CASTLEBANNY WIND FARM

FORESTRY REPLANTING LANDS ASSESSMENT REPORT

January 2021

Table of Contents

1.0 INTRODUCTION

1.1 INTRODUCTION

This report has been prepared for Springfield Renewables Ltd. by James Owens of Oran Ecology on behalf of TOBIN Consulting Engineers, with input by TOBIN staff. Springfield Renewables Ltd. (a joint venture company involving Coillte and ART Generation) intends to apply to An Bord Pleanála for planning permission to develop a wind farm and all associated infrastructure at a site located in south-east Kilkenny between the settlements of Mullinavat, Inistiogue and Ballyhale. An EIAR and NIS have been prepared as part of the proposed wind farm project planning permission application. As part of the wind farm project, permanent felling of forestry is required at the site and therefore replanting of bare lands elsewhere in the state with forestry is necessary. This report is an environmental assessment of the proposed replanting lands for the Castlebanny Wind Farm.

The area of land that requires replanting as a result of the proposed wind farm development is 75ha. Lands at four sites in four counties have been chosen for replanting/afforestation. Should the wind farm be approved, these lands will be used for replanting to off-set the area of forestry which will be permanently felled at the wind farm site. Should this land become unavailable for allocation to the Castlebanny wind farm project for any reason, then similarly suitable and approved lands within the state will be used. A description of the proposed replanting lands and an assessment of the potential impacts associated with afforestation at each site are provided in this document.

2.0 POLICY BACKGROUND AND PROJECT DESCRIPTION

2.1 REPLANTING REQUIREMENT

A felling licence is required from the Minister for Agriculture, Food & the Marine under the Forestry Act 2014 to fell or otherwise remove a tree or trees and to thin a forest for silvicultural reasons. The Forestry Act 2014 allows for the inclusion of a replanting obligation as a condition of a felling licence. The clearfelling of forestry will carry a replanting obligation in almost all circumstances. As set out in Felling & Reforestation Policy (DAFM, 2017), infrastructure felling as part of proposed wind farm developments requires that alternative afforestation take place and that the alternative site must be of an equivalent size to the area felled.

The replanting of land or off-site afforestation require technical approval by the Minister for Agriculture, Food & the Marine under the Forestry Act 2014 and its consent is regulated under the Forestry Regulations 2017 (S.I. No. 191 of 2017). This legislation provides for development of afforestation project's adherence to compliance with the EIA Directive as amended (Directive 2011/92/EU as amended by Directive 2014/52/EU) and Habitats Directive (Directive 92/43/EEC). It should be noted that subsequent to technical approval being granted, the lands can be left bare until a felling licence for the wind farm to which they are linked has been acquired. Bare replacement lands can also be planted ahead of a felling licence being acquired for the wind farm.

Four potential areas have been identified for assessment purposes, and any replanting associated with the Castlebanny sites will take place at these or similar lands, subject to Technical Approval by the Forest Service. The list of lands assessed in this report is presented in Table 2.1. A brief summary of the characteristics of each site is given in the sections below.

Table 2.1 Proposed Replanting Lands

Site Number	Townland and County Location	Replanting Area (ha)
1.	Burrish, Co. Mayo	7.35
2.	Moyne, Co. Roscommon	11.21
3.	Coolnagun, Co. Westmeath	42.77
4.	Treanmanagh, Co. Clare	14.27

2.1.1 Burrish, Co. Mayo

The replanting lands are located in the townland of Burrish, Co. Mayo, 3.7km north-east of Ballindine. A site location map is shown as Figure 2.1. The site is accessed from a local road and is currently managed as grazed pasture and for horticulture. The proposed replanting area is 7.35ha.

2.1.2 Moyne, Co. Roscommon

The replanting lands are located in the townland of Moyne, Co. Roscommon, 2.1km north-east of Loughglynn. A site location map is shown as Figure 2.2. The site is accessed from local roads and is currently managed as grazed pasture. The proposed replanting area is 11.21ha.

2.1.3 Coolnagun, Co. Westmeath

The replanting lands are located in the townland of Coolnagun, Co. Westmeath, 2.7km south-west of Coole. A site location map is shown as Figure 2.3. The site is accessed from a local road and agricultural access track and is currently managed as grazed pasture. The proposed replanting area is 42.77ha.

2.1.4 Treanmanagh, Co. Clare

The replanting lands are located in the townland of Treanmanagh, Co. Clare, 7.9km south-east of Milltown Malby. A site location map is shown as Figure 2.4. The site is accessed from a local road and agricultural access track and is currently managed as grazed pasture. The proposed replanting area is 14.27ha.

2.2 CHARACTERISTICS OF THE PROPOSED REPLANTING WORKS

As part of the application and as described in EIAR Chapter 2 (Description of the Proposed Development), it was determined that the permanent felling of approximately 75ha of forestry would be required to develop the Castlebanny Wind Farm with a requirement to replant the same area elsewhere in the state. Forestry which will be temporarily felled at the proposed Castlebanny Wind Farm site will be replanted within the wind farm site at the same location.

The proposed afforestation project will involve the planting of coniferous and broadleaf species, and unplanted Areas of Biodiversity Enhancement (ABE) will also be incorporated into the sites as per the requirements of the Forest Service.

The afforestation project will consist of cultivation and drainage, planting, fencing, vegetation control, beating-up (i.e. replacement of tree failures) and ongoing monitoring. Ongoing monitoring of the site will take place within the first four to five years at which point it is anticipated that the forest will be established.

The proposed afforestation project has been informed by and will be undertaken in accordance with the relevant Forest Service guidance and regulations and which were considered in the preparation of this document. These are set out in the following documents;

- DAFM. 1998. Code of Best Forest Practice. Department of Agriculture, Food & the Marine, Johnstown Castle Estate, Co. Wexford
- DAFM. 2000. Forest Protection Guidelines and Guidelines for the Use of Herbicides in Forestry. Department of Agriculture, Food & the Marine, Johnstown Castle Estate, Co. Wexford
- DAFM. 2000. Forestry and the Landscape Guidelines. Department of Agriculture, Food & the Marine, Johnstown Castle Estate, Co. Wexford
- DAFM. 2000. Forestry and Archaeology Guidelines. Department of Agriculture, Food & the Marine, Johnstown Castle Estate, Co. Wexford
- DAFM. 2000. Forestry and Water Quality Guidelines. Department of Agriculture, Food & the Marine, Johnstown Castle Estate, Co. Wexford

- DAFM. 2000. Forestry Biodiversity Guidelines. Department of Agriculture, Food & the Marine, Johnstown Castle Estate, Co. Wexford
- DAFM. 2000. Forestry Harvesting and Environmental Guidelines. Department of Agriculture, Food & the Marine, Johnstown Castle Estate, Co. Wexford
- DAFM. 2015. Forestry Standards Manual, November 2015. Department of Agriculture, Food & the Marine, Johnstown Castle Estate, Co. Wexford.
- DAFM. 2016. Environmental Requirements for Afforestation, December 2016. Department of Agriculture, Food & the Marine, Johnstown Castle Estate, Co. Wexford.
- DAFM (2017) Felling & Reforestation Policy. Department of Agriculture, Food & the Marine, Johnstown Castle Estate, Co. Wexford

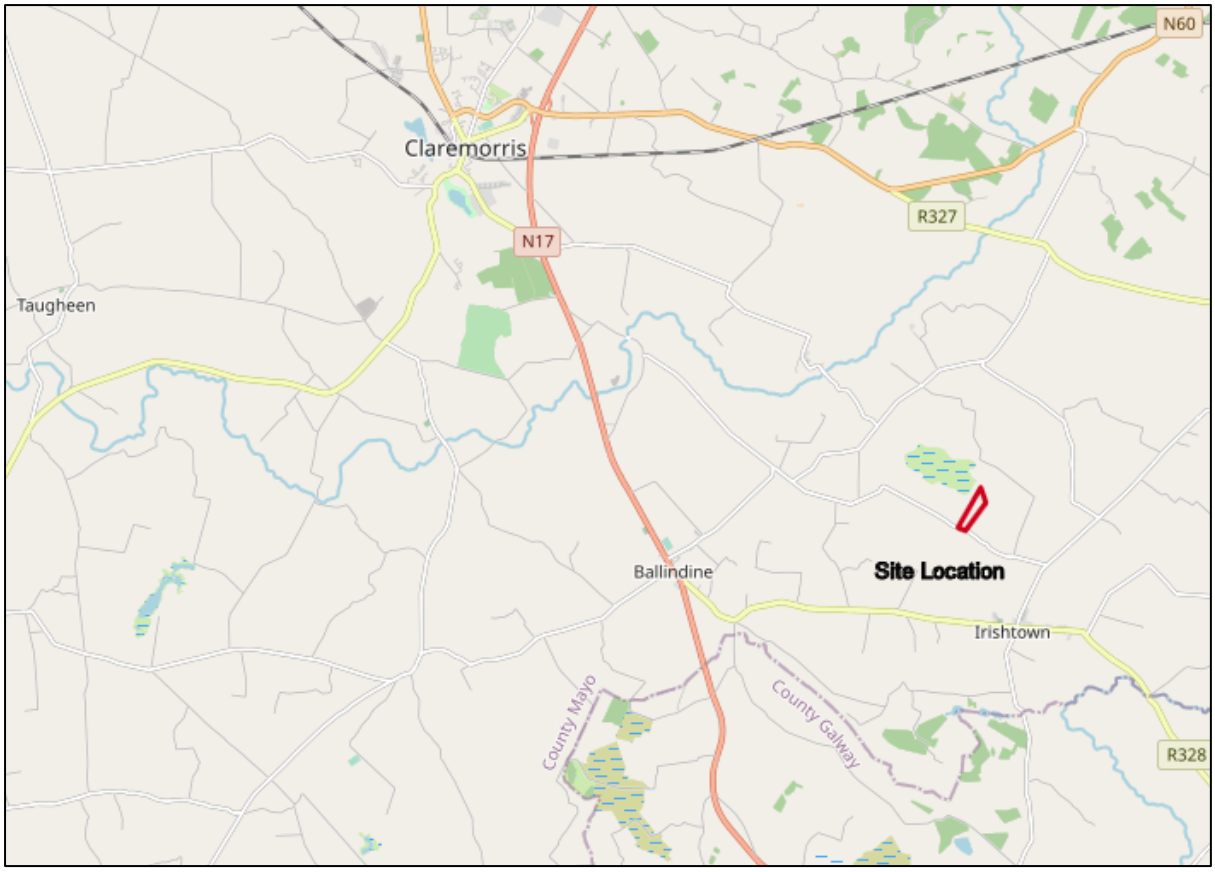

Figure 2.1.Site Location Map: Burrish. Co. Mayo

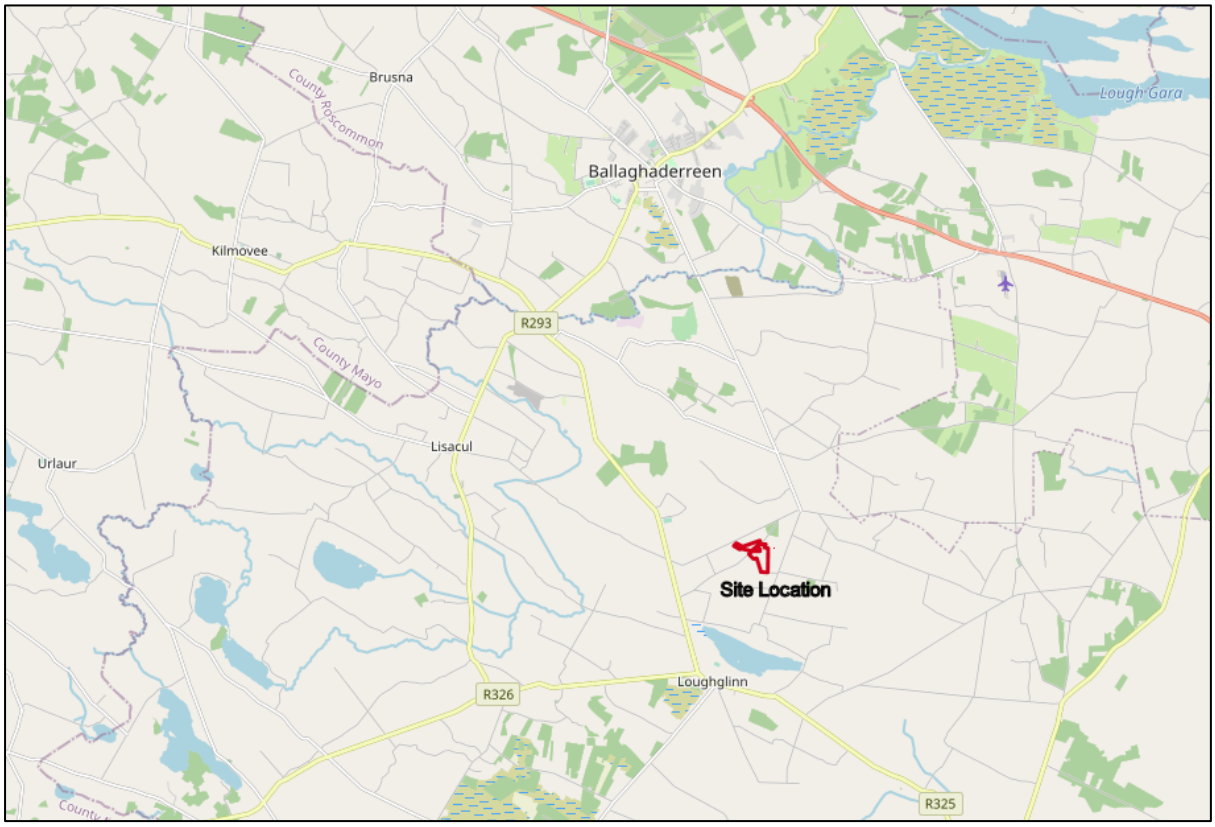

Figure 2.2.Site Location Map: Moyne, Co. Roscommon

Figure 2.3.Site Location Map: Coolnagun, Co. Westmeath

Figure 2.4.Site Location Map: Treanmangh, Co. Clare

2.2.1 Afforestation Operations

2.2.1.1 Cultivation and Drainage

(Approximate duration 2 weeks for each site)

Mounding and associated drainage will be carried out by an excavator. Appropriate drainage design will include collector drains, interceptor drains and cut-off drains, which are all generally of similar size. A description of each drain type as per the Forestry Standards Manual is given below.

Collector drains: These drains collect water from mound drains, plough furrows, mole drains, etc. Collector drains should not be greater than 80 metres apart and should run at acute angles to the contour. These acute angles should be no greater than 2^{O} (1-in-30) on slopes greater than 3^{O} (1-in-20). They should be excavated to a depth not greater than 10-15 cm below the depth of mound drains. Where collector drains have to be extended into erodable material, 'mini' silt traps should be placed appropriately by deepening the drains in places. Collector drains should discharge via sediment traps and / or an interceptor drain (see below) into the aquatic buffer zone. On flat sites, collector drains may have to discharge directly into the aquatic zone, via appropriate sediment traps.

Interceptor drains: These are constructed along the outer edges of aquatic buffer zones. They collect the discharge from the drained area and allow it to overflow into the aquatic buffer zone.

Cut-off drains: These are constructed immediately upslope of a site, and are designed to direct water away from the site.

Figure 2.5, taken from the Forestry Standards Manual, shows an example of the different drain types and where sediment traps might be located.

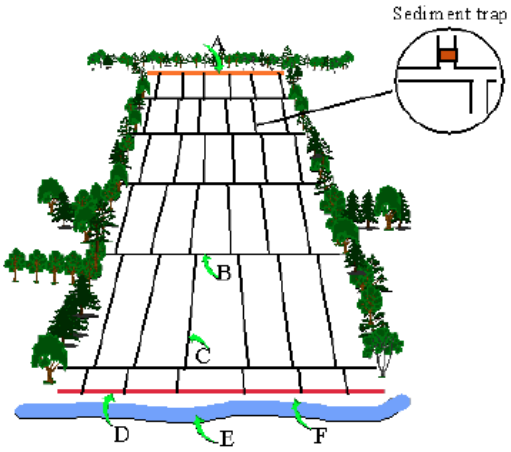

Figure 2.5 Example of different drainage design, Forest Service (2015)

2.2.1.2 Planting

(Approximate duration for each site 3 weeks)

Planting will be carried out manually in accordance with Forestry Standards Manual (DAFM, 2015). Planting will be done either by slit planting, angle notch or pit-planting. Slit planting is the most common planting method where the slit is made with a spade and the tree root is inserted into the ground and the slit closed with the heel of the foot and the plant firmed. Angle-notch is similar to slit planting except that two slits are made, either in the shape of a right angle or a T, and the soil is then levered up. The plants are inserted into the hole created and again the plant is firmed. Pit planting is a common method used on flat or uncultivated ground where a small pit is dug and the plant inserted into the hole and the loose soil back filled and firmed.

2.2.1.3 Fencing

(Approximate duration for each site 1-2 days)

Each of the sites will be fenced with stock proof fencing. Fencing will consist of timber posts and three strands of barbed wire. In areas where sheep may be an issue, fencing will consist of sheep wire and one strand of barbed wire.

2.2.1.4 Vegetation Control

(Throughout the 4-5 year establishment window as necessary)

Vegetation control will either be done manually (cleaning) or using knapsack applied herbicide.

2.2.1.5 Beating Up

(Throughout the 4-5 year establishment window as necessary)

Beating-up will involve replacing tree failures. Tree planting will be undertaken manually through angle notch, slit and pit planting.

2.2.1.6 Silvicultural Monitoring

Ongoing silvicultural monitoring of each site will take place within the first four to five years at which point it is anticipated that the forests will be established.

3.0 RELEVANT POLICIES AND GUIDELINES

3.1 RELEVANT NATIONAL POLICY

3.1.1 Forests, Products and People: Ireland's Forest Policy – A Renewed Vision (2014)

This document was published by the Department of Agriculture, Food and Marine in 2014. It contains strategic goals and recommendations of the Forest Policy Review Group.

The Strategic goal is stated as:

"*Develop an internationally competitive and sustainable forest sector that provides a full range of economic, environmental and social benefits to society and which accords with the Forest Europe definition of sustainable development.*"

It highlights the important role that forestry is playing in terms of the economy, environment and society. Forests now account for 10.5% of the land area of Ireland with a strong forest growth rates compared to other European countries.

The importance of forests' contribution to climate change mitigation is also described in this report. Irish Kyoto-eligible forests will sequester about 4.8 million tonnes of carbon dioxide (CO_2) in 2020, representing between 40% and 60% of the target.

The afforestation policy outlined in the policy document aims to support transition to a low carbon economy and reach the demanding greenhouse gas emission reduction targets as well as reduce dependence on fossil fuels.

Some of the recommended policies and actions are:

- Expansion of the Forest Resource: To increase the forest area, in accordance with sustainable forest management (SFM) principles, in order to support a long term sustainable roundwood supply of 7 to 8 million cubic metres per annum. This policy aims to increase afforestation to 15,000 hectares annually.

- Management of the Resource: To ensure the sustainable management of the forest resource in accordance with best practice thereby ensuring its capacity to provide the full range of timber and other benefits.

- Environment and Public Goods: To ensure that afforestation, management of existing forests and development of the forest sector are undertaken in a manner that enhances their contribution to the environment and the capacity to provide public goods and services.

3.1.2 Forestry Programme 2014-2020

This programme was finalised in January 2015 by the Forest Service, Department of Agriculture, Food and the Marine in accordance with European Union Guidelines on State aid for agriculture and forestry and in rural areas 2014 to 2020. The measures proposed within this

programme are consistent with the '*Forests, Products and People: Ireland's Forest Policy – A Renewed Vision*' report and identifies needs and measures in relation to Ireland's forest sector.

Some objectives under Measure 1: Afforestation and Creation of Woodland are:

- Increase Ireland's forest cover from 10.7% to 18% by the year 2046
- Establish up to 8,290 hectares of new forests and woodlands per annum (subject to the availability of funds)
- Foster carbon sequestration and climate change mitigation.
- Provide a resource which will contribute to long-term sustainable development in the rural economy.

This measure is the most relevant to increase, on a permanent basis, Ireland's forest cover to capture carbon, produce wood resources and help mitigate emissions from agriculture.

