as having 'Unfavourable' status. Over 46% of these protected habitats are experiencing ongoing declines, with only 2% showing improvement in their status. The main drivers of this decline are agricultural practices which are negatively impacting over 70% of habitats, particularly ecologically unsuitable grazing, abandonment and pollution. Both blanket bog and wet heath habitat types have Unfavourable/Bad status.

The status of blanket bogs in Ireland is bad and continues to deteriorate. There are a number of pressures that affect blanket bogs, including overgrazing, burning, afforestation, peat extraction, erosion, drainage, and agricultural activities causing nitrogen deposition.

The status of wet heath in Ireland is also bad and continues to deteriorate. Area losses continue due to new forestry, paths, tracks and land clearance. Other pressures include overgrazing, burning, wind farm

development and erosion. Nitrogen deposition from agricultural activities that generate air pollution has recently been recognised as negatively impacting this habitat. Climate change is also acknowledged to be a potential future threat to wet heath, due to expected rises in temperature and decreases in precipitation.

Ireland's national biodiversity objectives are set out in a number of key policy documents. These documents are discussed below

National Biodiversity Action Plan

As a party to the UN Convention on Biological Diversity (CBD), Ireland has made a commitment to prepare Action Plans towards the achievement of the Convention's targets: namely to secure the conservation of biological diversity; sustainable use of its components; and the equitable sharing of the benefits arising out of the utilisation of genetic resources. Ireland's 3rd National Biodiversity Action Plan (NBAP) 2017-2021, which was prepared to meet these commitments, sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's Vision for Biodiversity that *"biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally"*. Key objectives of the NBAP that are relevant to the proposed project include increasing awareness and appreciation of biodiversity and ecosystem services; conserving and restoring biodiversity and ecosystem services in the wider countryside; and expanding and improving management of protected areas and species.

Biodiversity Climate Change Sectoral Adaptation Plan

The Biodiversity Climate Change Sectoral Adaptation Plan (DCHG, 2019) considers terrestrial, freshwater and marine biodiversity and ecosystem services. The goal is to protect biodiversity from the impacts of climate change and to conserve and manage ecosystems so that they deliver services that increase the adaptive capacity of people and biodiversity. This is achieved by identifying adaptation options that will help to protect biodiversity and ecosystem services from the impacts of changing climate. A key objective of the plan is to *"Protect, restore and enhance biodiversity to increase the resilience of natural and human systems to climate change"*. Priority actions that are identified in the plan include restoring and enhancing natural systems through management to increase resilience and promoting ecosystem restoration and conservation through Payment for Ecosystem Services and investment in actions that increase carbon sinks while promoting biodiversity.

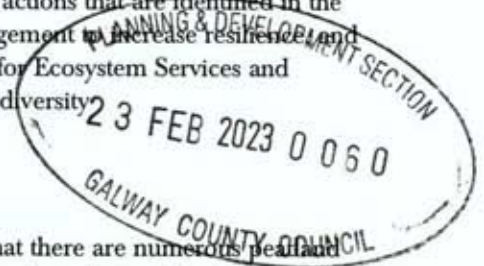
National Peatland Strategy

Section 5.8 of the National Peatlands Strategy (NPWS, 2016) notes that there are numerous peatland restoration programmes and individual site projects in progress. A number of raised bog sites are being restored, involving partnerships between State bodies, voluntary conservation groups (e.g. Irish Peatland Conservation Council) and local community groups. Rehabilitation of former bare peat production areas is resulting in a rich mosaic of semi-natural habitats including open water, poor fen, rich fen, scrub, grassland and heathland. Between 2002 and 2007 a Coillte LIFE project restored 1,989ha of blanket bog across 20 sites.

Principle P24 of the National Peatland Strategy is as follows:

- *"Coillte and Bord na Móna as the managers of significant tracts of peatlands on behalf of the Irish people will continue to show leadership in responsible management, rehabilitation and restoration of peatlands"*.

Coillte's current Wild Western Peatlands Project, of which the proposed Derryclare project is a part, aims to restore and rehabilitate approximately 2,100ha of Atlantic blanket bog and wet heath along the western seaboard of Ireland.



National Planning Framework

The Project Ireland 2040 National Planning Framework (NPF) is a planning framework to guide development and investment out to the year 2040. The NPF notes that the diversity of our biological communities is also important for the quality of our water, soils and as a source of food. Land use change, including in particular pressures from urbanisation, can have a direct and indirect impact on Ireland's habitats and species.

Under the NPF, the Government of Ireland pledges support to the protection and enhancement of carbon pools, such as forests, peatlands and permanent grasslands to ensure the inclusion of climate change as a matter of course in planning-related decision-making processes.

- National Policy Objective 54: Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions.

Additionally, the NPF highlights the tourism potential for peatlands, stating the following:

- National Policy Objective 22: Facilitate tourism development and in particular a National Greenways, Blueways and Peatways Strategy, which prioritises projects on the basis of achieving maximum impact and connectivity at national and regional level.

The Proposed Project will contribute to meeting Ireland's national biodiversity objectives as discussed above by restoring up to 281 hectares of blanket bog and wet heath habitat, and establishing up to 62 hectares of native scrub woodland that will promote greater biodiversity through habitat enhancement. The presence of an array of habitats (from both existing broadleaf woodland and blanket bog, and proposed blanket bog and wet heath restoration) will, in time, support an increasing number of flora and fauna species.

1.4.3 National Peatlands Strategy

In April 2011, the Government of Ireland made a number of key decisions relation to the conservation and management of Ireland's peatlands, particularly those sites nominated for designation as Special Areas of Conservation (SAC) and Natural Heritage Areas (NHA). A national strategy on peatlands conservation and management was drawn up to provide direction Ireland's approach to peatland management.

Significant areas of Ireland's peatlands are owned and managed by public bodies, including Coillte and Bord na Móna. Coillte is the largest single landowner of blanket peatlands in Ireland and is the best placed organisation to deliver significant peatland habitat restoration at scale. The National Peatlands Strategy (NPS) acknowledges and includes Coillte's restoration works on afforested peatlands in Ireland by supporting Coillte's view that restoration will have a positive effect beyond the actual restoration area, for instance, on the adjoining intact bog that had been previously subject to "collateral" drainage effects. Coillte's previous LIFE projects (See Section 1.4.2, above) have also resulted in increased knowledge and public awareness of the large-scale restoration of modified bog habitats across Ireland, therefore encouraging community engagement.

The following policy objectives have been outlined in relation to peatlands under Coillte management.

- NPS P 12: Future management of these State-owned peatlands will be in keeping with the objectives of the Strategy.
- NPS A 8: As part of the Forest Policy Review, the relevant authorities, working with stakeholders, will introduce guidance and criteria for the identification and future

management of peat areas currently afforested. They will also provide clear guidance on future afforestation of peat soils.

- NPS A 9: The present management of State-owned peatland areas will be evaluated and alternative management options aimed increasing the delivery of all the ecosystem services of naturally functioning peatlands will be considered.
- NPS P 22: The work of Bord na Móna, Coillte and the Irish Peatlands Conservation Council in developing ecologically rich futures for cutaway and formerly forested bogs will be developed. Such areas can bring new tourism and recreation attractions to the midlands and the west.
- NPS P 30: Coillte and Bord na Móna as the managers of significant tracts of peatlands on behalf of the Irish people will continue to show leadership in responsible management, rehabilitation and restoration of peatlands.

The Proposed Project is in keeping with the policy objectives listed above.

1.4.4

Native Woodland Establishment and Afforestation Targets

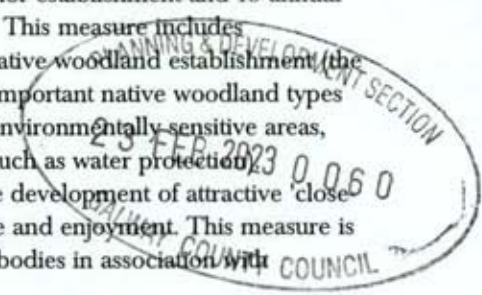
National policy is aimed towards increasing Ireland's forest cover in a sustainable manner. The document *Forests, Products and People: Ireland's forest policy – a renewed vision* (DAFM, 2014) sets out an updated national forest policy strategy that takes account of the substantial changes that have occurred in Irish forestry since the publication of its forerunner, *Growing for the Future* (DAFM, 1996).

The Forestry Programme 2014-2020 identifies four main requirements in relation to Ireland's forest sector:

- Increase on a permanent basis, Ireland's forest cover to capture carbon, produce wood and assist in climate mitigation;
- Increase and sustain the production of forest-based biomass to meet renewable energy targets;
- Support forest owners to actively manage their plantations;
- Optimise the environmental and social benefits of new and existing forests.

To meet these needs the Forestry Programme 2014-2020 proposes the following measures:

- Afforestation and Creation of Woodland: Support for establishment and 15 annual premium payments for the creation of new forests. This measure includes afforestation, agro-forestry, forestry for fibre, and native woodland establishment (the latter focused on creating new woodland areas of important native woodland types and opportunities for habitat connectivity, and in environmentally sensitive areas, with a view to realising wider eco-system services such as water protection).
- NeighbourWood Scheme: Provides support for the development of attractive 'close to-home' woodland amenities for public access, use and enjoyment. This measure is aimed primarily at local authorities and semi-state bodies in association with community groups.
- Forest Roads: Support for the construction of forest roads is provided under this measure.
- Reconstitution Scheme: Support for forest owners to restore and retain forests following significant damage by natural causes.
- Woodland Improvement Scheme: This scheme provides support for forest management operations for broadleaf woodlands and actions within existing forests, which effect structural changes aimed to improve timber quality and protecting and enhancing water quality and other environmental sensitivities.
- Native Woodland Conservation Scheme: Supports the protection and enhancement of existing native woodlands and where appropriate, the conversion of conifer forests



to native woodlands. This measure is focused on important native woodland types and opportunities for habitat connectivity, and in environmentally sensitive areas, with a view to realising wider eco-system services such as water protection.

- Knowledge Transfer and Information Actions: Supports the setting up of knowledge transfer groups, continuous professional development, and training.
- Producer Groups: Support is provided under this measure to help forest owners to work together to create a critical mass for forestry operations and mobilising timber;
- Innovative Forest Technology: Support for early adopters of new technology, e.g. low impact harvesters and/or inventory equipment.
- Forest Genetic Reproductive Material: Annual payment towards the cost of managing and conserving registered seed stands and establishing seed orchards.
- Forest Management Plans: Support for forest owners to prepare management plans for their forest holdings.

Under the Forestry Programme 2014-2020, the objectives of the Native Woodland Afforestation and Conservation Schemes (NWS) include the creation of 2,700 hectares of new native woodlands and the conservation of 1,950 hectares of existing native woodland (including conversion from conifer forest to native woodland), respectively. The Forest Programme sets out a target of 1,070 hectares under the 'public woodland' category for the Native Woodland Conservation Scheme. Almost €24 million is provided under these two scheme measures for the implementation of the NWS of the Forestry Programme.

While the Proposed Project will result in a reduction in overall forested area, the areas targeted for restoration have been concentrated in areas where the existing forest is performing poorly and is deemed unsuitable and inappropriate for sustainable forestry and are at odds with climate and biodiversity policy. These poorly performing forest areas tend to be the least modified and contain peat characteristics that lend themselves well to peatland habitat restoration. Despite the proposed reduction in overall forested area, the Proposed Project will provide a contribution towards meeting Ireland's native woodland targets under the Forestry Programme 2014-2020 by establishing up to 62 hectares of native woodlands in public ownership. The proposed native woodland establishment areas are focused on areas adjacent to existing native woodlands at the site. At the time of writing, the Forestry Programme 2023-2027 has not been published.

1.4.5

National climate objectives

The *Climate Action Plan* (DCCAE, 2021) which features 493 action plans sets out how Ireland will achieve a 51% reduction in overall greenhouse gas emissions by 2030 and lay the foundations for achieving net zero carbon emissions by 2050.

One of the key targets in relation to wetlands is '*...rehabilitating 65,000 hectares of peatlands across numerous landowners and projects*' by 2030. Ongoing and proposed measures to deliver the target include:

- Restore/rewet raised bog Special Areas of Conservation and Natural Heritage Areas as set out in the National Raised Bog Special Areas of Conservation Management Plan 2017-2022. Such restoration measures, and hydrological management of our protected peatlands, will halt and reduce peat oxidation and carbon loss.
- Undertake further research to assess the potential to sequester, store and reduce emissions of carbon through the management, restoration and rehabilitation of peatlands as outlined in the National Peatlands Strategy.
- Upgrade land-use and habitat mapping systems to establish the baseline condition of wetlands, and inform the development of best-practice guidelines for wetland management, including the management of degraded sites and peatlands currently exploited for energy peat extraction.

- Develop further measures to help rehabilitate exploited and degraded peatlands, including as part of national land-use planning and the new Common Agricultural Policy, and recognising that strategies may need to differ between regions.

The Proposed Project would enhance the rehabilitation of peatland by restoring up to 278 hectares of blanket bog and wet heath that is currently drained and planted in poorly performing coniferous forestry. The rehabilitation of peatlands on the Derryclare site is focused on rewetting forested peats with the goal of re-establishing active peat bogs and other wetland habitats and so reverse the loss of carbon to the atmosphere from drying peats.

"Completion of project plan for Derryclare pilot site in Co. Galway" is identified as a step necessary for the delivery of Action 372 (Minimise the impact of deforestation on GHG emissions, while supporting wider government policies) of the Climate Action Plan. This step has now been completed and the Proposed Development consists of the implementation of the project plan for the Derryclare Site and will therefore contribute to achieving the targets of the Climate Action Plan.

1.4.6 Recreational Benefits

In addition to the environmental benefits discussed above there will be potential social and recreational benefits associated with new woodlands.

The Proposed Project creates an opportunity to establish recreational and eco-tourism for use by members of the local and wider community alike. The establishment of native woodlands, in combination with rehabilitated peatland and wetland areas will be attractive to locals and visitors to the area because of its wildlife, history and variety of landscapes. This will provide a long-term benefit to both the local community and visitors to the area. Coillte operates an open forest policy that encourages the use of Coillte Forests for recreation.

Through previous EU LIFE rehabilitation projects on raised bogs, blanket peats and old woodlands, Coillte have demonstrated that creating locations where the public can explore the rich environmental fabric of these areas, with engaging interpretative materials on location, really brings them to life for visitors. Creating a greater understanding of the benefits to society that these restoration projects deliver, and where visitors can see and experience the changes to this habitat and landscape, will engender greater support for similar projects into the future.

1.4.7 Landscape Benefits

The Coillte property at Derryclare lies to the west of Lough Inagh and Derryclare Lough in Connemara. This area is a key tourist and angling destination and is close to the Wild Atlantic Way and the Western Way. The forest is very visible from the surrounding area, and when it was planted over 50 years ago there was little consideration given to landscape design. This iconic site contains areas of high biodiversity value and therefore offers great potential for redesign and restoration. The removal of large blocks of non-native pine and Sitka spruce plantations will result in an improvement in the landscape aesthetics of the scenic Inagh Valley by lowering the treeline from upper slopes to allow the property to blend in better with the surrounding landscape.



1.5 Legislative Context

1.5.1 Environmental Impact Assessment

The consolidated European Union Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the 'EIA Directive'), was transposed into Irish planning legislation by the Planning and Development Acts 2000 to 2022 and the Planning and Development

Regulations 2001 to 2022. The EIA Directive was amended by Directive 2014/52/EU which has been transposed into Irish law with the recent European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

Accordingly, this EIAR complies with the EIA Directive as amended by Directive 2014/52/EU. Regard has been had to the existing provisions of the Planning and Development Act 2000 to 2019 and the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

The European Union Directive 2011/92/EU, amended by EU Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment (the 'EIA Directive'), requires Member States to ensure that a competent authority carries out an assessment of the likely significant effects of certain types of project, as listed in the Directive's, prior to development consent being given for the project. This EIAR complies with the EIA Directive as amended by Directive 2014/52/EU. The Environmental Impact Assessment (EIA) of the Proposed Project will be undertaken by Galway County Council as the competent authority. Article 5 of the EIA Directive as amended by Directive 2014/52/EU provides where an EIA is required, the developer shall prepare and submit an environmental impact assessment report (EIAR). The information to be provided by the developer shall include at least:

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

In addition, Schedule 6 to the Planning and Development Regulations 2001 to 2022 sets out the information to be contained in an EIAR, with which this EIAR complies.

MKO was appointed as environmental consultant on the Proposed Project and commissioned to prepare this EIAR in accordance with the requirements of the EIA Directive as amended by Directive 2014/52/EU.

1.5.2

EIA Screening

Deforestation for the purposes of conversion to another land use is classified as a form of development in Annex II, Paragraph 1(d) of the EIA Directive, which means at a minimum, such developments must be screened for the need for an EIA (pursuant to Article 4(2) of the Directive) either on:

- > A case-by-case basis, or
- > Where they are equal to, exceed or are below thresholds set by the Member State

This EU legal requirement is transposed into national Irish planning law *inter alia* by:

- > The Planning & Development Acts 2000 to 2015; and
- > The Planning & Development Regulations 2001 to 2013

Under the Planning & Development Act 2000, as amended (Part 1, section 4(1)(i)),

- (i) *development consisting of the thinning, felling and replanting of trees, forests and woodlands, the construction, maintenance and improvement of non-public roads serving forests and woodlands and works ancillary to that development, not including the replacement of broadleaf high forest by conifer species; is classed as 'exempted development'.*

This means that it does not require planning permission from the local planning authority. However, this form of development does require other statutory consents, namely a felling licence and a licence for forest road construction under the Forestry Act 2014, as set out in the Forestry Regulations 2017 (S.I. 191 of 2017).

As deforestation is not listed as an 'exempted development' in the Planning & Development Acts or Regulations and as there is a mandatory threshold set out in the Schedule 5, Part 2, Paragraph 1(d) (iii) of the Planning & Development Regulations 2001, as amended, which requires

'deforestation for the purpose of conversion to another type of land use, where the area to be deforested would be greater than 10 hectares of natural woodlands or 70 hectares of conifer forest...'

to be subject to an EIA (and developments below that threshold involving deforestation to be screened for EIA), projects involving deforestation must obtain (in addition to a felling licence) planning permission either from the local planning authority or from An Bord Pleanála.

Since the Proposed Project will include the conversion of more than 70 hectares of coniferous forestry to blanket bog and wet heath habitat an EIA is required. MKO has been appointed as Environment Consultants for the project and will prepare an EIAR in support of the planning application. The EIAR will be prepared in accordance with the requirements of Schedule 6 of the Planning and Development Regulations 2001, as amended, Directive 2014/52/EU, amending Directive 2011/92/EU, relating to the information to be contained in an EIAR, and the Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (May 2022).

The EIAR provides information on the receiving environment and assesses the likely significant effects of the proposed project on it and proposes mitigation measures to avoid or reduce these effects. The function of the EIAR is to provide information to allow the competent authority to conduct the EIA of the proposed project. All elements of the overall project have been assessed as part of this EIA.

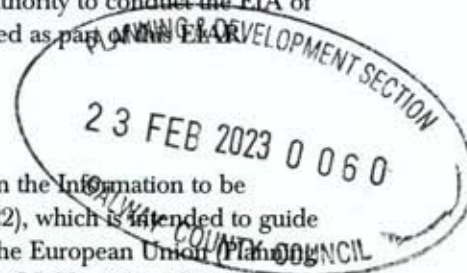
1.5.3

EIAR Guidance

The Environmental Protection Agency (EPA) published its 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, May 2022), which is intended to guide practitioners preparing an EIAR in line with the requirements set out in the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

In preparing this EIAR regard has also been taken of the provisions of the 'Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment', published by the Department of Housing, Planning and Local Government (DHPLG) in August 2018 to the extent these guidelines are relevant having regard to the enactment of the revised EIA Directive.

The European Commission also published a number of guidance documents in December 2017 in relation to Environmental Impact Assessment of Projects (Directive 2011/92/EU as amended by 2014/52/EU) including 'Guidance on Screening', 'Guidance on Scoping' and 'Guidance on the preparation of the Environmental Impact Assessment Report'. MKO has prepared the EIAR with regard to these guidelines also.



Purpose and Scope of the EIAR

The purpose of this EIAR is to document the current state of the environment in the vicinity of the proposed project site and to quantify the likely significant effects of the Proposed Project on the environment, in accordance with the requirements of the EIA Directive. The compilation of this document serves to highlight any areas where mitigation measures may be necessary in order to protect the surrounding environment from the possibility of any negative impacts arising from the Proposed Project.

It is important to distinguish the EIA to be carried out by the Forest Service, DAFM, from the EIAR accompanying the application. The EIA is the assessment carried out by the competent authority, which includes an examination that identifies, describes and assesses in an appropriate manner, in the light of each individual case and in accordance with Articles 4 to 11 of the Environmental Impact Assessment Directive, the direct and indirect effects of the Proposed Project on the following:

- a) *population and human health*
- b) *biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC*
- c) *land, soil, water, air and climate*
- d) *material assets, cultural heritage and the landscape*
- e) *the interaction between the factors referred to in points (a) to (d)*

The EIAR submitted by the applicant provides the relevant environmental information to enable the EIA to be carried out by the competent authority. The information to be contained in the EIAR is prescribed Article 5 of the revised EIA Directives described in Section 1.5 above.



Structure and Content of the EIAR

General Structure

This EIAR uses the grouped structure method to describe the existing environment, the potential impacts of the Proposed Project thereon and the proposed mitigation measures. Background information relating to the Proposed Project, scoping and consultation undertaken and a description of the Proposed Project are presented in separate sections. The grouped format sections describe the impacts of the Proposed Project in terms of population and human health, biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; land, soils and geology, water, hydrology and hydrogeology, air and climate, noise and vibration, landscape and visual, cultural heritage and material assets such as traffic and transportation, together with the interaction of the foregoing

The chapters of this EIAR are as follows:

- Introduction
- Background to the Proposed Project
- Consideration of Reasonable Alternatives
- Description of the Proposed Project
- Population and Human Health
- Biodiversity,
- Land, Soils and Geology
- Hydrology and Hydrogeology
- Air and Climate
- Noise and Vibration
- Cultural Heritage
- Landscape and Visual
- Material Assets – including Traffic and Transport
- Vulnerability to Major Accidents and Natural Disasters
- Interaction of the Foregoing
- Schedule of Mitigation

The EIAR also includes a non-technical summary, which is a condensed and easily comprehensible version of the EIAR document. The non-technical summary is laid out in a similar format to the main EIAR document and comprises a description of the proposed project followed by the existing environment, impacts and mitigation measures presented in the grouped format.

Description of Likely Significant Effects and Impacts

As stated in the *Guidelines on the Information to be contained in Environmental Impact Statements* (EPA, 2022), an assessment of the likely impacts of a Proposed Project is a statutory requirement of the EIA process. The statutory criteria for the presentation of the characteristics of potential impacts requires that potential significant impacts are described with reference to the extent, magnitude, complexity, probability, duration, frequency, reversibility and trans-frontier nature (if applicable) of the impact.

The classification of impacts in this EIAR follows the definitions provided in the Glossary of Impacts contained in the following guidance documents produced by the Environmental Protection Agency (EPA):

- *Guidelines on the Information to be contained in Environmental Impact Assessment Reports – May 2022* (EPA, 2022).



- *Advice Notes for Preparing Environmental Impact Statements – Draft September 2015* (EPA, 2015).
- *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements* (EPA, 2003)

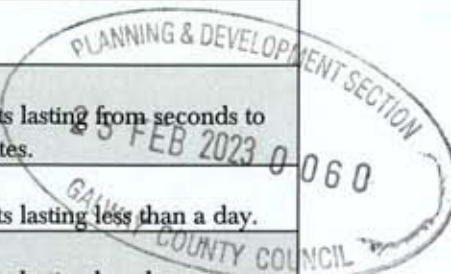
Table 1-1 presents the glossary of impacts as published in the EPA guidance documents. Standard definitions are provided in this glossary, which permit the evaluation and classification of the quality, significance, duration and type of impacts associated with a Proposed Project on the receiving environment. The use of pre-existing standardised terms for the classification of impacts ensures that the EIA employs a systematic approach, which can be replicated across all disciplines covered in the EIAR. The consistent application of terminology throughout the EIAR facilitates the assessment of the Proposed Project on the receiving environment.

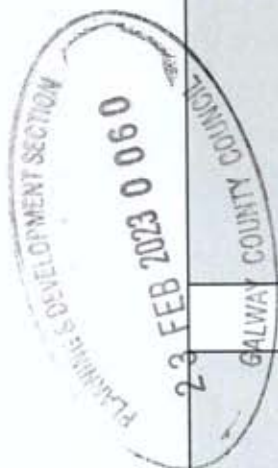
Table 1-1 Impact Classification Terminology (EPA, 2017)

Impact Characteristic	Term	Description
Quality	Positive	A change which improves the quality of the environment.
	Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative	A change which reduces the quality of the environment.
Significance	Imperceptible	An effect capable of measurement but without significant consequences.
	Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends.
	Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.



Impact Characteristic	Term	Description
	Very significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound	An effect which obliterates sensitive characteristics.
Extent & Context	Extent	Describe the size of the area, number of sites and the proportion of a population affected by an effect.
	Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions.
Probability	Likely	Effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
	Unlikely	Effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration and Frequency	Momentary	Effects lasting from seconds to minutes.
	Brief	Effects lasting less than a day.
	Temporary	Effects lasting less than a year.
	Short-term	Effects lasting one to seven years.
	Medium-term	Effects lasting seven to fifteen years.
	Long-term	Effects lasting fifteen to sixty years.





Impact Characteristic	Term	Description
	Permanent	Effect lasting over sixty years.
	Reversible	Effects that can be undone, for example through remediation or restoration.
	Frequency	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).
Type	Indirect	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
	'Do Nothing'	The environment as it would be in the future should the subject project not be carried out.
	Worst Case'	The effects arising from a project in the case where mitigation measures substantially fail.
Type	Indeterminable	When the full consequences of a change in the environment cannot be described.
	Irreversible	When the character, distinctiveness, diversity, or reproductive capacity of an environment is permanently lost.
	Residual	Degree of environmental change that will occur after the proposed mitigation measures have taken effect.

Impact Characteristic	Term	Description
	Synergistic	Where the resultant effect is of greater significance than the sum of its constituents.

Each impact is described in terms of its quality, significance, extent, duration, and type, where possible. A 'Do-Nothing' impact is also predicted in respect of each environmental theme in the EIAR. Residual impacts are also presented following any impact for which mitigation measures are prescribed. The remaining impact types are presented as required or applicable throughout the EIAR.

Any potential interactions between the various aspects of the environment assessed throughout this EIAR are presented in Chapter 15: Interaction of the Foregoing.

1.8

Project Team

The companies and staff listed in Table 1-2 were responsible for completion of the EIA of the proposed project. Further details regarding project team members are provided below.

The EIAR project team comprises a multidisciplinary team of experts with extensive experience in the preparation of EIARs and in their relevant area of expertise. The qualifications and experience of the principal staff from each company involved in the preparation of this EIAR are summarised in Section 1.9.1 below. Each chapter of this EIAR has been prepared by a competent expert in the subject matter. Further details on project team expertise are provided in the Statement of Authority at the beginning of each effect assessment chapter.

Table 1-2 Companies and Staff Responsible for EIAR Completion

Consultants	Principal Staff Involved in Project	EIAR Input
MKO Tuam Road, Galway, H91 VW84	Michael Watson Thomas Blackwell Edward Ryan Sanghamitra Nidhi Dutta Pamela Harty Pat Roberts Jack Smith Jack Workman Sarah Mullen Pdraig Desmond Joseph O'Brien	EIAR Project Managers, Scoping and Consultation, Preparation of Natura Impact Statement, EIAR Sections: 1. Introduction 2. Background to the Proposed Project 3. Reasonable Alternatives 4. Description of the Proposed Project 5. Population & Human Health 6. Biodiversity, Flora & Fauna 9. Air and Climate 10. Noise and Vibration 12. Landscape & Visual 13. Material Assets 14. Vulnerability to Natural Disaster and Major Accidents 15. Interaction of the Foregoing 16. Schedule of Mitigation
Hydro Environmental Services 22 Lower Main Street	Michael Gill Conor McGettigan	Drainage Design, Preparation of EIAR Sections:

Consultants	Principal Staff Involved in Project	EIAR Input
Dungarvan Co. Waterford		7. Land, Soils & Geology 8. Hydrology & Hydrogeology
Tobar Archaeological Services Saleen, Midleton, Co. Cork	Miriam Carroll Annette Quinn	Archaeological Impact Assessment and preparation of EIAR Section: 11. Cultural Heritage
Alan Lipscombe Traffic and Transport Consultants Claran, Headford, Co. Galway	Alan Lipscombe	13. Material Assets (Traffic and Transport)
Fehily Timoney Core House, Pouladuff Road, Ballyphehane, Cork, T12 D773	Ian Higgins Aaron Clarke	Peat Stability Assessment

MKO Team

Michael Watson – Project Director

Michael Watson is Project Director and head of the Environment Team in McCarthy Keville O'Sullivan (MKO). Michael has over 17 years' experience in the environmental sector. Following the completion of his Master's Degree in Environmental Resource Management, Geography, from National University of Ireland, Maynooth he worked for the Geological Survey of Ireland and then a prominent private environmental & hydrogeological consultancy prior to joining MKO in 2014. Michael's professional experience includes managing Environmental Impact Assessments, EPA License applications, hydrogeological assessments, environmental due diligence and general environmental assessment on behalf of clients in the wind farm, waste management, public sector, commercial and industrial sectors nationally. Michael's key strengths include project strategy advice for a wide range and scale of projects, project management and liaising with the relevant local authorities, Environmental Protection Agency (EPA) and statutory consultees as well as coordinating the project teams and sub-contractors. Michael is a key member of the MKO senior management team and as head of the Environment Team has responsibilities to mentor various grades of team members, foster a positive and promote continuous professional development for employees. Michael also has a Bachelor of Arts Degree in Geography and Economics from NUI Maynooth, is a Member of IEMA, a Chartered Environmentalist (CEnv) and Professional Geologist (PGeo).

Thomas Blackwell – Senior Environmental Consultant

Thomas is a Senior Environmentalist with MKO with over 15 years of progressive experience in environmental consulting. Thomas holds a BA (Hons) in Geography from Trinity College Dublin and a M.Sc. in Environmental Resource Management from University College Dublin. Prior to taking up his position with MKO in August 2019, Thomas worked as a Senior Environmental Scientist with HDR, Inc. in the United States and held previous posts with private consulting firms in both the USA and Ireland. Thomas is a registered Professional Wetland Scientist with the Society of Wetland Scientists with specialist knowledge in wetland assessment and delineation, mitigation planning and design, stream geomorphic assessment, and stream and wetland restoration design. Thomas' professional experience includes managing Environmental Impact Assessments, environmental permitting, environmental due diligence and compliance, and general environmental assessment on behalf of clients in the solar farm, mining, solid waste management, residential and commercial development, and public sectors. Thomas' key strengths and areas of expertise are in project management and

strategy development, environmental permitting and assessment for renewable energy projects, fluvial geomorphology and stream restoration design. Since joining MKO, Thomas has been involved as an Environmental Consultant on a range of energy infrastructure, and residential projects.