3.1.3 Climate Action Plan 2019

One of the targets of the Climate Action Plan is to achieve 26.8 $MtCO_2eq$ abatement through LULUCF (Land Use, Land-Use Change and Forestry) actions over the period 2021 to 2030, comprising of an average of 8,000ha per annum of newly planted forest, and sustainable forest management of existing forests (providing 21$MtCO_2eq$ cumulative abatement).

3.1.4 The National Planning Framework : Project 2040

The National Planning Framework (NPF) was published by the Department of Housing, Planning and Local Government in February of 2018. The NPF is a framework to guide Ireland's development and investment in the coming years. It is the Government's high-level strategic plan to shape Ireland's development until the year 2040. It contains a set of national objectives and key principles from which more detailed and refined plans will follow. The NPF states that "*Ireland's forests play an important role in helping with climate change mitigation, through carbon sequestration in forests and the provision of renewable fuels and raw materials. Irish forestry is a major carbon sink and afforestation is the most significant mitigation option that is available to Ireland's land use sector*".

Furthermore, the NPF states that the government will support "*The roll-out of renewables and protection and enhancement of carbon pools such as forests, peatlands and permanent grasslands. It is necessary to ensure that climate change continues to be taken into account as a matter of course in planning-related decision making processes*".

3.2 RELEVANT REGIONAL POLICY

3.2.1 Regional Planning Guidelines for the West 2010 - 2022

The guidelines aim to support sustainable forestry across the region. Forestry should be assessed for its potential impacts on designated habitats and species including the potential for impacts on Natura 2000 sites through Habitats Directive Assessment, where relevant. The guidelines acknowledges that the forestry sector creates opportunities for a variety of employment in rural economies such as nurseries, consultants, contractors, processing in sawmills, wood recycling and wood waste enterprises.

3.2.2 Regional Planning Guidelines for the East 2010 - 2022

The guidelines recognise that afforestation has become a significant feature in the region over the last decade as a result of targeted grant aid schemes. It is considered that the continued development of this sector should be promoted in a sustainable manner, compatible with the protection of the environment. The plan states that forestry provides some opportunities for employment in maintenance, felling and re-planting and the services associated with those activities.

3.2.3 Regional Planning Guidelines for the South West 2010 - 2022

The guidelines note that the forestry sector comprises mainly small and medium sized privately owned farm based enterprises that provide a potentially viable area for diversification. The National Forest Inventory quantifies the productive forest are for the South West region as covering 112,190ha, with Kerry having in excess of 40,000 ha of forestry plantations. The cycle of planting over the past 15 years indicates that many private forestry plantations will be at or approaching maturity during the next decade. The Regional Bio-energy Plan for the South West shows that enhanced management of this resource is required.

3.2.4 Regional Spatial & Economic Strategy 2020-2032 (RSES) – Northern and Western Region

The spatial strategy recognises the important contribution of forestry to the rural areas and the bioeconomy. The strategy also recognises that the Northern and Western Region is a natural place that has the highest proportion of carbon sinks, or areas which can remove CO2 from the atmosphere, such as bogs and large areas of forestry. It is a regional policy objective that a Regional Fora be established to set out a framework for sustainable afforestation across the region that enables government policy to grow the sector and that addresses community concerns and perceptions.

3.2.5 Regional Spatial & Economic Strategy 2019-2031 (RSES) – Southern Region

The spatial strategy recognises the important contribution of forestry to the rural economy. The strategy states that forestry is central for Ireland's transition to a low carbon and sustainable future and can play an important role in increasing and diversifying farm income. The RSES supports the measures outlined in the Climate Action Plan 2019 and supporting actions will focus on a number of areas including forestry. The regional assembly supports the government's annual afforestation target of 8,000ha as part of the Climate Action Plan. It is an objective of the assesmbly to work with key stakeholders in developing sustainable forestry, including initiatives for native tree planting and better management of peatland and soil management to support carbon sequestration and enhancement of biodiversity.

3.2.1 Regional Spatial & Economic Strategy 2019-2031 (RSES) – Eastern Region

The spatial strategy recognises the important contribution of forestry to the rural economy. It is an objective of the strategy that local authorities support rural sectors such as forestry. The strategy also recognises that the Eastern Region is a natural place that has the highest proportion of carbon sinks, or areas which can remove CO2 from the atmosphere, such as bogs and large areas of forestry.

3.3 RELEVANT COUNTY AND LOCAL POLICIES

3.3.1 Mayo County Development Plan: 2014-2020 and Draft Mayo County Development Plan 2021-2027

Mayo County has a total forest area in excess of 51,300ha of forest and woodland area, or 10.5% land cover which is just under the national level of 10.7%. The Mayo County Development Plan 2014-2020 highlights that the sector will continue to be an important economic activity in rural areas, as well as an alternative enterprise for farmers. Sustainably managed forestry can also become an important tourism asset and the council aims to work in partnership with Coillte to identify opportunities for tourism.

The council states it will continue to support sustainable forestry development of an appropriate scale throughout the County but acknowledges the importance of protecting the environment including, Natura 2000 sites, residential amenity and visual amenity.

3.3.1 Roscommon County Development Plan: 2014-2020

Over 21,000ha of forestry has been planted in County Roscommon, representing 8.7% of the total area of the County. Forests are more prevalent in the northern part of the County representing approximately 10.5% of the area than the south of the County where it represents only approximately 3% of the area. Some 13,000ha of forest in the County is on private land with over 8,000ha in public ownership. Roscommon County Council recognizes the many benefits of forestry within the County in terms of economic, recreational and carbon sequestration potential, and acknowledges the potential for further afforestation in County Roscommon.

The Roscommon County Development Plan 2014-2020 highlights that the sector will continue to be an important economic activity in rural areas, as well as an alternative enterprise for farmers. The council aims to support and promote sustainable forestry development in County Roscommon, subject to the protection of, inter alia, scenic landscapes and views, water quality, heritage features, residential amenity, established public rights of way and public safety. The Council also recognises the potential of forestry in tourism and in bio-fuel production.

3.3.1 Westmeath County Development Plan: 2014-2020 and Draft Westmeath County Development Plan 2021-2027

Westmeath has forestry coverage of approximately 6%. This includes the extensive beech plantation at Mullaghmeen covering 400 hectares, which is the largest planted broadleaved forest in Ireland providing an important amenity and recreation site in the county. The Westmeath County Development Plan 2014-2020 highlights that the sector will continue to be an important economic activity in rural areas, as well as an alternative enterprise for farmers. The plan recognises that although the county has one of the lowest percentages of forest cover in the country, forestry is of social, economic and environmental importance to Westmeath by providing a valuable recreation resource. The plan aims to promote forestry development of appropriate scale and character whilst ensuring that the development does not have a negative visual impact on the countryside or cause pollution or degradation to wildlife habitats, natural waters or areas of ecological importance.

3.3.1 Clare County Development Plan: 2017-2023

Clare County has a total forest area of 55,106ha, or 17% land cover which is over the national level of 10.7%. The Clare County Development Plan 2017-2023 highlights that the sector will

continue to be an important economic activity in rural areas and recognises that forestry has the potential to provide economic, environmental and social gains, which can benefit both rural and urban economies. The council aims to promote sustainably managed forestry which can benefit rural and urban economies, the development of ancillary industries and to enhance biodiversity, recreational amenities and to mitigate against climate change.

The council states it will continue to support sustainable forestry development of an appropriate scale throughout the County but acknowledges the importance of protecting the environment including, Natura 2000 sites, residential amenity and visual amenity.

3.4 RELEVANT NATIONAL GUIDELINES

The replanting at the proposed site will be carried out in accordance with the Forest Service Guidelines described below and any further requirements resulting from the technical approvals.

3.4.1 Forest Service Guidelines

Code of Best Forest Practice – Ireland[1]

The aim of the Code of Best Forest Practice is to complement on an operational level that of *Growing for the Future - A Strategic Plan for the Development of the Forestry Sector in Ireland*[2] *"To develop forestry to a scale and in a manner which maximises its contribution to national economic and social well-being on a sustainable basis and which is compatible with the protection of the environment."*

In the context of sustainable forest management, it aims to ensure that the various environmental, economic and social forest values are recognised. Most forests in Ireland are managed on a commercial basis, therefore a careful balance between measures to protect the environment and measures to maintain forest productivity are deemed necessary in this code.

Felling & Reforestation Policy (DAFM, 2017)

This policy document aims to provide a consolidated source of information on the legal and regulatory framework relating to tree felling. Information on the felling licence application process is also described. Where the permanent removal of trees is envisaged, Forest Service policy is outlined for different tree removal scenarios.

[1] Part 1
https://www.agriculture.gov.ie/media/migration/forestry/publications/codeofbestforestpractice/Code%20of%20Best%20Forest%20Prac%20Part%201.pdf

Part 2
https://www.agriculture.gov.ie/media/migration/forestry/publications/codeofbestforestpractice/Code%20of%20Best%20Forest%20Prac%20Part%202.pdf

2 Department of Agriculture, Food and Forestry (1996) Growing for the Future - A Strategic Plan for the Development of the Forestry Sector in Ireland. Stationary Office.

Environmental Requirements for Afforestation[3]

The aim of the guidelines is to ensure that the establishment of new woodlands and forests is carried out so that it compatible with the protection and enhancement of our environment. In assessing an application for afforestation, the Forest Service is required to consider potential effects across a range of issues and sensitivities. This includes in-combination effects regarding water, biodiversity, landscape, social issues, etc.

Forestry Standards Manual

The Forestry Standards Manual supports Ireland's Forestry Programme for the period 2014 – 2020. The standards and procedures outlined are consistent with the Forests, Products and People: Ireland's Forest Policy – A Renewed Vision. The Forestry Standards Manual provides guidance on the operational requirements of the various support schemes (Afforestation Scheme, Forest Road Scheme, etc.), which are subject to the conditions set out in each of the respective scheme documents, as published by the Department. Eligibility under the various schemes is governed by the terms and conditions of each, as set out in the relevant scheme document.

Forestry and Water Quality Guidelines[4]

Forestry activities have the potential to interact both positively and negatively with aquatic resources and the maintenance and enhancement of water quality is of utmost importance. These guidelines describe a range of measures intended to cover all situations relating to forestry and water quality.

Forestry and the Landscape Guidelines[5]

These guidelines describe a range of measures that forest owners can employ in relation to the landscape, it is recognised that some may be impractical for individual forests, due to land ownership pattern, location and other set factors. Where a degree of flexibility exists, forest owners are required to implement those landscape measures which can be applied effectively to their property.

All forest workers and machine operators involved in any forest operation should be made aware of and understand the guidelines, all relevant environmental issues relating to the site, and working practices which minimise environmental disturbance.

Forestry and Archaeology Guidelines[6]

Archaeological sites and monuments are part of the national heritage. These guidelines have been developed to ensure that forest development should not disturb sites of archaeological importance. They have been compiled to assist non-archaeologists involved in forest development to identify archaeological sites and set out the procedures which should be followed to avoid site disturbance.

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3 https://www.agriculture.gov.ie/media/migration/forestry/grantandpremiumschemes/2016/EnvironmentalRequirementsAfforestationDecember121216.pdf

4 https://www.agriculture.gov.ie/media/migration/forestry/publications/water_quality.pdf

5 https://www.agriculture.gov.ie/media/migration/forestry/publications/landscape.pdf

6 https://www.agriculture.gov.ie/media/migration/forestry/publications/archaeology.pdf

Forest Biodiversity Guidelines[7]

Forests are among the most diverse and complex ecosystems in the world, providing a habitat for a multitude of flora and fauna. Ireland's forests represent an important opportunity to conserve and enhance biodiversity at both a local and national level. These guidelines are biodiversity considerations to be incorporated into all forest development, harvesting, forest roading and maintenance plans to consider biodiversity, habitat and nature conservation issues.

Forest Harvesting and Environmental Guidelines[8]

These guidelines address issues relating to soil conservation; the protection of water quality, archaeological sites, biodiversity and the visual landscape; the maintenance of forest health and productivity in the context of timber harvesting and forest road construction and maintenance. It therefore provides guidelines for:

- *harvest planning;*
- *harvest operation;*
- *harvest site restoration;*
- *road planning;*
- *road construction;*
- *machine servicing.*

Forest Protection Guidelines[9]

These guidelines are set up to protect the forest, ensure a healthy and vigorous forest and to prevent and control damage in a correct, timely, effective and safe manner. For that purpose, forest owners and managers have an obligation to value the need for vigilance, experienced forest management and advice on site in order to ensure a healthy and vigorous forest and to prevent and control damage in a correct, timely, effective and safe manner. Methods include the use of herbicides in controlling competing vegetation and pesticides in dealing with insects.

All of the above-mentioned guidelines set out sound and practical measures based on the principles of Sustainable Forest Management (SFM), and are based in the best available scientific information. All forest workers and machine operators involved in any forest operation will be made aware of and understand the guidelines, all relevant environmental issues relating to the site, and working practices which minimise environmental disturbance.

3.5 FOREST CERTIFICATION

Coillte comply with two forest management certification schemes, namely FSC (Forest Stewardship Council), and PEFC (Programme for the Endorsement of Forest Certification). Both FSC and PEFC forest management certification schemes are independent schemes which audit and inspect forest managers to ensure their work meets strict forest management standards

[7] https://www.agriculture.gov.ie/media/migration/forestry/publications/biodiversity.pdf
[8] https://www.agriculture.gov.ie/media/migration/forestry/publications/harvesting.pdf
[9] https://www.agriculture.gov.ie/media/migration/forestry/publications/fsFPG.pdf

against social, economic and environmental criteria. Certification of Coillte's forest estate is an independently verified way in which Coillte can demonstrate to stakeholders and customers that its natural resource management practices are economically, socially and environmentally responsible. Coillte is audited annually to ensure compliance with both FSC and PEFC certification schemes. To comply with the certification schemes, all forest operations are carried out in accordance with national best practice standards which are described in Section 3.4.

4.0 IMPACT ASSESSMENT METHODOLOGY

The effect of the proposed replanting has been appraised under the following environmental headings:

- Biodiversity
- Hydrology, Hydrogeology and Water Quality
- Land, Soils and Geology
- Air and Climate
- Noise and Vibration
- Population, Human Health and Material Assets
- Cultural Heritage
- Landscape and Visual

Each of the proposed replanting sites is assessed separately under the headings listed above. Each section contains a description of the existing environment, potential effects and appropriate mitigation measures to reduce, remedy or eliminate those effects, where required. Residual effects are also described in the cases where mitigation measures are recommended. The evaluation of the significance of the effect is also undertaken as per the EPA guidelines (EPA, 2017). If effects are anticipated, mitigation measures are devised to minimise effects on the environment through avoidance, by reduction and by remedy.

Post implementation of mitigation measures and residual effects assessment, a cumulative impacts assessment is included for each section. Section 13 contains an overall cumulative impacts assessment conclusion.

The environmental assessment was completed using the following guidance documents;

- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, 2017)
- Guidelines for Assessment of Ecological Impacts of National Roads Schemes (NRA, 2009)
- A Guide to Habitats in Ireland. Heritage Council (Fossitt, 2000)
- Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes. National Roads Authority (NRA, 2008)
- Assessment of Plans & Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) & (4) of the Habitats Directive 92/43/EEC (EC, 2002)
- Appropriate Assessment of Plans & Projects in Ireland. Guidance for Planning Authorities. (DoEHLG, 2010)
- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2005)

Some additional guidelines may be referenced in the relevant sections of this report below. The granting of Technical Approval for afforestation of each site is also subject to appropriate guidance.

4.1 PLANS AND PROJECTS CONSIDERED FOR THE CUMULATIVE IMPACT ASSESSMENT

The proposed development was considered in combination with other plans and existing and approved projects in the area that could result in cumulative effects on the environment. The proposed Castlebanny Wind Farm project was also considered as part of the cumulative effects assessment. The proposed wind farm site, in Co. Kilkenny, is >100km away from the nearest forestry replanting site, Treanmanagh, in Co. Clare. Due to the distance between the four proposed replanting sites and the proposed wind farm site, the proposed wind farm will not result in cumulative effects at the proposed replanting sites. Existing activities (including land use, forestry/agricultural activity, industry, etc.) were considered in the areas around each site.

4.1.1 Site 1: Burrish, Co. Mayo

A search of the online planning system for Mayo County Council for existing and approved plans within the past five years was undertaken on the 14/01/2021. No planning applications likely to cause potential significant in combination effects were identified. There were no planning applications within the last 5 years from the townland of Burrish in which the proposed project is located. There was one planning application within the last five years from the adjacent townland of Cuillaun;

- Pl. Ref. 1737 – Retention for domestic garage

The An Bord Pleanála website (www.pleanala.ie/index.htm) was consulted on the 14/01/2021 for existing and approved projects was undertaken. No planning applications likely to cause potential significant in combination effects were identified including projects of similar nature and scale as the proposed replanting and within the same surface water sub-catchment. No planning applications were found in the search.

The EPA website (www.epe.ie) was consulted on the 14/01/2021 , and indicated the following licenced activities in the same surface water catchment as the project:

- P0048-03 - Dawn Meats Ireland t/a Western Proteins, Ballyhaunis, Mayo
- P0970-01 - Mr Michael Quinn, Coolloughra, Ballyhaunis, Mayo
- P0923-01 - Mr Paraig Kiely, Carrowhauny, Ballyhaunis, Mayo

The following other plans and any associated projects considered in the assessment were;

- The Mayo County Development Plan 2014-2020 was also reviewed and considered as part of this assessment.

4.1.2 Site 2: Moyne, Co. Roscommon

A search of the of the online planning system for Roscommon County Council for existing and approved plans within the past five years was undertaken on the 14/01/2021. No planning applications likely to cause potential significant in combination effects were identified. The following planning applications were returned for the townland of Moyne.

- Pl. Ref.17505 - Forest road entrance
- Pl. Ref.18550 - Forest access entrance
- Pl. Ref.18551 - Forest access entrance

- Pl. Ref.19218 - Extension to a dwelling

The An Bord Pleanála website (www.pleanala.ie/index.htm) was consulted on the 14/01/2021 for existing and approved projects. No planning applications likely to cause potential significant in combination effects were identified including projects of similar nature and scale as the proposed replanting and within the same surface water sub-catchment. The following application was found:

- PL20 .300493 - N5 Ballaghaderreen to Scramoge Road Development and associated CPO

The EPA website (www.epe.ie) was consulted on the 14/01/2021, and indicated the following licenced activities in the general vicinity of the project:

- P0802-03 - Aurivo Dairy Ingredients Limited, Ballaghaderreen, Roscommon
- P0178-01 - Dawn Country Meats Limited (Ballaghadereen), Ballaghaderreen, Roscommon

The following other plans and projects considered in the assessment were;

- The Roscommon County Development Plan 2014-2020 was also reviewed and considered as part of this assessment.

4.1.3 Site 3: Coolnagun, Co. Westmeath

A search of the online planning system for Westmeath County Council for existing and approved projects was undertaken on the 14/01/2021. No planning applications likely to cause potential significant in combination effects were identified. There were no planning applications within the last 5 years from the townland of Coolnagun in which the proposed project is located or from the adjacent townlands of Kiltareher and Corralanna.

The An Bord Pleanála website (www.pleanala.ie/index.htm) was consulted on the 14/01/2021 for existing and approved projects was undertaken. No planning applications likely to cause potential significant in combination effects were identified including projects of similar nature and scale as the proposed replanting and within the same surface water sub-catchment. The following application was found:

- PL25M.306188 – Coole Wind Farm

The EPA website (www.epe.ie) was consulted on the 14/01/2021 and indicated the following licenced activities in the general vicinity of the project:

- P0966-01- Kiernan Breeding Stock, Ardagullion, Granard, Longford

The following other plans and projects considered in the assessment were;

- The Westmeath County Development Plan 2014-2020 was also reviewed and considered as part of this assessment.

4.1.4 Site 4: Treanmanagh, Co. Clare

A search of the Clare County Council online planning system for existing and approved projects was undertaken on the 14/01/2021. No planning applications likely to cause potential significant in combination effects were identified. There were no planning applications within the last 5 years from the townland of Treanmanagh in which the proposed project is located.

There were four planning applications within the last five years for the adjacent townlands of Carrownagry North and Drummin;

- Pl. Ref. 15452 – Slated shed construction
- Pl. Ref. 15453 - Slated shed construction
- Pl. Ref. 16257 - Slated shed construction
- Pl. Ref. 20658 - MCRE Windfarm Ltd (MCRE) proposed wind farm development.

The An Bord Pleanála website (www.pleanala.ie/index.htm) was consulted on the 14/01/2021 for existing and approved projects. No planning applications likely to cause potential significant in combination effects were identified including projects of similar nature and scale as the proposed replanting and within the same surface water sub-catchment. The following application was found:

- PL03 .245392 – Glenmore Wind Farm

The EPA website (www.epe.ie) was consulted on the 14/01/2021 , and indicated the following licenced activities in the in the same surface water catchment of the project: No recent results were found.

The following other plans and projects that were considered in the assessment were;

- The Clare County Development Plan 2017-2023 was also reviewed and considered as part of this assessment.

5.0 BIODVERSITY

5.1 METHODOLOGY

5.1.1 Introduction

An ecological assessment of the sites was undertaken based on the results of a desk study and field surveys. General ecological walkover surveys of the sites were undertaken which included habitat and botanical surveys, as well as protected species surveys including birds and mammals. Based on the results of these studies, the potential for direct, indirect and cumulative effects of the proposed afforestation projects on the existing ecological receptors was assessed. Where any potential effects are found to occur, appropriate mitigation measures are proposed to minimise these potential effects.

The purpose of this evaluation was to:

- Undertake a desktop review of available ecological data for both the receiving environment and greater area, including a review of designated sites within 15 km of each project site;
- Undertake ecological field surveys of the receiving environments;
- Identify flora and fauna present within the footprint of the replant lands;
- Evaluate the ecological significance of the receiving environments;
- Appraise the potential effects of the project on the ecology of the receiving environment;
- Consider measures to mitigate the potential negative effect(s) of the project on the ecology of the receiving environments.
- Appraise the residual effects post mitigation

5.1.2 Desk Study

Designated Nature Conservation Sites

Designated sites within 15km of the proposed development were taken to be within the Likely Zone of Influence, following Appropriate Assessment of Plans and Projects in Ireland: guidance for planning authorities (DoEHLG, 2009). Nationally designated sites, such as Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) within 15km of the proposed replanting sites and European sites within 15km of the proposed replanting sites, namely Special Areas of Conservation (SACs) and Special Protection Areas for birds (SPAs), were identified as part of this ecological assessment using the Map Viewer at www.npws.ie. Sites outside the 15km zone were also considered but no connectivity was identified. These designated sites are described in Sections 5.2.1.1, 5.3.1.1., 5.4.1.1. and 5.5.1.1.

Flora and Fauna

Information was gathered on protected flora and fauna records within the same hectad as the proposed project site. Records available on the NPWS and the National Biodiversity Data Centre websites were reviewed.

The following resources were also reviewed:

- Geohive Aerial Photography;
- National Parks and Wildlife Service (NPWS) designated site synopses, conservation objectives documents and NPWS map viewer;
- Teagasc soils maps;
- Geological Survey Ireland (GSI) area maps;
- Environmental Protection Agency (EPA) water quality data;
- Inland Fisheries Ireland map viewer; and

5.1.3 Field survey

Habitats at the proposed replanting lands were identified and classified, according to '*A Guide to Habitats in Ireland*' (Fossitt, 2000) and mapped in accordance with '*Best Practice Guidance for Habitat Survey and Mapping*' (Smith *et al.*, 2011).

An ecological walkover survey of the site was undertaken in accordance with Ecological Surveying Techniques for Protected Flora & Fauna during the Planning of National Road Schemes (NRA, 2008).

Habitats were appraised and evaluated according to their occurrence as protected habitats under Annex I of the EU Habitats Directive (92/43/EEC) and for their capacity to support rare, threatened and endangered species. The methodology used to assess the effect on habitats is based on NRA guidelines (2009 a and b), CIEEM guidelines and EPA guidelines.

Scientific and common names for plants follow Parnell *et al.*, (2012) and Blamey *et al.*, (1996), respectively. Habitats were mapped using desk-based GIS software, namely ArcGIS 10.4.1, which was also used to calculate habitat areas and lengths.

During the general ecological walkover survey, the area was searched for any signs of protected mammals within the study area as well as mammal features such as tracks, trails, fur, droppings and shelter (setts, dreys and holts). Watercourse crossings within and adjacent to the proposed replant lands were surveyed for evidence of otter. Incidental records of birds were also noted.

A marsh fritillary larval web survey was undertaken at the Treanmanagh site on the 28th of September, which was within the optimum survey period for such surveys (Late August and September). The standard method of monitoring marsh fritillary populations is to count the larval webs.

The ecological walkover surveys were undertaken at Moyne and Burrish on the 29th of August 2020, at Treanmanagh on the 2nd and 28th of September 2020 and Coolnagun on 6th September 2020. The surveys were undertaken during the optimal survey period for habitat surveys, April-September inclusive (Smith *et al.*, 2011).

5.2 SITE 1: BURRISH, CO. MAYO

5.2.1 Receiving Environment

5.2.1.1 Designated Nature Conservation Sites

European Sites

Special Areas of Conservation (SACs) are protected under the European Union (EU) 'Habitats Directive' (92/43/EEC). Special Protection Areas (SPAs) were initially designated under Directive 79/409/EEC[10], The Directive on the Conservation of Wild Birds ('The Birds Directive'), and are now protected as European (Natura 2000) Sites under the EU 'Habitats Directive'. SACs and SPAs make up the Natura network of sites.

Table 5.1 provides an assessment of the designated sites within the potential zone of influence and Figure 5.1 shows the location of the designated sites in relation to the project.

[10] Amended in 2009, it became the Directive 2009/147/EC

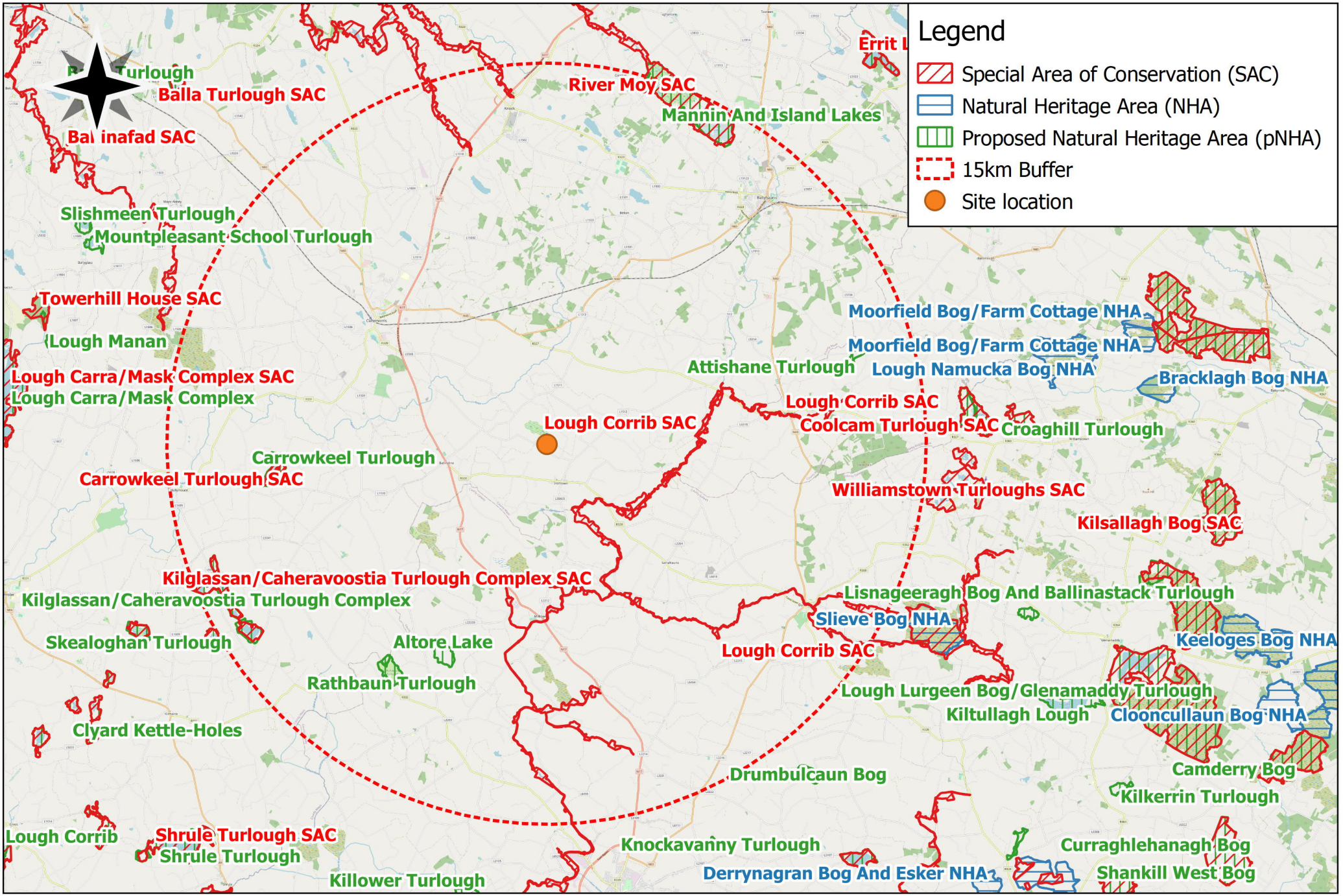


Figure 5.1 . Designated Sites within 15km Created By: James Owens Date: 26/09/2020 Scale: 1:325,000

Oran Ecology

Table 5.1 European Sites within the potential Zone of Influence

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
Lough Corrib SAC [000297] 2.7km	• Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] • Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] • Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] • Active raised bogs [7110] • Degraded raised bogs still capable of natural regeneration [7120]	The proposed Burrish Replant Site is located entirely outside the boundary of the SAC, no potential for direct effects exists. No watercourses which could act as conduits for pollution were recorded at the site. No hydrological connectivity between the proposed project site and the European site exists. No pathway for indirect effects between the proposed Burrish Replant Site and the designated site exists. The proposed Burrish Replant Site is located outside of the 2.5km foraging range of the lesser horseshoe bat roost for which the SAC is designated. No potential pathway for significant effects on the QI were identified. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Burrish Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
	• Depressions on peat substrates of the Rhynchosporion [7150] • Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] • Petrifying springs with tufa formation (Cratoneurion) [7220] • Alkaline fens [7230] • Limestone pavements [8240] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] • Bog woodland [91D0] • Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] • Austropotamobius pallipes (White-clawed Crayfish) [1092] • Petromyzon marinus (Sea Lamprey) [1095] • Lampetra planeri (Brook Lamprey) [1096] • Salmo salar (Salmon) [1106] • Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303] • Lutra lutra (Otter) [1355] • Najas flexilis (Slender Naiad) [1833]		

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
	• Hamatocaulis vernicosus (Slender Green Feather-moss) [6216]		
Carrowkeel Turlough SAC [000475] 10.3km	• Turloughs [3180]*	The proposed Burrish Replant Site is located entirely outside the boundary of the SAC, no potential for direct effects exists. The proposed Burrish Replant Site is located in a separate ground waterbody catchment (Clare-Corrib) to the SAC (Cong-Robe) and therefore no ground water connection exists. No watercourses which could act as conduits for pollution were recorded at the site. No hydrological connectivity between the proposed Burrish Replant Site and the European site exists. No pathway for indirect effects between the proposed project and the designated site exists. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Burrish Replant Site.
River Moy SAC [002298] 11.7km	• Active raised bogs [7110] • Degraded raised bogs still capable of natural regeneration [7120]	The proposed Burrish Replant Site is located entirely outside the boundary of the SAC, no potential for direct effects exists.	No potential for significant effects have been identified with regard to the proposed Burrish Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
	• Depressions on peat substrates of the Rhynchosporion [7150] • Alkaline fens [7230] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] • Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] • Austropotamobius pallipes (White-clawed Crayfish) [1092] • Petromyzon marinus (Sea Lamprey) [1095] • Lampetra planeri (Brook Lamprey) [1096] • Salmo salar (Salmon) [1106] • Lutra lutra (Otter) [1355]	The proposed Burrish Replant Site is located in a separate surface water catchment (Clare) to the SAC (Moy) and therefore no hydrological connectivity between the proposed Burrish Replant Site and the European site exists. No pathway for indirect effects between the proposed Burrish Replant Site and the designated site exists. Potential likely significant effects can be excluded.	
Greaghans Turlough SAC [000503] 13.4km	• Turloughs [3180]*	The proposed Burrish Replant Site is located entirely outside the boundary of the SAC, no potential for direct effects exists. The proposed Burrish Replant Site is located in a separate ground waterbody catchment (Clare-Corrib) to the SAC (Cong-Robe) and therefore no ground water connection exists.	No potential for significant effects have been identified with regard to the proposed Burrish Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		No watercourses which could act as conduits for pollution were recorded at the site. No hydrological connectivity between the proposed Burrish Replant Site and the European site exists. Potential likely significant effects can be excluded.	
Kilglassan/Caheravoostia Turlough Complex SAC [000504] 13.8km	• Turloughs [3180]*	The proposed Burrish Replant Site is located entirely outside the boundary of the SAC, no potential for direct effects exists. The proposed project site is located in a separate ground waterbody catchment (Clare-Corrib) to the SAC (Cong-Robe) and therefore no ground water connection exists. No watercourses which could act as conduits for pollution were recorded at the site. No hydrological connectivity between the proposed Burrish Replant Site and the European site exists. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Burrish Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
Ardkill Turlough SAC [000461] 14.9km	• Turloughs [3180]*	The proposed project site is located entirely outside the boundary of the SAC, no potential for direct effects exists. The proposed project site is located in a separate ground waterbody catchment (Clare-Corrib) to the SAC (Cong-Robe) and therefore no ground water connection exists. No watercourses which could act as conduits for pollution were recorded at the site. No hydrological connectivity between the proposed Burrish Replant Site and the European site exists. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Burrish Replant Site.

Nationally Designated Importance

Nationally designated sites consist of Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA). Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation. A list of pNHAs were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated. Prior to statutory designation, pNHAs are subject to limited protection, in the form of agri-environmental farm planning schemes, a Forest Service requirement for NPWS approval for afforestation on pNHA land and a recognition of the ecological value of pNHAs by Planning and Licencing Authorities.

Table 5.2 provides an assessment of the designated sites within the potential zone of influence and Figure 5.1 shows the location of the designated sites in relation to the project.

Table 5 2 Nationally Designated Sites within the potential Zone of Influence

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
Carrowkeel Turlough pNHA [000475]	10.3km	Turlough	No surface water or groundwater connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed development significant effects are not anticipated.
Altore Lake pNHA [000224]	8.7km	Lake/Wetlands	No surface water connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed development significant effects are not anticipated.
Attishane Turlough pNHA [001618]	12.1km	Turlough	No surface water or groundwater connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed development significant effects are not anticipated.

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
Rathbaun Turlough pNHA [000215]	10.4km	Turlough	No surface water or groundwater connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed development significant effects are not anticipated.
Greaghans Turlough pNHA [000503]	13.4km	Turlough	No surface water or groundwater connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed development significant effects are not anticipated.
Kilglassan/Caheravoostia Turlough Complex pNHA [000504]	13.8km	Turlough	No surface water or groundwater connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed development significant effects are not anticipated.
Ardkill Turlough pNHA [000461]	14.9km	Turlough	No surface water or groundwater connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed development significant effects are not anticipated.
Mannin and Island Lakes pNHA [001910]	13.7km	Lake/Wetlands	No surface water connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			of the proposed development significant effects are not anticipated.

5.2.2 Habitats at the proposed project site

A habitat map is shown in Figure 5.2. The existing site is primarily comprised of Improved agricultural grassland (GA1) which was composed of perennial ryegrass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*) and creeping thistle (*Cirsium arevense*) (Plate 5.1). A small field of mature planted laurel (*Prunus laurocerasus*) was recorded in the centre of the site and categorised as Ornamental/non-native shrub (WS3) (Plate 5.1). West of this was a narrow strip of semi-mature poplar (*Populus* sp.) plantation categorised as Broadleaved woodland (WD1) which had poor structural diversity and dominated by a bramble field layer (Plate 5.2). An area of bramble (*Rubus fruticosus* agg.) Scrub (WS1) bordered the Broadleaved woodland (WD1) to the west and south (Plate 5.2). Other habitats at the site included Hedgerows (WL1), Stone walls and other stonework (BL1) and Buildings and artificial surfaces (BL3) (Plate 5.1). Hedgerows (WL1) contained whitethorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*). No watercourses were recorded from the site. The topography of the site is flat, with slope gradient less than 5%. Soils at the site consisted of well drained mineral soils.

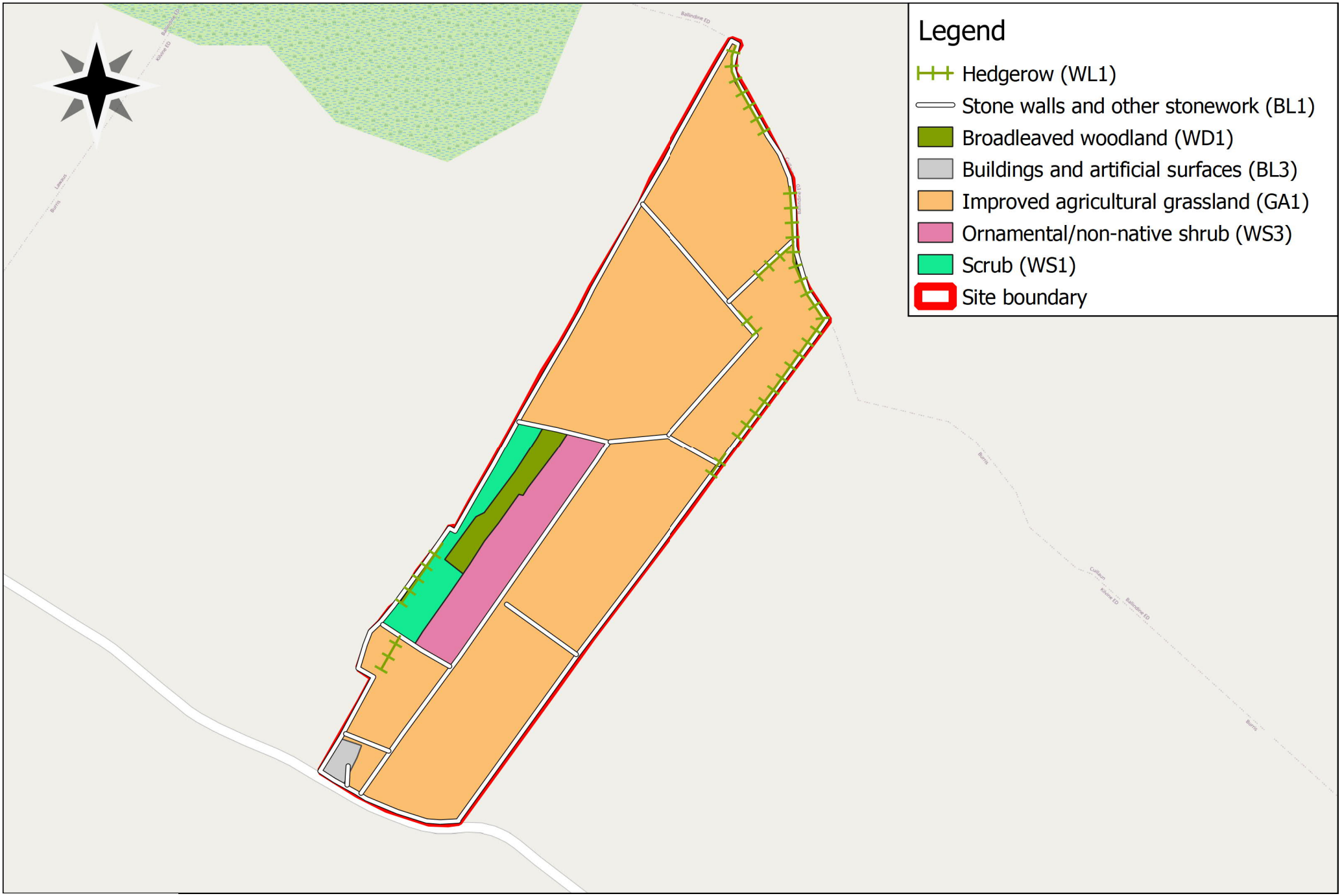


Figure 5.2. Habitats Created By: James Owens Date: 26/09/2020 Scale: 1:6,000

Oran Ecology

Plate 5.1 Improved grassland (GA1), planted laurel (WS3), stone walls (BL1) and Hedgerows (WL1) in the background

Plate 5.2 Poplar plantation (WD1) and adjacent low Scrub (WS1)

5.2.2.1 Invasive Species

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

5.2.2.2 Protected Flora

No botanical species listed under Annex II of the EU Habitats Directive or listed under Flora Protection Order (FPO) or red list of vascular plant species were recorded from the proposed project site.