Sanghamitra Nidhi Dutta – Environmental Scientist

Sanghamitra is an Environmental Scientist with two years of experience in the environmental consultancy sector. She has a BSc. in Environmental Scientist and an MSc. in Ecosystem Science and Policy from University College Dublin.

Edward Ryan – Environmental Scientist

Edward is an Environmental Scientist with MKO with over three years of consultancy experience and has been involved the compilation of numerous EIAR chapters, including the preparation of air and climate assessments and reports, for various projects. Edward holds a BSc. in Earth Science and a MSc. in Climate Change: Integrated Environmental and Social Science Aspects.

Jack Smith – Environmental Scientist and LVIA Specialist

Jack is an Environmental Scientist with MKO having joined the company in May 2021. Jack holds a BCL (Hons) Law, an LLM (International Environmental and Energy Law), and a MSc (Hons) in Environmental Science where he focused his studies on Renewable Energy and Marine Spatial Planning. Jack's key strengths and expertise are in geographic information systems, data analysis, report writing and landscape and visual impact assessment. Since joining MKO, Jack has been involved in a range of projects, including residential developments, quarries, wind energy developments and solar energy developments. In his role as an environmental scientist within the Landscape Team, Jack works with other members of the team in the preparation and production of Landscape and Visual Impact Assessment chapters of EIA reports.

Jack Workman – Environmental Scientist and LVIA Specialist

Jack Workman is an Environmental Scientist and Landscape and Visual Impact Assessment Specialist with MKO. Jack's primary role at MKO is within the landscape team where he produces the Landscape Visual Impact Assessment (LVIA) chapter of Environmental Impact Assessment reports. Jack holds a BSc. In Psychology, an MSc. in Coastal and Marine Environments (Physical Processes, Policy & Practice) where he was awarded the Prof. Máirín De Valéra distinction in science research award. Prior to taking up his position with MKO, Jack worked as a Geospatial Analyst and Research Assistant with NUIG and also held previous posts in the coastal engineering sector with Royal Haskoning DHV and Saltwater Technologies. Since joining MKO in February 2020, Jack has conducted and project managed all aspects of LVIA for a broad range of commercial infrastructure developments including wind and solar energy projects, grid infrastructure, extraction industry and Strategic Housing Developments. Jack has utilised his specialist knowledge in LVIA to deliver effective consultation during the early-stage design of large infrastructure developments as well as conducting Landscape Capacity Assessments and feasibility studies. Jack holds a membership with the Chartered Institute of Water and Environmental Management, he is an Affiliate member with the British Landscape Institute and is also an active member of the Landscape Research Group.

Pamela Harty – Senior Planner

Pamela is a Senior Planner with MKO with over 13 years of experience in both private practice and local authorities. Prior to taking up her position with MKO in 2015, Pamela worked as a Senior Planner with SLR Consulting Ltd. and held previous posts with Moray Council in Scotland, the Heritage Council of Ireland, Kilkenny Borough Council and North Tipperary County Council. A chartered member of both the Irish Planning Institute and Royal Town Planning Institute, Pamela has project



managed a range of strategy and development projects across the Ireland and the UK. Pamela has extensive experience in strategic planning, regeneration, development consultancy, statutory plan preparation, environmental impact assessment, community engagement, urban design and masterplanning. Pamela's key strengths and areas of expertise are in project management, development management/masterplanning, socio economic impact assessments and collaborative planning. Since joining MKO Pamela has been involved as a Senior Planning Consultant on a significant range of energy infrastructure, commercial, student housing and Strategic Housing Development. Within MKO Pamela plays a large role in the management and confidence building of junior members of staff and works as part of a large multi-disciplinary team to produce EIA Reports.

Pat Roberts – Ecology Director

Pat Roberts joined MKO (then Keville & O'Sullivan Associates) in 2005 following completion of a B.Sc. in Environmental Science. He has extensive experience of providing ecological services in relation to a wide range of developments at the planning, construction and monitoring stages. He has wide experience of large scale industrial and civil engineering projects. He is highly experienced in the completion of ecological baseline surveys and impact assessment at the planning stage. He has worked closely with construction personnel at the set-up stage of numerous construction sites to implement and monitor any prescribed best practice measures. He has designed numerous Environmental Operating Plans and prepared many environmental method statements in close conjunction with project teams and contractors. He has worked extensively on the identification, control and management of invasive species on numerous construction sites.

Pat has worked as project manager and ecologist on numerous ecological assessments completed by the company to date, including a wide range of work within sensitive ecological areas, and currently manages the work of the MKO Ecology Team.

Sarah Mullen – Senior Ecologist

Sarah is a Senior Ecologist with MKO with over 5 years of experience in ecological consultancy. Sarah holds a B.Sc. (Hons) in Botany, an M.Sc. in Biodiversity and Conservation and a Ph.D. in Botany, in which she investigated the role of biodiversity in the functioning of plant-pollinator interactions in semi-natural grassland habitats. Prior to taking up her position with MKO in September 2018, Sarah worked as an Ecologist with Ryan Hanley Ltd. where she gained experience in multidisciplinary ecological surveys, ecological impact assessment and appropriate assessment. Since joining MKO Sarah has been responsible for the management and undertaking of flora, fauna and habitat surveys for a range of projects including energy infrastructure and public and private residential developments and for the preparation of Ecological Impact Assessments, Stage 1 and Stage 2 Appropriate Assessment reports and Biodiversity/Habitat Management Plans. Sarah's key strengths and areas of expertise are in terrestrial flora and fauna ecology, including vegetation surveys, habitat mapping, invasive species surveys, mammal surveys, Appropriate Assessment and Ecological Impact Assessment. She holds membership with the Chartered Institute of Ecology and Environmental Management.

Pádraig Desmond – Ecologist

Pádraig is an Ecologist with MKO who began working with the company in December 2021. Pádraig holds a B.Sc. (Hons) in Ecology and Environmental Biology from University College Cork. Since joining MKO, Pádraig has worked on several large-scale projects, including wind farm and solar farm developments, as part of a multi-disciplinary team, while also project managing smaller proposed developments. Prior to taking up his role with MKO, Pádraig worked with Envirico as a Junior Ecologist where his primary role was carrying out ecological surveys for NPWS, Coillte, and private entities. In all, Pádraig has over 2 years' experience working in ecological consultancy. Prior to the Envirico role, Pádraig worked with the Department of Conservation of New Zealand as a Field Ecologist. Pádraig's key strengths are in producing ecological reports for planning applications and

carrying out the required surveys, such as: upland botanical surveys, mammal surveys, invasive species surveys, stream characterization and assessments, and Annex I habitat assessments.

Joseph O'Brien – CAD & Mapping Technician

Joseph O'Brien holds the position of CAD Technician with McCarthy Keville O'Sullivan Ltd. since joining the Company in June 2016. Prior to joining MKO, Joseph worked as a free-lance Modelmaker and CAD Technician. His previous experience included designing various models and props through CAD and then made them for various conventions such as Dublin Comic Con and Arcade Con. Joseph holds a BA Honours Level 8 in Modelmaking, Design and Digital Effect from the Institute of Art Design and Technology and also holds a City & Guilds Level 3 in 2D and 3D AutoCAD. Joseph is responsible for mapping and drawings completed by the company and is proficient in the use of MapInfo GIS software in addition to AutoCAD and other design and graphics packages.

1.8.2 External Team

1.8.2.1 Hydro Environmental Services Ltd.

Michael Gill

Michael Gill is an Environmental Engineer with over 22 years' environmental consultancy experience in Ireland. Michael has completed numerous hydrological and hydrogeological impact assessments of wind farms in Ireland. He has also managed EIA/EIS assessments for infrastructure projects and private residential and commercial developments. In addition, he has substantial experience in wastewater engineering and site suitability assessments, contaminated land investigation and assessment, wetland hydrology/hydrogeology, water resource assessments, surface water drainage design and SUDs design, and surface water/groundwater interactions.

Conor McGettigan

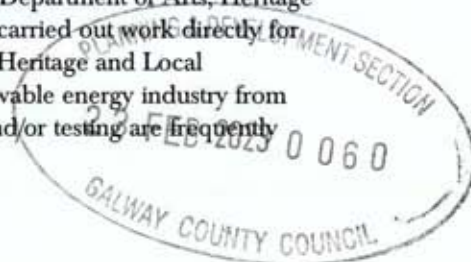
Conor McGettigan (BSc, MSc) is an Environmental Scientist with 3 years' experience in the environmental sector in Ireland. Conor holds an M.Sc. in Applied Environmental Science (2020) and a B.Sc. in Geology (2016) from University College Dublin. Conor has prepared the land, soils and geology chapters of environmental impact assessment reports for a wide range of developments including several wind farm developments on peatlands.

1.8.2.2 Tobar Archaeological Services

Miriam Carroll & Annette Quinn

Tobar Archaeological Services have been in operation since 2003 and offer professional nationwide services ranging from pre-planning assessments to archaeological excavation, and cater for clients in state agencies, private and public sectors.

Tobar's Directors, Annette Quinn and Miriam Carroll are licensed by the Department of Arts, Heritage and the Gaeltacht (DoAHG) to carry out excavations in Ireland and have carried out work directly for the National Monuments Services of the Department of the Environment, Heritage and Local Government (now DoAHG). Tobar has a proven track record in the renewable energy industry from EIS stage through to construction stage when archaeological monitoring and/or testing are frequently required.



1.8.2.3 Fehily Timoney

Ian Higgins

Ian Higgins (BSc Engineering Geology, MSc Geotechnical Engineering, FGS, MIEI) is a Geotechnical Engineer with over 20 years consultancy experience in Ireland. Ian has completed numerous peat stability assessment and geological impact assessment for wind farms. In addition, he has significant experience in the geotechnical design of wind energy projects at construction stage.

Aaron Clarke

Aaron is a Chartered Principal Geologist with Fehily Timoney's Infrastructure Team, providing specialist advice for multi-disciplinary projects across Ireland and the UK. He has over 18 years' experience working as a geologist; of which, ten years' have been spent within ground engineering. Aaron has experience working on peatland developments (typically for renewables), where he has progressed the EIAR Soils, Geology and Hydrogeology Chapter. To inform the EIAR, he has undertaken site walkovers to determine potential geotechnical and hydrological constraints; scoped, procured, and managed small to large-scale ground investigations; and completed Peat Stability Assessments Reports, Geotechnical Assessment Reports, and Peat and Spoil Management Plans

Preparation

MKO is responsible for the preparation of this EIAR. No difficulties, such as technical deficiencies, lack of information or knowledge, were encountered in compiling any specific information contained in the EIAR.

1.10 Viewing and Purchasing of the EIAR

Copies of this EIAR will be available online, including the Non-Technical Summary (NTS), on the Planning Section of the Galway County Council website, under the relevant Planning Reference Number (to be assigned on lodgement of the application).

<https://www.galway.ie/en/services/planning/online/>

This EIAR and all associated documentation will also be available for viewing at the offices of Galway County Council. The EIAR may be inspected free of charge or purchased by any member of the public during normal office hours at the following address:

Galway County Council,
Planning Department
Áras an Chontae
Prospect Hill
Galway
H91 H6KX

The EIAR will also be available to view online via the Department of Planning, Housing and Local Government's EIA Portal, which will provide a link to the planning authority's website on which the application details are contained. This EIA Portal was recently set up by the Department as an electronic notification to the public of requests for development consent which are accompanied by an EIAR. (<https://www.housing.gov.ie/planning/environmental-assessment/environmental-impact-assessment-eia/eia-portal>).

2.

BACKGROUND TO THE PROPOSED PROJECT

2.1

Site of the Proposed Project

2.1.1

Site Location

The Coillte property at Derryclare 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 567 Hectares (ha) and ranges in elevation from 10-180m, lying on the western slopes of Derryclare and Bencorr mountains. Figure 2-1 presents a map of the site location.

2.1.2

Physical Characteristics of the Site and Surrounding Lands

The site topography ranges between 180m above ordnance datum (m AOD) at its highest point to approximately 10m at its lowest point. The current land-use in Derryclare is dominated by forest cover which was planted primarily in the 1960s following intensive drainage and fertiliser application to establish conifer plantations. Approximately 6% of the property is unplanted blanket bog and wet heath habitat. 18% is forest cover that has been felled or burnt and not replanted and is restoring to wet heath or blanket bog, and the remaining 76% is under forest cover. Approximately 43% of the forest area is in its second rotation, having been felled and replanted over the last 20 years, with the remaining 47% in its first rotation planted in the 1960s. 95% of the existing forest cover is comprised of conifer species, primarily Lodgepole pine and Sitka spruce. The main habitats in the Derryclare catchment are wet heath and blanket bog where the vegetation is dominated by purple moor-grass (*Molinia caerulea*) with deer-grass (*Trichophorum cespitosum*), tormentil (*Pontentilla erecta*), ling (*Calluna vulgaris*) and cross-leaved heath (*Erica tetralix*). An oak-dominated woodland adjoins the south-east of the Coillte property.

2.1.3

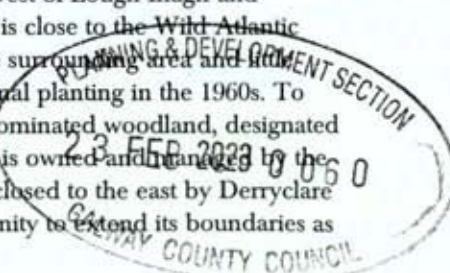
Site Entrance

The site is currently accessed via the existing entrance off R344 road from the N59 at Recess to the N59 at Kylemore which runs in a north-south directions along the eastern side of the site in the townland of Cloonacartan. The R344 connects to the N59 approximately 2km south of the site entrance.

2.2

Surrounding Environment

The Derryclare property extends to approximately 567ha and ranges in elevation from 10-180m, lying on the western slopes of Derryclare and Bencorr mountains and to the west of Lough Inagh and Derryclare Lough. The area is a key tourist and angling destination and is close to the Wild Atlantic Way and the Western Way. The existing forest is highly visible from the surrounding area and from consideration was given to landscape design during the time of the original planting in the 1960s. To the southeast of the Coillte property lies an old (possibly ancient), oak-dominated woodland, designated in 1980 as Derryclare Nature Reserve (S.I. 177/1980; 19ha in size) and it is owned and managed by the National Parks and Wildlife Service (NPWS). The Nature Reserve is enclosed to the east by Derryclare Lough and conifer plantations to the west, and currently has no opportunity to extend its boundaries as it would naturally do.



2.2.1 Designated Areas

The Coillte property is undesignated but fully surrounded by the Twelve Bens/Garraun Complex Special Area of Conservation (Code: IE002031). Figure 2-2 presents an overview of the Designated Sites within the wider region of the site.

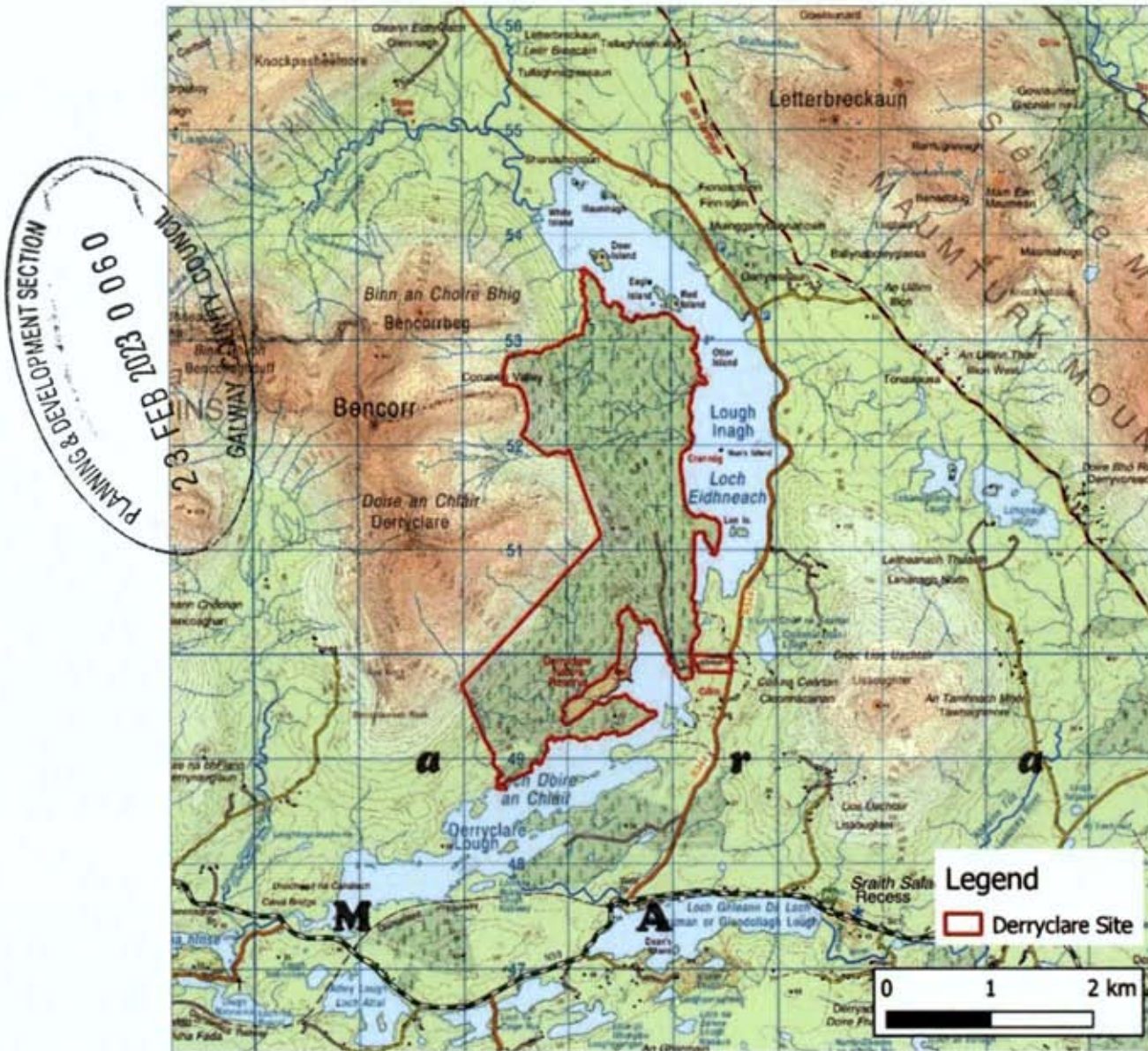


Figure 2-1 Site Location



Figure 2-2 Designated Sites



2.3

Planning History of the Subject Site

This section sets out the relevant planning history of the site and its immediate surrounds. The planning history search that was carried out undertook a comprehensive search of the planning history on the subject site as well as within the site vicinity. There was 1 no. application on record on the Galway County Council Online Planning System for the subject site.

Table 2-1: Planning History of the Subject Site

Planning Reference Number	Description	Applicant	Decision
952407	Permission to moor a small smolt imprinting pen for 2-month period annually at Oorid Lough - Inagh Lough - Ballynahinch Lough	Ballynahinch-Fishery-System-Co-Op	Refused (14/12/1995): The proposed development is located in an area of outstanding natural beauty designated as and Area of Outstanding Scenic Amenity and would if permitted, cause a man-made physical feature to intrude into the landscape which would lead to the natural scenic and environmental amenities of the area.

2.3.1

Planning Applications within the Site Vicinity

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 2-2 displays the Planning History within the site vicinity.

Table 2-2: 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	Cignal Infrastructure Ltd.	Granted (10/05/2021) subject to 9 conditions

Planning Reference Number	Description	Applicant	Decision
	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		
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 13 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 development 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 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	Eircom Limited	Granted (17/12/2019) subject to 9 conditions



Planning Reference Number	Description	Applicant	Decision
	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

2.4 Cumulative Impact Assessment

This EIAR, which includes a description of likely significant impacts of the project, includes an assessment of cumulative impacts that may arise. The factors considered in relation to cumulative effects include human beings, flora and fauna, soil, water, climatic factors, landscape, cultural heritage, and material assets.

The potential for cumulative impacts arising from the Proposed Project in combination with other projects has therefore been fully considered throughout this EIAR. This section of the EIAR provides

an overview of other projects located within the wider area that have been considered within the cumulative impact assessments.

2.4.1 Methodology for the Cumulative Assessment of Projects

The potential for cumulative effects to arise from the Proposed Project was considered in the subject areas of human beings, flora and fauna, soil, water, climatic factors, landscape, cultural heritage, and material assets. To comprehensively consider potential cumulative impacts, the final section of each relevant section within this Environmental Report includes a cumulative impact assessment where appropriate.

The potential cumulative impact of the Proposed Project and other relevant developments has been carried out with the purpose of identifying what influence the Proposed Project will have on the surrounding environment when considered cumulatively and in combination with relevant permitted, proposed, and constructed projects in the vicinity of the proposed site.

The Cumulative Impact Assessments (CIA) of projects has four principle aims:

1. *To establish the range and nature of existing projects within the cumulative impact study area of the proposed cable connection.*
2. *To summarise the relevant projects which have a potential to create cumulative impacts.*
3. *To establish anticipated cumulative impact findings from expert opinions within each relevant field. Detailed cumulative impact assessments are included in each relevant section of the Environmental Report.*
4. *To identify the projects that hold the potential for cumulative interaction within the context of the proposed development and discard projects that will neither directly or indirectly contribute to cumulative impacts.*

Assessment material for this cumulative impact assessment was compiled on the relevant developments within the vicinity of the Proposed Project. The material was gathered through a search of the Galway County Council's online Planning Register. These projects are summarised in Section 2.4.2 below.

2.4.2 Projects Considered in Cumulative Assessment

The projects considered in relation to the potential for cumulative impacts and for which all relevant data was reviewed (e.g. individual EIS/EIAR's, layouts, drawings etc) include those listed previously above at Section 2.3 are summarised below:

- PI Ref: 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. Applicant: Cignal Infrastructure Ltd. Granted (10/05/2021) subject to 9 conditions
- PI Ref: 201078: Permission sought 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) Applicant: Cathal Staunton. Granted (15/03/2021) subject to 13 conditions



- PI Ref: 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
Applicant: Festus O Toole. Granted (16/03/2020) subject to 12 conditions
- PI Ref: 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
Applicant: Cathal Staunton. Granted (11/03/2019) subject to 10 conditions
- PL Ref: 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 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.
Applicant: Eircom Limited. Granted (17/12/2019) subject to 9 conditions
- PI Ref: 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
Applicant: Robert Needham & Megan Burke. Granted (05/03/2018) subject to 12 conditions
- PI Ref: 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.
Applicant: Vodafone Ireland Limited. Granted on (18/12/2017) subject to 7 conditions



The potential for cumulative impacts arising from the Proposed Project and these projects have been set out in full in the relevant chapters of this EIAR, where appropriate. Detailed consideration of all potential cumulative impacts can therefore be found in the relevant sections of this EIAR.

Potential cumulative effects associated with Population and Human Health are considered in Chapter 5. Potential cumulative effects associated with dust and noise are addressed in Chapters 9 and 10 of the EIAR. Potential cumulative effects associated with traffic are addressed in Chapter 13.

2.5

Planning Policy

This section of the report sets out the relevant European, National, Regional and Local planning policies which are of relevance to the planning application. The local planning policy section includes policy sections from Galway County Council, as relevant. Relevant material considerations are also set out below, as appropriate.

2.5.1 European Policy

2.5.1.1 EU Biodiversity Strategy for 2030

The EU Biodiversity Strategy for 2030 sets out an ambitious and far-reaching programme of measures to halt and reverse biodiversity loss in the EU and across the globe.

The Strategy aims to address the five main drivers of biodiversity loss and put in place an enhanced governance framework, as well as fill any policy gaps, while at the same time consolidating existing efforts and ensuring the full implementation of existing EU legislation.

The Strategy highlights that the biodiversity crisis and the climate crisis are intrinsically linked. Just as the crises are linked, so are the solutions. Nature regulates the climate, and nature-based solutions, such as protecting and restoring wetlands, peatlands and coastal ecosystems, or sustainably managing marine areas, forests, grasslands and soils, will be essential for emission reduction and climate adaptation (our emphasis added).

The EU Biodiversity Strategy sets out four pillars:

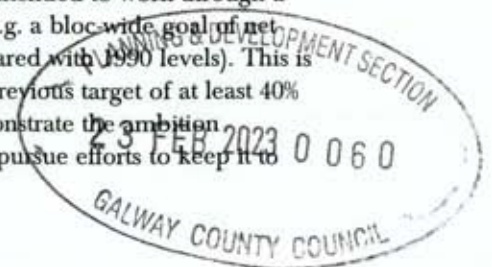
- Protect Nature
- Restore Nature
- Enable Transformative Change
- EU Action to Support Biodiversity Globally

Pillar one: Protect Nature sets out a range of commitments and goals, which include to “*strictly protect at least a third of the EU’s protected areas - representing 10% of the EU land and 10% of EU sea including all remaining primary and old-growth forests as well as other carbon rich ecosystems, such as peatlands, grasslands, wetlands, mangroves and seagrass meadows” (our emphasis added).*

It is noted that carbon-rich ecosystems, such as peatlands, grasslands, wetlands, mangroves and seagrass meadows will be targeted, in view of their importance for tackling climate change (our emphasis added).

2.5.1.2 European Green Deal – European Climate Law (2021)

The European Green Deal, initially introduced by the European Commission in December 2019, sets out the ‘blueprint’ for a transformational change of the 27-country bloc from a high to a low-carbon economy, without reducing prosperity and while improving people’s quality of life, through cleaner air and water, better health and a thriving natural world. The Green Deal is intended to work through a framework of regulation and legislation setting clear overarching targets, e.g. a bloc-wide goal of net-zero carbon emissions by 2050 and a 55% cut in emissions by 2030 (compared with 1990 levels). This is a substantial increase compared to the existing target, upwards from the previous target of at least 40% (2030 Climate & Energy Framework), and furthermore, these targets demonstrate the ambition necessary to keep the global temperature increase to well below 2°C and pursue efforts to keep it to 1.5°C as per the Paris Agreement.



The law aims to ensure that all EU policies contribute to this goal and that all sectors of the economy and society play their part. All 27 no. EU Member States have committed to turning the EU into the first climate neutral continent by 2050. One third of the 1.8 trillion-euro investments from the Next Generation EU Recovery Plan, and the EU's seven-year budget, will finance the European Green Deal. On 14th July 2021, the European Commission adopted a set of proposals to make the EU's climate, energy, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. Achieving these emission reductions in the next decade is crucial to Europe becoming the world's first climate-neutral continent by 2050 would clearly be assisted by the Proposed Project.

Proposed Nature Restoration Policy

European Commission: Proposal for a Regulation on Nature Restoration

The proposal for a regulation on nature restoration sets out an overarching objective: *“to contribute to the continuous, long-term and sustained recovery of biodiverse and resilient nature across the EU's land and sea areas by restoring ecosystems and to contribute to achieving Union climate mitigation and climate adaptation objectives and meet its international commitments”*.

To achieve this objective, the proposal sets multiple binding restoration targets and obligations across a broad range of ecosystems. These measures should cover at least 20% of the EU's land and sea areas by 2030 and all ecosystems in need of restoration by 2050.

The proposal notes that overall, the benefits of restoring Annex I peatlands, marshlands, forests, heathland and scrub, grasslands, rivers, lakes and alluvial habitats, and coastal wetlands can be estimated as being in the order of EUR 1 860 billion (with costs estimated in the order of EUR 154 billion).

Union climate policy is being revised in order to follow the pathway proposed in Regulation (EU) 2021/1119 to reduce net emissions by at least 55 % by 2030 compared to 1990. In particular, the proposal for a Regulation of the European Parliament and of the Council amending Regulations (EU) 2018/841 and (EU) 2018/199961 aims to strengthen the contribution of the land sector to the overall climate ambition for 2030 and aligns the objectives as regards accounting of emissions and removals from the land use, land use change and forestry (‘LULUCF’) sector with related policy initiatives on biodiversity. That proposal emphasises the need for the protection and enhancement of nature-based carbon removals, for the improvement of the resilience of ecosystems to climate change, for the restoration of degraded land and ecosystems, and for rewetting peatlands. It further aims to improve the monitoring and reporting of greenhouse gas emissions and removals of land subject to protection and restoration. In this context, it is important that ecosystems in all land categories, including forests, grasslands, croplands and wetlands, are in good condition in order to be able to effectively capture and store carbon.

Provisional Agreement of the Land Use, Land Use Change and Forestry (LULUCF) regulation

The European Commission issued a press release on 11th November 2022 which states that the European Commission welcomes the provisional deal on the Land Use, Land Use Change and Forestry (LULUCF) regulation reached with the European Parliament and Council to increase the EU's target for net carbon removals by natural sinks to 310 million tonnes of CO₂ equivalent by 2030. This agreement sets ambitious and fair targets for each Member State to reverse the decreasing trend of the EU's carbon sink.

The European Green Deal is the EU's long-term growth strategy to make Europe climate-neutral by 2050. The revision of the Land Use, Land Use Change and Forestry (LULUCF) regulation is one of the ‘Fit for 55’ proposals presented by the Commission in July 2021 to make the EU's climate, energy, land

use, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. The LULUCF sector is responsible for both emitting and absorbing CO₂ from the atmosphere, and specifically covers the use of soils, trees, plants, biomass and timber.

Under the European Green Deal, member states will be responsible for caring for and expanding their carbon sinks to meet the new EU target. Member States have many measures at hand to improve their land management, including sustainable forest management or the rewetting of peatlands (our emphasis added). It is advised that member states should update their strategic plans under the Common Agricultural Policy (CAP) to reflect the higher ambition for the land sector.

This provisional agreement now requires formal adoption by the Parliament and the Council. Once this process is completed, the new legislation will be published in the Official Journal of the European Union and enter into force.

2.5.2 National Planning Policy

2.5.2.1 National Biodiversity Objectives

In 2019 the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) reported that, on a global scale, biodiversity loss continues in an unprecedented manner (IPBES 2019). Land, ocean, atmosphere and biosphere are being altered to an unparalleled degree Globally, seventy-five per cent of the land surface has been significantly altered, 66 per cent of the ocean area is experiencing increasing cumulative impacts, and over 85 per cent of wetlands (area) has been lost. Unless action is taken to reduce the intensity of drivers of biodiversity loss, there will be a further acceleration in the global rate of species extinction, which is already at least tens to hundreds of times higher than it has averaged over the past 10 million years.