5.2.3 Significance of flora and habitats

The majority of the habitats encountered at the proposed project site were highly modified and of low ecological significance. Improved agricultural grassland (GA1), bramble Scrub (WS1), Ornamental/non-native shrub (WS3), semi-mature plantation Broadleaved woodland (WD1), Buildings and artificial surfaces (BL3) and Stone walls and other stonework were categorised as *Local Importance (Lower value)* as they were of low biodiversity value and are very common in the surrounding landscape. Hedgerows (WL1) were categorised as Local Importance (Higher value) as they are features of high biodiversity value in a local context and they can provide ecological corridors between features of higher biodiversity value.

No botanical species of high conservation status were recorded from the site.

The proposed replanting lands did not contain habitats listed under Annex I of the EU Habitats Directive.

5.2.4 Fauna

Rabbit (*Oryctolagus cuniculus*) and fox (*Vulpes vulpes*) were recorded at the proposed project site. No evidence of protected mammals were recorded from the site such as badger (*Meles meles*). Incidental sightings of birds included linnet (*Linaria cannabina*), swallow (*Hirundo rustica*), robin (*Erithacus rubecula*), and buzzard (*Buteo buteo*). Hedgerows and treelines provide potentially suitable foraging and commuting habitat for bats.

5.2.5 Significance of fauna

No evidence of species protected under Annexes of the EU Habitats Directive or Wildlife Acts 1976-2012 as amended were recorded from the site. No red listed birds or birds listed on Annex I of the Birds Directive were recorded during the site survey. Birds recorded during the walkover survey are considered to be from local populations of Local Importance (Higher value).

5.2.6 Impact Assessment

5.2.6.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

5.2.6.2 Potential for Effects on Designated Sites

The proposed project site is not located within the boundary of any designated site. Therefore, the potential for direct effects does not exist. An Appropriate Assessment Screening Report has been prepared for this site and is included in the NIS accompanying the planning application.

Potential pathways for effect were not identified with regard to any European or Nationally designated sites in Section 5.2.1.1. **No potential for significant effects have been identified with regard to the proposed Burrish Replant Site .**

5.2.6.3 Potential for Effects: Habitat Loss/Degradation

The habitats recorded at the proposed project site were highly modified. The main habitats encountered had low ecological value. The proposed replanting project will be concentrated on, and will result in the loss of, Improved agricultural grassland (GA1), bramble Scrub (WS1), Ornamental/non-native shrub (WS3), semi-mature plantation Broadleaved woodland (WD1), which were considered to be of Local Importance (Lower value). Field boundaries at the site such as Hedgerows (WL1) and stone walls (BL1) will be retained as part of the proposed project. If forestry is planted too close to Hedgerows (WL1) it may result in a degradation of the habitat.

In the absence of mitigation, predicted effects on habitats is considered to be **Permanent Slight Negative Effect.**

Mitigation

Retain hedgerows with a 5m setback as per Environmental Requirements for Afforestation (DAFM, 2016) guidance.

Residual Effects

Post implementation of mitigation measures, **no significant effects** as a result of the proposed project are anticipated

5.2.6.4 Potential for effects: Loss of Faunal Habitat

No evidence of protected mammal species was recorded on the site. The habitats at the site consisted of highly modified habitats and/or are common in the surrounding landscape. Woody vegetation has the potential to provide important nesting habitats for a locally important bird population. These linear landscape features also have the potential to provide commuting and foraging corridors for bats. The proposed afforestation will result in an increase in woodland edge which can be utilised by bats and the forestry can provide suitable nesting habitat for birds

In the absence of mitigation, predicted effects on habitats is considered to be **Permanent Slight Positive Effect.**

5.2.6.5 Potential for effects: Disturbance to Fauna

No evidence of protected mammal species was recorded from the site. The habitats at the site consisted of highly modified habitats and are common in the surrounding landscape. Hedgerows and woody vegetation have the potential to provide important nesting habitats for a locally important bird population. If site clearance works were to be undertaken within the bird nesting season there is the potential for nesting birds to be disturbed or injured.

In the absence of mitigation, predicted effects on habitats is considered to be **Temporary Slight Negative Effect.**

Mitigation

Works will be undertaken outside of the bird nesting season (1st March to 31st August). Linear features will be retained, including hedgerows, with a 5m setback as per Environmental Requirements for Afforestation (DAFM, 2016) guidance.

Residual Effects

Post implementation of mitigation measures, **no significant effects** as a result of the proposed project are anticipated

5.2.6.6 Potential for effects: Pollution of Watercourses

No watercourses were recorded within or adjacent to the proposed project site.

Significant Effects are not anticipated.

5.3 SITE 2: MOYNE, CO. ROSCOMMON

5.3.1 Receiving Environment

5.3.1.1 Designated Nature Conservation Sites

European Sites

Special Areas of Conservation (SACs) are protected under the European Union (EU) 'Habitats Directive' (92/43/EEC). Special Protection Areas (SPAs) were initially designated under Directive 79/409/EEC[11], The Directive on the Conservation of Wild Birds ('The Birds Directive'), and are now protected as European (Natura 2000) Sites under the EU 'Habitats Directive'. SACs and SPAs make up the Natura network of sites.

Table 5.3 provides an assessment of the designated sites within the potential zone of influence and Figure 5.3 shows the location of the designated sites in relation to the project.

[11] Amended in 2009, it became the Directive 2009/147/EC

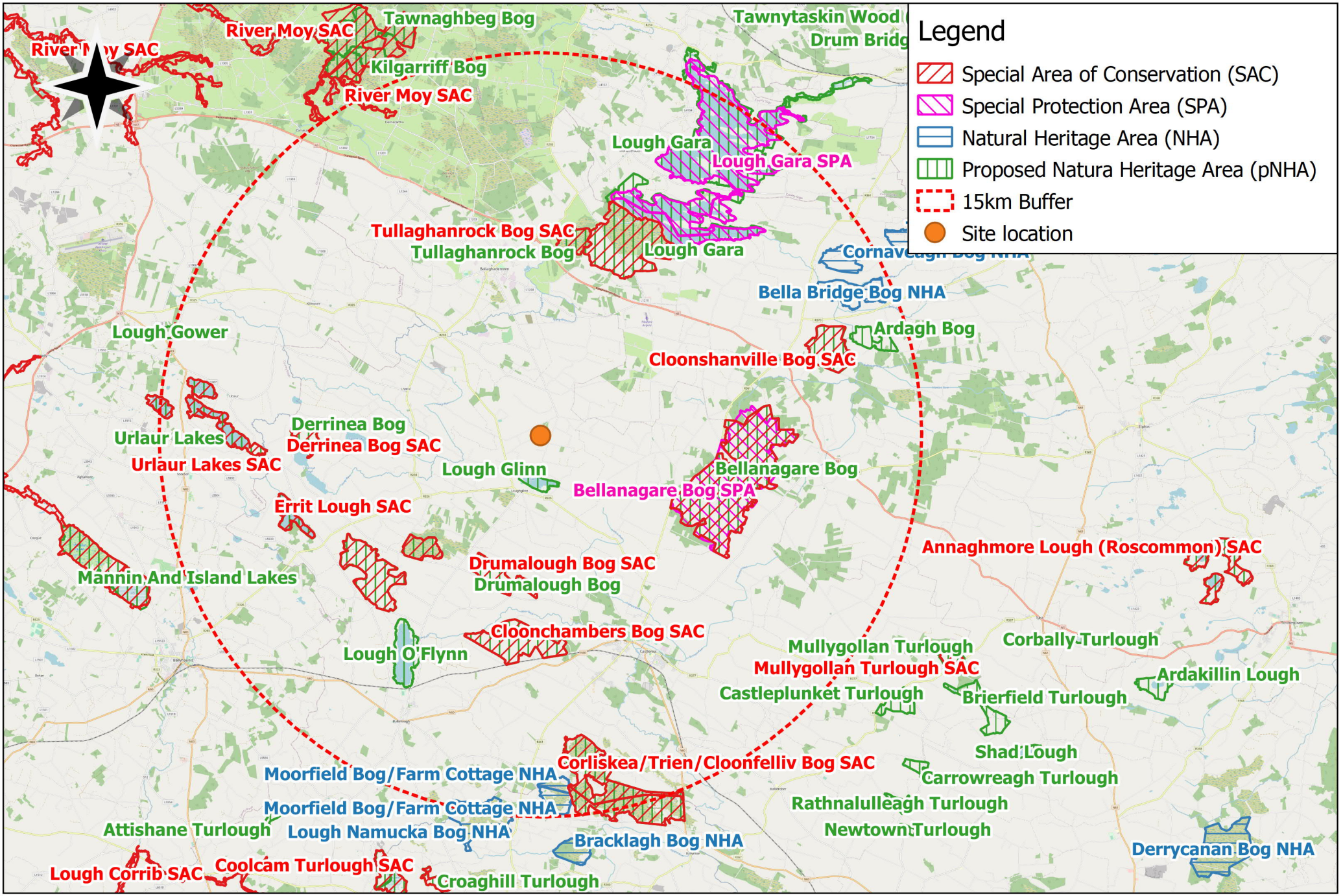


Figure 5.3 . Designated Sites within 15km Created By: James Owens Date: 26/09/2020

Scale: 1:325,000

Oran Ecology

Table 5.3 European Sites within the potential Zone of InfluenceEuropean Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
Drumalough Bog SAC [002338] 5.3km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150]	The proposed Moyne Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The European site is located in a separate hydrological catchment (Suck) to the proposed Moyne Replant Site (Lung) and no hydrological connectivity between the proposed Moyne Replant Site and the European site exists. The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the distance between the proposed Moyne Replant Site and the European site, no potential for indirect effects was identified. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.

Table 5.3 European Sites within the potential Zone of InfluenceEuropean Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
Bellanagare Bog SAC [000592] 5.8km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150]	The proposed Moyne Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. No watercourses which could act as conduits for pollution were recorded at the proposed Moyne Replant Site. The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the distance between the proposed Moyne Replant Site and the European site, no potential for indirect effects was identified. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.
Bellanagare Bog SPA [004105] 5.8km	• Greenland White-fronted Goose (Anser albifrons flavirostris) [A395]	The proposed Moyne Replant Site is located entirely outside the boundary of the SAC, no potential for direct effects exists.	No potential for significant effects have been identified with

Table 5.3 European Sites within the potential Zone of InfluenceEuropean Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		The proposed Moyne Replant Site is located within the 8km core foraging range of Greenland white-fronted goose associated with the SPA (SNH, 2016). However, as per the NPWS Site Synopsis for the SPA, the geese have not been recorded at the SPA for a number of years. The site was comprised of small fields, enclosed by linear features such as treelines/hedgerows, scrub, and which were dominated by tall soft rush vegetation, features which deter usage by geese (Gill, 1996; Larsen and Madsen, 2000). The site does not provide open intensively managed agricultural fields or intact raised bog which is the preferred foraging habitat of the SCI. Due to the above factors, the proposed Moyne Replant Site does not offer suitable foraging habitat for the SCI.	regard to the proposed Moyne Replant Site.

Table 5.3 European Sites within the potential Zone of InfluenceEuropean Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		Potential likely significant effects can be excluded.	
Callow Bog SAC [000595] 6.9km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150]	The proposed Moyne Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. No watercourses which could act as conduits for pollution were recorded at the proposed Moyne Replant Site. The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the distance between the proposed Moyne Replant Site and the European site, no potential for indirect effects was identified. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.

Table 5.3 European Sites within the potential Zone of InfluenceEuropean Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
Tullaghanrock Bog SAC [002354] 7.1km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150]	The proposed Moyne Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. No watercourses which could act as conduits for pollution were recorded at the proposed Moyne Replant Site. The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the distance between the proposed Moyne Replant Site and the European site, no potential for indirect effects was identified. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.
Cloonchambers Bog SAC [000600] 7.3km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150]	The proposed Moyne Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists.	No potential for significant effects have been identified with

Table 5.3 European Sites within the potential Zone of InfluenceEuropean Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		The European site is located in a separate hydrological catchment (Suck) to the proposed Moyne Replant Site (Lung) and no hydrological connectivity between the proposed Moyne Replant Site and the European site exists. The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the distance between the proposed Moyne Replant Site and the European site, no potential for indirect effects was identified. Potential likely significant effects can be excluded.	regard to the proposed Moyne Replant Site.
Carrowbehy/Caher Bog SAC [000597] 7.6km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150]	The proposed Moyne Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists.	No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.

Table 5.3 European Sites within the potential Zone of InfluenceEuropean Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		The European site is located in a separate hydrological catchment (Suck) to the proposed project site (Lung) and no hydrological connectivity between the proposed Moyne Replant Site and the European site exists. The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the distance between the proposed Moyne Replant Site and the European site, no potential for indirect effects was identified. Potential likely significant effects can be excluded.	
Derrinea Bog SAC [000604] 8.8km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150]	The proposed Moyne Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. No watercourses which could act as conduits for pollution were	No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.

Table 5.3 European Sites within the potential Zone of InfluenceEuropean Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		recorded at the proposed Moyne Replant Site. The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the distance between the proposed Moyne Replant Site and the European site, no potential for indirect effects was identified. Potential likely significant effects can be excluded.	
Lough Gara SPA [004048] 9.1km	• Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] • Whooper Swan (Cygnus cygnus) [A038]	The proposed Moyne Replant Site is located entirely outside the boundary of the SPA, no potential for direct effects exists. The proposed Moyne Replant Site is located outside the 8km core foraging range of Greenland white-fronted goose and the 5km core foraging range for whooper swan associated with the SPA.	No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.

Table 5.3 European Sites within the potential Zone of InfluenceEuropean Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		Potential likely significant effects are not anticipated.	
Errit Lough SAC [000607] 9.8km	• Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140]	The proposed Moyne Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The European site is located up-catchment of the proposed Moyne Replant Site. No surface water connectivity was identified between the proposed Moyne Replant Site and the SAC. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.
Urlaur Lakes SAC [001571] 10.8km	• Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140]	The proposed Moyne Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The European site is located up-catchment of the proposed Moyne Replant Site. No surface water connectivity was identified	No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.

Table 5.3 European Sites within the potential Zone of InfluenceEuropean Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		between the proposed Moyne Replant Site and the SAC. Potential likely significant effects can be excluded.	
Cloonshanville Bog SAC [000614] 11.0km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150] • Bog woodland [91D0]	The proposed Moyne Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. No watercourses which could act as conduits for pollution were recorded at the proposed Moyne Replant Site. The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the distance between the proposed Moyne Replant Site and the European site, no potential for indirect effects was identified. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.

Table 5.3 European Sites within the potential Zone of InfluenceEuropean Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
Corliskea/Trien/Cloonfelliv Bog SAC [002110] 11.9km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150] • Bog woodland [91D0]	The proposed Moyne Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The European site is located in a separate hydrological catchment (Suck) to the proposed Moyne Replant Site (Lung) and no hydrological connectivity between the proposed Moyne Replant Site and the European site exists. The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the distance between the proposed Moyne Replant Site and the European site, no potential for indirect effects was identified. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.

Table 5.3 European Sites within the potential Zone of InfluenceEuropean Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
River Moy SAC [002298] 13.8km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150] • Alkaline fens [7230] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] • Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]* • Austropotamobius pallipes (White-clawed Crayfish) [1092] • Petromyzon marinus (Sea Lamprey) [1095] • Lampetra planeri (Brook Lamprey) [1096] • Salmo salar (Salmon) [1106] • Lutra lutra (Otter) [1355]	The proposed Moyne Replant Site is located entirely outside the boundary of the SAC, no potential for direct effects exists. The proposed Moyne Replant Site is located in a separate surface water catchment (Upper Shannon) to the SAC (Moy) and therefore no hydrological connectivity between the proposed Moyne Replant Site and the European site exists. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.

Nationally Designated Importance

Nationally designated sites consist of Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA). Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation. A list of pNHAs were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated. Prior to statutory designation, pNHAs are subject to limited protection, in the form of agri-environmental farm planning schemes, Forest Service requirement for NPWS approval for afforestation on pNHA land and recognition of the ecological value of pNHAs by Planning and Licencing Authorities.

Table 5.4 provides an assessment of the designated sites within the potential zone of influence (including information of potential hydrological connectivity and pathways for effect as appropriate for the aquatic or terrestrial designated habitat) and Figure 5.3 shows the location of the designated sites in relation to the project.

Table 5.4 Nationally Designated Sites within the potential Zone of Influence

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
Lough Glinn pNHA [001644]	1.5km	Lake/Wetlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Drumalough Bog pNHA [001632]	5.3km	Peatlands	No surface water or groundwater connectivity exists between the proposed development site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Bellanagare Bog pNHA [000592]	5.8km	Peatlands	No surface water or groundwater connectivity exists between the proposed project site and

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Lough Gara pNHA [000587]	6.9km	Lake/Wetlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Tullaghanrock Bog pNHA [002013]	7.1km	Peatlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Cloonchambers Bog pNHA [000600]	7.3km	Peatlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			distance, nature and scale of the proposed project significant effects are not anticipated.
Carrowbehy/Caher Bog pNHA [000597]	7.6km	Peatlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Derrinea Bog pNHA [000604]	8.8km	Peatlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Errit Lough pNHA [000607]	9.8km	Lake/Wetlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Urlaur Lakes pNHA [001571]	10.8km	Lake/Wetlands	No surface water or groundwater connectivity exists between the

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			proposed project site and the designated site. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Cloonshanville Bog pNHA [000614]	11.0km	Peatlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Corliskea/Trien/Cloonfelliv Bog pNHA [002110]	11.9km	Peatlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Bella Bridge Bog NHA [000591]	12.2km	Peatlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Cornaveagh Bog NHA [000603]	13.1km	Peatlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Moorfield Bog/Farm Cottage NHA [000221]	13.4km	Peatlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Lough Namucka Bog NHA [000220]	14.4km	Peatlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially dependent peatland habitats. Due to distance, nature and scale

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			of the proposed project significant effects are not anticipated.
Ardagh Bog pNHA [001222]	12.8km	Peatlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Lough Gower pNHA [000523]	14.8km	Lake/Wetlands	No surface water or groundwater connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed project significant effects are not anticipated.

5.3.2 Habitats at the proposed project site

A habitat map is shown in Figure 5.4. The proposed project site is primarily composed of species-poor Wet grassland (GS4) fields (Plate 5.3). This habitat is characterised by dominant soft rush (*Juncus effusus*), Yorkshire fog (*Holcus lanatus*), creeping bent (*Agrostis stolonifera*) and creeping buttercup (*Ranunculus repens*). A small area of the southern fields also contained purple moor-grass (*Molinia caerulea*) within the Wet grassland (GS4). Willow (*Salix* sp.) dominated Scrub (WS1) which also contained downy birch (*Betula pubescens*) was recorded to the north of the site (Plate 5.4). An area of Raised bog (PB1) which has been cut for turf in the recent past was recorded to the west of the site. The proposed replanting site contains a narrow strip of this habitat, along with Cutover bog (PB4) to the north-west. Peatland habitat was dominated by ling (*Calluna vulgaris*) and also contained purple moor-grass, cross-leaved heath (*Erica tetralix*), carnation sedge (*Carex panicea*) and *Sphagnum capillifolium*. The bog has become degraded from turf cutting and associated drainage.

Fields throughout the site were defined by Hedgerows (WL1), Treelines (WL2) and Drainage ditches (FW4). Hedgerow (WL1) species included whitethorn (*Crataegus monogyna*), blackthorn *(Prunus spinosa*) and gorse (*Ulex europaeus*) and Treelines (WL2) contained willow,

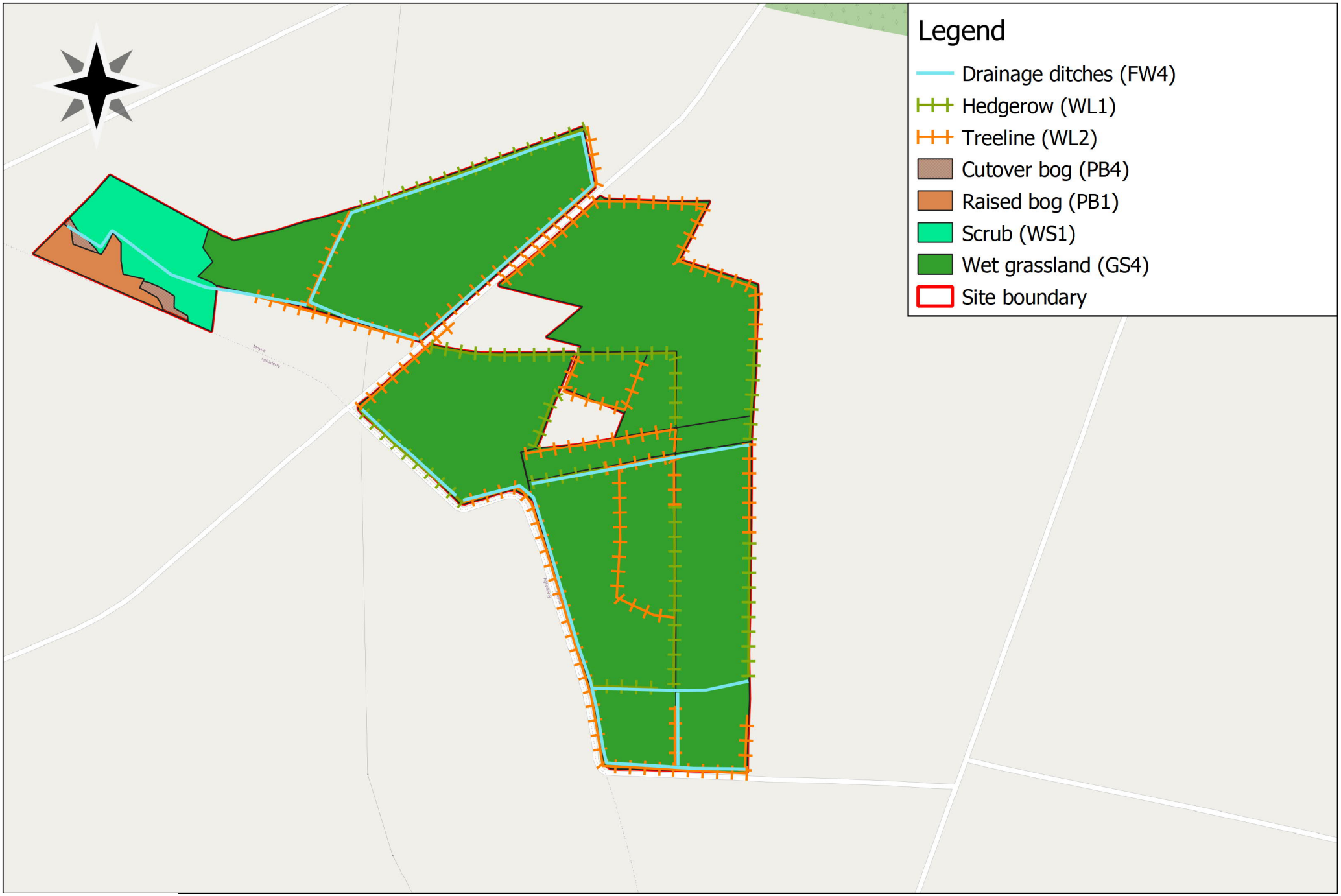


Figure 5.4. Habitats Created By: James Owens Date: 26/09/2020 Scale: 1:7,000

Oran Ecology

ash (*Fraxinus excelsior*) and downy birch. Drainage ditches (FW4) recorded at the site were well vegetated and contained either low quantities of stagnant water or contained no water at all. The topography of the site is flat, with slope gradient less than 5%. Soils at the site consisted of gleyed mineral soils and peaty soils.

No rivers or streams were recorded within or adjacent to the site.

Plate 5.3 Wet grassland (GS4) characteristic of most of the site and Hedgerow (WL1)

Plate 5.4 Wet grassland (GS4), Scrub (WS1) and Treeline (WL2)

5.3.2.1 Invasive Species

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

5.3.2.2 Protected Flora

No botanical species listed under Annex II of the EU Habitats Directive or listed under Flora Protection Order (FPO) or red list of vascular plant species were recorded from the proposed project site.

5.3.3 Significance of flora and habitats

The majority of the habitats encountered at the proposed project site were of limited ecological significance. Wet grassland (GS4) and Drainage ditches (FW4) at the site were categorised as *Local Importance (Lower value)* as they were of low biodiversity value and are very common in the surrounding landscape. Scrub (WS1), Cutover bog (PB4), Hedgerows (WL1) and Treelines (WL2) were categorised as Local Importance (Higher value) as they are features of high biodiversity value in a local context and they can provide ecological corridors between features of higher biodiversity value. The degraded Raised bog (PB1) may correspond with Degraded raised bogs still capable of natural regeneration [7120] habitat which is listed under Annex I of the EU Habitats Directive and is therefore categorised as County Importance.

No botanical species of high conservation status were recorded from the site.

The proposed replanting lands did not contain any additional habitats listed under Annex I of the EU Habitats Directive.

5.3.4 Fauna

Irish hare (*Lepus timidus hibernicus*) was seen at the site during the walkover survey and a number of badger (*Meles meles*) snuffle holes were recorded in the most southerly fields. No badger setts were recorded at the site. No additional signs of protected mammals were recorded from the site. The site did not contain watercourses which could offer potentially suitable habitat for otter. Incidental sightings of birds included blackbird (*Turdus merula*), song thrush (*Turdus philomelos*), robin (*Erithacus rubecula*), and coal tit (*Periparus ater*). Hedgerows, treelines and scrub provide potentially suitable foraging and commuting habitat for bats.

5.3.5 Significance of fauna

Irish hare and badger are protected under the Wildlife Acts 1976-2012 as amended and hare is also listed under Annex V of the EU Habitats Directive. Both species are common in agricultural landscapes and the species are considered to be from local population of Local Importance (Higher value). No red listed birds or birds listed on Annex I of the Birds Directive were recorded during the site survey. Birds recorded during the walkover survey are very common in the Irish countryside and are considered to be from local populations of Local Importance (Lower value).

No evidence of any additional species protected under Annexes of the EU Habitats Directive or Wildlife Acts 1976-2012 as amended were recorded from the site.

5.3.6 Impact Assessment

5.3.6.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

5.3.6.2 Potential for Effects on Designated Sites

The proposed project site is not located within the boundary of any designated site. Therefore, the potential for direct effects does not exist. An Appropriate Assessment Screening Report has been prepared for this site and is included in the NIS accompanying the planning application.

Potential pathways for effect were not identified with regard to any European or Nationally designated sites in Section 5.3.1.1. **No potential for significant effects have been identified with regard to the proposed Moyne Replant Site.**

5.3.6.3 Potential for Effects: Habitat Loss/Degradation

The main habitats encountered at the proposed project site had low ecological value, including Wet grassland (GS4) and Drainages ditches (FW4). Field boundaries at the site such as Hedgerows (WL1) and Treelines (WL2) will be retained as part of the proposed project. A small area of Scrub (WS1) will be lost as part of the proposed development. It is proposed to retain the area of degraded Raised bog (PB1) and Cutover bog (PB4) as part of the project, however, if drainage was carried out close to this habitat it could result in further degradation. In addition, if forestry is planted too close to Hedgerows (WL1)/Treelines (WL2), it may result in a degradation of those habitats.

In the absence of mitigation, predicted effects on habitats is considered to be **Permanent Moderate Negative Effect.**

<u>Mitigation</u>

- No drainage will take place within the most northerly field which borders the area of bog and all trees will be manually pit planted in this field.
- Retain hedgerows/treelines with a 5m setback as per Environmental Requirements for Afforestation (DAFM, 2016) guidance.

<u>Residual Effects</u>

Post implementation of mitigation measures, **no significant effects** as a result of the proposed project are anticipated

5.3.6.4 Potential for effects: Loss of Faunal Habitat

Evidence of badger and hare were recorded from the proposed project site. No badger setts were recorded from the proposed project site. Both of these species are common in agricultural landscapes such as those that occur at the proposed project site. Coniferous forestry has the potential to provide suitable habitat for badger. Although the proposed forestry project will eventually result in a loss of suitable habitat for hare, there is abundant suitable supporting habitat for the species within the surrounding area. Woody vegetation has the potential to provide important nesting habitats for a locally important bird population. These linear

landscape features also have the potential to provide commuting and foraging corridors for bats. The proposed afforestation will result in an increase in woodland edge which can be utilised by bats and the forestry can provide potentially suitable nesting habitat for some bird species.

No significant effects are anticipated.

5.3.6.5 Potential for effects: Disturbance to Fauna

Evidence of badger and hare were recorded from the proposed project site. No badger setts were recorded from the proposed project site. Both of these species are common in agricultural landscapes such as those that occur at the proposed project site. Hedgerows, treelines and scrub have the potential to provide important nesting habitats for birds and the species recorded during the walkover survey were considered to be part of a locally important bird population. If site clearance works were to be undertaken within the bird nesting season there is the potential for nesting birds to be disturbed or injured.

In the absence of mitigation, predicted effects on habitats is considered to be **Temporary Slight Negative Effect.**

Mitigation

Works will be undertaken outside of the bird nesting season (1st March to 31st August). Linear features will be retained, including hedgerows, with a 5m setback as per Environmental Requirements for Afforestation (DAFM, 2016) guidance.

Residual Effects

Post implementation of mitigation measures, **no significant effects** as a result of the proposed project are anticipated

5.3.6.6 Potential for effects: Pollution of Watercourses

Drainage ditches (FW4) recorded at the site were well vegetated and contained either low quantities of stagnant water or contained no water at all. No watercourses of any significance were recorded within or adjacent to the proposed project site.

Significant Effects are not anticipated.

5.4 SITE 3: COOLNAGUN, CO. WESTMEATH

5.4.1 Receiving Environment

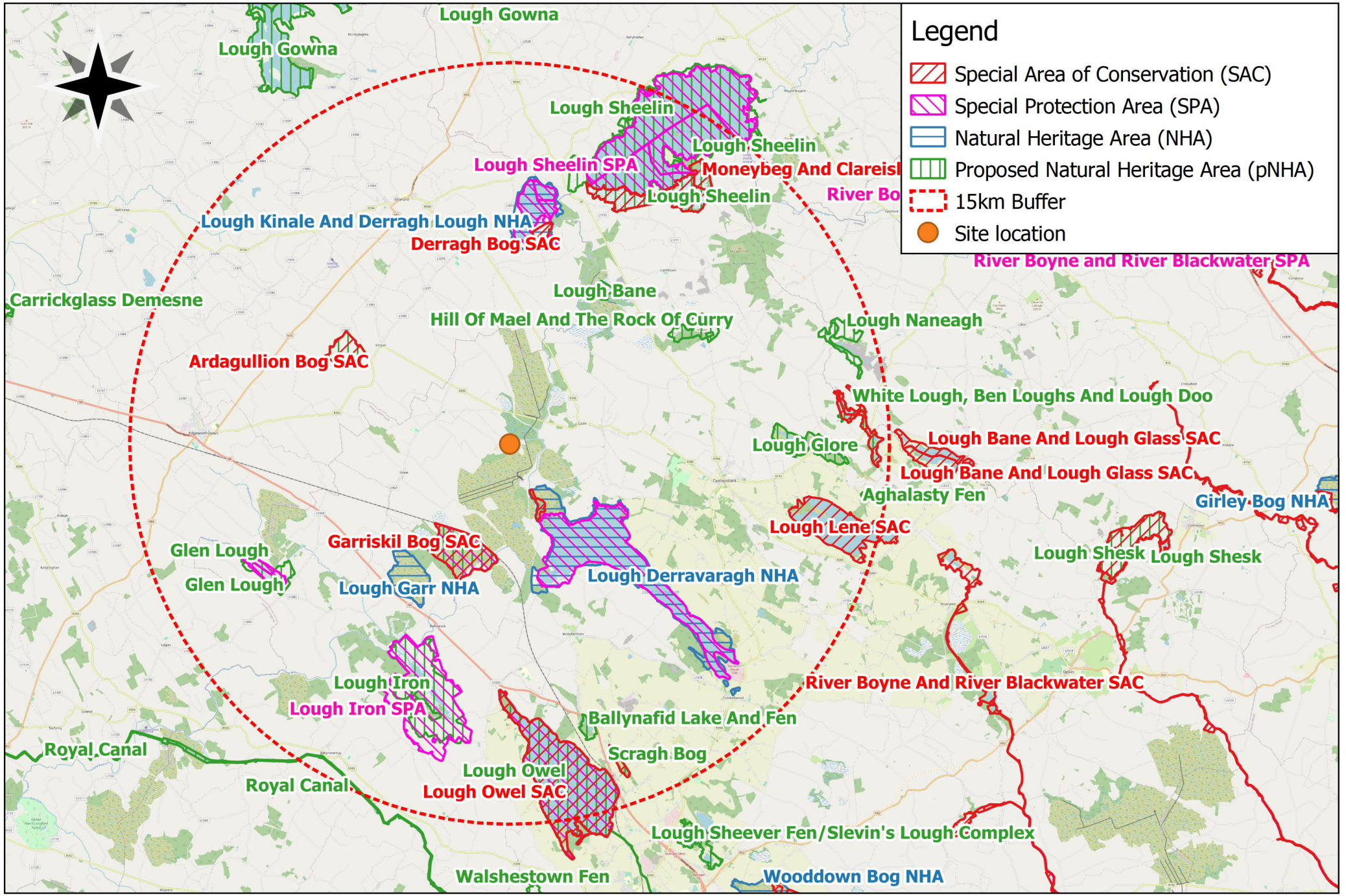
5.4.1.1 Designated Nature Conservation Sites

European Sites

Special Areas of Conservation (SACs) are protected under the European Union (EU) 'Habitats Directive' (92/43/EEC). Special Protection Areas (SPAs) were initially designated under Directive 79/409/EEC[12], The Directive on the Conservation of Wild Birds ('The Birds Directive'), and are now protected as European (Natura 2000) Sites under the EU 'Habitats Directive'. SACs and SPAs make up the Natura network of sites.

Table 5.5 provides an assessment of the designated sites within the potential zone of influence and Figure 5.5 shows the location of the designated sites in relation to the project. NPWS conservation objectives documents and site synopses for the designated sites are available on www.npws.ie.

[12] Amended in 2009, it became the Directive 2009/147/EC



Designated Sites within 15km Created By: James Owens Date: 26/09/2020 Scale: 1:325,000

0 5 10 km

Figure 5.5

Oran Ecology

Table 5.5 European Sites within the potential Zone of Influence

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
Garriskil Bog SAC [000679] 2.0km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150]	The proposed Coolnagun Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The European site is located over 10km surface water distance from the proposed Coolnagun Replant Site and is separated hydrologically from the project site by the intervening Lough Derravaragh waterbody. In addition, the proposed Coolnagun Replant Site is separated from the SAC by the large Coolnagun Bog which has been harvested for peat. The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the hydrological distance between the proposed Coolnagun Replant Site and the European site, no potential for indirect effects was identified. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
Lough Derravarragh SPA [004043] 3.1km (4.6km surface water distance)	• Whooper Swan (Cygnus cygnus) [A038] • Pochard (Aythya ferina) [A059] • Tufted Duck (Aythya fuligula) [A061] • Coot (Fulica atra) [A125] • Wetland and Waterbirds [A999]	The proposed Coolnagun Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The proposed Coolnagun Replant Site is located outside the 1km core foraging range of coot, tufted duck and pochard associated with the SPA. Therefore, no disturbance/displacement effects on those SCI's is anticipated. The proposed Coolnagun Replant Site is located within the 5km core foraging range of whooper swan and the project site has the potential to contain suitable foraging habitat for the SCI, therefore disturbance/displacement related effects cannot be excluded. A stream that flows adjacent to the proposed Coolnagun Replant Site provides surface water connectivity with the SPA downstream. Therefore, there is potential for a deterioration of surface water quality resulting in effects on the wetland supporting habitat.	Potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site. Therefore, further assessment is needed, and the site progresses to Stage 2 of the Appropriate Assessment process.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		Potential likely significant effects cannot be excluded.	
Garriskil Bog SPA [004102] 4.0km	• Greenland White-fronted Goose (Anser albifrons flavirostris) [A395]	The proposed Coolnagun Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The proposed Coolnagun Replant Site is located within the 8km core foraging range of Greenland white-fronted goose and the project site has the potential to contain suitable foraging habitat for the SCI, therefore disturbance/displacement related effects cannot be excluded. Potential likely significant effects cannot be excluded.	Potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site. Therefore, further assessment is needed, and the site progresses to Stage 2 of the Appropriate Assessment process.
Ardagullion Bog SAC [002341] 6.8km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150]	The proposed Coolnagun Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The European site is located up-catchment of the proposed Coolnagun Replant Site and no hydrological connectivity between the proposed works site and the European site exists.	No potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the distance between the proposed Coolnagun Replant Site and the European site, no potential for indirect effects was identified. Potential likely significant effects can be excluded.	
Lough Kinale and Derragh Lough SPA [004061] 7.7km	• Pochard (Aythya ferina) [A059] • Tufted Duck (Aythya fuligula) [A061] • Wetland and Waterbirds [A999]	The proposed Coolnagun Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The proposed Coolnagun Replant Site is located outside the 1km core foraging range of tufted duck and pochard associated with the SPA. Therefore, no potential disturbance/displacement effects on those SCI's were identified. The European site is located up-catchment of the proposed Coolnagun Replant Site and therefore no surface water connectivity exists between the proposed works site and the SPA.	No potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		Potential likely significant effects can be excluded.	
Derragh Bog SAC [002201] 7.8km	• Degraded raised bogs still capable of natural regeneration [7120] • Bog woodland [91D0]*	The proposed Coolnagun Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The European site is located up-catchment of the proposed Coolnagun Replant Site and no hydrological connectivity between the proposed works site and the European site exists. The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the distance between the proposed Coolnagun Replant Site and the European site, no potential for indirect effects was identified. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site.
Lough Iron SPA [004046] 8.3km (16.5km surface water distance)	• Whooper Swan (Cygnus cygnus) [A038] • Wigeon (Anas penelope) [A050] • Teal (Anas crecca) [A052]	The proposed Coolnagun Replant Site is located entirely outside the boundary of	No potential for significant effects have been identified with regard to the

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
	• Shoveler (Anas clypeata) [A056] • Coot (Fulica atra) [A125] • Golden Plover (Pluvialis apricaria) [A140] • Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] • Wetland and Waterbirds [A999]	the SPA, no potential for direct effects exists. The proposed Coolnagun Replant Site is located outside the core foraging range of all of the SCI species for which the SPA is designated. Therefore, no disturbance/displacement effects on the SCI's is anticipated. A stream that flows adjacent to the proposed Coolnagun Replant Site provides surface water connectivity with Lough Derravarragh which in turn is connected to Lough Iron. The proposed Coolnagun Replant Site is located 16.5km surface water distance upstream of the SPA. Given the nature of the proposed project, the hydrological distance that exists and the volume of the intervening Lough Derravarragh, hydrological effects on the wetland supporting habitat are not anticipated. Potential likely significant effects can be excluded.	proposed Coolnagun Replant Site.
Lough Owel SAC [000688] 9.8km	• Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140]	The proposed Coolnagun Replant Site is located entirely outside the boundary of	No potential for significant effects have been identified