According to data from the 2019 Article 17 Overview Report on the Status of EU Protected Habitats and Species (DCHG, 2019) 85% of EU protected habitats in Ireland are reported as having 'Unfavourable' status. Over 46% of these protected habitats are experiencing ongoing declines, with only 2% showing improvement in their status. The main drivers of this decline are agricultural practices which are negatively impacting over 70% of habitats, particularly ecologically unsuitable grazing, abandonment and pollution. Both blanket bog and wet heath habitat types have Unfavourable/Bad status.

The status of blanket bogs in Ireland is bad and continues to deteriorate. There are a number of pressures that affect blanket bogs, including overgrazing, burning, afforestation, peat extraction, erosion, drainage, and agricultural activities causing nitrogen deposition.

The status of wet heath in Ireland is also bad and continues to deteriorate. Area losses continue due to new forestry, paths, tracks and land clearance. Other pressures include overgrazing, burning, wind farm development and erosion. Nitrogen deposition from agricultural activities that generate air pollution has recently been recognised as negatively impacting this habitat. Climate change is also acknowledged to be a potential future threat to wet heath, due to expected rises in temperature and decreases in precipitation.

Ireland's national biodiversity objectives are set out in a number of key policy documents. These documents are discussed below.

National Biodiversity Action Plan

As a party to the UN Convention on Biological Diversity (CBD), Ireland has made a commitment to prepare Action Plans towards the achievement of the Convention's targets: namely to secure the conservation of biological diversity; sustainable use of its components; and the equitable sharing of the benefits arising out of the utilisation of genetic resources. Ireland's 3rd National Biodiversity Action Plan



(NBAP)2017-2021, which was prepared to meet these commitments, sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's Vision for Biodiversity that *"biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally"*. Key objectives of the NBAP that are relevant to the proposed project include increasing awareness and appreciation of biodiversity and ecosystem services; conserving and restoring biodiversity and ecosystem services in the wider countryside; and expanding and improving management of protected areas and species.

Biodiversity Climate Change Sectoral Adaptation Plan

The Biodiversity Climate Change Sectoral Adaptation Plan considers terrestrial, freshwater and marine biodiversity and ecosystem services. The goal is to protect biodiversity from the impacts of climate change and to conserve and manage ecosystems so that they deliver services that increase the adaptive capacity of people and biodiversity. This is achieved by identifying adaptation options that will help to protect biodiversity and ecosystem services from the impacts of changing climate. A key objective of the plan is to *"Protect, restore and enhance biodiversity to increase the resilience of natural and human systems to climate change"*. Priority actions that are identified in the plan include restoring and enhancing natural systems through management to increase resilience, and promoting ecosystem restoration and conservation through Payment for Ecosystem Services and investment in actions that increase carbon sinks while promoting biodiversity.

National Peatland Strategy

Section 5.8 of the National Peatlands Strategy (NPWS, 2016) notes that there are numerous peatland restoration programmes and individual site projects in progress. A number of raised bog sites are being restored, involving partnerships between State bodies, voluntary conservation groups (e.g. Irish Peatland Conservation Council) and local community groups. Rehabilitation of former bare peat production areas is resulting in a rich mosaic of semi-natural habitats including open water, poor fen, rich fen, scrub, grassland and heathland. Between 2002 and 2007 a Coillte LIFE project restored 1,989ha of blanket bog across 20 sites.

Coillte has a history of bog restoration. In 2004, Coillte began an EU LIFE - Nature Programme to actively restore 571 hectares of raised bog on 14 midland sites in counties Galway, Roscommon, Longford, Westmeath, Meath, Cavan and Laois. All 14 sites are designated as candidate Special Areas of Conservation (cSACs) under the EU Habitats Directive and provide habitats for a range of nationally important rare plant and animal species. In 2007, Coillte completed a five-year EU LIFE-NATURE Blanket Bog restoration project. Over the course of this project various restoration techniques were used such as tree removal, felling of trees to waste and blocking drains to re-wet previously drained areas. This project was originally scheduled for completion by the end of 2006, with a target of restoring 1,212 hectares but was extended to 2007 so that an additional 776 hectares could be included, resulting in a total of almost 2,000 hectares of blanket bog being restored.

In 2011 Coillte commenced its 2nd Restoration Project on Raised Bogs. The project (LIFE09 NAT/IE/000222) is being managed by Coillte and focuses on the restoration of 636 hectares of raised bog habitat on 17 Coillte owned sites within the Natura 2000 network and in Natural Heritage Areas. This nature conservation project is jointly funded by the EU (DG-Environment), NPWS (part of the Department of Arts, Heritage and the Gaeltacht) and Coillte under the LIFE-Nature Programme¹. During the lifetime of the project a significant improvement in the quality of raised bog habitat is expected. The aim is to create the conditions which will allow raised bog habitat regeneration in future years.

¹ Further information available at: <https://www.leavenotraceireland.org/raised-bog-restoration-project-ireland/>

Principle P24 of the National Peatland Strategy is as follows:

- *“Coillte and Bord na Móna as the managers of significant tracts of peatlands on behalf of the Irish people will continue to show leadership in responsible management, rehabilitation and restoration of peatlands”*

Coillte’s current Wild Western Peatlands Project, of which the proposed Derryclare Project is a part, aims to restore and rehabilitate approximately 2,100ha of Atlantic blanket bog and wet heath along the western seaboard of Ireland.

National Planning Framework

The Project Ireland 2040 National Planning Framework (NPF) is a planning framework to guide development and investment out to the year 2040. The NPF notes that the diversity of our biological communities is also important for the quality of our water, soils and as a source of food. Land use change, including in particular pressures from urbanisation, can have a direct and indirect impact on Ireland’s habitats and species.

Under the NPF, the Government of Ireland pledges support to the protection and enhancement of carbon pools, such as forests, peatlands and permanent grasslands to ensure the inclusion of climate change as a matter of course in planning-related decision-making processes.

- **National Policy Objective 54:** Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions.

Additionally, the NPF highlights the tourism potential for peatlands, stating the following:

- **National Policy Objective 22:** Facilitate tourism development and in particular a National Greenways, Blueways and Peatways Strategy, which prioritises projects on the basis of achieving maximum impact and connectivity at national and regional level.

The proposed project will contribute to meeting Ireland’s national biodiversity objectives as discussed above by restoring up to 281 hectares of blanket bog and wet heath habitat that will promote greater biodiversity through habitat enhancement. The presence of an array of habitats (from both existing broadleaf woodland and blanket bog, and proposed blanket bog and wet heath restoration) will, in time, support an increasing number of flora and fauna species.

2.5.2.2 National Climate Objectives

The *Climate Action Plan* (DCCAE, 2021) which features 493 action plans sets out how Ireland will achieve a 51% reduction in overall greenhouse gas emissions by 2030 and lay the foundations for achieving net zero carbon emissions by 2050.

One of the key targets in relation to wetlands is ‘...rehabilitating 65,000 hectares of peatlands across numerous landowners and projects’ by 2030. Ongoing and proposed measures to deliver the target include:

- Restore/rewet raised bog Special Areas of Conservation and Natural Heritage Areas as set out in the National Raised Bog Special Areas of Conservation Management Plan 2017-2022. Such restoration measures, and hydrological management of our protected peatlands, will halt and reduce peat oxidation and carbon loss.
- Undertake further research to assess the potential to sequester, store and reduce emissions of carbon through the management, restoration and rehabilitation of peatlands as outlined in the National Peatlands Strategy.



- Upgrade land-use and habitat mapping systems to establish the baseline condition of wetlands, and inform the development of best-practice guidelines for wetland management, including the management of degraded sites and peatlands currently exploited for energy peat extraction.
- Develop further measures to help rehabilitate exploited and degraded peatlands, including as part of national land-use planning and the new Common Agricultural Policy, and recognising that strategies may need to differ between regions.

The proposed project would enhance the rehabilitation of peatland by restoring up to 281 hectares of Atlantic blanket bog and wet heath that is currently drained and planted in poorly performing coniferous forestry. The rehabilitation of peatlands on the Derryclare site is focused on rewetting forested peats with the goal of re-establishing active peat bogs and other wetland habitats and so reverse the loss of carbon to the atmosphere from drying peats.

Completion of project plan for Derryclare pilot site in Co. Galway" is identified as a step necessary for the delivery of Action 372 (Minimise the impact of deforestation on GHG emissions, while supporting wider government policies) of the Climate Action Plan. This step has now been completed and the proposed project consists of the implementation of the project plan for the Derryclare Site and will therefore contribute to achieving the targets of the Climate Action Plan.

2.5.2.3 Native Woodland Establishment and Afforestation Targets

National policy is aimed towards increasing Ireland's forest cover in a sustainable manner. The document *Forests, products and people: Ireland's forest policy – a renewed vision* (DAFM, 2014) sets out an updated national forest policy strategy that takes account of the substantial changes that have occurred in Irish forestry since the publication of its forerunner, *Growing for the Future* (DAFM, 1996).

The Forestry Programme 2014-2020 identifies four main requirements in relation to Ireland's forest sector:

- Increase on a permanent basis, Ireland's forest cover to capture carbon, produce wood and assist in climate mitigation;
- Increase and sustain the production of forest-based biomass to meet renewable energy targets;
- Support forest owners to actively manage their plantations;
- Optimise the environmental and social benefits of new and existing forests

To meet these needs the Forestry Programme proposes the following measures:

- **Afforestation and Creation of Woodland:** Support for establishment and 15 annual premium payments for the creation of new forests. This measure includes afforestation, agro-forestry, forestry for fibre, and native woodland establishment (the latter focused on creating new woodland areas of important native woodland types and opportunities for habitat connectivity, and in environmentally sensitive areas, with a view to realising wider eco-system services such as water protection).
- **NeighbourWood Scheme:** Provides support for the development of attractive 'close-to-home' woodland amenities for public access, use and enjoyment. This measure is aimed primarily at local authorities and semi-state bodies in association with community groups.
- **Forest Roads:** Support for the construction of forest roads is provided under this measure.
- **Reconstitution Scheme:** Support for forest owners to restore and retain forests following significant damage by natural causes.
- **Woodland Improvement Scheme:** This scheme provides support for forest management operations for broadleaf woodlands and actions within existing forests, which effect structural changes aimed to improve timber quality and protecting and enhancing water quality and other environmental sensitivities.

- Native Woodland Conservation Scheme: Supports the protection and enhancement of existing native woodlands and where appropriate, the conversion of conifer forests to native woodlands. This measure is focused on important native woodland types and opportunities for habitat connectivity, and in environmentally sensitive areas, with a view to realising wider eco-system services such as water protection.
- Knowledge Transfer and Information Actions: Supports the setting up of knowledge transfer groups, continuous professional development, and training.
- Producer Groups: Support is provided under this measure to help forest owners to work together to create a critical mass for forestry operations and mobilising timber;
- Innovative Forest Technology: Support for early adopters of new technology, e.g. low impact harvesters and/or inventory equipment.
- Forest Genetic Reproductive Material: Annual payment towards the cost of managing and conserving registered seed stands and establishing seed orchards.
- Forest Management Plans: Support for forest owners to prepare management plans for their forest holdings.

Under the Forestry Programme 2014-2020, the objectives of the Native Woodland Afforestation and Conservation Schemes (NWS) the creation of 2,700 hectares of new native woodlands and the conservation of 1,950 hectares of existing native woodland (including conversion from conifer forest to native woodland), respectively. The Forest Programme sets out a target of 1,070 hectares under the 'public woodland' category for the Native Woodland Conservation Scheme. Almost €24 million is provided under these two scheme measures for the implementation of the NWS of the Forestry Programme.

While the proposed project will result in a reduction in forested area, the areas targeted for restoration have been concentrated in areas where the existing forest is performing poorly and is deemed unsuitable and inappropriate for sustainable forestry and are at odds with climate and biodiversity policy. These poorly performing forest areas tend to be the least modified and contain peat characteristics that lend themselves well to bogland habitat restoration. Despite the proposed reduction in overall forested area, the proposed project will provide a contribution towards meeting Ireland's native woodland targets under the Forestry Programme 2014-2020 by establishing up to 62 hectares of native woodlands in public ownership. The proposed native woodland establishment areas are focused on areas adjacent to existing native woodlands at the site. At the time of writing, the Forestry Programme 2023-2027 has not been released.

2.5.2.4 National Peatlands Strategy

In April 2011, the Government of Ireland made a number of key decisions relation to the conservation and management of Ireland's peatlands, particularly those sites nominated for designation as Special Areas of Conservation (SAC) and Natural Heritage Areas (NHA). A national strategy on peatlands conservation and management was drawn up to provide direction Ireland's approach to peatland management.

Significant areas of Ireland's peatlands are owned and managed by public bodies, including Coillte and Bord na Móna. Coillte is the largest single landowner of blanket peatlands in Ireland and is the best placed organisation to deliver significant bogland habitat restoration at scale. The NPS acknowledges and includes Coillte's restoration works on afforested peatlands in Ireland by supporting Coillte's view that restoration will have a positive effect beyond the actual restoration area, for instance, on the adjoining intact bog that had been previously subject to "collateral" drainage effects. Coillte's previous LIFE projects (See Section 4.2 Bog Restoration of the Scoping Document for further details) have also resulted in increased knowledge and public awareness of the large-scale restoration of modified bog habitats across Ireland, therefore encouraging community engagement.

The following policy objectives have been outlined in relation to peatlands under Coillte management.



- NPS P 12: Future management of these State-owned peatlands will be in keeping with the objectives of the Strategy.
- NPS A 8: As part of the Forest Policy Review, the relevant authorities, working with stakeholders, will introduce guidance and criteria for the identification and future management of peat areas currently afforested. They will also provide clear guidance on future afforestation of peat soils.
- NPS A 9: The present management of State-owned peatland areas will be evaluated and alternative management options aimed increasing the delivery of all the ecosystem services of naturally functioning peatlands will be considered.
- NPS P 22: The work of Bord na Móna, Coillte and the Irish Peatlands Conservation Council in developing ecologically rich futures for cutaway and formerly forested bogs will be developed. Such areas can bring new tourism and recreation attractions to the midlands and the west.
- NPS P 30: Coillte and Bord na Móna as the managers of significant tracts of peatlands on behalf of the Irish people will continue to show leadership in responsible management, rehabilitation and restoration of peatlands.

The proposed project is in keeping with the policy objectives listed above.

2.5.3 Regional Planning Policy

2.5.3.1 Regional Spatial and Economic Strategy for the Northern and Western Region

The Regional Spatial and Economic Strategy (RSES) provides a high-level development framework for the Northern and Western Region that supports the implementation of the National Planning Framework (NPF) and the relevant economic policies and objectives of Government. It provides a 12-year strategy to deliver the transformational change that is necessary to achieve the objectives and vision of the Assembly.

It is stated within the RSES that “*peatlands and wetlands are the second most widespread land cover type in the Northern and Western Region, covering about 25% of the region*”.

The following policy objectives are outlined in relation to peatlands within the RSES:

- RPO 5.5: Ensure efficient and sustainable use of all our natural resources, including inland waterways, peatlands, and forests in a manner which ensures a healthy society a clean environment and there is no net contribution to biodiversity loss arising from development supported in this strategy. Conserve and protect designated areas and natural heritage area. Conserve and protect European sites and their integrity.
- RPO 5.6: Develop awareness and create a greater appreciation of the benefits of our natural heritage, including on the health, wealth and well-being of the region’s ecosystem services.
- RPO 5.7: Ensure that all plans, projects and activities requiring consent arising from the RSES are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate.
- RPO 5.22: To protect and conserve our designated peatlands and bogs for reasons of biodiversity, ecosystem services, carbon sinks, areas of habitat importance, amenity and landscape value.

2.5.4 Local Planning Policy

2.5.4.1 Galway County Development Plan (2022-2028)

The preparation of the Galway County Development Plan 2022 – 2028 (GCDP) commenced on the 18th of June 2020 and came into effect on the 20th of June 2022. The GCDP provides the strategic framework for land-use planning in the county and sets out the Vision and Strategic Aims for the county, which are supported by a number of policies and objectives.

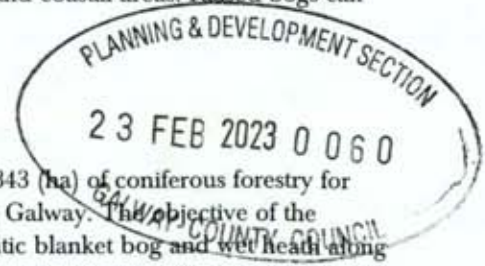
Chapter 10 Natural Heritage, Biodiversity and Green/Blue Infrastructure of the GCDP outlines the strategic aims for increasing awareness, participation and understanding of Galway's natural heritage to safeguard and manage it. Policy objectives pertaining to Natural Heritage and Biodiversity state the following in relation to peatlands:

- **NHB 6 Implementation of Plans and Strategies:** Support the implementation of any relevant recommendations contained in the National Heritage Plan 2030, the National Biodiversity Plan, the All-Ireland Pollinator Plan and the National Peatlands Strategy and any such plans and strategies during the lifetime of this plan.
- **WTWF 1 Wetland Sites:** Protect and conserve the ecological and biodiversity heritage of wetland sites in the County. Ensure that an appropriate level of assessment is completed in relation to wetlands habitats that are subject to proposals which would involve drainage or reclamation that might destroy, fragment or degrade any wetland in the county. This includes lakes and ponds, turloughs, watercourses, springs and swamps, marshes, fens, heath, peatlands, some woodlands as well as some coastal and marine habitats. Protect Ramsar sites under The Convention on Wetlands of International Importance (especially as Waterfowl Habitat).
- **P 1 Protection of Peatlands:** Ensure that peatland areas which are designated (or proposed for designation) as NHAs, SACs or SPAs are conserved for their ecological, climate regulation, education and culture, archaeological potential including any ancient walkways (toghers) through bogs.
- **P 2 Best Practice in Peatland Conservation and Management:** Work in partnership with relevant stakeholders on all suitable peatland sites to demonstrate best practice in sustainable peatland conservation, management and restoration techniques and to promote their heritage and education value subject to Ecological Impact Assessment and Appropriate Assessment Screening, as appropriate.
- **P 3 Framework Plans:** Seek to support relevant agencies such as Bord na Mona in advancing rehabilitation works for the peatlands and related infrastructure, to provide for the future sustainable and environmentally sensitive use of peatland sites including for amenity purposes.

Bogs are a unique wetland habitat and serve as 'living archives' due to the presence of semi-fossilised plant remains and artefacts. They are a significant agricultural, biodiversity, community, education and tourism resource. In County Galway, upland blanket bog is found in mountainous regions and lowland/Atlantic blanket bog is found in the Connemara lowlands and coastal areas. Raised bogs can be found in the lowlands of the north and east of County Galway.

2.6 Summary of Compliance

The Proposed Project will comprise the removal of approximately 343 (ha) of coniferous forestry for conversion to different land-use (bog restoration) at Derryclare, Co. Galway. The objective of the project is to restore and rehabilitate approximately 2,100ha of Atlantic blanket bog and wet heath along the western seaboard of Ireland - that is currently planted with poorly performing inappropriate spruce and pine forests - to enhance biodiversity and improve carbon storage in the landscape.



The relevant European, National, Regional and Local planning policies and objectives are outlined above. These policies mainly relate to biodiversity, nature and peatland conservation, climate change, and carbon reduction and it is considered that the Proposed Project is compliant with these referenced relevant policies.

2.7 Scoping and Consultation

2.7.1 Scoping Document

An informal EIAR scoping exercise was undertaken as part of the EIAR preparation process. Scoping is the process of determining the content, depth and extent of topics to be covered in the environmental information to be submitted to a competent authority for projects that are subject to an Environmental Impact Assessment (EIA). This process is conducted by contacting the relevant authorities and Non-Governmental Organisations (NGOs) with interest in the specific aspects of the environment likely to be affected by the proposal. These organisations are invited to submit comments on the scope of the EIAR and the specific standards of information they require. Comprehensive and timely scoping helps ensure that the EIAR refers to all relevant aspects of the Proposed Project and its potential effects on the environment. In this way, scoping not only informs the content and scope of the EIAR, it also provides a feedback mechanism for the proposed design itself.

A scoping document providing details of the application site and the Proposed Project, was prepared by MKO and circulated on 11th November 2022 to the agencies, NGOs and other relevant parties listed in Table 2-2 below.

MKO requested the comments of the relevant personnel/bodies in their respective capacities as consultees with regards to the EIAR process.

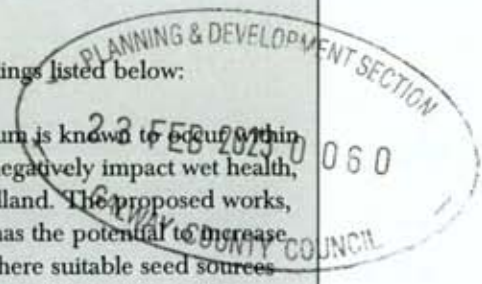
2.7.2 Scoping Responses

The scoping responses received to date are presented in Appendix 2-1.

Table 2.2 Scoping Consultees

No	Consultee	Response
1	An Chomhairle Ealaíon	No Response Received to date.
2	An Taisce	No Response Received to date.
3	Bat Conservation Ireland	Email received 14.11.2023. Acknowledge receipt of document. Due to limited resources, they are unable to get involved in planning issues.
4	Birdwatch Ireland	No Response Received to date.
5	Butterfly Conservation Ireland	No Response Received to date.
6	Community Wetland Forum	No Response Received to date.

7	Department of Agriculture, Food and the Marine	No Response Received to date.
8	Department of the Environment, Climate and Communications	<p>Correspondence issued 15th December 2022.</p> <p>Response provided on behalf of Geological Survey Ireland which is a division of the Department of the Environment, Climate and Communications.</p> <p>Encouraged the use of and reference to Geological Survey Ireland datasets.</p> <p>Advised that there are no envisaged impacts on the integrity of current County Geological Sites by the Proposed Project.</p>
9	Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media	No Response Received to date.
10	Department of Transport	<p>Email received 22.11.2022</p> <p>The Department of Transport would appreciate if the following could be considered in relation to the proposed Derryclare Wild Western Peatlands Project, Co. Galway.</p> <p>The proposed project could have a potential impact on the proposed Clifden to Recess Greenway which traverses the R344. The R344 could be used as an access route for construction/ tree felling activities. The impact of this should be appropriately assessed and adequate mitigation measures be proposed to ensure the safe and efficient operation of the greenway which is under construction.</p>
11	Department of Housing, Local Government and Heritage	<p>1st Email received 14.11.2022.</p> <p>Ref: G Pre00299/2022.</p> <p>The normal target turnaround for pre-planning and other general consultations is six weeks from date of receipt. In relation to general consultations from public bodies under the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 to 2011, the Department endeavours to meet deadline dates, where requested.</p> <p>2nd email received 23rd December 2022</p> <p>Correspondence included a number of headings listed below:</p> <p>Nature Conservation – the species <i>R. ponticum</i> is known to occur within the study area, if this species spreads it will negatively impact wet health, blanket bog, conifer clear fell, and oak woodland. The proposed works, which include clear felling and re-profiling, has the potential to increase the seedling establishment of <i>R. ponticum</i> where suitable seed sources occur. The department recommends that the potential effects of the</p>





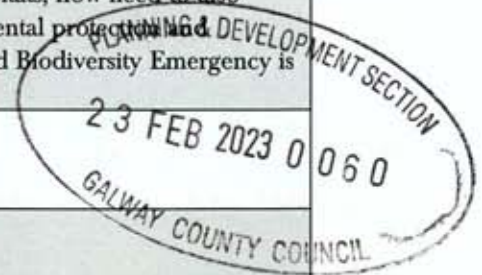
		<p>spread of <i>R. ponticum</i> be considered in both the EIAR and NIS. The Department recommends that an invasive species management plan for <i>R. ponticum</i> should be undertaken within the study area as part of the proposed works.</p> <p>Water Quality Impacts - the potential for the proposed works to impact on water quality should be considered comprehensively in both the EIAR and the NIS. The department recommends that surveys are undertaken to establish baselines water quality conditions within the study area prior to the commencement of any proposed works. A water quality monitor programme should be undertaken during the works. An Ecological Clerk of Works should be responsible for overseeing the implementation of any such measures. For the purposes of the appropriate assessment process, simple reference to 'best practice' water quality protection measures is not sufficient, site specific water quality protection measures should be provided.</p> <p>Monitoring of restoration works – Bog restoration works such as drain blocking have the potential to fail, consequently the Department recommends that a monitoring programme for the proposed restoration works be included in the proposal and considered as a potential operational impact in the EIAR and/or NIS. Responsibility for any necessary remediation works should be clearly outlined.</p> <p>In combination effects - all associated works provided through a different consent process, namely felling and/or forestry roads, be considered in-combination with the proposed works in an assessment provided. The EIAR and/or NIS should not assume the success of any mitigation measures provided included in these associated works, particularly in relation to water quality. The effectiveness of these measures should be assessed independently.</p>
12	Faite Ireland	<p>Email received 13.12.2022</p> <p>Correspondence included a copy of Fáilte Ireland's Guidelines for the Treatment of Tourism in an EIA, The purpose of this report is to provide guidance for those conducting Environmental Impact Assessment and compiling an Environmental Impact Assessment Reports (EIAR), or those assessing EIARs, where the project involves tourism or may have an impact upon tourism. These guidelines are non-statutory and act as supplementary advice to the EPA EIAR Guidelines outlined in section 2.</p>
13	Forest Service	No Response Received to date.
14	Galway County Council – Planning Section	No Response Received to date.
15	Galway County Council – Transportation and Infrastructure Department	No Response Received to date.

16	Galway County Council - Environment Section	No Response Received to date.
17	Galway County Council - Heritage Officer	No Response Received to date.
18	Geological Survey of Ireland	<p>Correspondence received 15.12.2022</p> <p>Geological Survey Ireland is in partnership with the National Parks and Wildlife Service (NPWS, Department of Housing, Local Government and Heritage), to identify and select important geological and geomorphological sites throughout the country for designation as geological NHAs (Natural Heritage Areas). This is addressed by the Geoheritage Programme of Geological Survey Ireland, under 16 different geological themes, in which the minimum number of scientifically significant sites that best represent the theme are rigorously selected by a panel of theme experts.</p> <p>County Geological Sites (CGSs), as adopted under the National Heritage Plan, include additional sites that may also be of national importance, but which were not selected as the very best examples for NHA designation. All geological heritage sites identified by Geological Survey Ireland are categorised as CGS pending any further NHA designation by NPWS. CGSs are now routinely included in County Development Plans and in the GIS of planning departments, to ensure the recognition and appropriate protection of geological heritage within the planning system. CGSs can be viewed online under the Geological Heritage tab on the online Map Viewer.</p> <p>The audit for Co. Galway was carried out in 2019. The full report details can be found here. Our records show that there are two CGSs adjacent to the Derryclare Site Boundary.</p> <p>Glencoaghan, Co. Galway (GR 79829, 250544), under IGH themes: IGH5 Precambrian, IGH7 Quaternary. A south-facing valley in the glaciated Beanna Beola mountains. A key locality for understanding the stratigraphy and metamorphic history of the Connemara Dalradian. Link to Site Report: GY061.</p> <p>Derryclare Marble Quarry, Co. Galway (GR 83795, 249129), under IGH themes: IGH6 Mineralogy, IGH5 Precambrian. A disused marble quarry site on the northeast shore of Derryclare Lough, in the Inagh Valley. This is an important County Geological Site. Marbles of economic importance occur in one stratigraphic horizon, the Connemara Marble Formation (which also contains calcareous schist, mica schist and quartzite). Link to Site Report: GY050.</p> <p>With the current plan, there are no envisaged impacts on the integrity of current CGSs by the Proposed Project. However, if the Proposed Project plan is altered, please contact Clare Glanville (Clare.Glanville@gsi.ie) for further information and possible mitigation measures if applicable.</p>



		<p>The Groundwater Data Viewer indicates an aquifer classed as a 'Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones' underlies the Proposed Project. The Groundwater Vulnerability map indicates the range of groundwater vulnerabilities within the area covered is variable. We would therefore recommend use of the Groundwater Viewer to identify areas of High to Extreme Vulnerability and 'Rock at or near surface' in your assessments, as any groundwater-surface water interactions that might occur would be greatest in these areas.</p> <p>Please note we have recently launched QGIS compatible bedrock (100K) and Quaternary geology map data, with instructional manuals and videos. This makes our data more accessible to general public and external stakeholders. QGIS compatible data can be found in our downloadable bedrock 100k .zip file on the Data & Maps section of our website.</p>
<p>19</p>	<p>Health Service Executive West</p>	<p>Correspondence received 14.12.2022</p> <p>The Environmental Health Service (EHS) recommends that the following matters are included and assessed in the EIAR</p> <ul style="list-style-type: none"> • Public Consultation • Population and Human Health • Water (Hydrology and Hydrogeology) • Land and Soils • Air, Dust and Odour • Climate Change and Opportunity for Health Gain • Noise and Vibration • Waste Management • Ancillary Facilities • Cumulative Impacts <p>Public Consultation</p> <p>The Environmental Health service recommend the appointment of a community liaison officer. Early and meaningful public consultation with the local community should be carried out to ensure all potentially significant impacts have been adequately addressed.</p> <p>Geotechnical and Peat Stability Assessment</p> <p>A detailed assessment of the current ground stability in the area of the Proposed Project must be carried out and all proposed mitigation measures should be detailed in the EIAR. The assessment should include the impact tree felling may have on the future stability of ground conditions, taking into consideration extreme weather events, site drainage and the potential for soil erosion.</p> <p>The Environmental Health Service recommends that a detailed Peat Stability/Geotechnical Assessment should be undertaken to assess the suitability of the soil for the Proposed Project. The EIAR should include provision for a peat stability monitoring programme to identify early signs of potential bog slides ('pre-failure indicators' see the Scottish</p>

		Government's 'Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Developments 2017) https://www.gov.scot/binaries/content/documents/govscot/publications/adv-ice-and-guidance/2017/04/peat-landslide-hazard-risk-assessments-best-practice-guide-proposed-electricity/documents/00517176-pdf/00517176-pdf/govscot%3Adocument/00517176.pdf
20	Inland Fisheries Ireland	Email received 22.11.2022 IFI have no objection to the Proposed Project provided that appropriate pollution mitigation measures are implemented during the course of the works. A copy of the 2016 Guidance document was provided for reference. It is also noted that the Proposed Project will be subject to the Article 6(3) Appropriate Assessment process.
21	Irish Peatland Conservation Council	Correspondance received 28.11.2022 The Derryclare Wild Western Peatlands Project is welcome as County Galway has lost much of its range of peatland and the biodiversity suffered as a keystone habitat deteriorated from the damaging practice of afforestation on peatland. We are now realising that the methods we have used to fuel our economy and provide materials has been far from sustainable. The biodiversity of Ireland, which evolved specialised because of the natural history and biogeography which presented rare habitats has been forced into a decline and without a real investigation and reversal of our impacts on the environment will be lost. The IPCC also hope that locals can be engaged in the protection and management of the site as these people will be the real boots on the ground. If they have a sense of community ownership they will provide long-term support, such as recording the biodiversity that returns if restoration is successful. We have seen with industrial peat extraction that the inward focus on these habitats transitioned to a source of fuel and work and the more intrinsic natural benefits were forgotten about or not valued enough. The companies that were mandated to work through peat extraction or forestry, who benefitted from the lack of awareness of the values of these peatland habitats, now need to also focus on re-introducing the idea of environmental protection and safeguarding if the reversal of the Climate and Biodiversity Emergency is to succeed in any real meaningful way
22	Irish Raptor Study Group	No Response Received to date.
23	Irish Water	Email received 16.11.2022 Irish Water's general scoping opinion in relation to Water Services provided. On receipt of the planning referral, Irish Water will review the finalised Environmental Impact Assessment Report (EIAR) as part of the planning process.