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
	• Transition mires and quaking bogs [7140] • Alkaline fens [7230] • Austropotamobius pallipes (White-clawed Crayfish) [1092]	the European site, no potential for direct effects exists. The proposed Coolnagun Replant Site is located within a separate surface water catchment (Upper Shannon) to the European site (Lower Shannon). The proposed Coolnagun Replant Site is located within a separate ground water catchment (Inny) to the European site (GWDTE-Lough Owel Fens & Mires) and therefore no pathway for effects in relation to groundwater dependent QI's was identified. Potential likely significant effects can be excluded.	with regard to the proposed Coolnagun Replant Site.
Lough Owel SPA [004047] 9.8km	• Shoveler (Anas clypeata) [A056] • Coot (Fulica atra) [A125] • Wetland and Waterbirds [A999]	The proposed Coolnagun Replant Site is located entirely outside the boundary of the SPA, no potential for direct effects exists. The proposed Coolnagun Replant Site is located outside the core foraging range of the SCI species for which the SPA is designated. Therefore, no disturbance/displacement effects on the SCI's is anticipated.	No potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		The proposed Coolnagun Replant Site is located within a separate surface water catchment (Upper Shannon) to the European site (Lower Shannon). Potential likely significant effects can be excluded.	
Moneybeg and Clareisland Bogs SAC [002340] 10.0km	• Active raised bogs [7110]* • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the Rhynchosporion [7150]	The proposed Coolnagun Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The European site is located in a separate hydrological sub-catchment (Inny [Shannon] SC 010) to the proposed Coolnagun Replant Site (Inny [Shannon] SC 020) and no hydrological connectivity between the proposed works site and the European site exists. The peatland habitats for which the SAC is designated are terrestrial in nature and rainwater dependent. Due to the ombrotrophic nature of the QI habitats and the distance between the proposed Coolnagun Replant Site and the European site, no potential for indirect effects was identified.	No potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		Potential likely significant effects can be excluded.	
Glen Lough SPA [004045] 10.4km	• Whooper Swan (Cygnus cygnus) [A038]	The proposed Coolnagun Replant Site is located entirely outside the boundary of the SPA, no potential for direct effects exists. The proposed Coolnagun Replant Site is located outside the 5km core foraging range for whooper swan associated with the SPA. No potential pathway for significant effect was identified. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site.
Lough Sheelin SPA [004065] 10.5km	• Great Crested Grebe (Podiceps cristatus) [A005] • Pochard (Aythya ferina) [A059] • Tufted Duck (Aythya fuligula) [A061] • Goldeneye (Bucephala clangula) [A067] • Wetland and Waterbirds [A999]	The proposed Coolnagun Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The proposed Coolnagun Replant Site is located outside the core foraging range of the SCI species for which the SPA is designated. Therefore, no disturbance/displacement effects on those SCI's is anticipated.	No potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		The European site is located up-catchment of the proposed Coolnagun Replant Site and therefore no surface water connectivity exists between the proposed works site and the SPA. Potential likely significant effects can be excluded.	
Lough Lene SAC [002121] 11.3km	• Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] • Austropotamobius pallipes (White-clawed Crayfish) [1092]	The proposed Coolnagun Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The proposed Coolnagun Replant Site is located within a separate surface water catchment (Upper Shannon) to the European site (Boyne). No potential for indirect effects was identified. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site.
Scragh Bog SAC [000692] 12.5km	• Transition mires and quaking bogs [7140] • Alkaline fens [7230] • Hamatocaulis vernicosus (Slender Green Feather-moss) [6216]	The proposed Coolnagun Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists.	No potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		The proposed Coolnagun Replant Site is located within a separate surface water catchment (Upper Shannon) to the European site (Lower Shannon). The proposed Coolnagun Replant Site is located within a separate ground water catchment (Inny) to the European site (GWDTE-Lough Owel Fens & Mires). No potential for indirect effects was identified. Potential likely significant effects can be excluded.	
White Lough, Ben Loughs and Lough Doo SAC [001810] 12.9km	• Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] • Austropotamobius pallipes (White-clawed Crayfish) [1092]	The proposed Coolnagun Replant Site is located entirely outside the boundary of the European site, no potential for direct effects exists. The proposed Coolnagun Replant Site is located within a separate surface water catchment (Upper Shannon) to the European site (Boyne). No potential for indirect effects was identified. Potential likely significant effects can be excluded.	No potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site.

Nationally Designated Importance

Nationally designated sites consist of Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA). Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation. A list of pNHAs were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated. Prior to statutory designation, pNHAs are subject to limited protection, in the form of agri-environmental farm planning schemes, Forest Service requirement for NPWS approval for afforestation on pNHA land and recognition of the ecological value of pNHAs by Planning and Licencing Authorities.

Table 5.6 provides an assessment of the designated sites within the potential zone of influence and Figure 5.5 shows the location of the designated sites in relation to the project. NPWS conservation objectives documents and site synopses for the designated sites are available on www.npws.ie.

Table 5.6 Nationally Designated Sites within the potential Zone of Influence

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
Lough Derravarragh NHA [000684]	2.0km (3.0km surface water distance)	Lake/Birds	The proposed project site is located entirely outside the boundary of the designated site, no potential for direct effects exists. The proposed Coolnagun Replant Site is located outside the 1km core foraging range of coot, tufted duck and pochard associated with the pNHA. Therefore, no disturbance/displacement effects on those spcies is anticipated. The proposed Coolnagun Replant Site is located within the 5km core foraging range of whooper swan and the project site has the potential to contain suitable foraging habitat for the species for which the pNHA is designated, therefore disturbance/displacement related effects cannot be excluded. Surface water connectivity has been identified between the proposed project site and the designated site. The potential for

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			pollution related indirect impacts as a result of the proposed project exists.
Garriskil Bog pNHA [000679]	3.9km	Peatlands/Birds	The proposed Coolnagun Replant Site is located within the 8km core foraging range of Greenland white-fronted goose and the project site has the potential to contain suitable foraging habitat for the SCI, therefore disturbance/displacement related effects cannot be excluded. No surface water connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Lough Garr Bog NHA [001812]	5.9km	Peatlands	No surface water connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Ardagullion Bog pNHA [002069]	6.8km	Peatlands	No surface water connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Lough Bane pNHA [001721]	6.8km	Lake/Peatlands	No surface water connectivity exists between the proposed project site and the designated site. No pathway for effect has

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Hill of Mael and the Rock of Curry pNHA [000681]	7.7km	Limestone pavement and grassland	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially dependent habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Lough Kinale and Derragh Lough NHA [000985]	7.7km	Peatlands/Birds	No surface water connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated. The proposed project site is located outside the core foraging range of mute swan, pochard and tufted duck, for which the NHA has been designated.
Lough Iron pNHA [000687]	8.3km (16.5km surface water distance)	Lake/Wetlands/Birds	The proposed project site is located entirely outside the boundary of the designated site, no potential for direct effects exists. A stream that flows adjacent to the proposed project site provides surface water connectivity with Lough Derravarragh which in turn is connected to Lough Iron. The proposed project site is located 16.5km surface water distance

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			upstream of the SPA. Given the nature of the proposed project, the hydrological distance that exists and the volume of the intervening Lough Derravarragh, hydrological effects on the wetland habitat are not anticipated. The proposed project site is located outside the core foraging range of the bird species for which the pNHA has been designated.
Lough Owel pNHA [000688]	9.8km	Lake/Fen/Mire	No surface water connectivity exists between the proposed project site and the designated site. The proposed Coolnagun Replant Site is located within a separate surface water catchment (Upper Shannon) to the European site (Lower Shannon). The proposed Coolnagun Replant Site is located within a separate ground water catchment (Inny) to the European site (GWDTE-Lough Owel Fens & Mires) and therefore no pathway for effects in relation to groundwater dependent habitats was identified. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Glen Lough pNHA [001687]	9.9km	Lake/Birds	The proposed project site is located outside the core foraging range of the bird species for which the pNHA has been designated. No surface water connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Lough Sheelin pNHA [000987]	10.0km	Lake/Birds	The proposed project site is located outside the core foraging

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			range of the bird species for which the pNHA has been designated. No surface water connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Lough Gore pNHA [000686]	10.4km	Lake	No surface water connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Ballynafid Lake and Fen pNHA [000673]	11.0km	Lake/Fen	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Scragh Bog SAC pNHA [000692]	12.5km	Fen	No surface water connectivity exists between the proposed project site and the designated site. The proposed Coolnagun Replant Site is located within a separate ground water catchment (Inny) to the European site (GWDTE-Lough Owel Fens & Mires). No potential for indirect effects was identified. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
White Lough, Ben Loughs and Lough Doo pNHA [001810]	12.9km	Lake	No surface water connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed project

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			significant effects are not anticipated.
Lough Naneagh pNHA [001814]	13.0km	Lake/Fen	No surface water connectivity or groundwater connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Aghalasty Fen pNHA [000672]	14.0km	Fen	No surface water or groundwater connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Royal Canal pNHA [002103]	14.6km	Canal/Watercourse	No surface water connectivity exists between the proposed project site and the designated site. Due to distance, nature and scale of the proposed project significant effects are not anticipated.

5.4.2 Habitats at the proposed project site

A habitat map is shown in Figure 5.6. The majority of the proposed project site is comprised of Improved agricultural grassland (GA1) with wet grassland influences (Plate 5.5). This habitat is found in the fields north of an access track into the site, which was categorised as Spoil and bare ground (ED2). South of this access track are three Wet grassland (GS4) fields (Plate 5.6). Species composition in the Improved agricultural grassland (GA1) fields consisted of perennial ryegrass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), tussocks of soft rush (*Juncus effusus*) and abundant creeping thistle (*Cirsium arvense*). The fields of Wet grassland (GS4) contained rank tall vegetation at the time of the site visit and was dominated by tall soft rush. These fields also contained creeping bent (Agrostis stolonifera), Yorkshire fog, meadowsweet (*Filipendula ulmaria*) and nettle (*Urtica dioica*). A small strip of Dr calcareous and neutral grassland (GS1) was recorded adjacent to the river which forms the northern boundary of the site, along its western length. This habitat formed where material had been excavated and side cast from the river in past arterial drainage works. The main species consisted of common knapweed (*Centaurea nigra*), bird's-foot trefoil (*Lotus corniculatus*) and common bent (*Agrostis capillaris*)

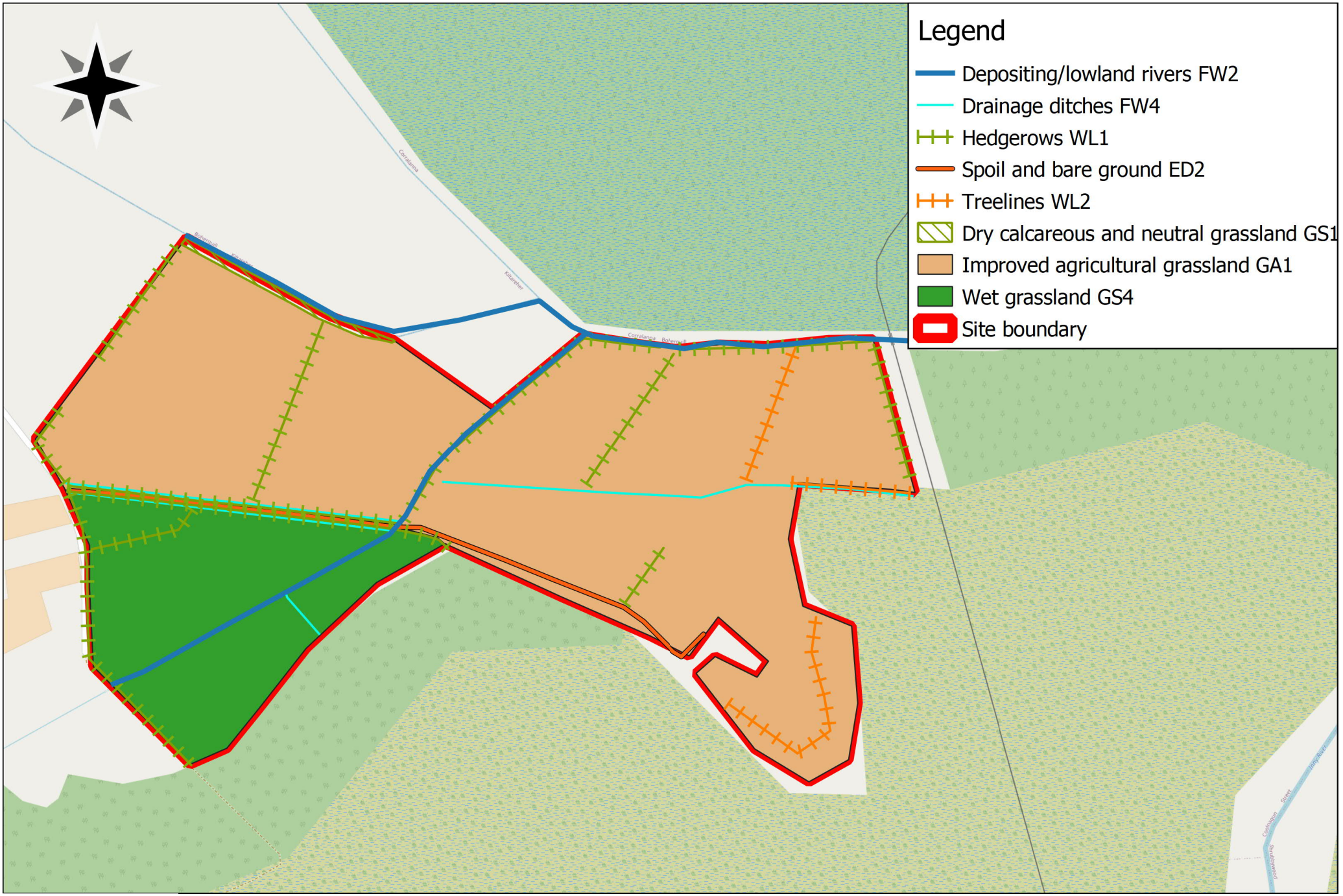


Figure 5.6. Habitats Created By: James Owens Date: 26/09/2020 Scale: 1:11,000

Oran Ecology

Drainage ditches (FW4) were recorded along some fields boundaries and were generally well vegetated and contained a low flow of water. Hedgerows (WL1) and Treelines (WL2) demarcated most field boundaries at the site (Plate 5.5 and Plate 5.6). Hedgerows (WL1) were composed of whitethorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) and Treelines (WL2) were dominated by ash (*Fraxinus excelsior*) and willow (*Salix* sp.). A river formed the northern site boundary and flowed in an easterly direction (Plate 5.7). The river had been canalised in the past and consisted of glide habitat. A stream flowed through the site in a south-west to north-east direction and flowed into the river along the northern site boundary. This watercourse also consisted of glide habitat and contained emergent vegetation in parts such as common reed (*Phragmites australis*) and branched bur-reed (*Sparganium erectum*). Both watercourses were categorised as Depositing/lowland rivers (FW2).

Overhead powerlines also bisect the site.

The topography of the site is flat, with slope gradient less than 5%. Soils at the site consisted of gleyed mineral soils and cutover peat soils.

Plate 5.5 Improved grassland (GA1) and Hedgerow (WL1)

Plate 5.6 Wet grassland (GS4), Hedgerow (WL1) and Treeline (WL2)

Plate 5.7 Example of Depositing/lowland rivers (FW2)

5.4.2.1 Invasive Species

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

5.4.2.2 Protected Flora

No botanical species listed under Annex II of the EU Habitats Directive or listed under Flora Protection Order (FPO) or red list of vascular plant species were recorded from the proposed project site.

5.4.3 Significance of flora and habitats

The majority of the habitats encountered at the proposed project site were of limited ecological significance. Improved agricultural grassland (GA1), rank Wet grassland (GS4) and Spoil and bare ground (ED2) and Drainage ditches (FW4) at the site were categorised as *Local Importance (Lower value)* as they were of low biodiversity value and are very common in the surrounding landscape. Dry calcareous and neutral grassland (GS1), Depositing/lowland rivers (FW2), Hedgerows (WL1) and Treelines (WL2) were categorised as Local Importance (Higher value) as they are features of high biodiversity value in a local context and they can provide ecological corridors between features of higher biodiversity value.

No botanical species of high conservation status were recorded from the site.

The proposed replanting lands did not contain any additional habitats listed under Annex I of the EU Habitats Directive.

5.4.4 Fauna

Badger snuffle holes were recorded in some of the eastern fields at the site. No badger setts were recorded at the site. No signs of otter were recorded from a survey along the watercourses present at the site, although the two rivers have the potential to offer suitable supporting habitat for otter. No additional signs of protected mammals were recorded from the site. Incidental sightings of birds included blackbird (*Turdus merula*), hooded crow (*Corvus cornix*), robin (*Erithacus rubecula*), chaffinch (*Fringilla coelebs*), wood pigeon (*Columba palumbus*), swallow (*Hirundo rustica*), blue tit (*Cyanistes caeruleus*) and kestrel (*Falco tinnunculus*). Hedgerows and treelines provide potentially suitable foraging and commuting habitat for bats.

5.4.5 Significance of fauna

Badger is protected under the Wildlife Acts 1976-2012 as amended. Badger is common and widespread in agricultural landscapes and the surrounding area is considered to host a population of Local Importance (Higher value). No red listed birds or birds listed on Annex I of the Birds Directive were recorded during the site survey. Birds recorded during the walkover survey are considered to be from local populations of Local Importance (Higher value).

No evidence of any additional species protected under Annexes of the EU Habitats Directive or Wildlife Acts 1976-2012 as amended were recorded from the site.

5.4.6 Impact Assessment

5.4.6.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

5.4.6.2 Potential for Effects on Designated Sites

The proposed project site is not located within the boundary of any designated site. Therefore, the potential for direct effects does not exist.

Potential pathways for effect were identified with regard to Lough Derravaragh SPA, in addition to Lough Derravaragh NHA and Garriskil Bog pNHA in Section 5.4.1.1. A NIS has been prepared and post implementation of mitigation measures, it concluded that there is no potential for the proposed project to result in adverse effects on Lough Derravaragh SPA and Garriskil Bog pNHA (See the NIS accompanying the planning application). The boundaries of Lough Derravaragh NHA and Garriskil Bog pNHA are contiguous with Lough Derravaragh SPA and Garriskil Bog SPA and therefore the mitigation measures outlined in the NIS will also prevent the proposed project from having a significant effect on the nationally designated sites.

Potential pathways for effect were not identified with regard to any additional European or Nationally designated sites in Section 5.4.1.1. **No potential for significant effects have been identified with regard to the proposed Coolnagun Replant Site.**

5.4.6.3 Potential for Effects: Habitat Loss/Degradation

The main habitats within the proposed development footprint had low ecological value, including Improved agricultural grassland (GA1), Wet grassland (GS4), Spoil and bare ground 9ED2), Buildings and artificial surfaces (BL3) and Drainages ditches (FW4). Field boundaries at the site such as Hedgerows (WL1) and Treelines (WL2) and the Dry calcareous and neutral grassland (GS1) will be retained as part of the proposed project. If forestry is planted too close to Hedgerows (WL1)/Treelines (WL2), it may result in a degradation of those habitats.

In the absence of mitigation, predicted effects on habitats is considered to be **Permanent Slight Negative Effect.**

Mitigation

- Retain hedgerows/treelines with a 5m setback as per Environmental Requirements for Afforestation (DAFM, 2016) guidance.

Residual Effects

Post implementation of mitigation measures, **no significant effects** as a result of the proposed project are anticipated

5.4.6.4 Potential for effects: Loss of Faunal Habitat

Evidence of badger was recorded from the proposed project site. However, no badger setts were recorded from the proposed project site. Badger is common in agricultural landscapes such as those that occur at the proposed project site. Coniferous forestry has the potential to provide

suitable habitat for badger. Hedgerows and treelines have the potential to provide important nesting habitats for birds and the species recorded during the walkover survey were considered to be part of a locally important bird population. These linear landscape features also have the potential to provide commuting and foraging corridors for bats. The proposed afforestation will result in an increase in woodland edge which can be utilised by bats and the forestry can provide potentially suitable nesting habitat for some bird species.

No significant effects are anticipated.