24	Irish Wildlife Trust	Email received 01.12.2022 No comments on Scoping Document
25	Office of Public Works	No Response Received to date.
26	The Heritage Council	No Response Received to date.
27	Woodlands of Ireland	No Response Received to date.
28	TII	<p>Email received 13.12.2022</p> <p>TII advise that the development is between 1.5 and 2.5 kms north of the Clifden to Recess Greenway. The Developer is advised to contact Connemara Greenway Project NRPO Office, at Galway County Council.</p> <p>The developer/scheme promoter should have regard, inter alia, to the following:</p> <ul style="list-style-type: none"> • TII notes that the subject site adjoins the N59, national secondary road. Therefore, there are official policy and road safety considerations that would need to be resolved in relation to access to national roads, as outlined above. • Consultations should be had with the relevant Local Authority/National Roads Design Office with regard to the locations of existing and future national road schemes. • TII would be specifically concerned as to potential significant impacts the development would have on the national road network (and junctions with national roads) in proximity to the Proposed Project, i.e., the • N59 national secondary road. The developer should assess visual impacts from existing national roads. • The developer should have regard to any Environmental Impact Statement and all conditions and/or modifications imposed by An Bord Pleanála regarding road schemes in the area. The developer should, in particular, have regard to any potential cumulative impacts.



3.

CONSIDERATION OF REASONABLE ALTERNATIVES

3.1

Introduction

Article 5(1)(d) of Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (codification) as amended by Directive 2014/52/EU (the EIA Directive) requires that the Environmental Impact Assessment Report (EIAR) prepared by the developer contains *“a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment.”*

Article 5(1)(f) of the EIA Directive requires that the EIAR contains *“any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.”*

Annex IV of the EIA Directive states that the information provided in an EIAR should include a *“description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.”*

This section of the EIAR contains a description of the reasonable alternatives that were studied by the developer, which are relevant to the proposed project and its specific characteristics, in terms of site location, site layout incorporating size and scale of the project. This section also outlines the design considerations in relation to the felling and peatland restoration. It provides an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

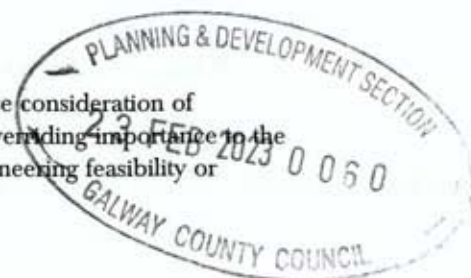
The consideration of alternatives is an effective means of avoiding environmental impacts. As set out in the *Draft Guidelines on The Information to be Contained in Environmental Impact Assessment Reports* (Environmental Protection Agency, 2017), the presentation and consideration of reasonable alternatives investigated is an important part of the overall EIA process.

Hierarchy

EIA is concerned with projects. The Environmental Protection Agency (EPA) draft guidelines (EPA, 2022) state that in some instances neither the applicant nor the competent authority can be realistically expected to examine options that have already been previously determined by a higher authority, such as a national plan, or regional programme for infrastructure, which are examined by means of a Strategic Environmental Assessment (SEA), the higher tier form of environmental assessment.

Non-environmental Factors

EIA is confined to the potential significant environmental effects that influence consideration of alternatives. However, other non-environmental factors may have equal or overriding importance to the developer of a project, for example project economics, land availability, engineering feasibility or planning considerations.



Site-specific Issues

The EPA guidelines state that the consideration of alternatives also needs to be set within the parameters of the availability of the land, i.e., the site may be the only suitable land available to the developer, or the need for the project to accommodate demands or opportunities that are site-specific. Such considerations should be on the basis of alternatives within a site, for example design and layout.

3.1.2 Methodology

The EU Guidance Document (EU, 2017) on the preparation of an EIAR outlines the requirements of the EIA Directive and states that, in order to address the assessment of reasonable alternatives, the Developer needs to provide the following:

- > A description of the reasonable alternatives studied; and
- > An indication of the main reasons for selecting the chosen option with regards to their environmental impacts.

There is limited European and National guidance on what constitutes a 'reasonable alternative' however, the EU Guidance Document (EU, 2017) states that reasonable alternatives "*must be relevant to the proposed project and its specific characteristics, and resources should only be spent assessing these alternatives*".

The guidance also acknowledges that "*the selection of alternatives is limited in terms of feasibility. On the one hand, an alternative should not be ruled out simply because it would cause inconvenience or cost to the Developer. At the same time, if an alternative is very expensive or technically or legally difficult, it would be unreasonable to consider it to be a feasible alternative*".

The current EPA Guidelines (EPA, 2022) state that "*It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required.*"

Consequently, taking consideration of the legislation and guidance requirements into account, this section addresses alternatives under the following headings:

- > 'Do Nothing' Alternative;
- > Alternative Sites;
- > Alternative Mitigation Measures.

Each of these is addressed in the following sub-sections.

While environmental considerations have been at the core of the decision-making process for all of the project processes and infrastructure components, it should be noted that the majority of alternative options considered under the headings listed above are unlikely to have had significantly, greater environmental effects than the chosen option.

3.2 'Do-Nothing' Alternative

Article IV, Part 3 of the EIA Directive states that the EIAR should include "*an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.*" This is referred to as the "do-nothing" alternative. EU guidance (EU, 2017) states that this should involve the assessment of "*an outline of what is likely to happen to the environment should the Project not be implemented – the so-called 'do-nothing' scenario.*"

An alternative land-use option to the proposed peatland restoration project would be to leave the site as it is, with no changes made to existing land-use practices. If the Proposed Project were not to proceed, the current land-use, conifer forestry, at the site would continue.

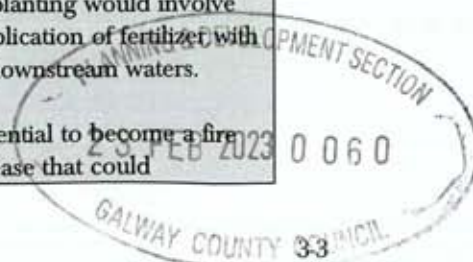
In implementing the "Do Nothing" alternative, however, the opportunity to restore and rehabilitate the site would be lost, along with the opportunity to better align the landscape of the Proposed Project Site with the surrounding moorland landscape character. In addition, with the implementation of the "do-nothing" alternative the opportunity would be lost to contribute to meeting Ireland's national biodiversity objectives by restoring up to 281 hectares of blanket bog and wet heath habitat.

Under the "Do Nothing" alternative the existing poorly performing, stressed forestry at the site would remain in-situ. This scenario would see the property continue to be managed as forest. This would involve a mixture of felling and replanting with conifer species as part of the forestry cycle. It is likely that, for commercial reasons, no felling would occur in the poorest performing areas of the site. The area that was previously burnt would likely be replanted with conifers. Coillte are bound by the forestry act, so when a forest block is felled there is a legal obligation to replant it. Replanting would require cultivation which would likely lead to a further oxidisation of the underlying peat. Replanting would also require the application of fertiliser with the attendant risk of increased nutrient inputs to downstream waters. In the "Do Nothing" alternative the existing stressed forestry has the potential to become a fire risk and a potential reservoir for disease that could negatively affect other commercial forestry blocks. As the trees on the site die, due to disease and wind blow, fallen trees would remain on the site and would release nutrients to downstream waters as they decompose.

On the basis of the positive environmental effects arising from the Proposed Project, when compared to the 'do-nothing' scenario, the 'do-nothing' scenario was not the chosen option. A comparison of the potential environmental effects of the 'Do-Nothing' Alternative when compared against the chosen option of peatland restoration at this site are presented in Table 3-1 below.

Table 3-1 Comparison of environmental effects when compared against the chosen option (restoring peatlands at the site)

Environmental Consideration	'Do-Nothing' Alternative
Population and Human Health	The opportunity to restore and rehabilitate the site to bog would be lost, along with the opportunity to generate local employment and investment and to diversify the local economy
Biodiversity and Ornithology	Opportunity to restore valuable blanket bog, wet heath, and native woodland habitats would be lost.
Land, Soils and Geology	Neutral. Continuous drainage and cultivation will lead to a degrade of the peat due to oxidisation and increase carbon and methane emissions.
Geotechnical	Neutral
Water	<p>The property will continue to be managed as a conifer plantation. Coillte are bound by the forestry act, so in the "do nothing" scenario when a crop of timber is felled there is a legal obligation to replant it. Replanting would involve the cultivation of the site and the application of fertilizer with the potential to result in impacts to downstream waters.</p> <p>Existing stressed forestry has the potential to become a fire risk and a potential reservoir for disease that could</p>



Environmental Consideration	'Do-Nothing' Alternative
	negatively affect other commercial forestry blocks. As the trees on the site die, due to disease and wind blow, fallen trees would remain on the site and would release nutrients to downstream waters as they decompose.
Air and Climate	Research has indicated that peatlands can store more carbon than trees ¹ , the opportunity for increased carbon sequestration will also be lost.
Noise and Vibration	Neutral
Landscape and Visual	The opportunity to restore and rehabilitate the site to bog would be lost, along with the opportunity to better align the landscape of the Proposed Project Site with the surrounding peatland landscape character
Cultural Heritage and Archaeology	Neutral
Material Assets	Neutral

Alternative Locations

As part of the Wild Western Peatlands Project a consultation process was undertaken with local Coillte management staff, environmental managers and stakeholders who have an in-depth knowledge of local sites leading to the selection of potential sites suitable for the project. The following criteria were used for site selection for the Wild Western Peatlands project were:

- The key driver to site selection will be to optimise the biodiversity, water quality and climate mitigation attributes in areas impacted by inappropriate forestry. Priority will be given to sites containing blanket bog and heathland that are considered suitable for restoration on ecological grounds, with the aim of restoring extent and connectivity of Annex 1 habitats. Proximity and hydrological connection to SACs with blanket bog and wet heath habitats is a key attribute. The presence of associated Annex 2 designated floral and faunal species are also important criteria.
- Blanket bog will be given priority especially sites where there is a significant proportion of deep peat >50cm to increase the delivery of all the ecosystem services of naturally functioning peatlands – rehabilitation and restoration of peatlands.
- Enhance water quality protection particularly in areas with freshwater pearl mussel (FWPM), salmonid catchments and where forestry is a key pressure in high water quality catchments.
- Local partnership potential with involvement of statutory and local stakeholders and community is an important factor in site selection.
- Minimise release of carbon from peat soils and strive to maintain a positive carbon balance. Where the site is not a priority for restoration and is likely to support sufficient tree growth to compensate for greenhouse gas losses from the soil (understood to be YC8 or above for Sitka spruce), they will be retained as resilient environmental mixed woodlands.

¹ Beaulne, J., Garneau, M., Magnan, G. et al. Peat deposits store more carbon than trees in forested peatlands of the boreal biome. *Sci Rep* 11, 2657 (2021). <https://doi.org/10.1038/s41598-021-82004-x>

- Sites of low timber production capability, with the majority of conifers growing at yield class 12 or below will be targeted for removal and bog and/or wet heath restoration.
- Poor landscape design and visual appeal of forest particularly in highly sensitive and scenic landscapes will be a consideration regarding site selection criteria.

Based on the criteria above, a shortlist of the following five high priority sites for the Wild Western Peatlands Project was identified:

- Glentornan & Arduns, Co. Donegal
- Glennamong, Co. Mayo
- Derryclare, Co. Galway
- Cappaghoosh, Co. Galway
- Derrynafulla & Coorannel, Co Cork

3.3.1

Glentornan & Arduns, Co. Donegal

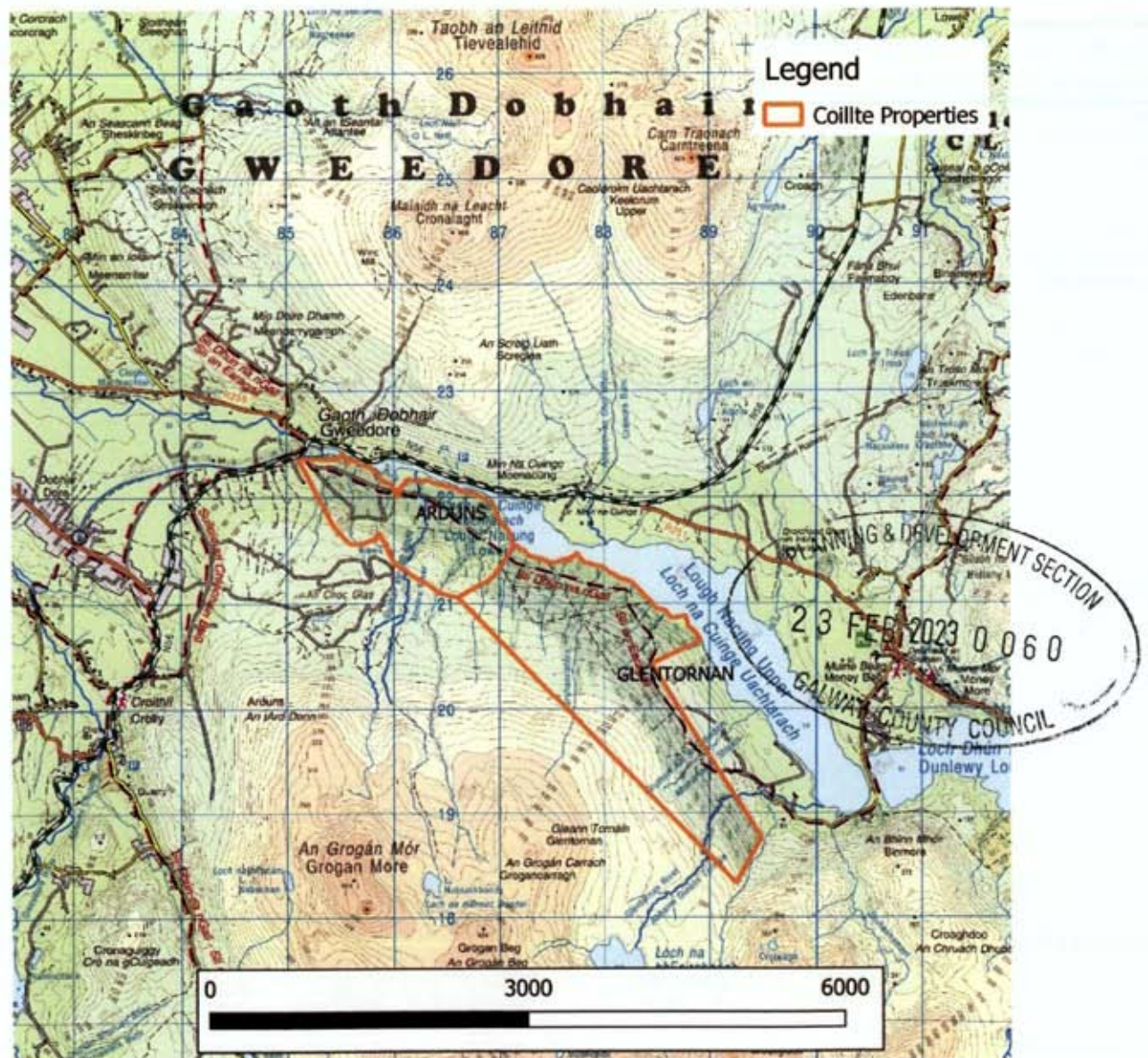


Figure 3-1 Glentornan & Arduns, Co. Donegal

The Coillte properties Glentornan & Arduns though undesignated, are surrounded by the Cloghernagore and Glenveagh National Park SAC (002047), Derryveagh and Glendowan Mountains SPA (004039) and adjacent to Glenveagh National Park. The SE of Glentornan is within a FWPM catchment. The property is 99% conifer and 1% unplanted. The age class distribution is 35% over 40 years and 65% under 40 years. The Yield class distribution is 39% under YC 14 and 61% over YC 14. An Taisce owns large area of land adjacent to the Coillte properties and it is close to Glenveagh National Park (NPWS). Blanket bog restoration on this site will increase connectivity to the adjacent properties and create ecologically sensitive riparian zones and improve water quality in the catchment.

3.3.2

Glennamong, Co. Mayo

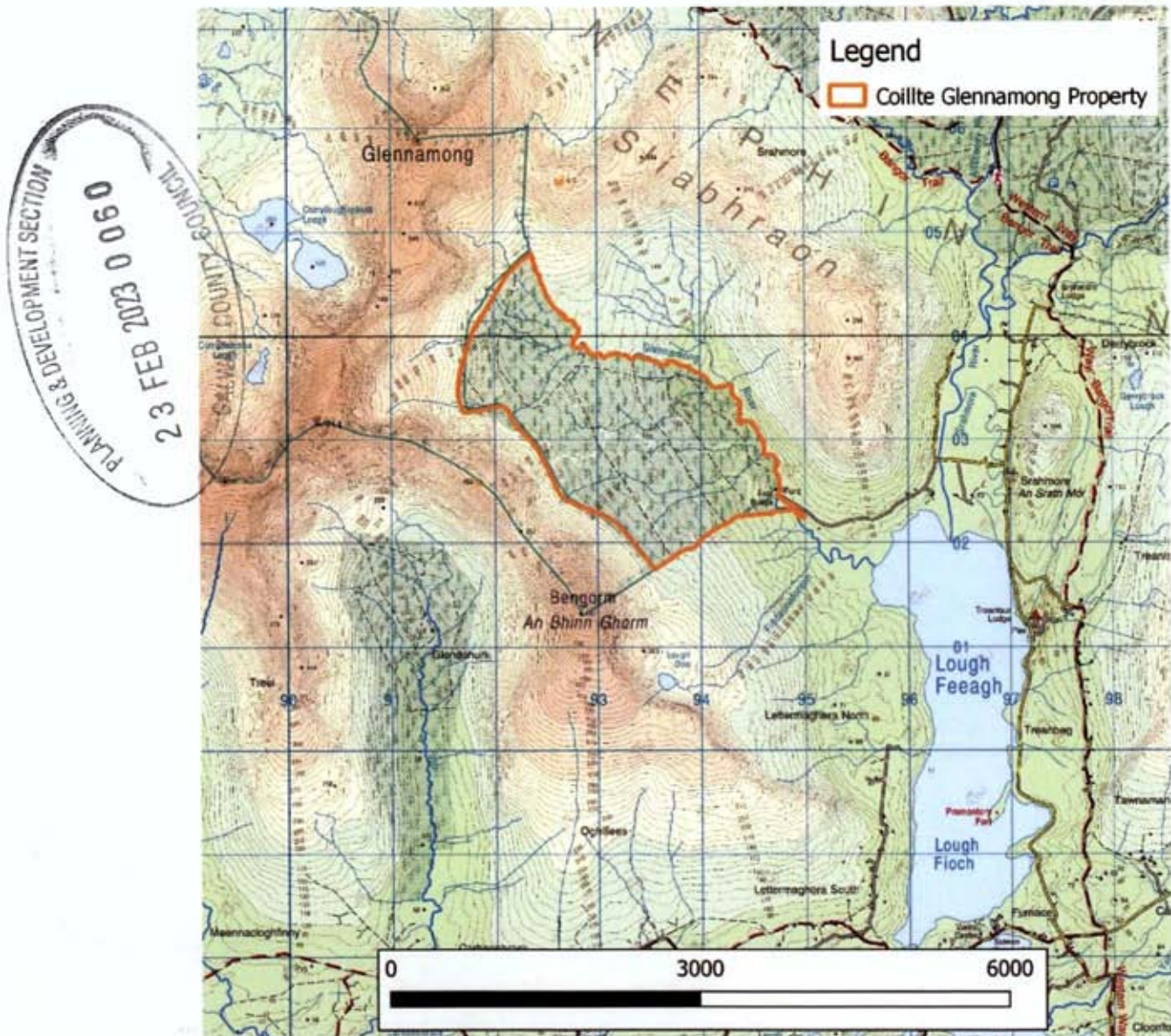


Figure 3-2 Glennamong Site, Co. Mayo

The Coillte property Glennamong though undesignated, is surrounded by the Owenduff/Nephin Complex SAC (00534) and Owenduff/Nephin Complex SPA (04098) and close to Ballycroy National Park. It is in the Burrishoole catchment and watercourses flow directly into Lough Feeagh where the Marine Institute is located. The property is 99% conifer and 1% unplanted. The age class distribution is 82% over 40 years and 18% under 40 years. The Yield class distribution is 93% under YC 14 and 7% over YC 14. The size of the property is 444ha. The soils are mainly peats with some peaty podsoles. The property has extensive riparian zones which flow into Lough Feeagh. Decades of water monitoring have

taken place in this catchment by the Marine Institute. The objectives here are to redesign and restructure to improve biodiversity and water quality, wet heath & blanket bog restoration.

3.3.3 Cappaghoosh, Co. Galway

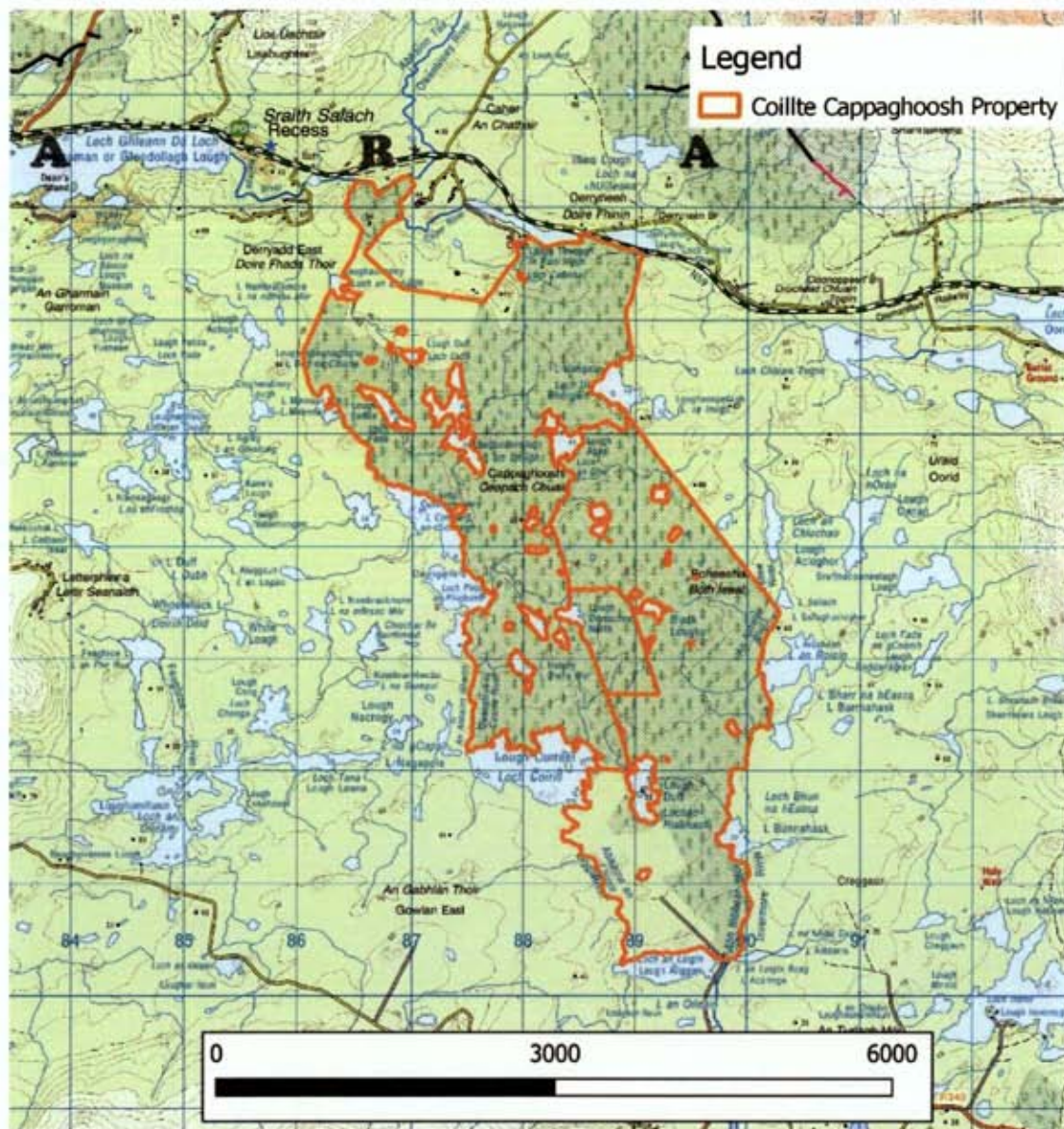


Figure 3-3 Cappaghoosh Site, Co. Galway

The Coillte properties of Cappaghoosh and Boheeshal are partly designated and surrounded by the Connemara Bog Complex SAC (002034) and the Connemara Bog Complex SPA (004181). 364ha of the area was previously restored to blanket bog under the LIFE Nature project LIFE02 NAT/IRL/8490 Restoring Active Blanket Bog in Ireland 2002. Excluding the LIFE sites, the property is 99% conifer and 1% unplanted. The age class distribution is 88% over 30 years and 12% under 30 years. The Yield class distribution is 92% under YC 14 and 8% over YC 14. The size of the property (including the LIFE sites) is 1271ha. The soils are mainly low-lying blanket peats. A large number of lowland oligotrophic lakes occur interspersed throughout the property, along with extensive stream networks. The objective here is to remove poorly growing conifers and restore to blanket bog.

3.3.4

Derrynafulla and Coorannel, Co Cork

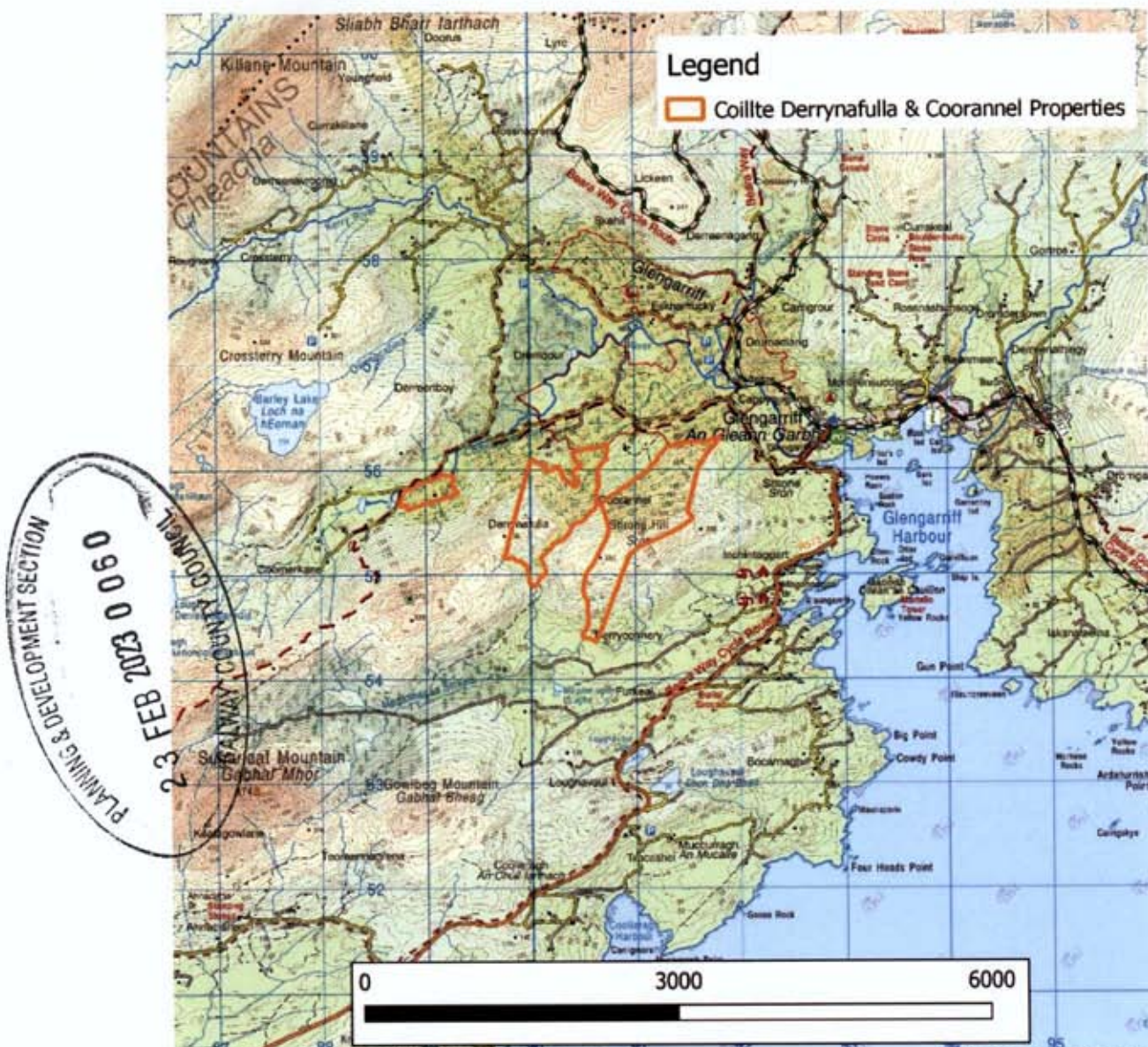


Figure 3-4 Derrynafulla Site, Co. Cork

The Coillte properties of Derrynafulla and Coorannel are surrounded by the Caha Mountains SAC (000093) and Glengarriff Harbour and Woodland SAC (000090) to the NE. They are also adjacent to Glengarriff Nature Reserve which is jointly managed by NPWS and Coillte. NPWS have also acquired new lands along the Cookmarkane river which are adjacent to Derrynafulla and the Nature Reserve. The property is 99% conifer and 1% unplanted. The age class distribution is 58% over 40 years and 42% under 40 years. The Yield class distribution is 45% under YC 14 and 55% over YC 14. The size of the property is 155ha. The soils are mainly peaty podsols. The area is located in a highly scenic and ecologically important catchment of Glengarriff. The objectives are to remove conifers and restore to bog and heath, and in other areas establish native and mixed woodland and manage invasive rhododendron.

3.3.5

Derryclare, Co. Galway (Selected as Pilot Site)

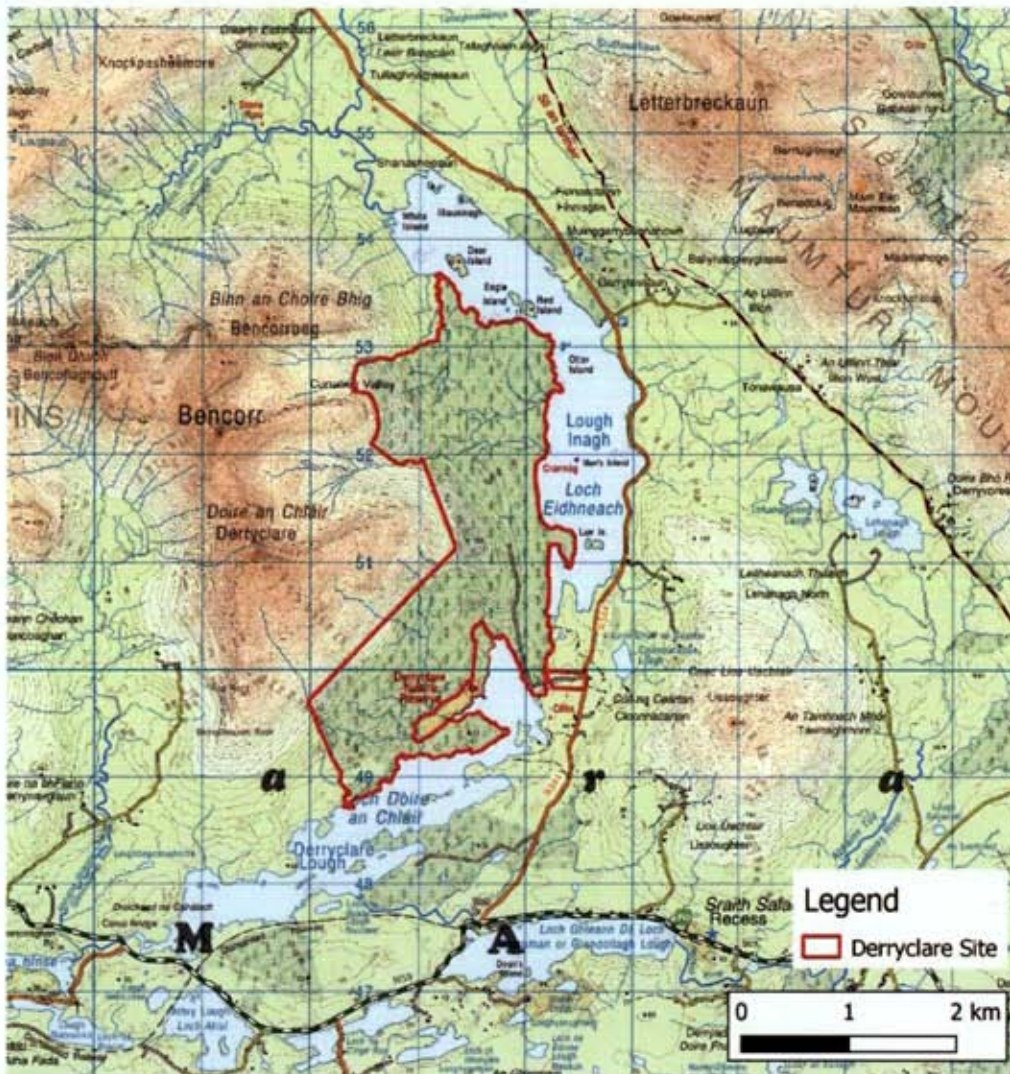


Figure 3-5 Derryclare Site, Co. Galway

The Coillte property at Derryclare though undesignated, is situated within the Twelve Bens/Garraun Complex Special Area of Conservation. It is adjacent to Lough Inagh and Derryclare Lough, a very important salmonid catchment. It is also adjacent to the Derryclare Nature Reserve – one of the finest examples of semi-natural Atlantic oak woodland in Ireland, owned and managed by NPWS.

The Derryclare property was selected to be the pilot site for the Wild Western Peatlands Project as it represents all the expected challenges that are likely to be encountered in the restoration process at one site. Derryclare will act as an important demonstration area for Coillte and other stakeholders in managing the significant challenges posed by inappropriate forestry planting in sensitive western peatland areas and inform how best to manage other similar plantations in the future. The Derryclare property was selected to be the pilot site for the Wild Western Peatlands Project for the following reasons:

- It represents all the expected challenges that are likely to be encountered in the restoration process at one site.
- Derryclare will act as an important demonstration area for Coillte and other stakeholders in managing the significant challenges posed by inappropriate forestry planting in sensitive western peatland areas and inform how best to manage other similar plantations in the future.



- The existing forestry entrance, via a local road on the eastern site boundary, can continue to be used without any alterations or road works required.
- The Proposed Project can comply with the policies and principles outlined in Chapter 1: Introduction (of this EIAR) in terms of the need for additional carbon sinks in Ireland.
- The Proposed Project can contribute to the achievement of national climate & policy targets.

3.4

Alternative Mitigation Measures

Mitigation by avoidance has been a key aspect of the Proposed Project's evolution through the selection and design process. The proposed peatland restoration has been designed to avoid negative impacts to natural watercourses on the site and therefore limit the potential for environmental effects on downstream receptors. The proposed peatland restoration will have an overall positive impact on sensitive receptors through habitat enhancement and long-term positive effects on water quality. Forestry best practice will be followed to ensure that sensitive receptors are protected during the construction phase of the Proposed Project, and in particular during the proposed harvesting activities on the site. These practices include avoidance of sensitive area (such as aquatic zones), establishment of buffers on watercourses, and use of brash mats to avoid rutting of soils.

Due to the nature of the Proposed Project the greatest potential for environmental effects exists during the construction phase. During the operational phase there are no significant ongoing emissions to any environmental media (water, air, soil etc.). Further alternative mitigation measures for this phase are therefore not necessary for further consideration.

The alternative to this approach is to further encroach on the environmentally sensitive areas of the site and accept the potential adverse environmental effects associated with this. Mitigation measures could be put in place to compensate for the loss of environmentally sensitive areas; however such an approach would not represent best practice.

The best practice design and mitigation measures set out in this EIAR will contribute to reducing any risks and have been designed to break the pathway between the site and any identified environmental receptors. The alternative is to either not propose these measures or propose measures which are not best practice and /or effective and neither of these options is acceptable or sustainable.

4.

DESCRIPTION OF THE PROPOSED PROJECT

4.1

Introduction

This section of the Environmental Impact Assessment Report (EIAR) describes the development and its component parts which is the subject of a proposed application for planning permission to Galway County Council, ('the Proposed Project'). This chapter also describes elements of the overall project which are not subject to this planning application but are assessed in this EIAR. Construction methodologies for the main components of the development are also included in this chapter of the EIAR.

The Proposed Project comprises:

1. *The felling/removal of some 343 hectares of conifer plantation for the purposes of peatland restoration and the establishment of native woodland.*
 - a. *Measures to restore and rehabilitate approximately 281 hectares of Atlantic blanket bog and heathland that is currently planted with lodgepole pine and Sitka spruce forests and managed for commercial forestry.*
 - b. *Conversion of 62 hectares of conifer forestry to native woodland.*
2. *Main peatland restoration measures will include tree removal, drain blocking (manual and mechanical) and ground reprofiling.*
3. *The control of existing invasive species on site and continued control during the restoration works to prevent their spread.*
4. *Drain-blocking all existing artificial drainage and artificial land drains currently existing within the peatland restoration areas in order to restore the high water table which is necessary for blanket bog growth*
5. *Provision of silt traps at outflows to block the pathway to the Twelve Bens/Garraun Complex Special Area of Conservation.*
6. *Deer fencing to protect 62 hectares of proposed native woodland*
7. *Provision of a Harvest Management Phasing Plan for the Proposed Project.*
8. *Provision of new internal access road extending to 1.58 km*
9. *Across the site there will be 4 no. temporary water-crossings constructed in order to facilitate the harvesting of the timber at the site.*
10. *Provision of informational signage.*
11. *Resurfacing of up to 8.23 km of existing forestry roads.*
12. *Resurfacing of existing car park to facilitate public access.*
13. *Installation of water monitoring stations for real time water monitoring during operations.*
14. *Cutting of roadside trees to improved sightline visibility at site entrance.*

This application is seeking a ten-year permission in order to allow for the phased completion of the Proposed Project.

All elements of the Proposed Project described in the list above have been assessed in this EIAR and are described in detail in this chapter.

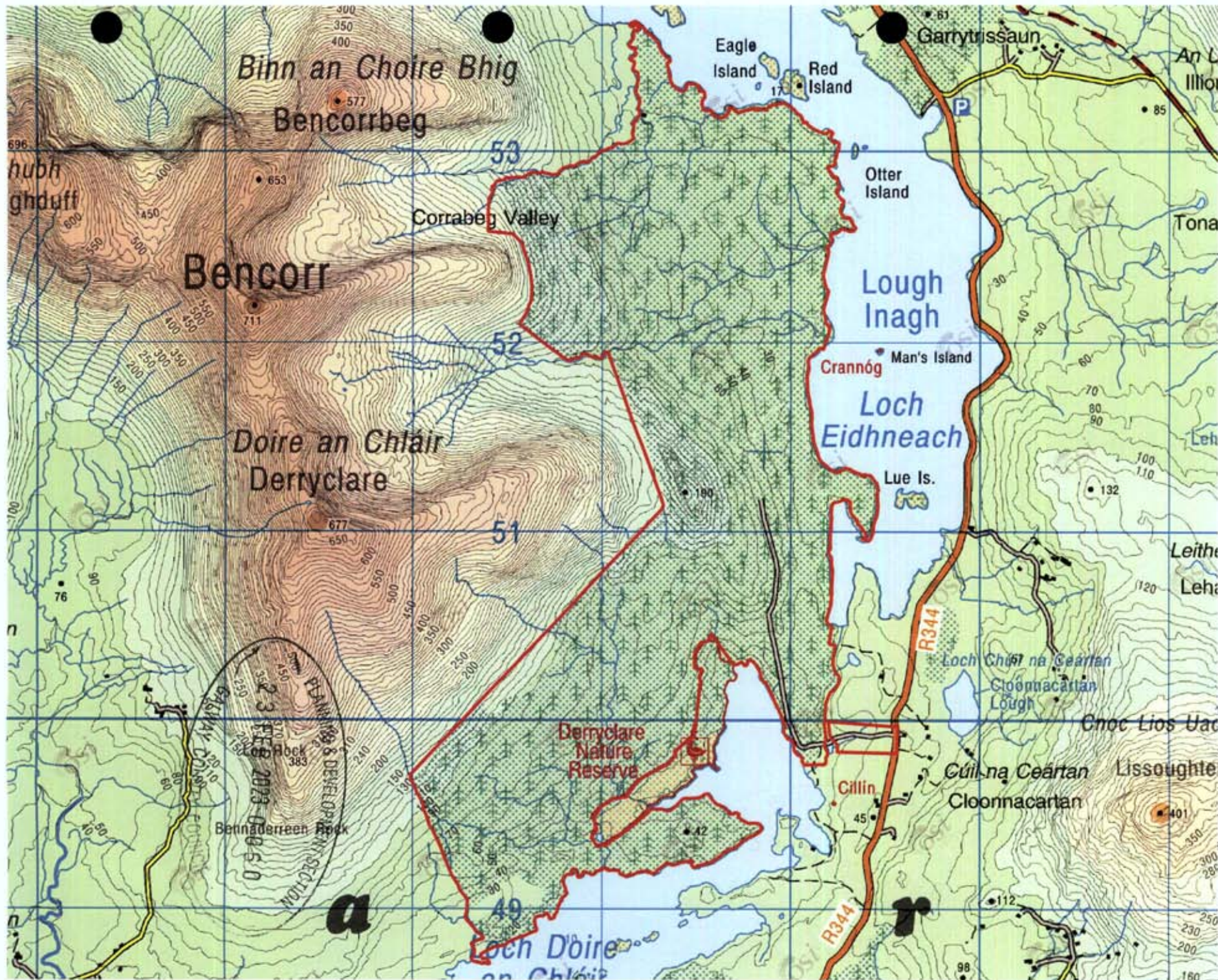


4.2 Existing Site Description

4.2.1 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). 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 as Figure 4-1.





Map Legend

EIAR Site Boundary



Drawing Title

EIAR Study Area Map

Project Title

Derryclare Wild Western Peatland Project

Drawn By

ER

Checked By

TB

Project No

210603

Drawing No

Figure 4-1

Scale

1:26,000

Date

09.02.23



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4.2.2

Site Description

The site topography ranges between 180m above ordnance datum (m AOD) at its highest point to approximately 10m at its lowest point. The current land-use in Derryclare is dominated by forest cover which was planted primarily in the 1960s following intensive drainage and fertiliser application to establish conifer plantations. Approximately 6% of the property is unplanted blanket bog and wet heath habitat. 18% is forest cover that has been felled or burnt and not replanted and is reverting to wet heath or blanket bog, or is located along riparian buffers, and the remaining 76% is under forest cover. Approximately 43% of the forest area is in its second rotation, having been felled and replanted over the last 20 years, with the remaining 47% in its first rotation planted in the 1960s. Approximately 95% of the existing forest cover is comprised of conifer species, primarily Lodgepole pine and Sitka spruce. It is estimated that 84% of the forest cover is yield class (YC) 12 or less, below the threshold for commercial forest production (YC14+), with 55% at YC8 or below.

The main habitats in the Derryclare catchment are wet heath and blanket bog where the vegetation is dominated by purple moor-grass (*Molinia caerulea*) with deer-grass (*Trichophorum cespitosum*), tormentil (*Potentilla erecta*), ling (*Calluna vulgaris*) and cross-leaved heath (*Erica tetralix*). An oak-dominated woodland adjoins the south-east of the Coillte property.

The area is a key tourist and angling destination and is close to the Wild Atlantic Way and the Western Way. The existing forest is highly visible from the surrounding area and little consideration was given to landscape design during the time of the original planting in the 1960s. To the southeast of the Coillte property lies an old (possibly ancient), oak-dominated woodland, designated in 1980 as Derryclare Nature Reserve (S.I. 177/1980; 19ha in size) and it is owned and managed by the National Parks and Wildlife Service (NPWS). The Nature Reserve is enclosed to the east by Derryclare Lough and conifer plantations to the west, and currently has no opportunity to extend its boundaries as it would naturally do. Photographs of the existing forestry at the site are provided as Plates 4-1 and 4-2, below.



Plate 4-1: View of existing coniferous forestry planted directly to the lake shore at the northern end of the Derryclare Site, facing south.



Plate 4-2: View of existing coniferous forestry at the southern end of the Derryclare Site, facing northwest. Note wind thrown trees in the foreground.

Surface water within the northern portion of the site drain in an easterly or north-easterly direction to Lough Inagh. The remainder of the site drains to Derryclare Lake. There is an extensive network of artificial drains within the project site that will be blocked as part of the proposed peatland restoration. A detailed description of the site hydrology and hydrogeology is provided in Chapter 7 of this EIAR. A map of the existing land-use within the EIAR study area is provided as Figure 4-2.

4.2.2.1 Peat Depths

The depth of peat within the EIAR study area ranges from almost zero to over 4 metres. In general, the deeper peats are found in the flatter areas adjacent to the lakes, while the steeper areas to the west of the site are characterized by shallow peats less than 1 metre in depth. A detailed description of the site soils and geology is provided in Chapter 8 of this EIAR.

4.3 Proposed Project Layout

The layout of the Proposed Project has been designed to minimise the potential environmental effects of necessary access infrastructure, while at the same time maximising the potential environmental benefits of the proposed peatland restoration. The Proposed Project layout makes maximum use of the existing access roads and tracks within the site, thereby minimising the extent of proposed new roads required.

The overall layout of the Proposed Project is shown on Figure 4-3. This drawing shows the proposed locations of peatland restoration area, native woodland establishment areas, internal roads layout, and the site entrance. Detailed site layout drawings of the Proposed Project are included in Appendix 4-1 to this EIAR.





Map Legend

- Derryclare Site
- Existing Forest Road
- Existing Carpark
- Existing Peatland
- Existing Forestry



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Drawing Title

Existing Landcover

Project Title

Derryclare Wild Western Peatland Project

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ER

Checked By

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Project No.

210603

Drawing No.

Figure 4-2

Scale

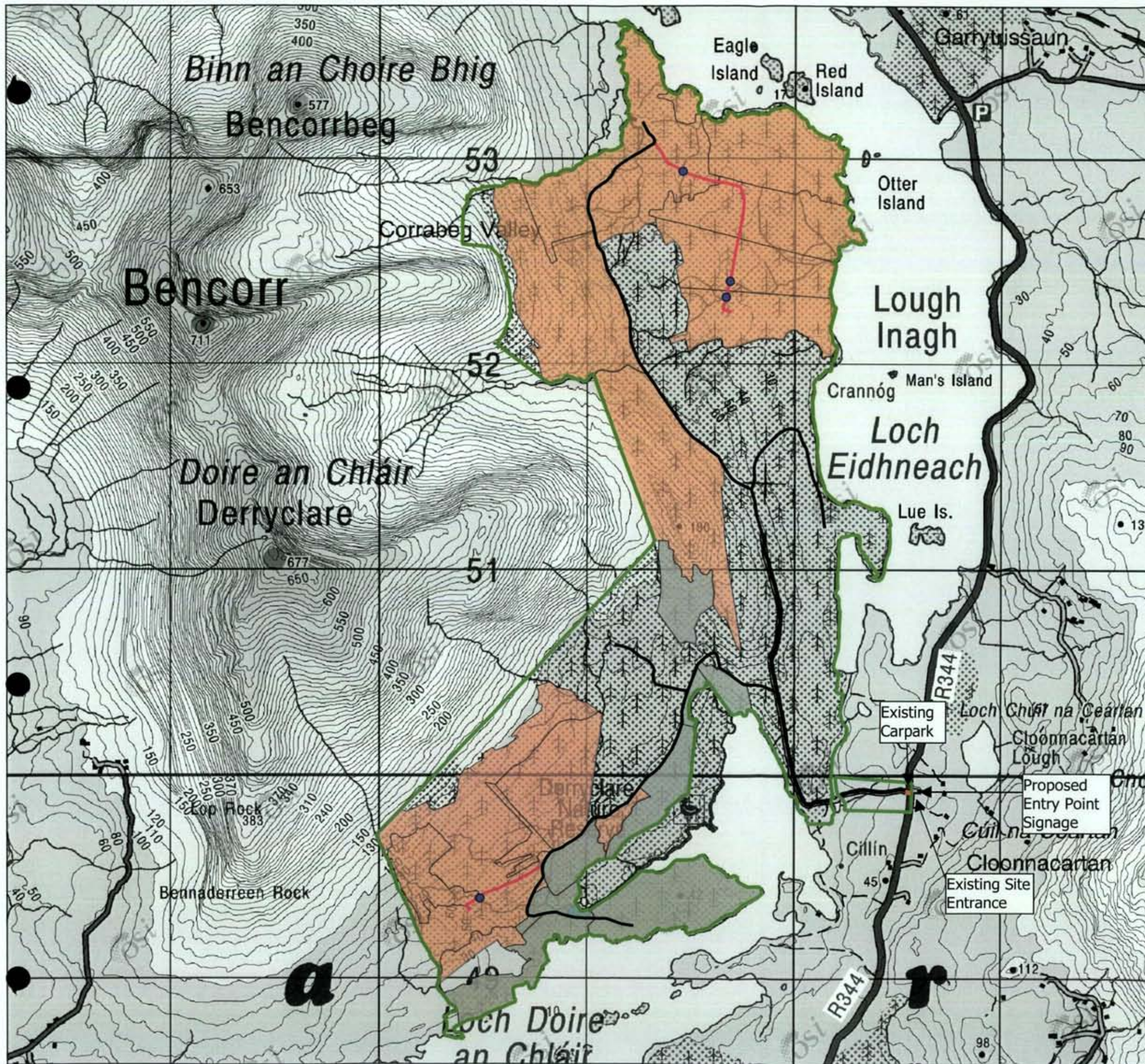
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Map Legend

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



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Drawing Title
Proposed Development Layout

Project Title
Derryclare Wild Western Peatland Project

Drawn By	ER	Checked By	TB
Project No.	210603	Drawing No.	Figure 4-3
Scale	1:18,000	Date	2023-02-14



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4.4

Site Access and Transportation

4.4.1

Site Entrance

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 Kylemore 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 location of the existing site entrance is shown on Figure 4-3. Vegetation to the north and south of the existing site entrance will be trimmed to improve site lines for vehicles exiting the site.

4.4.2

Traffic Management

The construction phase of the project will require the import of stone material for the finishing the proposed forestry access road extensions. Stone will be imported to provide a suitable capping material to complete the finishing layer on the road surface. Harvested timber will also be exported from the site for off-site processing. The scheduling of these deliveries will be coordinated by the contractor and with the source of this material and delivery routing set out in a Traffic Management Plan to be prepared prior to the commencement of works.

Other deliveries will include nursery material for planting of native woodland areas, plastic dam materials for bog restoration, and pre-cast concrete / plastic pipes for completion of necessary watercourse crossings.

The assessment of the predicted traffic impacts associated with the development is provided in Section 14 of this EIAR.



4.5 Project Components

4.5.1 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 highly suitable for bog restoration or conversion to native woodland over the initial 6-year 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. Careful planning with the input of harvesting contractors is necessary to ensure the correct layout of felling coupes that can be harvested in a safe manner. With appropriate mitigations, good machine operators and flexibility to cease work during poor weather, all blocks can be harvested safely, with minimal impact on water quality and soils.

A total of approximately 343 hectares of coniferous forestry will be removed in 20 harvest blocks, 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, (Table 4-2). Harvest Plan Maps for each of the proposed harvest blocks are included in Appendix 4-2

Table 4-1 Proposed Harvest Blocks

Harvest Block Number	Area (hectares)	Plan Year for Operations	Harvesting method to be used
GY27_3_09	19.93	2023	Conventional harvesting
GY27_HB0009	24.86	2025	Conventional harvesting
GY27_HB0010	22.65	2026	Conventional harvesting
GY27_HB0011	17.25	2028	Conventional harvesting
GY27_HB0012	36.39	2024	Conventional harvesting
GY27_HB0013	11.01	2025	Conventional harvesting
GY27_HB0014	43.07	2024	Fell to waste (manual or mechanical)
GY27_HB0015	9.56	2027	Conventional harvesting
GY27_HB0016	3.63	2026	Conventional harvesting
GY27_HB0017	11.56	2026	Conventional harvesting
GY27_HB0018	19.21	2027	Conventional harvesting

GY27_HB0020	5.57	2026	Conventional harvesting
GY27_HB0021	42.38	2024	Mulching crop
GY27_HB0022	37.01	2024	None (Completed under licence)
GY27_HB0023	2.83	2026	Conventional harvesting
GY27_HB0024	3.76	2025	Mulching crop
GY27_HB0027	20.4	2025	None (Completed under licence)
GY27_HB0028	8.76	2025	Conventional harvesting
GY27_HB0029	1.23	2025	Conventional harvesting
GY27_HB0030	2.35	2025	Conventional harvesting

4.5.2 Habitat Restoration and Enhancement

4.5.2.1 Blanket Bog and Wet Heath Restoration

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. Areas proposed for bog restoration are shown on Figure 4-3.

4.5.2.2 Establishment of Native Scrub Woodland

Approximately 62.26 hectares of coniferous forestry will be felled and replanted with native scrub woodland. Areas proposed for native woodland establishment are shown on Figure 4-4. It is important to note that establishing new native woodland on peatland soils is a very difficult proposition. Therefore, 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 this 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 4-2, below.



Table 4-2 Pioneer Native Woodland Establishment Methodology

Pioneer Native Woodland	
†Source: Native Woodland Intervention for Remediation of Industrial Cutover Peatlands Pilot Scheme 2021 – 2022.	
Description	Standards†
<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 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 eligible for grant aid. There will be a mosaic of tree cover and open bog depending on peat depths across the site.</p> <p>Scrap mounding/no cultivation with no mound drains is the preferred cultivation method and mounding only where drainage is deemed essential</p> <p>No additional drainage or fertiliser application is recommended.</p>

The proposed native woodland area will be planted with a range of native species as listed in Table 4-6 below.

Table 4-3 Proposed Native Tree Species to be used.

Common Name	Scientific Name	Drier Area Species Mix	Wetter Area Species Mix
Birch	<i>Betula pubescens</i>	55%	40%
Willow	<i>Salix spp.</i>	20%	60%
Rowan	<i>Sorbus aucuparia</i>	10%	–
Sessile oak	<i>Quercus petraea</i>	5%	–
Scots pine	<i>Pinus sylvestris</i>	5%	–
Alder	<i>Alnus glutinosa</i>	5%	–

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

Table 4-4 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)

4.5.3 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 Project, 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.

4.5.3.1 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 Project. 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 4-3 View of existing site access road





Plate 4-4 View of existing site access road

4.5.3.2 New Forestry Access Roads

In order to access and service the forestry blocks in the northern section of the site one new road extension is required. A 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 to construct approximately 1.58 kilometres of new roadway as part of the Proposed Project. The routes of the proposed new roads are shown in Figure 4.3. Proposed new 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.

A typical section for the proposed access roads is shown in Figure 4.4. The proposed 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.

4.5.3.3 Temporary Watercourse Crossings

Along the new 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 this ELAR. Additional temporary water course crossings of forestry drains may also be required to facilitate timber harvesting. These additional crossings will be accomplished using the same methodology described in Section 4.7.9 however, all forest drains within the project site will be permanently blocked as part of the proposed peatland restoration. Temporary Watercourse Crossings will be removed following the completion of the restoration works.

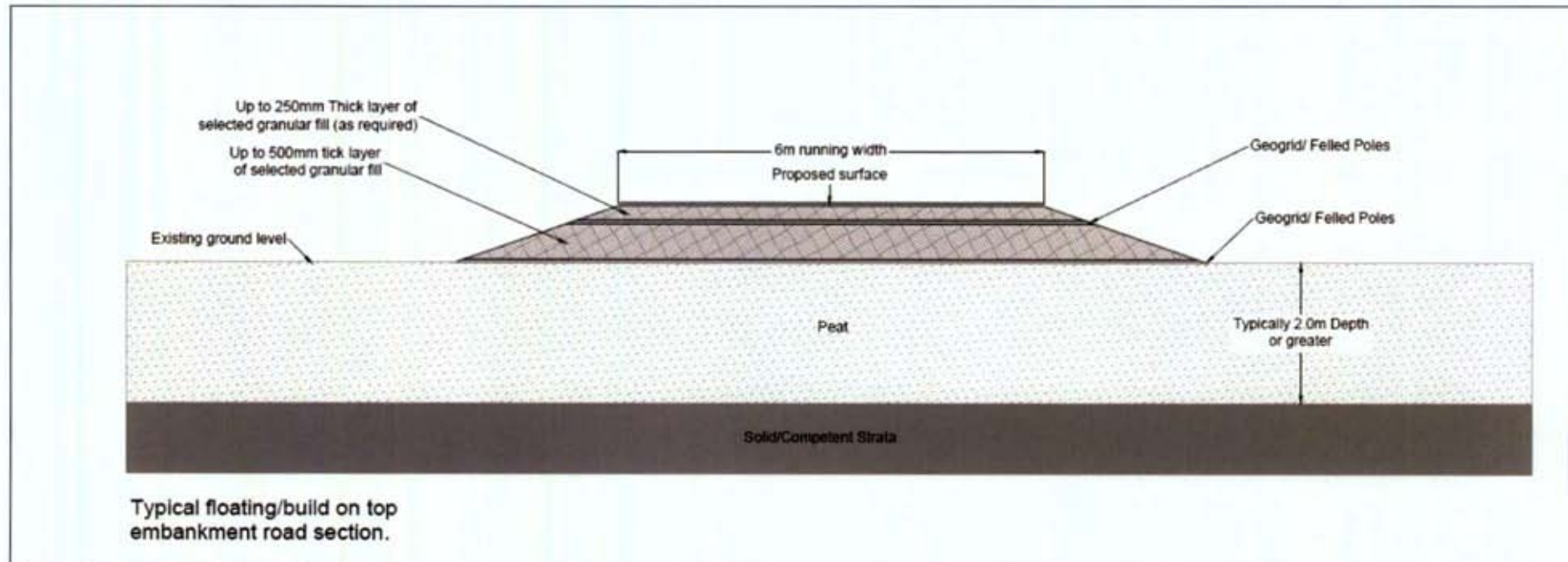


Figure 4-4 Typical Floating/Build on Top Road Section



4.5.4

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 4-5.



Plate 4-5 View of existing car park

4.5.5 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'. Information in relation to the flora and fauna present at the site and within the local area will also be provided. Elevation drawings of the proposed amenity signage is shown on Figure 4-5.