5.4.6.5 Potential for effects: Disturbance to Fauna

Evidence of badger was recorded from the proposed project site. However, no badger setts were recorded from the proposed project site. Badger is common in agricultural landscapes such as those that occur at the proposed project site. Hedgerows and treelines have the potential to provide important nesting habitats for a locally important bird population. If site clearance works were to be undertaken within the bird nesting season there is the potential for nesting birds to be disturbed or injured.

In the absence of mitigation, predicted effects on habitats is considered to be **Temporary Slight Negative Effect.**

Mitigation

Works will be undertaken outside of the bird nesting season (1st March to 31st August). Linear features will be retained, including hedgerows, with a 5m setback as per Environmental Requirements for Afforestation (DAFM, 2016) guidance.

Residual Effects

Post implementation of mitigation measures, **no significant effects** as a result of the proposed project are anticipated

5.4.6.6 Potential for effects: Pollution of Watercourses

Two significant watercourses were recorded at the site, a stream that flowed through the site in a north-eastern direction and a stream which formed the northern boundary of the site. Drainage ditches (FW4) recorded at the site were well vegetated and contained either stagnant water with a low flow or small quantities of water. The proposed replanting site has the potential to result in pollution of watercourses from increased sediment, increased nutrients and chemicals entering the streams from forestry activities such as ground cultivation and drainage, use of fertilisers and use of chemicals. The ground at the site was flat and therefore the main potential for impact is if drainage channels associated with forestry are directly discharging to the watercourses.

In the absence of mitigation, predicted effects on watercourses is considered to be **Long-term Moderate Negative Effect.**

Mitigation

- A 10m water setback will be established along all streams.
- A 5m water setback will be established along all drains that discharge directly to the streams

- All ground preparation, drainage works and use of chemicals and fertiliser will done in accordance with Forest Service best practice as per Environmental Requirements for Afforestation (DAFM, 2016) and Forestry Standards Manual (DAFM, 2015).

Residual Effects

Post implementation of mitigation measures, **no significant effects** as a result of the proposed project are anticipated

5.5 SITE 4: TREANMANAGH, CO. CLARE

5.5.1 Receiving Environment

5.5.1.1 Designated Nature Conservation Sites

European Sites

Special Areas of Conservation (SACs) are protected under the European Union (EU) 'Habitats Directive' (92/43/EEC). Special Protection Areas (SPAs) were initially designated under Directive 79/409/EEC[13], The Directive on the Conservation of Wild Birds ('The Birds Directive'), and are now protected as European (Natura 2000) Sites under the EU 'Habitats Directive'. SACs and SPAs make up the Natura network of sites.

Table 5.7 provides an assessment of the designated sites within the potential zone of influence and Figure 5.7 shows the location of the designated sites in relation to the project.

[13] Amended in 2009, it became the Directive 2009/147/EC

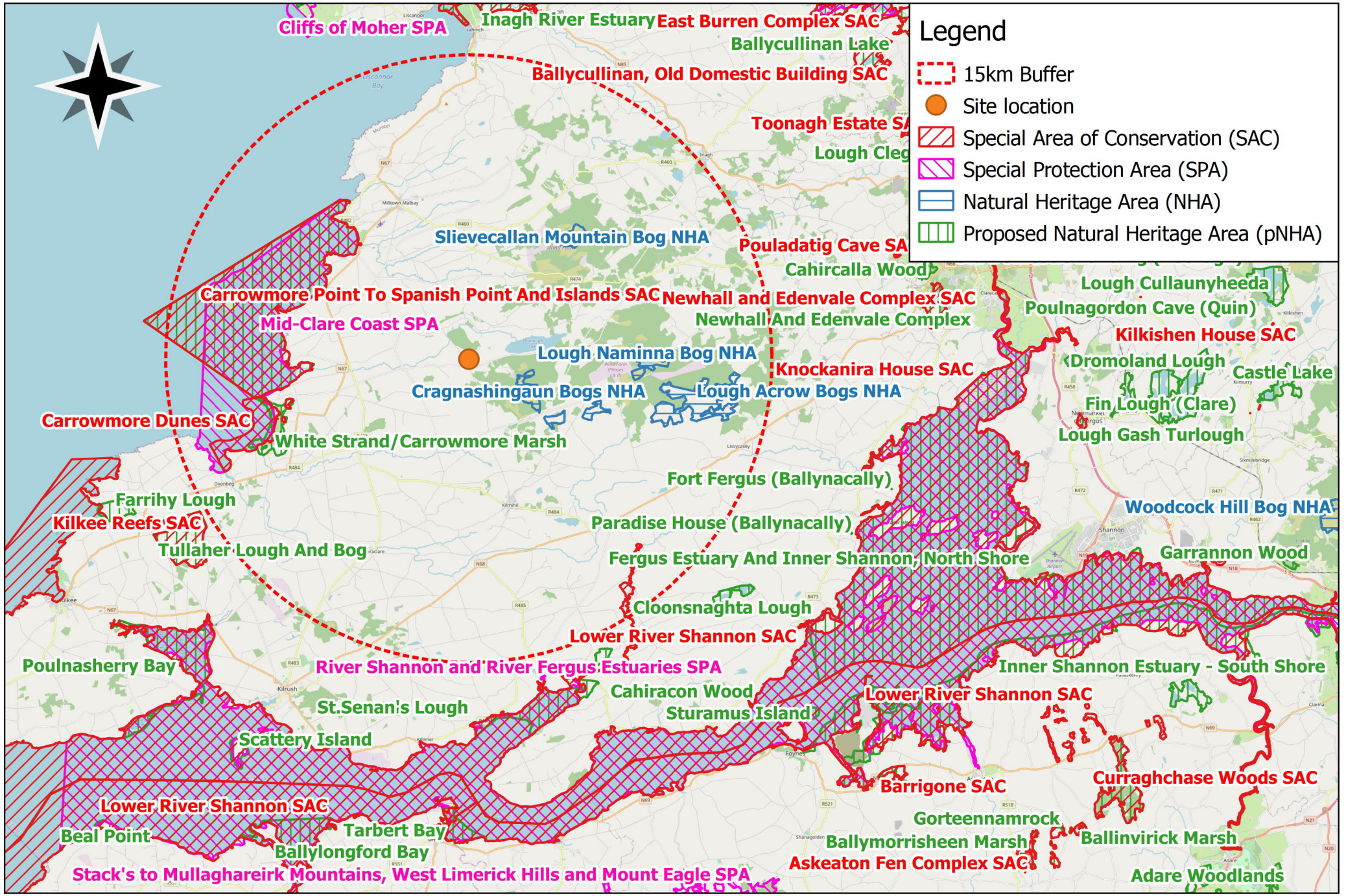


Figure 5.7. Designated Sites within 15km Created By: James Owens Date: 26/09/2020 Scale: 1:400,000

Oran Ecology

Table 5.7 European Sites within the potential Zone of Influence

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
Carrowmore Point to Spanish Point and Islands SAC [001021] 7.6km (9.4km surface water distance)	• Coastal lagoons [1150] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Petrifying springs with tufa formation (Cratoneurion) [7220]	The proposed Treanmanagh Replant Site is located entirely outside the boundary of the SAC, no potential for direct effects exists. A watercourse which forms part of the northern site boundary provides surface water connectivity with the SAC downstream. Therefore, there is the potential for the proposed Treanmanagh Replant Site to result in a deterioration of water quality affecting QI habitats. Potential likely significant effects cannot be excluded.	Potential for significant effects have been identified with regard to the proposed Treanmanagh Replant Site. Therefore, further assessment is needed.
Mid-Clare Coast SPA [004182] 7.6km (9.4km surface water distance)	• Cormorant (Phalacrocorax carbo) [A017] • Barnacle Goose (Branta leucopsis) [A045] • Ringed Plover (Charadrius hiaticula) [A137] • Sanderling (Calidris alba) [A144] • Purple Sandpiper (Calidris maritima) [A148]	The proposed Treanmanagh Replant Site is located entirely outside the boundary of the SPA, no potential for direct effects exists. A watercourse which forms part of the northern site boundary provides surface water connectivity with the SPA	Potential for significant effects have been identified with regard to the proposed Treanmanagh Replant Site. Therefore, further assessment is needed.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
	• Dunlin (Calidris alpina) [A149] • Turnstone (Arenaria interpres) [A169] • Wetland and Waterbirds [A999]	downstream. Therefore, there is the potential for the proposed Treanmanagh Replant Site to result in a deterioration of water quality affecting wetland supporting habitat. The proposed works site is within the 15km core foraging range of the SCI species barnacle goose. There is the potential for the SCI to utilise the proposed project site as foraging grounds. Potential likely significant effects cannot be excluded.	
Carrowmore Dunes SAC [002250] 8.9km	• Reefs [1170] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	The proposed Treanmanagh Replant Site is located entirely outside the boundary of the SAC, no potential for direct effects exists. The proposed Treanmanagh Replant Site is located over 8km from the SAC, therefore the potential for the proposed project to result in effects on terrestrially dependent QI habitats and species does not exist. The proposed works site has surface water connectivity with the Atlantic Ocean via	No potential for significant effects have been identified with regard to the proposed Treanmanagh Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
		the Annageeragh River which discharges to Lough Donnell (10km surface water distance), and which in turn is over 2km coastal distance from the European site. Due to the nature and scale of the proposed project, the hydrological distance that exists between the project site and the SAC (over 12km) and the volume of the intervening waterbodies, which include Lough Donnell (12.5ha in area) and the Atlantic Ocean, potential pollution related effects are not anticipated. Potential likely significant effects can be excluded.	
Lower River Shannon SAC [002165] 12.4km	• Sandbanks which are slightly covered by sea water all the time [1110] • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Perennial vegetation of stony banks [1220]	The proposed Treanmanagh Replant Site is located entirely outside the boundary of the SAC, no potential for direct effects exists. The proposed Treanmanagh Replant Site is located in a separate surface water catchment (Mal Bay) to the SAC (Shannon Estuary North) and therefore no surface water connection exists. No pathway for indirect effects between the proposed project and the designated site exists.	No potential for significant effects have been identified with regard to the proposed Treanmanagh Replant Site.

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
	• Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410] • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] • Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] • Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] • Petromyzon marinus (Sea Lamprey) [1095] • Lampetra planeri (Brook Lamprey) [1096]	Potential likely significant effects can be excluded.	

European Site and Distance from proposed development	Qualifying Interest(s) / Special Conservation Interest Species	Likely Zone of Impact Screening	Possibility of Likely Significant Effects
	• Lampetra fluviatilis (River Lamprey) [1099] • Salmo salar (Salmon) [1106] • Tursiops truncatus (Common Bottlenose Dolphin) [1349] • Lutra lutra (Otter) [1355]		

Nationally Designated Importance

Nationally designated sites consist of Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA). Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation. A list of pNHAs were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated. Prior to statutory designation, pNHAs are subject to limited protection, in the form of agri-environmental farm planning schemes, Forest Service requirement for NPWS approval for afforestation on pNHA land and recognition of the ecological value of pNHAs by Planning and Licencing Authorities.

Table 5.8 provides an assessment of the designated sites within the potential zone of influence and Figure 5.7 shows the location of the designated sites in relation to the project.

Table 5 8 Nationally Designated Sites within the potential Zone of Influence

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
Cragnashingaun Bogs NHA [002400]	2.2km	Peatlands	No surface water connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
Slievecallan Mountain Bog NHA [002397]	7.1km	Peatlands	No surface water connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			significant effects are not anticipated.
Carrowmore Point To Spanish Point And Islands pNHA [001021]	7.6km	Coastal habitats	The proposed project site is located entirely outside the boundary of the designated site, no potential for direct effects exists. Surface water connectivity has been identified between the proposed project site and the designated site. The potential for pollution related indirect impacts as a result of the proposed project exists.
Lough Naminna Bog NHA [002367]	7.8km	Peatlands	No surface water connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.
White Strand/Carrowmore Marsh pNHA [001007]	8.9km	Coastal habitats/Dunes	No direct surface water connectivity exists between the proposed project site and the designated site. Due to the nature and scale of the proposed project, the hydrological distance that exists between the project site and the SAC and the volume of the intervening waterbodies,

Designated sites	Distance from proposed replanting site	Main Feature of Interest	Potential Pathway for Effect
			which include Lough Donnell and the sea, potential pollution related effects are not anticipated.
Lough Acrow Bogs NHA [002421]	9.2km	Peatlands	No surface water connectivity exists between the proposed project site and the designated site. No pathway for effect has been identified between the proposed project site and the terrestrially based and rainwater dependent peatland habitats. Due to distance, nature and scale of the proposed project significant effects are not anticipated.

5.5.2 Habitats at the proposed project site

A habitat map is shown in Figure 5.8. The existing site is primarily comprised of Wet grassland (GS4) which varied in species composition throughout the site. Most of the Wet grassland (GS4) habitat was composed of relatively species-poor vegetation which was dominated by soft rush (Juncus effusus), Yorkshire fog (*Holcus lanatus*) and meadowsweet (*Filipendula ulmaria*) (Plate 5.8). Smaller areas of more species-rich Wet grassland (GS4) were interspersed with rush dominated grassland in the centre of the site. Fields of semi-improved Wet grassland (GS4) was recorded to the south of the agricultural access track, which was categorised as Spoil and bare ground (ED2), and was dominated by Yorkshire fog, soft rush, cock's-foot grass (*Dactylis glomerata*), meadow buttercup (*Ranunculus acris*), sorrel (*Rumex acetosa*) and meadow vetchling (*Lathyrus pratensis*) (Plate 5.9). Wet grassland (GS4) areas with greater species richness was recorded within the centre of the site and were composed of carnation sedge (*Carex panicea*), crested dog's-tail (*Cynosurus cristatus*), sharp-flowered rush (*Juncus acutiflorus*), devil's-bit scabious (*Succisa pratensis*), meadow thistle (*Cirsium dissectum*) and tormentil (*Potentilla erecta*) (Plate 5.10). These consisted of a very small area along the eastern site boundary and larger but fragmented pocket in the centre of the site.

Two small pockets of Wet heath (HH3) were also recorded which were characterised by ling heather (*Calluna vulgaris*), tormentil, carnation sedge, devil's bit scabious, purple moor-grass (*Molinia caerulea*) and cross-leaved heath (*Erica tetralix*) (Plate 5.11). A small area of gorse (*Ulex europaeus*) Scrub (WS1) was recorded adjacent to the eastern pocket of Wet heath (HH3). The Wet heath (HH3) along the eastern site boundary also contained encroaching gorse. Bramble (*Rubus fruticosus* agg.) and gorse Scrub (WS1) was recorded at the southern end of the site.

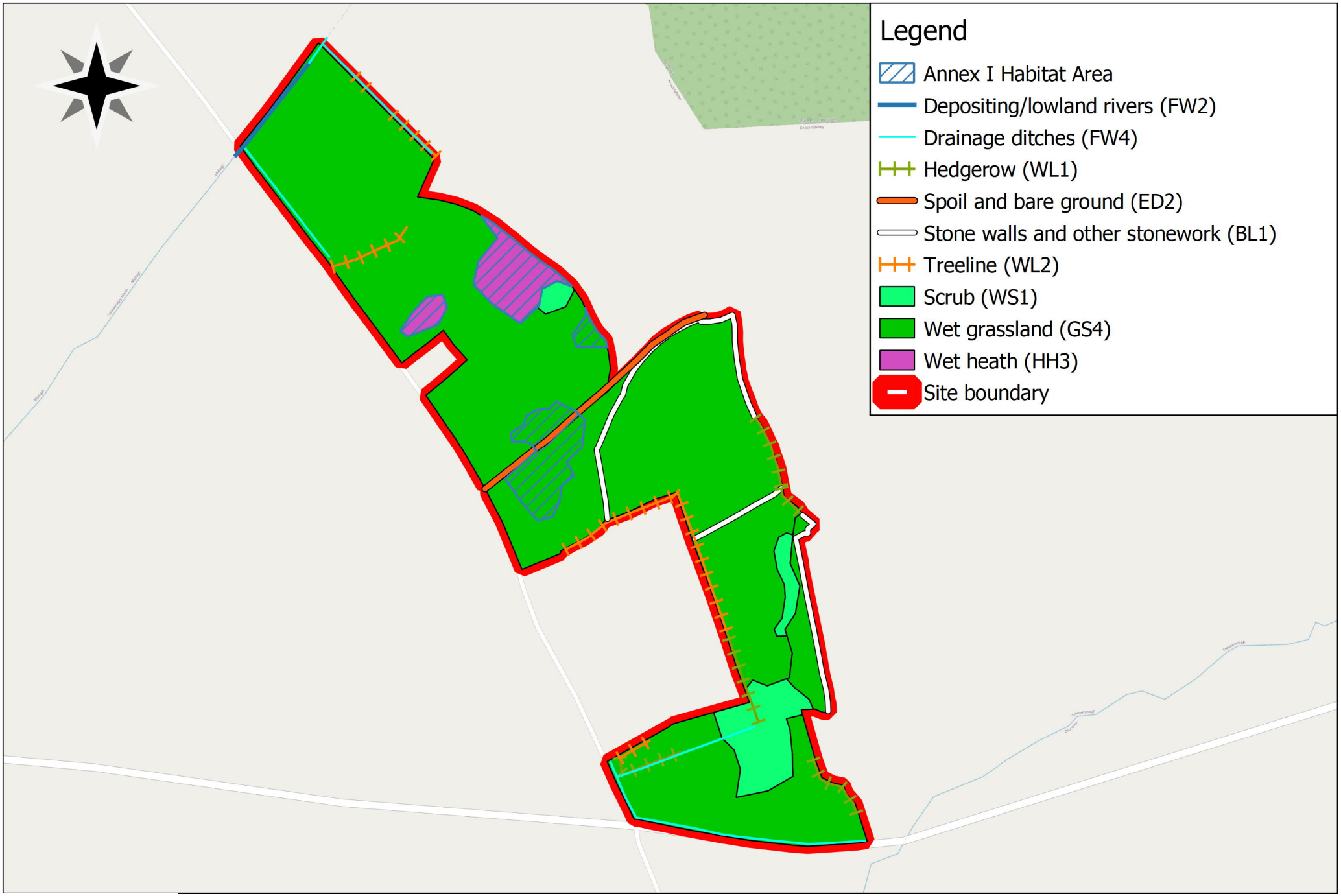


Figure 5.8. Habitats Created By: James Owens Date: 26/09/2020 Scale: 1:8,000

Oran Ecology

Well vegetated drains, categorised as Drainage ditches (FW4), formed some field boundaries and contained either stagnant or very little water. Hedgerows (WL1) and Treelines (WL2) were also recorded along some field boundaries (Plate 5.9). Hedgerows (WL1) contained whitethorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*). Treelines (WL2) contained willow (Salix sp.) and sycamore (*Acer pseudoplatanus*). Stone walls were recorded along the central fields within the site and were categorised as Stone walls and other stonework (BL1) (Plate 5.9). A small stream which was overgrown with brambles and contained a low flow of water, formed part of the northern site boundary and was categorised as Depositing/lowland rivers (FW2) (Plate 5.12). The topography of the site was mainly flat or gently sloping, with slope gradient less than 10%. Soils at the site consisted of poorly drained mineral soils and small pockets of peaty soil.

Plate 5.8 Wet grassland (GS4) and Scrub (WS1) at the southern end of the site

Plate 5.9 Semi-improved Wet grassland (GS4) recently mowed with Hedgerow (WL1) and stone wall (BL1)

Plate 5.10 Example of species-rich Wet grassland (GS4)

Plate 5.11 Wet heath (HH3) and encroaching gorse on the slope

Plate 5.12 Small stream (FW2) enclosed with bramble forming northern site boundary

5.5.2.1 Invasive Species

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

5.5.2.2 Protected Flora

No botanical species listed under Annex II of the EU Habitats Directive or listed under Flora Protection Order (FPO) or red list of vascular plant species were recorded from the proposed project site.