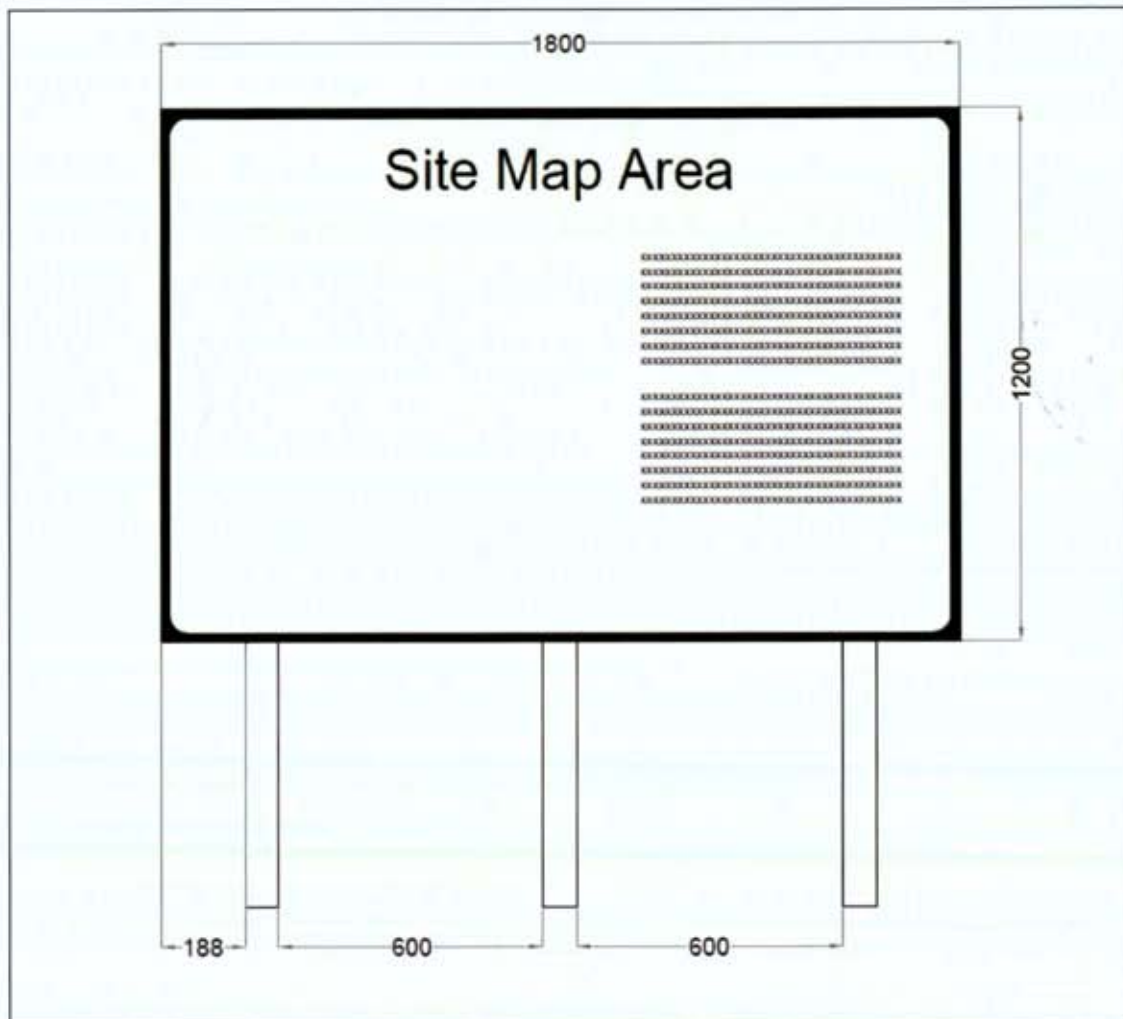


Figure 4-5 Amenity Signage Elevation Drawing



4.5.6 Deer Fencing

The proposed native woodland establishment areas will be fenced with deer proof fencing where necessary. Elevation drawings of the proposed deer proof fencing are shown on Figure 4-6.



Plate 4-6 View of existing stock proof fencing around the NPWS nature reserve adjacent to the site.

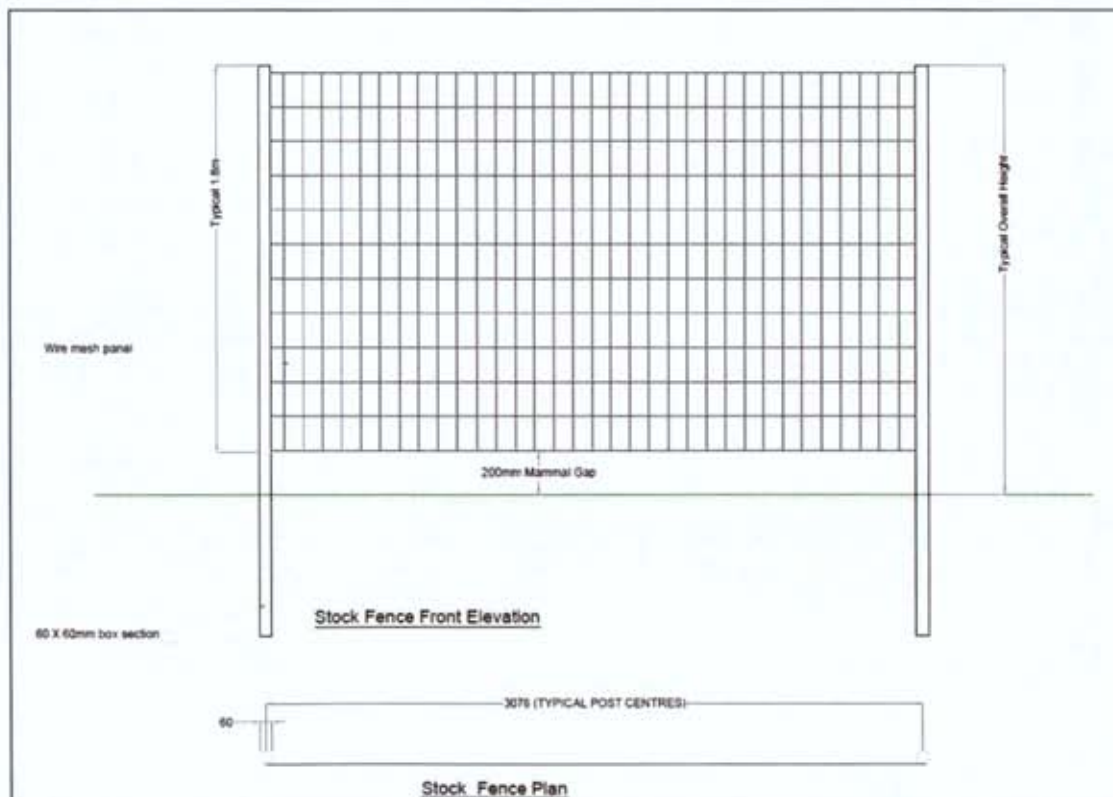


Figure 4-6 Deer Fencing Elevation

4.5.7 Site Activities

4.5.7.1 Environmental Management

All proposed activities on the site of the Proposed Project will be provided for in an environmental management plan. A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Project and is included in Appendix 4-3 of this EIAR. The CEMP sets out the key environmental considerations to be taken into account by the contractor during construction of the Proposed Project. The CEMP also details the mitigation measures to be implemented in order to comply with the environmental commitments outlined in the EIAR. The contractor will be contractually obliged to comply with all such measures. In the event planning permission is granted for the Proposed Project, the CEMP will be updated prior to the commencement of the development, to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned and will be submitted to the Planning Authority for written approval.

4.5.7.2 Refuelling

Wherever possible, vehicles will be refuelled off-site. This will be the case for regular, road-going vehicles. However, for forestry and excavator machinery that will be based on-site continuously, a limited amount of fuel will have to be stored on site in bunded areas.

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 refilled off site and will be towed around the site by a 4x4 jeep to where machinery is located. It is not practical for all vehicles to travel back to a single refuelling point, given the size of the cranes, 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.

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.

4.6 Construction Management

4.6.1 Construction Timing

It is estimated that the construction phase will take approximately 5-7 years from starting on site to the completion of restoration works. Restoration works range from low impact manual silt trap installation to high impact mechanised tree felling. Construction will be timed, in coordination with Inland Fisheries Ireland, to avoid critical salmonid spawning times.

4.6.2 Construction Sequencing

Table 4-2 below sets out an aspirational timeline for the implementation of the proposed project. This timeline may be subject to change based on time of the receipt of the necessary licences and approvals for the project. Figure 4-7 shows the various harvest blocks with estimated years of felling. Bog restoration activities may occur in the same year as felling or in subsequent years as appropriate.

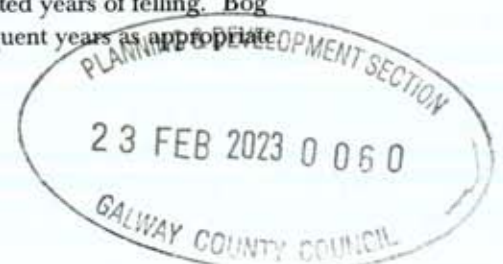
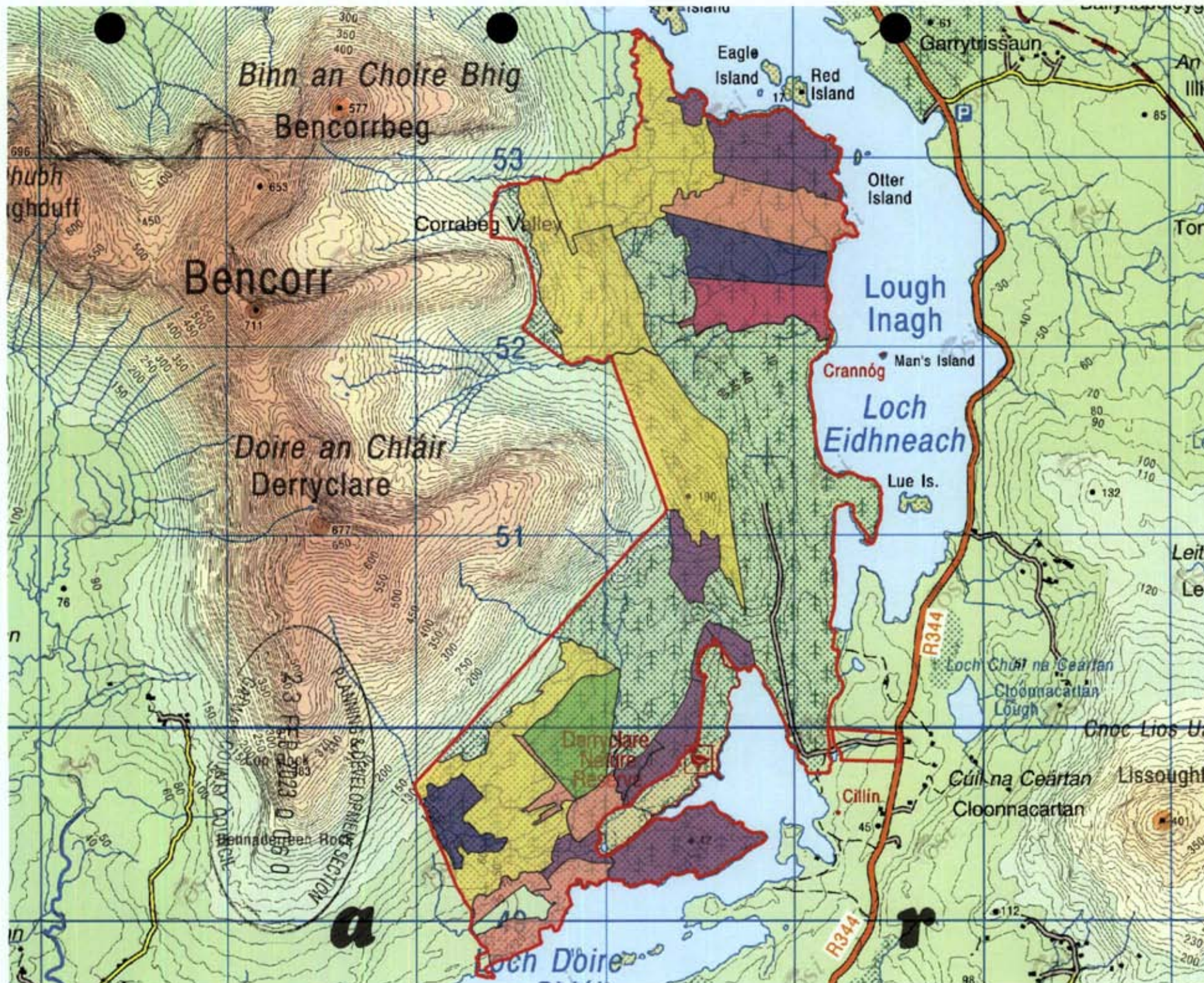


Table 4-5 Estimated Felling and Restoration Schedule

Planned Felling Year	Harvest Type for Existing Forestry	Proposed Target Habitat Type (post restoration)	Approx. Area (hectares)
2023	Conventional Harvesting	Blanket Bog/Wet Heath	20
2024	Conventional Harvesting	Blanket Bog/Wet Heath	37
	Mulch	Blanket Bog/Wet Heath	42
	Fell to Waste (burnt area)	Blanket Bog/Wet Heath	43
	Recently felled under licence	Blanket Bog/Wet Heath	37
2025	Conventional Harvesting	Blanket Bog/Wet Heath	27
	Conventional Harvesting	Native Woodland Scrub	21
	Recently felled under licence	Native Woodland Scrub	20
	Mulch	Native Woodland Scrub	4
2026	Conventional Harvesting	Blanket Bog/Wet Heath	29
	Conventional Harvesting	Native Woodland Scrub	17
2027	Conventional Harvesting	Blanket Bog/Wet Heath	29
2028	Conventional Harvesting	Blanket Bog/Wet Heath	17
TOTAL			343

PLANNING & DEVELOPMENT SECTION
23 FEB 2023 0 06 0
GALWAY COUNTY COUNCIL



Map Legend

EIAR Site Boundary

Proposed Restoration Areas by Year

- 2023
- 2024
- 2025
- 2026
- 2027
- 2028



Drawing Title
Proposed Restoration Areas by Years

Project Title
Derryclare Wild Western Peatland Project

Drawn By ER	Checked By TB
Project No. 210603	Drawing No. Figure 4-8
Scale 1:26,000	Date 2023-02-09

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4.6.3

Construction Phase Monitoring and Oversight

The requirement for a Construction Environmental Management Plan (CEMP) to be prepared in advance of any construction works commencing on any project that is the subject of environmental impact assessment and submitted for agreement to the Planning Authority is now well-established. The proposed procedures for the implementation of the mitigation measures outlined in such an EMP and their effectiveness and completion is typically audited by way of an Environmental Management Plan (EMP) Audit Report. The EMP Audit Report effectively lists all mitigation measures prescribed in any of the planning documentation, all conditions attached to the grant of planning permission and any further mitigation measures proposed during the detailed design stage, and allows them to be audited on a systematic and regular basis. The first assessment is a simply Yes/No question, has the mitigation measure been employed on-site or not? Following confirmation that the mitigation measure has been implemented, the effectiveness of the mitigation measures has to be the subject of regular review and audit during the full construction stage of the project. If some remedial actions are needed to improve the effectiveness of the mitigation measure, then these are notified to the site staff immediately during the audit site visit, and in writing by way of the circulation of the audit report. Depending on the importance and urgency of rectifying the issue, the construction site manager is given a timeframe by when the remedial works need to be completed.

The on-site construction staff will be responsible for implementing the mitigation measures specified in the EIAR and compiled in the Audit Report. Their implementation will be overseen by supervising foresters, hydrogeologists, environmental scientists, ecologists or geotechnical engineers, depending on who is best placed to advise on the implementation. The system of auditing referred to above ensures that the mitigation measures are maintained for the duration of the construction phase, and into the operational phase where necessary. The Audit Reports are usually submitted to the Planning Authority as a condition of planning and will be proposed as part of the Environmental Management Plan and Audit System that that is typically proposed to and agreed with the Planning Authority in advance of construction works commencing.

4.7

Proposed Construction and Restoration Methodologies (Construction Phase)

4.7.1

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 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)

4.7.2

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. Where available, closely spaced, felled poles (delimbed trees), covered with brash can be spread across the formation base width to help load distribution. Sods from drains (provided at preliminary stage) can be used to level up depressions. When the road site has been chosen some years before construction is due, it is recommended to carry out pre-construction drainage at the earliest possible stage and use the intervening time to make the formation area as strong as possible. Spoil from drains can be used to give a convex shape, drains themselves can be gradually deepened as drying out proceeds and planting of trees at close spacing will provide a matrix of stumps and roots as well as ready-to-hand supply of brash.

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.
- Base geogrid to be laid directly onto the existing peat surface along the line of the road in accordance with geogrid provider's requirements.
- Construction of road 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 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.



4.7.3 Tree Felling

4.7.3.1 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 stay 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 wet 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 design capacity and traverse overloaded across the site.

4.7.3.2 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.

4.7.3.3 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 strips or chips. Mulching machines can vary from tractor mounted attachments to flail heads mounted on a small excavator. An example of an area that will be mulched is shown in Plate 4-7, below.

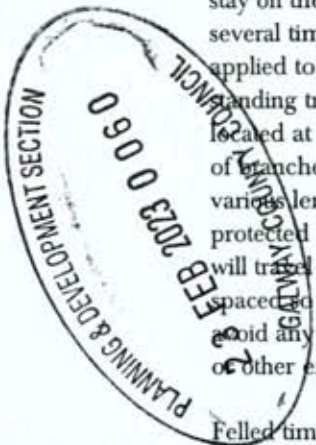




Plate 4-7 Image of young conifer regeneration at Derryclare.

4.7.4 Tree Planting Methodology

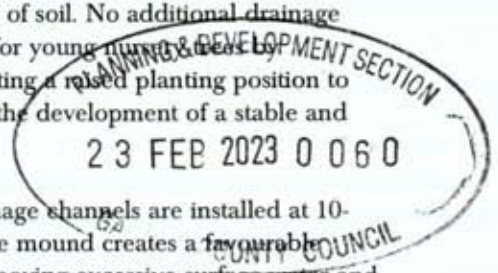
Planting will be carried out manually. The main forms of planting rooted material are set out as below and a proposed planting schedule can be found in Section 4.5.2.2 of this document. A combination of all the planting methods described below may be used on the site as conditions dictate. All planting 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.

4.7.4.1 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 clearer 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 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 young tree placed in the opening. The loose soil will then be backed filled with the spade and firmed in, ensuring that it is upright and straight and finally firmed by foot around the plant.

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. This form of planting can be suitable for ribbons, mounds and ripped ground.

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, then slightly pull up the plant to allow the roots to hang down and to ensure correct planting depth. Then the spade is removed and the soil is firmed with the ball of the foot. The angle notch planting methodology is illustrated in Figure 4-9, below.

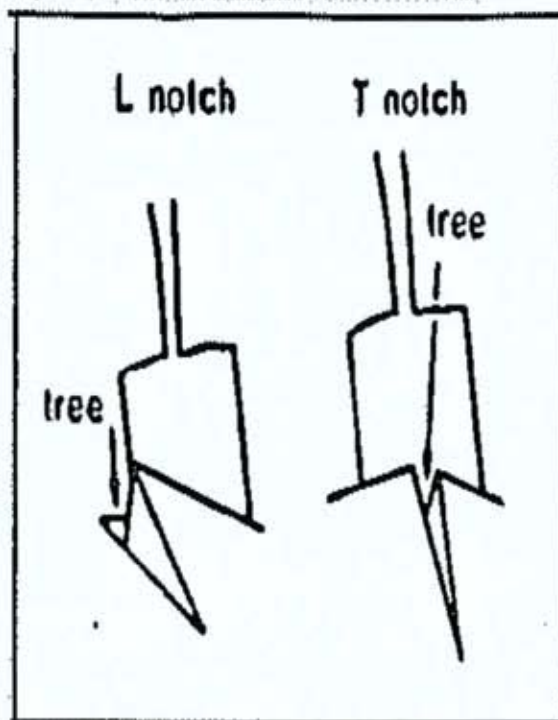


Figure 4-8 "L" and "T" Planting Notches

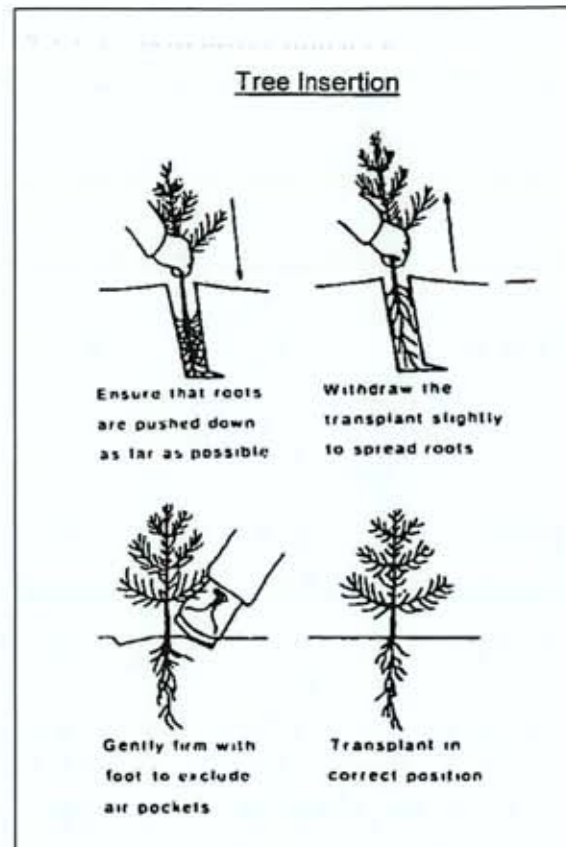


Figure 4-9 Angle Notch Planting Steps

4.7.4.4 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.



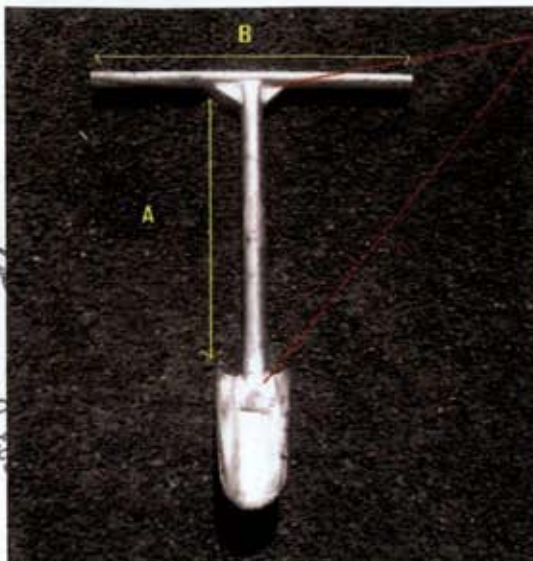


Figure 4-10 Semi-Circular Planting Spade

Note; reinforced locations for extra strength.

Spades should be galvanised to prevent rust.

Average Dimensions

A: 55cm

B: 45cm



Plate 4-8 Plug Planting Methodology

4.7.4.5 Pit Planting

A spade is used to dig a hole and the tree's roots are 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 types of preparation 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

4.7.5 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 4-6 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

4.7.6 Tree Protection

Deer proof 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.

4.7.7 Bog Restoration Techniques

The proposed bog restoration will follow the techniques recommended in NatureScot's Peatland ACTION - Technical Compendium - Restoration - 4 Artificial Drains and 8 Forest to Bog Restoration (NatureScot, 2022). The proposed restoration techniques that will be implemented are discussed below.

4.7.7.1 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 become less common. Wooden dams (wooden plank, plywood, timber logs) can also be used. Peat dams are generally effective but less so where the depth of solid peat at the base of the drain is ≤ 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 can be a concern, because the dams become leaky over time. Wooden dams will be used as blockings in smaller ditches and the ditches over time will be blocked due to natural sedimentation and re-filling, the decomposition of the wooden dam is therefore not a problem.

The slopes and sizes of the drains are the deciding factors in selecting the dam material types and also the spacing of the dams within the drains. Peat dams are usually only effective on a shallow slope ($<10^\circ$ gradient). Plastic dams are suitable in this case. Steeper drains could pose significant erosion risks. Peat dams are also not suitable for the large size drains (drain cross sectional area > 0.7 m²). The ideal dam spacing depends on drain slopes and volume of water; drains on steeper slopes and with greater supply area draining into them should be blocked at shorter intervals as stream powers will be higher. Dams are to 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 2 m and 4 m on steeper sloping ground.

The construction machinery access to some of the site areas may be problematic due to presence of soft soils and steeper 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, plastic dams would be 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. 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 drains (mainly furrows) in the moderately flat areas using the felled timber logs (log dams). Roadside drains will not be blocked in order to avoid any flooding. 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 the log, peat and plastic dams, across the entire site area are provided Appendix 4-5 of this EIAR. Final decisions on the method of drain blocking will be made based on conditions in the field. The following drain blocking methods will be used as appropriate.

4.7.7.1.1 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 where there is a 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 be used in the following situations:

- On ground that is too soft 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, yet 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 further 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 sit no 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.*

4.7.7.12 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 you may have on your site. 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 stock.*
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.*



4.7.7.1.3 Log Dams

Log dams will be used as blockings in 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 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 you may have on your site. 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.

4.7.7.2 Surface Smoothing and Re-Profiling

Bog restoration techniques must reverse the impact of the ridge-furrow cultivation process which continues to persist post-felling, as well as raising the bog water table within the underlying peat mass which have been damaged by the afforestation process. Methods comprising various surface smoothing techniques, and furrow/drain blocking or a combination of both have shown good potential in restoring active 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 to post felling sites. 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 process would likely take a very long time. Plough ridges often occupy up to 50% of the plantation surface area.

4.7.7.2.1 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 bog water table sufficiently in many situations. Reprofiling 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 plus 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 a drain. It makes the profile of the drains shallower which can make them safer for animals.

Reprofiling 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 4.9 Examples of blocked and reprofiled drains on peatland in Scotland

4.7.7.2.2 Stump Flipping and Surface Smoothing

Stump flipping is the process of carefully prying the root plate of a stump off 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.

4.7.7.2.3 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.

4.7.7.2.4 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 retain as much of the bog vegetation as possible and not bring up too much deep peat to the surface which takes longer to revegetate. The use of a low ground pressure excavator with wide tracks (1.9m or greater) will reduce compaction of the site.





Plate 4-10 Recently ground smoothed peat on a site in Scotland (May 2022)

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 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.

4.7.9

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:

- 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 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.
- 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)
- Bridging logs should be placed from top of bank to top of bank to ensure that the natural stream banks are left intact.



Plate 4-11 Examples of temporary stream crossings

4.7.10

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 clumps and regeneration evident to varying degrees across the property. However, 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 live shrubs with glyphosate, manual removal with brush-cutters, manual chainsaw felling and stump treatment using 'Ecoplugs'.

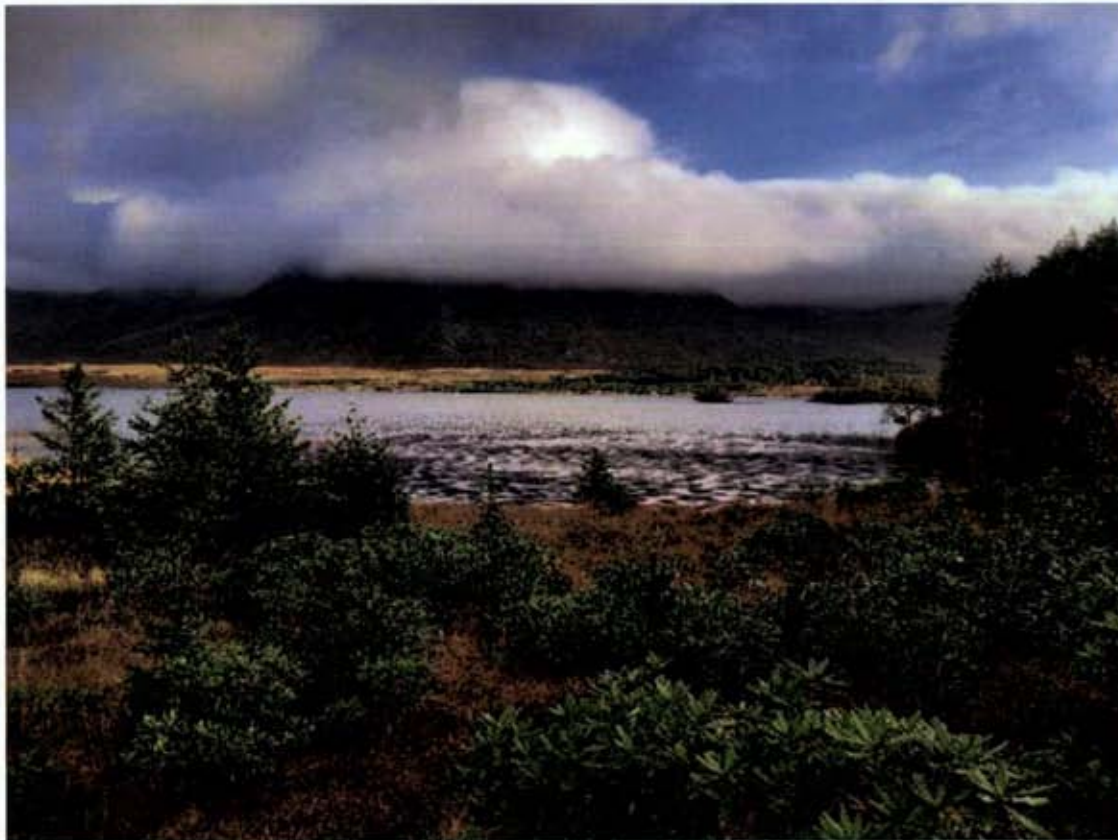
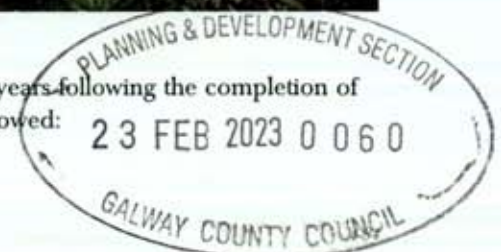


Plate 4-12 Image of invasive rhododendron at Derryclare

Invasive species control will be carried out each year for at least five years following the completion of restoration works. The following treatment methodologies will be followed:



4.7.10.1 Stem Injection

This method involves the application of herbicide directly into the stem of standing rhododendron. A hole will be made in the stem of the standing rhododendron plant using a drill or hatchet. A suitable Glyphosate based herbicide will be inserted into the hole for targeted application of 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 spread of *Rhododendron* as a result of the dispersal of fragments of live material during the felling process. Dead *Rhododendron* will be cleared as part of the felling process.

4.7.10.2 Cut and Stump Treat

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 stumps (<3cm in diameter) the freshly cut stumps shall be treated by direct application of Glyphosate (using 20% solution of water, marker dye, and Glyphosate) or Ecoplugs on large diameter stumps. This should be applied using a paint brush within 30 minutes of cutting and no later than 12 hours after cutting.

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 i.e. Roundup Biactive Ecoplugs.

Spraying/stump treatment operations to take place only in dry weather.

4.7.10.3 Spot spray

Regrowth of rhododendron/cherry laurel and any emergent seedlings (under 1.3 m) will be spot sprayed with a suitable Glyphosate product (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 appropriate product mix (see 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.

4.7.10.4 Use of Ecoplugs

Stump treatment to 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. 1 Ecoplug (as Ecoplug Max® 4 (680 g kg⁻¹ 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.

4.7.11 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 10m setback will be established along all aquatic zones and 5m setbacks will be established along all relevant watercourses and water hotspots.

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

4.8

Proposed Maintenance and Monitoring (Operational Phase)

The following maintenance is proposed to ensure the successful establishment of the proposed peatland and native woodland habitats:

- Annual monitoring of tree survival rates will occur in the areas where native woodland has been planted. If necessary supplemental planting of trees (i.e. filling in) will occur to ensure that the target density is achieved by year 4-6 (as per Table 42). Supplemental planting, if necessary, will occur in the autumn or spring planting windows.
- A water quality monitoring programme for the site will be implemented. Details are provided in Chapter 8 of this EIAR. The monitoring programme will include both chemical and biological water quality monitoring.
- Invasive species management will continue on an annual basis for at least 4 years following the completion of the construction phase of the project. The proposed methodology for invasive species management is described in Section 4.7.9, above.
- Vegetation monitoring plots have been established, and will be used to monitor the impact of project operations to restore and rehabilitate peatland and native woodland (15 baseline vegetation monitoring plots established in August 2021)

4.9

Decommissioning Phase

It is not intended that the proposed peatland restoration project will be reversed or removed as permanent planning permission is being sought for the change of land use from forestry to other habitat types. Therefore, it is intended that the Proposed Project will be retained as permanent, and will not be decommissioned.

4.10

Health and Safety

Health and safety in forestry is the concern of all those involved, including forest owners, managers, supervisors, operators, recreational users and trespassers (refer to 'Code of Best Forest Practice', Forest Service, 2000). Forest practice must ensure that operations do not endanger workers and others.

All Forest Service guidelines and Health and Safety legislation will be adhered to during all forestry-related activities at the proposed establishment lands.





5. POPULATION AND HUMAN HEALTH

5.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) identifies, describes and assesses the potential, significant, direct and indirect effects of the proposed deforestation and bog restoration project on population and human health and has been completed in accordance with the guidance set out by the Environmental Protection Agency (EPA), in particular the *'Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports'* (EPA, 2022). The full description of the proposed development is provided in Chapter 4 of this EIAR.

One of the principal concerns in the development process is that people, as individuals or communities, should experience no diminution in their quality of life from the direct or indirect impacts arising from the establishment and related operations of this development. Ultimately, all the impacts of a development impinge on human health, directly and indirectly, positively and negatively. The key issues examined in this chapter of the EIAR include population, human health, employment and economic activity, land-use, residential amenity, community facilities and services, tourism, property values, shadow flicker, noise and health and safety.

5.1.1 Statement of Authority

This section of the EIAR has been prepared by Sanghamitra Nidhi Dutta and reviewed by Thomas Blackwell of MKO. Sanghamitra is an Environmental Scientist with two years of experience in the environmental consultancy sector. She has a BSc. in Environmental Scientist and an MSc. in Ecosystem Science and Policy from University College Dublin. Thomas Blackwell is a Senior Environmental Scientist with MKO with over fifteen years' experience in environmental consulting in Ireland and the USA. Thomas holds a BA (Hons) in Geography from Trinity College Dublin and an MSc. in Environmental Resource Management from University College Dublin.

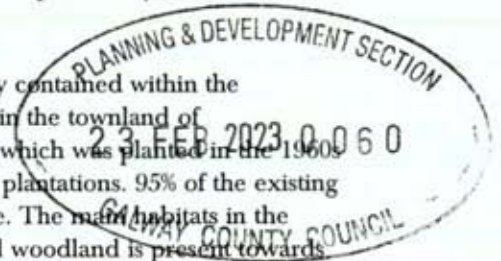
5.2 Population

5.2.1 Receiving Environment

Information regarding human beings and general socio-economic data were sourced from the Central Statistics Office (CSO), the Galway County Development Plan 2022-2028, and Fáilte Ireland. The study included an examination of the population and employment characteristics of the area. This information was sourced from the Census of Ireland 2016, which is the most recent census for which a complete dataset is available, as well as the Census of Ireland 2011 and from the CSO website, www.cso.ie. Census information is divided into State, Provincial, County, Major Town and District Electoral Division (DED) level. The 2022 Census is due for publication in April 2023 (first official report) and December 2023.

The Proposed Project is located at Derryclare, Co. Galway, and is largely contained within the townland of Derryclare, with a portion to the east of the site located within the townland of Cloonnacartan, in Co. Galway. The project area comprises forest cover, which was planted in the 1960s following intensive drainage and fertiliser application to establish conifer plantations. 95% of the existing forest cover is conifer species, primarily Lodgepole pine and Sitka spruce. The main habitats in the Derryclare catchment are wet heath and blanket bog. An oak dominated woodland is present towards the south-east of the Coillte property. The site location is shown in Figure 1-1 of Chapter 1 of this EIAR.

In order to assess the population in the vicinity of the site, the Study Area for the Population section of the EIAR is defined in terms of the District Electoral Divisions (DEDs) within which the Proposed

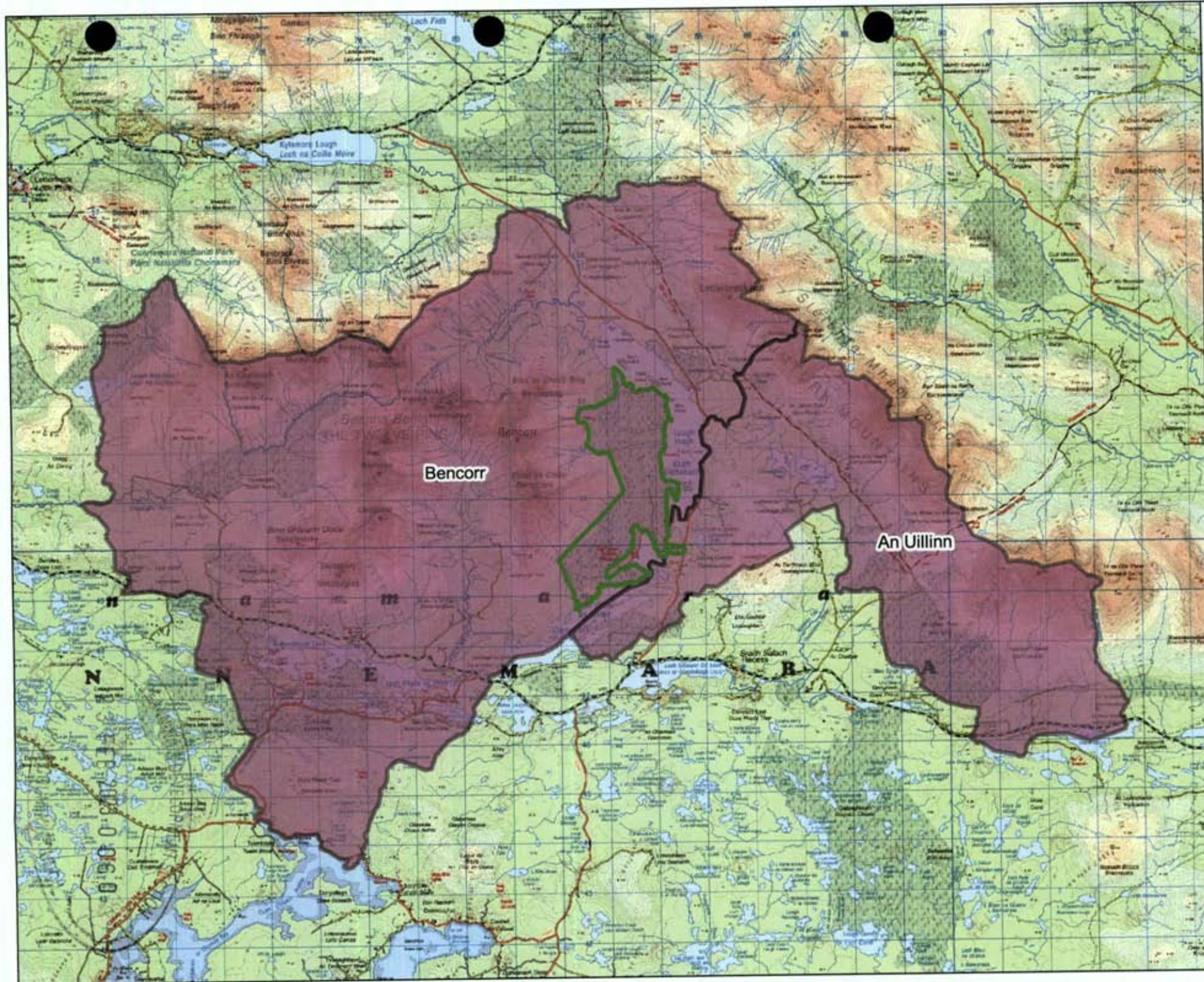


Project is located. The project site is located across two DEDs in Co. Galway, namely Bencorr and An Uillinn, which will hereafter be referred to as the 'Study Area' in context of population. These two DEDs are illustrated in Figure 5-1.

The population Study Area has a combined population of 323 persons, as of 2016, and comprises a total land area of 13,492 hectares (ha) or 134.92 square kilometres (km²)¹.



¹ CSO Census of the Population 2016



Map Legend

- Derryclare Site Boundary
- Electoral Divisions



Drawing Title
Population and Human Health
Study Area

Project Title
Derryclare Wild Western Peatland
Project

Drawn By ER	Checked By TB
Project No. 210603	Drawing No. Figure 5-1
Scale 1:100000	Date 14.02.23

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5.2.2 Population

5.2.2.1 Population Trends

In the period 2011 to 2016, the population of Ireland increase by 3.8%. Between 2011 and 2016, the population of Co. Galway increased by 2.4% to 179,390 persons. Population statistics for the Republic, County Galway and the Study Area have been obtained from the Central Statistics Office (CSO) and are presented in Table 5-1.

Table 5-1 Population 2011 – 2016 (Source: CSO)

Area	Population		% Population Change
	2011	2016	
Republic of Ireland	4,588,252	4,761,865	+3.80%
County Galway	175,124	179,390	2.4%
Study Area	355	323	-9%

The data presented in Table 5-1 shows that the population of the Study Area decreased by 9%. The populations across both DEDs have been relatively small. Bencorr experienced a population change of -10% with 252 persons in 2011 dropping to 226 persons in 2016. An Uillinn's population dropped by 5.8% from 103 persons in 2011 to 97 persons in 2016. Conversely, the population of County Galway increased by 2.4%.

5.2.2.2 Population Density

The population densities recorded within the Republic, County Galway and the population Study Area during the 2011 and 2016 Census are shown in Table 5-2.

Table 5-2 Population Density in 2011 and 2016 (Source: CSO)

Area	Population Density (Persons per square kilometre)		% change in Population Density
	2011	2016	
Republic of Ireland	65.57	68.06	+3.8%
County Galway	28.47	29.16	+2.4%
Study Area	2.63	2.39	-9%

The populations density of the Study Area recorded during 2016 was 2.39 persons per km². This figure is significantly lower than the national population density of 68.06 persons per km² and the county population density of 29.16 persons per km². These findings confirm that the site of the proposed development is located within a sparsely populated area.

Similar to the trends observed in population figures, the population density recorded during 2016 around the proposed development site varies between the two DEDs. Bencorr DED had a population density of 2.2 persons per km², while An Uillinn had a population density of 2.8 per km².

5.2.2.3 Household Statistics

The number of households and average household size recorded within the Republic of Ireland, County Galway and the Study Area during the 2011 and 2016 Census is shown in Table 5-3.

Table 5-3 Number of Households and Average Household Size 2011 - 2016 (Source: CSO)

Area	2011		2016	
	No. of Households	Avg. Size (persons)	No. of Households	Avg. Size (persons)
Republic of Ireland	1,654,208	2.8	1,697,665	2.8
County Galway	60,952	2.8	63,040	2.8
Study Area	95	2.49	96	2.36

In general, the figures in Table 5-3 show that while the number of households within the Republic of Ireland and County Galway have increased slightly, the average number of people per household has generally stayed the same, i.e., there are more households and the same amount of people per house. County Galway experienced an increase in the number of households but a decrease in the average number of people per household, correlating to the decrease in population overall as demonstrated above in Table 5-3.

The number of households in the Study Area increased by 1, while the average household size has shrunk slightly. The number of households recorded in Bencorr in 2011 was 53, which went up to 56 in 2016. Conversely, the number of households in An Uillinn dropped from 42 in 2011 to 40 in 2016.

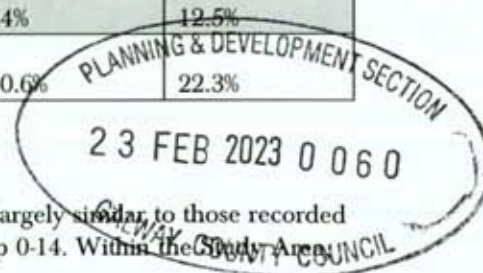
5.2.2.4 Age Structure

Table 5-4 presents the percentages of the Republic of Ireland, County Galway and the Study Area within different age groups as defined by the Central Statistics Office during the 2016 census. This data is illustrated in Figure 5-2.

Table 5-4 Population per Age Category in 2016 (Source: CSO)

Area	Age Category				
	0 - 14	15 - 24	25 - 44	45 - 64	65 +
Republic of Ireland	21.1%	12.1%	29.5%	23.8%	13.4%
County Galway	22.5%	11.5%	29.5%	24%	12.5%
Study Area	10.3%	10.5%	26.3%	30.6%	22.3%

The proportion of the Study Area's population across age categories is largely similar to those recorded at the national and County level, with the exception being the age group 0-14. Within the Study Area



the highest population percentage occurs within the 45-64 category, accounting for 30.6% of the total population.

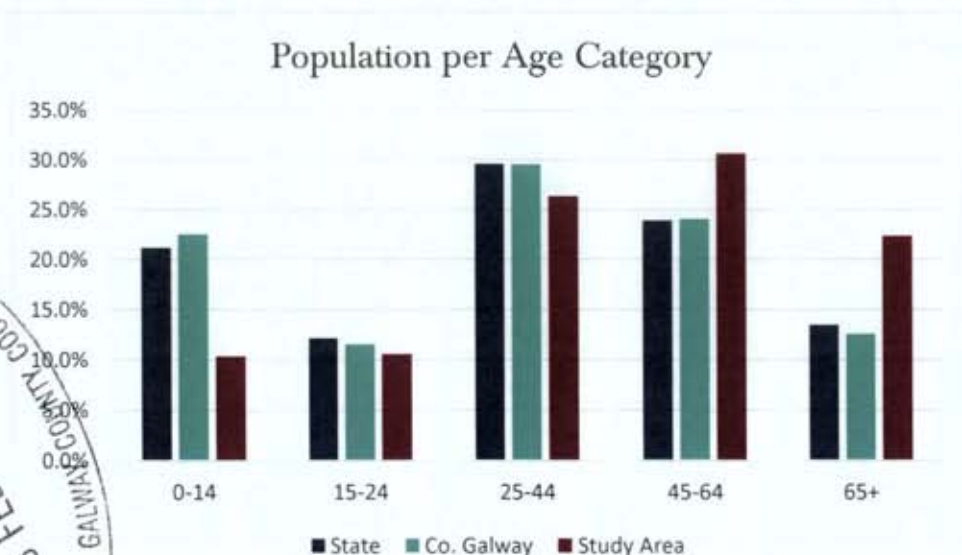


Figure 5.2 Population per Age Category in 2016 (Source: CSO)

5.2.3 Employment

5.2.3.1 Economic Status

The labour force consists of those who are able to work, i.e. those who are aged 15+, out of full-time education and not performing duties that prevent them from working. In 2016, there were 3,755,313 persons in the labour force in the Republic of Ireland. Table 5-5 shows the percentage of the total population aged 15+ who were in the labour force during the 2016 Republic of Ireland Census. This figure is further broken down into the percentages that were at work, seeking first-time employment or unemployment. It also shows the percentage of the total population aged 15+ who were not in the labour force, i.e. those who were students, retired, unable to work or performing home duties.

Table 5.5 Economic Status of the Total Population Aged 15+ in 2016 (Source: CSO)

Status		Republic of Ireland	County Galway	Study Area
% of population aged 15+ who are in the labour force		61.4%	61.3%	65.2%
% of which are:	At work	87.1%	88.3%	93.5%
	First time job seeker	1.4%	1.1%	1%
	Unemployed	11.5%	10.6%	5.5%
% of population aged 15+ who are not in the labour force		38.6%	38.7%	34.8%
% of which are:	Student	29.4%	27.7%	17.4%
	Home duties	21.1%	22.6%	21.4%

	Retired	37.6%	38.3%	57.1%
	Unable to work	10.9%	10.6%	4.1%
	Other	1.0%	0.8%	N/A

Overall, the principal economic status of those living in the Study Area is similar to that recorded at national and County level, the exceptions being the proportion of retired people and students. Of those who were not in the labour force during the 2016 Census, the highest percentage of the population in the two DEDs was in the 'Retired' category, which is the same as figures recorded at national and County level that also show 'Retired' as the highest category.

5.2.3.2 Employment by Socio-Economic Group

Socio-economic grouping divides the population into categories depending on the level of skill or educational attainment required. The 'Higher Professional' category includes scientists, engineers, solicitors, town planners and psychologists. The 'Lower Professional' category includes teachers, lab technicians, nurses, journalists, actors and driving instructors. Skilled occupations are divided into manual skilled such as bricklayers and building contractors; semi-skilled such as roofers and gardeners; and unskilled, which includes construction labourers, refuse collectors and window cleaners. Figure 5-3 shows the percentages of those employed in each socio-economic group in the State, County Galway and the Study Area during 2016.

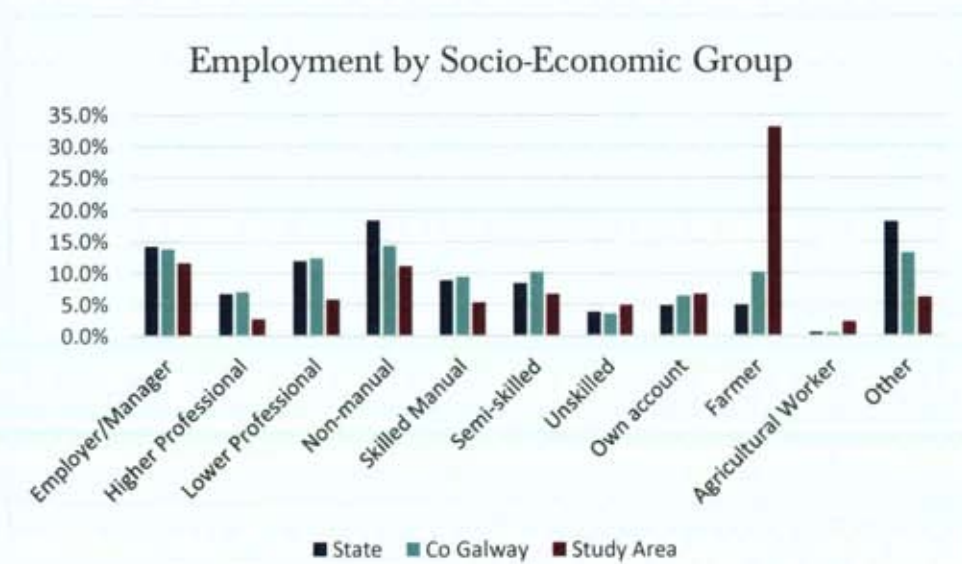


Figure 5-3 Percentages of those employed in each socio-economic group in the State, County Galway and the Study Area in 2016 (Source: CSO)

The highest level of employment within the Study Area was recorded in the Farmer category. The levels of employment within the Employer/Manager, High Professional, Lower Professional, Non-manual, Unskilled, and Other categories in the Study Area were lower than those recorded for the State and County Galway, whereas those recorded within the Unskilled and Own Account were higher.

The CSO employment figures grouped by socio-economic status include the entire population for the Study Area, County and State in their respective categories. As such, the socio-economic category of 'Other' is skewed to include those who are not in the labour force.

5.2.3.2.1 Employment Potential



The proposed development has the potential to support approx. 20 jobs. All jobs will be seasonal and job dependent and will likely include Coillte staff (3), felling contractors (2), planting contractors (7), restoration team (7), monitoring team (3), and additional indirect employment (3).

5.2.3.2.2 **Economic and Social Value**

The 'Forests, Products and People: Ireland's Forest Policy – a Renewed Vision (2014)' produced by the Department of Agriculture Food and the Marine (DAFM) notes the increasing economic, environmental and social role of forestry in Ireland. Please see Chapter 2 Background for details.

If successful, it is hoped that the Proposed Project will create an opportunity to establish recreational and eco-tourism for use by members of the local and wider community alike. The restoration of peatland and wetland habitats, along with native woodland establishment, will be attractive to locals and visitors to the area because of its wildlife, history and variety of landscapes. This will provide a long-term benefit to both the local community and visitors to the area.

As Coillte and Bord na Móna have demonstrated in previous EU LIFE restoration projects on raised bogs, blanket peats and old woodlands, a track record in creating locations where the public can explore the rich environmental fabric of these areas, with engaging interpretative materials on location, that really brings them to life for visitors. By creating a greater understanding of the benefits to society that these restoration projects deliver and where visitors can see and experience the changes to this habitat and landscape, we will engender greater support for similar projects into the future.

5.2.4 **Land-Use**

The proposed change of land use from forest to bog is located at Derryclare, Co. Galway. The current land-use at the site is conifer forestry which was established in the 1960s.

The total area of farmland within the study area measures approximately 3,475 hectares, comprising 25.75% of the Study Area, according to the CSO Census of Agriculture 2020. There are 75 farms located within the two DEDs, with an average farm size of 43.1 hectares. This is significantly larger than 25.8-hectare average farm size for County Galway.

Within the Study Area, grassland accounts for nearly all of the farmed lands. Table 5-6 shows the breakdown of farmed lands within the Study Area.

Table 5-6 Farm Size and Classification within the Study Area in 2020 (Source: CSO)

Characteristic	Value
Size of Study Area (2 No. DEDs)	13,492 hectares
Total Area Farmed within Study Area	3,475 hectares
Farmland as % of Study Area	25.75%
Breakdown of Farmed Land	Area (hectares)
Total Grassland	3,474.9
Total Silage	0
Total Crops	0
Total Cereals	0

Grazing	0
Total Hay	0
Total Potatoes	0

5.2.5 Services

Letterfrack (located approximately 21.3km north-west of the site) and Clifden (located approximately 23km west of the site) provide numerous services in the wider area, including retail, recreational, religious, and educational. Schools in the wider area include the Clifden Community Playschool and Clifden Community School. The closest third-level institution is Atlantic Technological University (ATU) Connemara, located in Letterfrack and comprises one of the three constituent schools of Atlantic Technological University. The Letterfrack ATU campus is the National Centre of Excellence for Furniture Design and Wood Technology, offering degree courses in design and manufacture, furniture and wood technology.

5.2.5.1 Access and Public Transport

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 and north of the N59.

Bus Éireann Lines 419 (Clifden Market Street to Galway Bus Station) and 423 (Clifden Market Street to Westport Railway Station) and Citylink Route 923 (Clifden to Galway) serves the wider area, following the N59 to the north, west and south of the site location. The nearest bus stations are Recess Cross, approximately 1.8km south-east of the site boundary, and Cashel Cross, approximately 1.9km south of the site boundary. There are no buses running on the R334 east of the site boundary.

5.2.5.2 Amenities and Community Facilities

Amenities in the surrounding areas include GAA and other sports clubs, recreational areas and leisure centres, notably the Clifden GAA grounds and Clifden Sea Sports Centre in Clifden, and Letterfrack Community Sports Field and Astro Turf Pitch and the West Coast United Football Club, located in Letterfrack off the N59. The majority of amenities such as museums and leisure centres are located in Clifden.

While there is a lack of amenities and tourist attractions within the immediate environs of the site boundary, scenic spots in the area include the Lough Inagh Viewpoint and Pines Island Viewpoint, located approximately 355m to the east and 1.7km to the south-west of the site boundary respectively. All scenic routes and protected views are detailed in Chapter 11 Landscape and Visual Impact Assessment.

5.3 Tourism

5.3.1 Tourist Numbers and Revenue

Tourism is one of the major contributors to the national economy and is a significant source of full-time and seasonal employment. During 2018, total tourism revenue generated in Ireland was approximately €9.4 billion, an increase on the €8.8 billion revenue recorded in 2017. Overseas tourist visits to Ireland in 2018 grew by 6.5% to 9.6 million (*Tourism Facts 2018*, Fáilte Ireland, July 2019).



Ireland is divided into eight tourism regions. Table 5-7 shows the total revenue and breakdown of overseas tourist numbers to each region in Ireland during 2019 (*Tourism Facts 2019*, Fáilte Ireland, September 2019).

Table 5-7 Overseas Tourists Revenue and Numbers 2019 (Source: Fáilte Ireland)

Region	Total Revenue (€m)	Total Number of Overseas Tourists (000s)
Dublin	€2,210m	6,644
Mid-East/Midlands	€348m	954
South-East	€261m	945
South-West	€970m	2,335
Mid-West	€472m	1,432
West	€653m	1,943
Border	€259m	768
Total	€5,173m	15,021

The West Region, in which the site of the proposed development is located, comprises Counties Galway, Mayo and Roscommon. This Region benefitted from approximately 12.93% of the total number of overseas tourists to the country and approximately 12.62% of the associated tourism income generated in Ireland in 2018.

Although data for 2018 or more recent years is not available, Table 5-8 presents the breakdown of overseas tourist numbers and revenue to the West region during 2017². As outlined in Table 5-8, County Galway had the highest number of tourists and tourism revenue in the region, far surpassing Counties Mayo and Roscommon.

Table 5-8 Overseas Tourism to West Region during 2017 (Source: Fáilte Ireland)

County	Revenue Generated by Overseas Tourists (€m)	No. of Overseas Tourists (000s)
Galway	589	1,673
Mayo	78	324
Roscommon	27	54

5.3.2 Tourist Attractions

There are no key identified tourist attractions pertaining specifically to the site of the proposed development itself. However, the natural landscape and scenic amenity of the area provide opportunities for general outdoor recreation, including walking, cycling and horse-riding. Furthermore, County Galway has a wide range of nationally significant tourism assets, which include the following:

² 2017 Topline Tourism Performance By Region, Fáilte Ireland, August 2018

- The Connemara National Park- a walking, cycling, sightseeing, fishing destination and other outdoor activities.
- Kilemore Abbey- A Gothic Church with Victorian Walled Gardens, Craft Shop, Pottery studio, Restaurant and Tea Rooms as well as the Lake and Woodland walks.
- The River Corrib and Lough Corrib – important recreational amenity and fisheries areas.
- Mountain ranges including: the Twelve Bens, Mweelrea Mountains and Maumturk Mountains– important centres for walking, cycling and adventure related activities.
- The Coastline along the Wild Atlantic Way– Scenic coastline and peninsulas and marine related activities including some fine blue flag beaches.
- The Gaeltacht areas which are of significant cultural heritage value and frequently visited by tourists.
- Galway City Museum located in Galway City's famous Spanish Arch has significant cultural heritage and Folklore
- Salthill Promenade Galway City- Blue Flag Beaches and outdoor activities
- The West Galway Peninsula of Renvyle – with its unique visual amenity and landscape character offer potential for walking and cycling and other outdoor activities.
- Aran and Inishbofin Islands and all the other uninhabited islands along the County's coast.
- Galway has rich fertile agricultural land and many bogs and peatlands with a higher than national average land mass of forest and woodland area.
- The Towns and Villages of County Galway where there is significant potential for heritage led tourism.

The Study Area is not within any of the strategic tourism areas identified in the CDP nor does it impact on any of the sites of existing tourism attractions.

5.3.3 Angling Tourism

Lough Inagh Fishery is a tourist attraction which draws anglers for fishing on Lough Inagh and Derryclare Lough, as well as fishing on the outflowing rivers from both loughs. There are three sets of 'Butts' or long fishing piers built out onto Derryclare Lough for visiting anglers. Spring salmon fishing begins in early March and peaks in May, with fish averaging around 10lb. Grilse migrate to the area in June up until September.

5.3.4 Hill Walking

Connemara is a popular destination for hikers with its numerous trails. Part of the Western Way trail, Maum to Leenaun, is located approximately 27km to the north-east of the site. Closer to the site, Derryclare and Bencorr Circulars offer a moderate, 11.3km loop near Recess. Derryclare Woods offers a two- to four-hour walk in the Inagh Valley near Recess, featuring deciduous and coniferous trees, lichens moss, lakes and views of the Twelve Bens mountains.

The Twelve Bens are part of the Connemara National Park which covers approximately 2,000 hectares of the countryside. Summits nearest to the Proposed Project site include Derryclare and Bencorr.

5.4 Likely and Significant Impacts and Associated Mitigation Measures

The following assessment evaluates the impact (where there is the potential for an impact to occur) on health and safety, employment, population, land-use, tourism, noise, dust, traffic and residential amenity during the felling/timber harvesting and restoration phases, as a result of the proposed development.



A total of approximately 343 hectares of coniferous forestry is proposed for removal, with the size of harvest blocks ranging between 1.2ha and 43ha. Approximately 281 hectares of existing forestry will be restored to blanket bog and wet heath habitat, through felling of the existing forestry and blocking site drains. Furthermore, approx. 63 hectares of coniferous forestry will be felled to be replaced by native scrub woodland.

‘Do-Nothing’ Scenario

If the Proposed Project were not to proceed, the current land-use, conifer forestry, at the site would continue. The opportunity to restore and rehabilitate the site to bog would be lost, along with the opportunity to generate local employment and investment and to diversify the local economy. Furthermore, given that research has indicated that peatlands can store more carbon than poorly growing trees³, the opportunity for increased carbon sequestration will also be lost.

Construction Phase Impacts

5.4.2.1 Health and Safety

Health and Safety in forestry sites is the concern of all involved parties, including forest owners, managers, supervisors, operators, recreational users and trespassers⁴. Forest practice must ensure that operations do not endanger workers and others. In the absence of the correct health and safety measures, forestry-related activities have the potential to have significant negative effects on the health and safety of workers and members of the public, on and in the vicinity of the site.

The Forest Service’s ‘Code of Best Forest Practice’ states that Safety, Health and Welfare at Work Act 1989 and the Safety, Health and Welfare at Work (General Application) Regulations 1993 place responsibilities on all involved in work activities and set out a basis for managing health and safety in all workplaces. Forest owners have legal responsibilities to ensure that the workplace and all articles and substances situated there are safe and free from health risk. This involves informing contractors of potential hazards, work agreements and monitoring. Employers, self-employed and employees all have clear responsibility to ensure safe working practices for themselves and others.

All Forest Service guidelines and Health and Safety legislation will be adhered to during all forestry-related activities at the Proposed Project lands. The residual potential for a significant negative impact on worker and public health and safety is therefore reduced to minimal.

Proposed Mitigation Measures

- Signage indicating operations will be erected in advance
- General safety signage and prohibitive notices will be erected
- Damage to forest tracks and forest roads will be minimised and country roads will be protected by being kept free of debris and other obstacles
- A Traffic Management Plan will be implemented

Residual Impact

With the implementation of the above, there will be a potential temporary, slightly, negative residual effect on health and safety during the harvesting phase of the Proposed Project.

³ Beaulne, J., Garneau, M., Magnan, G. et al. Peat deposits store more carbon than trees in forested peatlands of the boreal biome. *Sci Rep* 11, 2657 (2021). <https://doi.org/10.1038/s41598-021-82004-x>

⁴ Code of Best Forest Practice (2000); Forest Service

Significance of Effects

Based on the assessment above, there will be no significant direct or indirect effects in terms of health and safety.

5.4.2.2 Employment

The design, deforestation and restoration phases of the project will provide employment for contractors and maintenance staff. Approximately 20 positions could be created during the various phases of the Proposed Project. Work will be seasonal and groups of people from 2 to 10 could be working on site at any one time on a seasonal basis. The site preparation, felling and restoration phase will last approximately 5-7 years from the proposed felling to the completion of restoration works. The majority of site workers and materials will be sourced locally, therefore helping to sustain employment in the forestry trade contractor trade. This will have a short-term, significant positive impact.

The injection of money in form of salaries and wages to those employed during the felling and restoration phase of the project has the potential to result in an increase in household spending and demand for goods and services in the local area. This would result in local retailers and businesses experiencing a short-term positive impact on their cash flow, therefore generating a short-term slight positive indirect impact.

Residual Impact

The felling/harvesting phase of the Proposed Project will have a short-term slight positive impact on employment in the area.

Significance of Effects

Based on the assessment above, there will be no significant direct or indirect effects.

5.4.2.3 Population

Those working on the felling phase of the proposed development will travel daily to the site from the wider area. The felling phase is not expected to have any impact on the population of the area in terms of changes to population trends or density, household size or age structure.

Residual Impacts

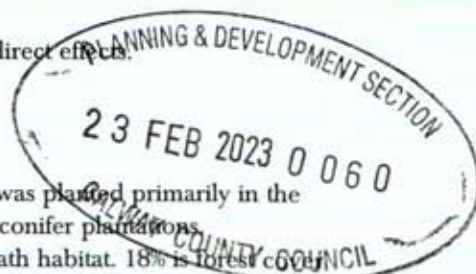
The Proposed Project will have a neutral impact on the area in terms of population trends or density, household size or age structure.

Significance of Effects

Based on the assessment above, there will be no significant direct or indirect effects.

5.4.2.4 Land Use

The current land-use in Derryclare is dominated by forest cover which was planted primarily in the 1960s following intensive drainage and fertiliser application to establish conifer plantations. Approximately 6% of the property is unplanted blanket bog and wet heath habitat. 18% is forest cover that has been felled or burnt and not replanted and is reverting to wet heath or blanket bog, or is located along riparian buffers, and the remaining 76% is under forest cover. Approximately 43% of the forest area is in its second rotation, having been felled and replanted over the last 20 years, with the



remaining 47% in its first rotation planted in the 1960s. Approximately 95% of the existing forest cover is comprised of conifer species, primarily Lodgepole pine and Sitka spruce.

The Proposed Project will result in a permanent change in the use of the site, from conifer plantation to blanket bog and wet heath. Patches of conifer plantations at the north and southern sections of the site have been classed as low yield and therefore have been prioritised for restoration. The relatively high water table in the area has also rendered the site suitable for bog restoration, which will maximise the biodiversity value and greenhouse gas fluxes of the site. The final state of the site is in keeping with the rural landscape, and therefore, the impact of the change in land-use is therefore positive due to the replacement of conifer forestry with native woodland and blanket bog.

Residual Impact

The Proposed Project will have a significant, permanent, positive effect on land.

Significance of Effects

Based on the assessment above, there will be a significant direct positive effect on land use and the surrounding landscape.

2.5 Tourism and Amenity

The Proposed Project will enhance existing recreational and eco-tourism opportunities for use by members of the local and wider community alike. The restoration of blanket bog will be attractive to locals and visitors to the area because of its wildlife, history and variety of landscape. This will provide long-term benefits to both the local community and visitors to the area.

As Coillte have demonstrated in previous EU LIFE restoration projects on raised bogs, blanket peats and old woodlands, creating locations where the public can explore the rich environmental fabric of these fabric of these areas, through interaction with interpretative materials on location, has the potential to enhance engagement. By creating a greater understanding of the benefits to society that these restoration projects deliver and where visitors can see and experience the changes to this habitat and landscape, future Coillte restoration projects intend to engender greater public support.

The Proposed Project will have a long-term, significant, positive effect on local tourism, recreation and amenity.

None of the tourism amenities mentioned in this section will be affected by the construction phase of the Proposed Project. Regardless, the following mitigation measures will be implemented to minimise any impacts at the project site itself and surrounding amenities and their users.

Proposed Mitigation Measures

- Any impacts of the operations on recreation areas, trails and waymarked ways will be minimised through careful design
- Forest tracks and forest roads will be protected and kept free of debris
- Operations will be restricted to normal working hours and haulage will be restricted to certain times and days
- Where necessary, trails or waymarked areas, recreation areas and car parks will be shut down to prevent members of the public from trespassing areas of operation

Residual Impact

The construction phase of the Proposed Project will have a short-term imperceptible negative effect on local tourism, recreation and amenity. Overall, the Proposed Project will have a long-term, significant, positive effect on local tourism, recreation and amenity.

Significance of Effects

Based on the above assessment, there will be no significant direct or indirect negative effects on tourism and amenities from the Proposed Project.

5.4.2.6 Noise

Pre-Mitigation Impacts

There will be a temporary increase in the noise levels in the vicinity of the Proposed Project. In addition to staff vehicles accessing and egressing the site, the construction phase will involve the use of harvesters and forwarders, as well as chainsaws and excavators.

If noise from the construction phase is experienced at any given noise sensitive location, it will be variable throughout the felling phase depending on the ongoing activities and the distance from the main felling activities to the receiving properties. The potential noise effects that will occur during the felling phase of the Proposed Project are further described in Chapter 10 of this EIAR. This will have a temporary, slight, negative impact.

Proposed Mitigation Measures

Best practice measures for noise control will be adhered to on-site during the felling phase of the proposed development in order to mitigate the slight, short-term negative impact associated with the phase of the development. The measures include:

- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on-site operations
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use
- During the course of the felling programme, supervision of the works will include ensuring compliance with the limits detailed in Chapter 10 of this EIAR and guidelines set out in British Standard documents 'BS 5338: Code of Practice for Noise Control on Construction and Demolition Sites' and 'BS5228: Part 1: Noise & Vibration Control on Construction and Open Sites'. The correct fitting and proper maintenance of silencers and/or enclosures, the avoidance of excessive and unnecessary revving of vehicle engines and the parking of equipment in locations that avoid possible effects on noise-sensitive locations will be employed.

Residual Impacts

Following the implementation of the above mitigation measures, there will be a temporary, imperceptible, negative residual impact due to an increase in noise levels during the construction phase of the proposed development.



Significance of Effects

Based on the assessment above, there will be no significant direct or indirect effects.

5.4.2.7 Traffic

Pre-Mitigation Impacts

During the felling/harvesting and restoration phases, the site will be accessed via the existing entrance off R344 road from the N59 at Recess to the N59 at Kylemore 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 felling phase will involve the use of forwarders and harvesters, as well as staff vehicles. In localised areas across the site, the construction of floating roads and embankment roads may be necessary. Traffic movements associated with the transportation of felled timber will be minimal and the following mitigation measures are proposed to reduce inconvenience for local road users.

Proposed Mitigation Measures

- In order to provide advance warning to general traffic on the R344 of the HGVs turning into and out of the access junction it is proposed that "Agriculture (or Other) Machinery" warning signs are provided on both of the R344 approaches to the existing junction.
- Clearance of a visibility triangle (3m at the junction tapering to 1m at a distance of 140m) of shrubs and bushes along the western side of the R344 in order to maximise visibility to the south of the junction.
- Clearance of a short section of shrubs to the north of the junction in order to provide clear visibility to the north.

Residual Impact

For the construction phase of the proposed development, there will be a short-term, imperceptible to slight, negative residual effect on local road users.

Significance of Effects

Based on the assessment above, there will be no significant direct or indirect effects.

5.4.2.8 Dust and Air Quality

Pre-Mitigation Impacts

Potential dust emissions sources during the construction phase of the Proposed Project include tree felling, timber haulage, and construction of floating roads. An increase in dust emissions has the potential to cause a nuisance to sensitive receptors in the immediate vicinity of the site. Furthermore, the entry and exit of staff vehicles and heavy machinery may result in the transfer of mud to the public road, particularly if the weather is wet. This in turn may cause nuisance to residents and other road users. However, these impacts will not be significant and will be relatively short-term in duration. Additional potential dust emissions sources during the peatland restoration phase of the project include Light Goods Vehicles ferrying staff and light machinery used for the construction and installation of

peat dams. An increase in dust emissions has the potential to cause nuisance on sensitive receptors in the immediate vicinity of the site.

However, these impacts will not be significant and will be relatively short-term in duration. The potential dust impacts that may occur during the restoration phase are further described in Chapter 9: Air and Climate of this EIAR.

Proposed Mitigation Measures

- All plant and materials vehicles shall be stored in the dedicated compound area
- Construction traffic will be restricted to defined routes and a speed limit will be implemented
- In periods of extended dry weather, dust suppression may be necessary during tree felling, along haul roads to ensure dust does not cause a nuisance
- If required, water will be taken from the site's drainage system and pumped into a bowser to dampen down haul roads to prevent generation of dust. Care will be taken to prevent oily or silty water from being used for dust suppression
- Water bowser movements will be monitored to prevent increased runoff

Residual Impact

Following the implementation of the mitigation measures mentioned above, there will be a short-term, imperceptible effect due to dust emissions from the construction of the Proposed Project.

Significance of Effects

Based on the assessment above, there will be no significant direct or indirect effects.

5.4.3 Operational Phase (Maintenance and Monitoring)

As part of maintenance and monitoring of the proposed development, one person will carry out the water monitoring and a team of 3-4 staff will undertake weed and invasive species control. Annual monitoring of tree survival rates will occur in the areas where native trees are planted, and if necessary, supplemental tree planting will occur to ensure that an overall density of 800 stems per hectare is achieved by year 4. A water quality monitoring programme for the site has been designed and is detailed in Chapter 8 of this EIAR.

5.4.3.1 Health and Safety

Health and safety in forestry is the concern of all those involved, including forest owners, managers, supervisors, operators, recreational users and trespassers⁵. Forest practice must ensure that operations do not endanger workers and others. All Forest Service guidelines and Health and Safety legislation will be adhered to during all forestry-related activities at the proposed development. In addition to this, all Coillte health and safety guidelines will also be adhered to. The residual potential for a significant negative impact on work and public health and safety is therefore reduced to minimal.

Proposed Mitigation Measures

- Signage will be erected prior to commencement of operations
- General safety signage and prohibitive notices will be erected wherever necessary
- Public roadways and rights of way will be kept free of debris and will be restored to pre-operations conditions

⁵ Code of Best Forest Practice (2000); Forest Service



Residual Impact

Following the implementation of the mitigation measures discussed above, the maintenance activities associated with the Proposed Project will have a temporary, slight neutral effect on the Health and Safety of all users of the area.

Significance of Effects

Based on the assessment above, there will be no significant direct or indirect effects.

5.4.3.2 Employment

The operational phase will involve approximately 3 - 4 staff and will last for approximately 5 years from the completion of the proposed restoration work. The extent of ongoing maintenance and hence the level of employment generated will be determined by site conditions and will be regularly reviewed by Coillte. It is anticipated that maintenance activities will be minimal, and therefore direct employment during the operational phase will also be minimal.

It is expected that the Proposed Project will result in indirect economic activity and employment by providing outdoor recreation opportunities, which could support a range of recreation and locally-based eco-tourism small and medium-sized enterprises in the area.

Residual Impact

The Proposed Project will have a potentially long-term slight, positive impact on employment levels in the area.

Significance of Effects

Based on the assessment, there will be no significant direct or indirect effects.

5.4.3.3 Population

Those working on the maintenance and monitoring of the project will have no impact on the population of the area in terms of changes to population trends or density, household size or age structure.

Residual Impact

The Proposed Project will have a neutral impact on the area in terms of population trends or density, household size or age structure.

Significance of Effects

Based on the assessment above, there will no significant direct or indirect effects.

5.4.3.4 Land Use

Land-use on the site will change from conifer forestry to a mix of native woodland and rehabilitated peatland as part of the initial felling and restoration phases. The use of the proposed lands for the project will have a positive effect on the economic, visual and ecological quality of the site. The maintenance and monitoring phase will not impact land-use due to the localised nature of the proposed activities.

Residual Impact

Maintenance or monitoring activities of the Proposed Project will have a neutral impact on the land-use of the receiving environment.

Significance of Effects

Based on the assessment above, there will be no significant direct or indirect effects on the receiving landscape.

5.4.3.5 Tourism and Amenity

The Proposed Project creates an opportunity to enhance the existing recreational and eco-tourism for use by members of the local and wider community alike. The establishment of blanket bog will be attractive to locals and visitors to the area because of its wildlife, history and variety of landscape. This will provide long-term benefits to both the local community and visitors to the area.

As Coillte have demonstrated in previous EU LIFE restoration projects on raised bogs, blanket peats and old woodlands, creating locations where the public can explore the rich environmental fabric of these areas, through interaction with interpretative materials on location, has the potential to enhance engagement. By creating a greater understanding of the benefits to society that these restoration projects deliver and where visitors can see and experience the changes to this habitat and landscape, future Coillte restoration projects intend to engender greater public support. In addition, the removal of poorly sited conifer plantations will benefit the landscape of this important scenic area.

Maintenance or monitoring activities may have the potential to temporarily limit or disrupt touristic activities at the project site due to health and safety requirements. Overall, the Proposed Project will have a long-term, significant, positive effect on local tourism, recreation and amenity.

Residual Impact

Maintenance or monitoring activities associated with the Proposed Project will have a temporary, imperceptible, negative effect on local tourism, recreation and amenity. Overall the proposed development will have a permanent, significant, positive effect on tourism and amenity.

Significance of Effects

Based on the assessment above, there will be no significant direct or indirect negative effects on tourism and amenity.

5.4.3.6 Noise

During the maintenance and monitoring phase, noise will be limited to arrival and departure of staff vehicles on site.

Residual Impact

This will result in a short-term intermittent imperceptible neutral effect on noise levels surrounding the Proposed Project site.

Significance of Effects

Based on the assessment above, there will be no significant direct or indirect effects.



5.4.3.7 Traffic

Traffic movements associated with the maintenance of the site will be minimal and comprise maintenance workers only in Light Goods Vehicles.

Residual Impact

Residual Impacts on local road users will be short-term imperceptible, and of neutral effect.

Significance of Effects

Based on the assessment above, there will be no significant direct or indirect effects.

5.4.3.8 Dust and Air Quality

Exhaust emissions associated with the maintenance and monitoring phase of the Proposed Project will arise from machinery and vehicles that are intermittently required onsite for maintenance activities. This will give rise to a short-term negative imperceptible impact.

Proposed Mitigation Measures

Any vehicles or machinery brought on-site during the maintenance phase will be maintained in good operational order, therefore minimising any emissions that arise.

Residual Impact

With the implementation of the mitigation measures discussed above the residual impacts will be short-term imperceptible, and of neutral effect.

Significance of Effects

Based on the assessment above, there will be no significant direct or indirect effects.

5.4.4 Cumulative Impact Assessment

The projects considered as part of the cumulative impact assessment are described in Section 2.4.2 of this EIAR in Chapter 2: Background to the Development.

Potential cumulative effects associated with dust and noise are addressed in Chapters 9 and 10 of the EIAR. Potential cumulative effects associated with traffic are addressed in Chapter 13.

5.4.4.1 Effects on Population

It is envisaged that local Coillte staff and contractors will be used during the construction phase of the project. Those working on the project will travel daily to the site from the wider region/area. Therefore, the Proposed Project and the construction of the other projects listed in Section 2.4.2 will have no effect on the population of the Study Area in terms of changes to population trends or density, household size or age structure.

5.4.4.2 Effects on Human Health

Any imperceptible impact that the Proposed Project will have on Human Health will be temporary in nature and related to the establishment phase of the project. Other developments outlined in Section 2.4.2 of this EIAR considered as part of this cumulative effect assessment are relatively local in nature and the potential for cumulative effects between them and the project are negligible. Since there are no effects on Human Health associated with the establishment phase, there is no potential for cumulative effects during this phase of the project.





BIODIVERSITY

6.1

Introduction

This chapter assesses the likely significant effects (both alone and cumulatively with other projects) that the Proposed Project may have on Biodiversity, Flora and Fauna and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified. The residual impacts on biodiversity are then assessed. Particular attention has been paid to species and habitats of ecological importance. These include species and habitats with national and international protection under the Wildlife Acts 1976-2022, EU Habitats Directive 92/43/EEC and the EU Birds Directive 79/409/EEC. The full description of the Proposed Project is provided in Chapter 4 of this EIAR.

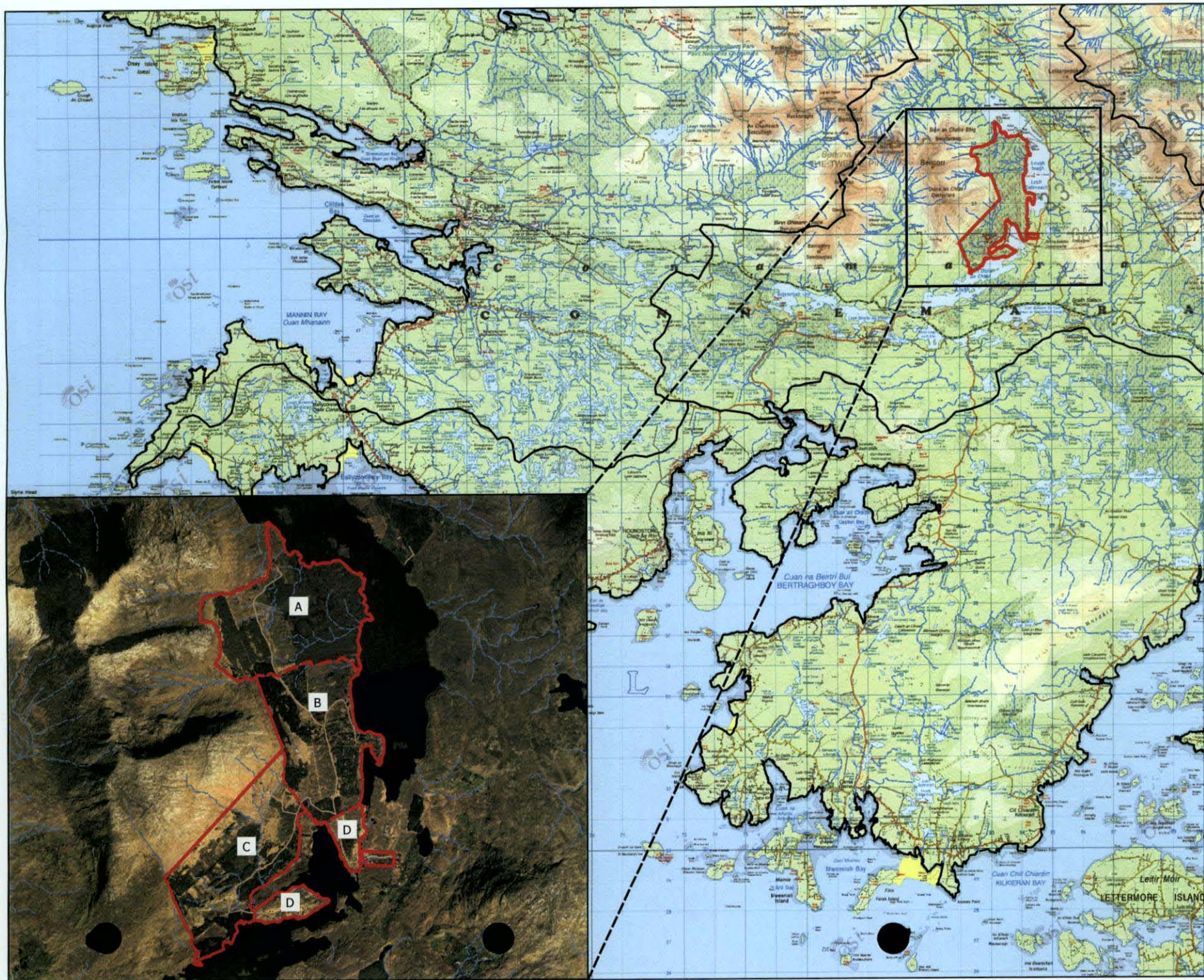
The chapter is structured as follows:

- The Introduction provides a description of the legislation, guidance and policy context applicable to Biodiversity, Flora and Fauna.
- This is followed by a comprehensive description of the ecological survey and impact assessment methodologies that were followed to inform the robust assessment of likely significant effects on ecological receptors.
- A description of the Baseline Ecological Conditions and Receptor Evaluation is then provided.
- This is followed by an Assessment of Effects which are described with regard to each phase of the development: construction phase and operational phase. Potential Cumulative effects in combination with other projects are fully assessed.
- Proposed mitigation and best practice measures to avoid, reduce or offset the identified effects are described and discussed. This is followed by an assessment of residual effects taking into consideration the effect of the proposed mitigation and best practice measures.
- The conclusion provides a summary statement on the overall significance of predicted effects on Biodiversity, Flora and Fauna.




The following defines terms utilised in this chapter:

- For the purposes of this EIAR, the entire project is referred to as 'the Proposed Project'.
- For the purpose of this EIAR, the term 'EIAR Study Area' refers to the site boundary, comprising the entire peatland restoration project within that boundary, as shown in Figure 6-1.
- Figure 6-1 further shows 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.
- "Key Ecological Receptor" (KER) is defined as a species or habitat occurring within the zone of influence of the development upon which likely significant effects are anticipated.
- "Zones of Influence" (ZOI) for individual ecological receptors refers to the zone within which potential effects are anticipated. ZOIs differ depending on the sensitivities of particular habitats and species and were assigned in accordance with best available guidance and through adoption of a precautionary approach.





Map Legend

-  Site Boundary
-  WFD Watercourses
-  WATER Catchments



Drawing Title

Site Location

Project Title
Proposed Derryclare Wild Western
Peatlands Project

Drawn By	PD	Checked By	SM
Project No.	210603	Drawing No.	6-1
Scale	1:160000	Date	24.10.2022



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Requirements for Ecological Impact Assessment

National Legislation

The Wildlife Act, 1976–2022, is the principal piece of legislation governing protection of wildlife in Ireland. The Wildlife Act provides strict protection for species of conservation value. The Wildlife Act conserves wildlife (including game) and protects certain wild creatures and flora. These species are therefore considered in this report as ecological receptors. Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs) are heritage sites that are designated for the protection of flora, fauna, habitats and geological sites. Only NHAs are designated under the Wildlife (Amendment) Act 2017. These sites do not form part of the Natura 2000 network of European sites and the AA process, or screening for same, does not apply to NHAs or pNHAs. Proposed Natural Heritage Areas (pNHAs) were published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated¹. However, these sites are considered to be of significance for wildlife and habitats as they may form statutory designated sites in the future (NPWS, 2020).

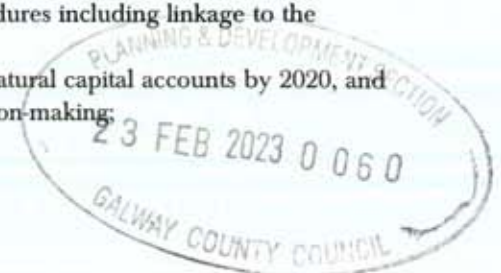
The Flora (Protection) Order, 2022 (S.I. No. 356 of 2015) lists the species, hybrids and/or subspecies of flora protected under Section 21 of the Wildlife Acts. It provides protection to a wide variety of protected plant species in Ireland including vascular plants, mosses, liverworts, lichens and stoneworts. Under Flora Protection Order it is illegal to cut, pick, collect, uproot or damage, injure or destroy species listed or their flowers, fruits, seeds or spores or wilfully damage, alter, destroy or interfere with their habitat (unless under licence).

National Policy

The Draft National Biodiversity Action Plan 2023-2027 (Department of Housing, Local Government & Heritage, 2017) (the “Plan”) demonstrates Ireland’s continuing commitment to meeting and acting on its obligations to protect Ireland’s biodiversity for the benefit of future generations through a series of targeted strategies and actions. The main objective of the Plan is to bring biodiversity into the mainstream of policy and decision-making. Objective 1 (*Mainstream biodiversity into decision-making across all sectors*) of the Plan identifies the following relevant measures in relation to future developments:

- “Incorporate into legislation the requirement for consideration of impacts on biodiversity to ensure that conservation and sustainable use of biodiversity are taken into account in all relevant plans and programmes and relevant new legislation;
- Public and Private Sector relevant policies will use best practice in SEA, AA and other assessment tools to ensure proper consideration of biodiversity in policies and plans;
- All Public Authorities and private sector bodies move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure;
- Strengthen ecological expertise in local authorities and relevant Government Departments and agencies;
- Local Authorities will review and update their Biodiversity and Heritage Action Plans;
- Local Authorities will review and update their Development Plans and policies to include policies and objectives for the protection and restoration of biodiversity;
- Develop a Green Infrastructure at local, regional and national levels and promote the use of nature-based solutions for the delivery of a coherent and integrated network;
- Continue to produce guidance on the protection of biodiversity in designated areas, marine and the wider countryside for Local Authorities and relevant sectors;
- Integrate Natura 2000 and Biodiversity financial expenditure tracking into Government Programmes internal paying agency management procedures including linkage to the Prioritised Action Framework and this NBAP;
- Develop a Natural Capital Asset Register and national natural capital accounts by 2020, and integrate these accounts into economic policy and decision-making;

¹ <https://www.npws.ie/protected-sites/nha> (accessed 23 January 2020).



- Initiate natural capital accounting through sectoral and small-scale pilot studies, including the integration of environmental and economic statistics using the framework of the UN System of Experimental-Ecosystem Accounting (SEEA);
- Establish a national Business and Biodiversity Platform under the CBD's Global Business Partnership;
- Ensure Origin Green produces tangible benefits for biodiversity with increased emphasis on conservation and restoration of biodiversity;
- Implement actions from Ireland's Biodiversity Climate Change Sectoral Adaptation Plan;
- Identify and take measures to minimise the impact of incentives and subsidies on biodiversity loss, and develop positive incentive measures, where necessary, to assist the conservation of biodiversity;
- Establish and implement mechanisms for the payments of ecosystem services including carbon stocks, to generate increased revenue for biodiversity conservation and restoration;
- Develop and implement a National Biodiversity Finance Plan to set out in detail how the actions and targets of this NBAP will be delivered from 2017 and beyond; and
- Monitor the implementation of the Plan"

Such policies have informed the evaluation of ecological features recorded within the study area and the ecological assessment process.

European Legislation

The EU Habitats Directive (92/43/EEC) (together with the Birds Directive (79/409/EEC), as subsequently codified by Council Directive 2009/147/EC on the conservation of wild birds) forms the cornerstone of Europe's nature conservation within the EU. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. The Habitats Directive protects over 1,000 animal and plant species and over 200 "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance. The Habitats Directive and Birds Directive, which were transposed into Irish law through Part XAB of the Planning and Development Acts 2000-2019 (from a land use planning perspective) recognise the significance of protecting rare and endangered species of flora and fauna, and more importantly, their habitats.

Annex I of the Habitats Directive lists habitat types whose conservation requires the designation of Special Areas of Conservation (SAC). Priority habitats, such as Turloughs, which are in danger of disappearing within the EU territory are also listed in Annex I. Annex II of the Directive lists animal and plant species (e.g. marsh fritillary, Atlantic salmon, and Killarney fern) whose conservation also requires the designation of SAC. Annex IV lists animal and plant species in need of strict protection such as lesser horseshoe bat and otter, and Annex V lists animal and plant species whose taking in the wild and exploitation may be subject to management measures. In Ireland, species listed under Annex V include Irish hare, common frog and pine marten. Species can be listed in more than one Annex, as is the case with otter and lesser horseshoe bat which are listed on both Annex II and Annex IV. The disturbance of species under Article 12 of the Habitats Directive (and in particular avoidance of deliberate disturbance of Annex IV species, particularly during the period of breeding, rearing, hibernation and migration and avoidance of deterioration or destruction of breeding sites or resting places) has been specifically assessed in this EIAR.

Council Directive 2009/147/EC on the conservation of wild birds (the "Birds Directive") instructs Member States to take measures to maintain populations of all bird species naturally occurring in the wild state in the EU (Article 2). According to Recital 1 of the Birds Directive, Council Directive 79/409/EEC on the conservation of wild birds was substantially amended several times and in the interests of clarity and rationality, the Birds Directive codifies Council Directive 79/409/EEC. Such measures may include the maintenance and/or re-establishment of habitats in order to sustain these bird populations (Article 3). A subset of bird species has been identified in the Directive and are listed in Annex I as requiring special conservation measures in relation to their habitats. These species have been listed on account of inter alia: their risk of extinction; vulnerability to specific changes in their habitat; and/or due to their relatively small population size or restricted distribution. Special Protection Areas (SPAs) are to be identified and classified for these Annex I listed species and for regularly occurring migratory species, paying particular attention to the protection of wetlands (Article 4).

In summary, the species and habitats provided National and International protection under these legislative and policy documents have been considered in this Chapter. A detailed assessment of the likelihood of the Proposed Project having either a significant effect or an adverse impact on any relevant European Sites (i.e. SACs, cSACs, SPAs or cSPAs) has been carried out in the Appropriate Assessment Screening Report and Natura Impact Statement, which accompanies this planning application. A separate assessment has not been carried out in this chapter, to avoid duplication of assessments. However, the relevant conclusions have been cross-referenced and incorporated.

6.3 Scoping/Review of Relevant Guidance and Sources of Consultation

The assessment methodology is based primarily upon the National Road Authority (NRA)'s Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev 2 (NRA, 2009) (referred to hereafter as the NRA Ecological Impact Assessment Guidelines), and the survey methodology is based on the NRA Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes (NRA, 2009). Although these survey methodologies relate to road schemes, these standard guidelines are recognised survey methodologies that ensure good practice regardless of the development type.

In addition, the following guidelines were consulted in the preparation of this document to provide the scope, structure and content of the assessment:

- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater and Coastal (CIEEM, 2018).

This assessment has been carried out in accordance with the Environmental Impact Assessment guidance as outlined in Chapter 1 of the EIAR.

In addition to the above, the following legislation applies with respect to habitats, fauna and water quality in Ireland and has been considered in the preparation of this report:

- The International Convention on Wetlands of International Importance especially Waterfowl Habitat (Concluded at Ramsar, Iran on 2 February 1971)
- S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009 and S.I. No. 722 of 2003 European Communities (Water Policy) Regulations 2003 which give further effect to EU Water Framework Directive (2000/60/EC).
- Planning and Development Acts 2000 – 2022.

The following legislation applies with respect to non-native species:

- Regulation 49 and 50 of European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011).

This assessment has been prepared with respect to the various planning policies and strategy guidance documents listed below:

- 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