5.5.3 Significance of flora and habitats

Most of the Wet grassland (GS4) habitat at the site was relatively species-poor and dominated by soft rush and was assigned *Local Importance (Lower value)*. Two smaller areas of species-rich Wet grassland (GS4) corresponded to the Annex I habitat, *Molinia* meadow (6410). These consisted of a small segment along the eastern site boundary and a fragmented pocket further west, which was surrounded by soft rush dominated grassland. Due to the small size of the eastern area of *Molinia* meadow (6410) but its connection to a larger area of *Molinia* meadow further east, this is assigned *County Importance*. The second area which is also small, along with being fragmented, was classified as *Local Importance (Higher value)*. The two small pockets of Wet heath (HH3) habitat corresponded to Annex I Wet heath (4010). The pocket further west was fragmented, small in size and considered unviable and was classified as *Local Importance (Higher value).* The larger pocket contained encroaching gorse and was considered degraded,

but due to its connection to a larger area of Wet heath further east, it was categorised as *County Importance*.

Depositing/lowland rivers (FW2), Hedgerows (WL1) and Treelines (WL2) were categorised as *Local Importance (Higher value)* as they are features of high biodiversity value in a local context and they can provide ecological corridors between features of higher biodiversity value.

Scrub (WS1), Drainage ditches (FW4) and Stone walls and other stonework (BL1) were categorised as *Local Importance (Lower value)* as they were of low biodiversity value and are very common in the surrounding landscape.

No botanical species of high conservation status were recorded from the site.

5.5.4 Fauna

No evidence of protected mammals were recorded from the site such as badger (*Meles meles*). Incidental sightings of birds included woodpigeon (*Columba palumbus*), snipe (*Gallinago gallinago*), linnet (*Linaria cannabina*), hooded crow (*Corvus cornix*), robin (*Erithacus rubecula*), and pheasant (*Phasianus colchicus*). Hedgerows and treelines provide potentially suitable foraging and commuting habitat for bats.

Devil's-bit scabious was recorded within parts of the northern half of the site. No evidence of marsh fritillary was recorded during targeted surveys.

5.5.5 Significance of fauna

No evidence of species protected under Annexes of the EU Habitats Directive or Wildlife Acts 1976-2012 as amended were recorded from the site. No red listed birds or birds listed on Annex I of the Birds Directive were recorded during the site survey. Birds recorded during the walkover survey are considered to be from local populations of *Local Importance (Higher value).*

5.5.6 Impact Assessment

5.5.6.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

5.5.6.2 Potential for Effects on Designated Sites

The proposed project site is not located within the boundary of any designated site. Therefore, the potential for direct effects does not exist.

Potential pathways for effect were identified with regard to Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA, in addition to Carrowmore Point To Spanish Point And Islands pNHA in Section 5.5.1.1. A NIS has been prepared and post implementation of mitigation measures, it concluded that there is no potential for the proposed project to result in adverse effects on Carrowmore Point to Spanish Point and Islands SAC and Mid-Clare Coast SPA (See the NIS accompanying the planning application). The boundaries of Carrowmore Point To Spanish Point And Islands pNHA are contiguous with Carrowmore Point to Spanish Point and Islands SAC and therefore the mitigation measures outlined in the NIS will also prevent the proposed project from having a significant effect on the nationally designated site.

Potential pathways for effect were not identified with regard to any additional European or Nationally designated sites in Section 5.5.1.1. **Significant effects on designated sites as a result of the proposed project are not anticipated.**

5.5.6.3 Potential for Effects: Habitat Loss/Degradation

The majority of the proposed project site consisted of habitats which were evaluated as being of Local Importance and are common in the surrounding landscape. A small area of the site consisted of habitats listed under Annex I of the Habitats Directive and were of County Importance with a total area of 1.15ha. Some of this area consisted of two fragmented pockets of *Molinia* meadow and Wet heath which are considered to be unviable areas of Annex I habitat due to their size and fragmented nature. In addition., the larger area of Wet heath further east was assessed as degraded due to encroaching gorse. More extensive and intact Annex I habitat occurs further east of the site. Field boundaries at the site such as Hedgerows (WL1), Treelines (WL2) and stone walls (BL1) will be retained as part of the proposed project. If forestry is planted too close to Hedgerows (WL1) it may result in a degradation of the habitat.

In the absence of mitigation, predicted effects on habitats is considered to be **Permanent Moderate Negative Effect.**

<u>Mitigation</u>

- Retain hedgerows with a 5m setback as per Environmental Requirements for Afforestation (DAFM, 2016) guidance.
- Areas of Annex I habitat will be maintained in current condition and will not be planted.

Residual Effects

Post implementation of mitigation measures, **no significant effects** as a result of the proposed project are anticipated

5.5.6.4 Potential for effects: Loss of Faunal Habitat

No evidence of protected mammal species was recorded from the site. The habitats encountered at the site are common in the surrounding landscape. No evidence of marsh fritillary was recorded during a targeted survey of the site. Woody vegetation has the potential to provide important nesting habitat for birds and the species recorded during the walkover survey were considered to be part of a locally important bird population. Linear landscape features also have the potential to provide commuting and foraging corridors for bats. The proposed afforestation will result in an increase in woodland edge which has the potential to be utilised by bats and the forestry can provide potentially suitable nesting habitat for birds

In the absence of mitigation, predicted effects on faunal habitats is considered to be **Permanent Slight Neutral Effect.**

5.5.6.5 Potential for effects: Disturbance to Fauna

No evidence of protected mammal species was recorded from the site. The habitats at the site consisted of habitats that are common in the surrounding landscape. Hedgerows and woody vegetation have the potential to provide important nesting habitats for a locally important bird population. If site clearance works were to be undertaken within the bird nesting season there is the potential for nesting birds to be disturbed or injured.

In the absence of mitigation, predicted effects on habitats is considered to be **Temporary Slight Negative Effect.**

Mitigation

Works will be undertaken outside of the bird nesting season (1st March to 31st August). Linear features will be retained, including hedgerows, with a 5m setback as per Environmental Requirements for Afforestation (DAFM, 2016) guidance.

Residual Effects

Post implementation of mitigation measures, **no significant effects** as a result of the proposed project are anticipated

5.5.6.6 Potential for effects: Pollution of Watercourses

A small stream formed part of the northern boundary of the site. Drainage ditches (FW4) recorded at the site were well vegetated and contained either stagnant water with a low flow or small quantities of water. The proposed development has the potential to result in pollution of watercourses from increased sediment, increased nutrients and chemicals entering the streams from forestry activities such as ground cultivation and drainage, use of fertilisers and use of chemicals. The ground at the site was flat and therefore the main potential for impact is if drainage channels associated with forestry are directly discharging to the watercourses.

In the absence of mitigation, predicted effects on watercourses is considered to be **Long-term Moderate Negative Effect.**

Mitigation

- A 10m water setback will be established along all streams.
- A 5m water setback will be established along all drains that discharge directly to the streams
- All ground preparation, drainage works and use of chemicals and fertiliser will done in accordance with Forest Service best practice as per Environmental Requirements for Afforestation (DAFM, 2016) and Forestry Standards Manual (DAFM, 2015).

Residual Effects

Post implementation of mitigation measures, **no significant effects** as a result of the proposed project are anticipated.

5.6 CUMULATIVE IMPACTS

If the proposed afforestation of the four replanting sites is approved by the Minister for Agriculture, Food & the Marine under the Forestry Act 2014, it will be a condition of approval that all works undertaken at the sites be undertaken in accordance with Forest Service requirements. The potential impacts associated with the proposed afforestation have been assessed as a neutral impact overall. When the proposed afforestation is considered in-combination with existing and approved projects, plans and activities in the vicinity of the four sites (as described in Section 4), and considering that the forestry guidelines are designed to minimise and prevent impacts to habitats that are outside the site, cumulative effects on sensitive ecological receptors are not anticipated. No new impact pathways are anticipated to be created when considered cumulatively with the other projects.

6.0 HYDROLOGY, HYDROGEOLOGY AND WATER

6.1 INTRODUCTION

An assessment of the potential impacts and associated effect of forestry planting at the four replanting sites on water was undertaken. The assessment focussed on all aspects of water quality, hydrology and hydrogeology of the receiving environment.

6.2 METHODOLOGY

Baseline information on the environmental setting of the proposed afforestation sites in terms of hydrology, hydrogeology and water quality are set out below and the potential for impacts on them are discussed. Where necessary, appropriate mitigation measures to limit any identified significant effects to hydrology, hydrogeology and water quality are recommended.

Baseline information gathered was mainly desk based after a review of the following online sources;

- EPA map viewer for water data (www.epa.ie).
- Geological Survey of Ireland map viewer (wwe.gsi.ie)

The impact assessment was undertaken in accordance with guidelines listed in Section 3 above.

6.3 SITE 1: BURRISH, CO. MAYO

The proposed project site is located within the Clare [Galway] SC 010 Water Framework Directive (WFD) sub-catchment. No watercourses, lakes or ponds were recorded within or adjacent to the proposed replanting site. The nearest watercourse is the Castlereagh stream over 350m away. There are no watercourses at the site which could act as conduits for pollution.

The proposed project site is located within the Clare-Corrib ground waterbody which has a WFD status of 'Good' and a risk rating of 'At risk'.

The Geological Survey of Ireland (GSI) groundwater vulnerability rating for the area is 'Moderate'.

6.3.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

6.3.2 Potential Effects: Surface water and groundwater

Watercourses or waterbodies which could act as significant conduits for pollution were not identified at the proposed project site. Topography at the site was flat (Slope <5%) and soils consisted of mineral soils. There were no drains present at the site. There is no potential for surface water run-off from the site as a result of the proposed project.

The potential effects on surface water quality are as described in the biodiversity section (Section 5). Due to the lack of watercourses at the site, potential effects on surface water quality in the area from surface water pollution are assessed as **No Effect.**

Due to duration, nature and scale of the proposed works, which are similar in activity levels to agriculture in the surrounding area, **no significant effects on groundwater are anticipated**.

6.4 SITE 2: MOYNE, CO. ROSCOMMON

The southern half of the proposed project site is located within the Lung SC 010 Water Framework Directive (WFD) sub-catchment and the northern half of the site is located within the Lung SC 020 Water Framework Directive (WFD) sub-catchment. No rivers/stream, lakes or ponds were recorded within or adjacent to the proposed project. The drainage ditches recorded at the site were well vegetated and contained either low quantities of stagnant water or contained no water at all. The nearest EPA watercourse to the site is the Loughglinn Demesne stream which is over 255m south of the site.

The proposed replanting site is located within the Carrick on Shannon ground waterbody which has a WFD status of 'Good' and a risk rating of 'At risk'.

The Geological Survey of Ireland (GSI) groundwater vulnerability rating for the area is 'Moderate'.

6.4.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

6.4.2 Potential Effects: Surface water and groundwater

Drainage ditches (FW4) recorded at the site were well vegetated and contained either low quantities of stagnant water or contained no water at all. The topography of the site is flat, with slope gradient less than 5%. Soils at the site consisted of gleyed mineral soils and peaty soils. No rivers or streams were recorded within or adjacent to the site. Therefore, watercourses or waterbodies which could act as conduits for pollution were not identified at the proposed replanting site.

The potential effects on surface water quality are as described in the biodiversity section (Section 5). Due to the lack of significant watercourses at the site, potential effects on surface water quality in the area from surface water pollution are assessed as **No Effect.**

Due to duration, nature and scale of the proposed works, which are similar in activity levels to agriculture in the surrounding area, **no significant effects on groundwater are anticipated**.

6.5 SITE 3: COOLNAGUN, CO. WESTMEATH

The proposed project site is located within the Inny [Shannon] SC 020 Water Framework Directive (WFD) sub-catchment. A small river/stream runs through the site in a north-east direction and flows into another river which forms the northern site boundary. The watercourses which flow through and adjacent to the site are listed by the EPA as the Coolnagun Stream 010 waterbody which has a River Waterbody WFD Status of unassigned and an 'At risk' rating of under review. The Coolnagun Stream 010 flows into the adjacent Inny 060 waterbody which has River Waterbody WFD Status of 'Good' and an 'At Risk' rating of 'Not at risk'. An EPA Q-Value sampling point, sampled in 2017, is located 4.5km downstream of the proposed project site and has a Q-value rating of '4-Good'.

The proposed project site is located within the Inny ground waterbody which has a WFD status of 'Good' and the risk rating is under review.

The Geological Survey of Ireland (GSI) groundwater vulnerability rating for the majority of the site is 'Low'. A small area at the northern boundary of the site is rated as 'Moderate' and a small area to the east of the site is rated as 'High'.

6.5.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

6.5.2 Potential Effects: Surface water and groundwater

The watercourses which flow from the site have the potential to carry surface water run-off from the site which could result in sediment, nutrients or chemicals polluting watercourses or downstream waterbodies. Topography at the site was flat (Slope <5%) and soils consisted of gleyed mineral soils and cutover peats. Due to the flat topography of the site, significant run-off as a result of drainage works is unlikely.

The potential effects on surface water quality are as described in the biodiversity section (Section 5). As river/stream flows through the site and another river flows adjacent to the site, potential effects on surface water quality in the area from surface water pollution are assessed as **Temporary Moderate Negative effects.**

Due to duration, nature and scale of the proposed works, which are similar in activity levels to agriculture in the surrounding area, **no significant effects on groundwater are anticipated**.

Mitigation

- Water setbacks and water protection measures as per Environmental Requirements for Afforestation (DAFM, 2016) and Forestry Standards Manual (DAFM, 2015) will be adhered to.
- All ground preparation, drainage works and use of chemicals and fertiliser will done in accordance with Forest Service best practice as per Environmental Requirements for Afforestation (DAFM, 2016) and Forestry Standards Manual (DAFM, 2015).

Residual Effects

Post implementation of mitigation measures, **no significant effects** as a result of the proposed project are anticipated.

6.6 SITE 4: TREANMANAGH, CO. CLARE

The proposed project site is located within the Annageeragh SC 010 Water Framework Directive (WFD) sub-catchment. A small stream runs adjacent to part of the northern site boundary. The watercourse is listed by the EPA as Carrownagry North and part of the Annageeragh 030 waterbody which has a River Waterbody WFD Status of 'Good' and an 'At risk' rating of 'Not at Risk'. An EPA Q-Value sampling point, sampled in 2006, is located 3.5km downstream of the proposed project site and has a Q-value rating of '4-Good'.

The proposed project site is located within the Milltown Malbay ground waterbody which has a WFD status of 'Good' and the risk rating is under review.

The Geological Survey of Ireland (GSI) groundwater vulnerability rating for the majority of the site is 'X, with rock at or near the surface'. The remainder of the site is rated as 'Extreme Vulnerability'. The site is located within a 'Locally important aquifer - Bedrock which is Moderately Productive only in Local Zones'.

6.6.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

6.6.2 Potential Effects: Surface water and groundwater

The watercourse which flows adjacent to the site has the potential to carry surface water run-off from the site which could result in sediment, nutrients or chemicals polluting watercourses or downstream waterbodies. Topography at the site was flat to gently sloping (Slope <10%) and soils consisted of gleyed mineral soils and peaty soils. Due to the gently sloping topography of the site, significant run-off as a result of drainage works is unlikely.

The potential effects on surface water quality are as described in the biodiversity section (Section 5). As a stream flows adjacent to the site, potential effects on surface water quality in the area from surface water pollution are assessed as **Temporary Moderate Negative effects.**

Due to duration, nature and scale of the proposed works, which are similar in activity levels to agriculture in the surrounding area, **no significant effects on groundwater are anticipated**.

Mitigation

- Water setbacks and water protection measures as per Environmental Requirements for Afforestation (DAFM, 2016) and Forestry Standards Manual (DAFM, 2015) will be adhered to.
- All ground preparation, drainage works and use of chemicals and fertiliser will done in accordance with Forest Service best practice as per Environmental Requirements for Afforestation (DAFM, 2016) and Forestry Standards Manual (DAFM, 2015).

Residual Effects

Post implementation of mitigation measures, **no significant effects** as a result of the proposed project are anticipated.

6.7 CUMULATIVE IMPACTS

If the proposed afforestation of the four replanting sites is approved, it will be a condition of approval that all works at the sites will be undertaken in accordance with Forest Service requirements. Two sites, Burrish and Moyne, did not contain watercourses or waterbodies of any significance. The potential impacts associated with the proposed afforestation have been assessed as a neutral impact overall. When the proposed afforestation is considered in-combination with existing and approved projects, plans and activities in the vicinity of the four sites, and considering the mitigation measures in place at Coolnagun and Treanmnaagh to minimise and prevent impacts to water quality outside the site, cumulative effects on sensitive hydrological receptors are not anticipated.

7.0 LAND, GEOLOGY AND SOILS

7.1 INTRODUCTION

An assessment of the potential impacts and associated effect of forestry planting at the four replanting sites on land, soils and geology was undertaken. The assessment focussed on all aspects of land, soils and geology of the receiving environment. Economic assets of natural heritage include non-renewable resources such as minerals or soils are dealt with in this section of the report. Transportation infrastructure and land-use practices, which are economic assets of human origin, are discussed in Material Assets in Section 10.

7.2 METHODOLOGY

Baseline information on the environmental setting of the proposed afforestation sites in terms of land, soils and geology are set out below and the potential for impacts on them are discussed. Where necessary, appropriate mitigation measures to limit any identified significant effects to land, soils and geology are recommended.

Baseline information gathered was mainly desk based after a review of the following online sources;

- Geohive (www.geohive.ie).
- Geological Survey of Ireland map viewer (wwe.gsi.ie)

Aerial imagery from Bing Maps and Google Maps was used to assess the land use of the surrounding area. The impact assessment was undertaken in accordance with Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, 2017) and Guidelines on procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2005).

7.3 SITE 1: BURRISH, CO. MAYO

The GSI have mapped bedrock beneath the site as mainly Visean limestone & calcareous shale and this is underlain by a regionally important aquifer. Soil at the site was classified as Deep well drained mineral (Mainly basic).

There are no geological heritage sites or recorded landslides within 10 km of the site and no mineral deposit or mining sites (current or historic) within or adjacent to the proposed area.

Topography at the site was flat (Slope <5%) and soils consisted of mineral soils. Importance of soils and geology at the site are classified as *Medium* as per Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2005) as soils were of medium significance on a local scale and had moderate fertility.

Land use on the site is one of agriculture, predominantly grassland.

7.3.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

7.3.2 Potential Effects

The excavation of site drains and mounding associated with forestry drainage and cultivation will create minor and local soil disturbance. No soil will be removed from the site. The planting of trees will have a negligible effect as this will be done manually using angle notch, pit or slit planting. There will be no disturbance of the underlying geology of the site and therefore no effects in this regard are anticipated. Disturbance to soils is evaluated as a **temporary slight negative effect**.

The change of land use from one of agriculture to forestry is in keeping with the local area, and as such has a neutral impact.

Mitigation

All ground preparation will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015).

Residual Effects

No significant effects on land, geology and soils as a result of the proposed afforestation project are anticipated.

7.4 SITE 2: MOYNE, CO. ROSCOMMON

The GSI have mapped bedrock beneath the site as mainly Visean limestone & calcareous shale and this is underlain by a regionally important aquifer. Soil at the site was classified as Mineral poorly drained (Mainly acidic), Peaty poorly drained mineral (Mainly acidic) and Raised peat.

There are no geological heritage sites or recorded landslides within 7.5 km of the site and no mineral deposit or mining sites (current or historic) within or adjacent to the proposed area.

The topography of the site is flat, with slope gradient less than 5%. Soils at the site consisted of gleyed mineral soils and peaty soils. Importance of soils and geology at the site are classified as *Low-Medium* as per Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2005) as soils were of medium significance on a local scale and had low-moderate fertility and volume of peat underlying the site is moderate on a local scale.

Land use on the site is one of agriculture, predominantly grassland.

7.4.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

7.4.2 Potential Effects

The excavation of site drains and mounding associated with forestry drainage and cultivation will create minor and local soil disturbance. No soil will be removed from the site. The planting of trees will have a negligible effect as this will be done manually using angle notch, pit or slit planting. There will be no disturbance of the underlying geology of the site and therefore no effects in this regard are anticipated. Disturbance to soils is evaluated as a **temporary slight negative effect.**

The change of land use from one of agriculture to forestry is in keeping with the local area, and as such has a neutral impact.

Mitigation

All ground preparation will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015).

Residual Effects

No significant effects on land, geology and soils as a result of the proposed afforestation project are anticipated.

7.5 SITE 3: COOLNAGUN, CO. WESTMEATH

The GSI have mapped bedrock beneath the site as mainly Visean limestone & calcareous shale and this is underlain by a locally important aquifer. Soil at the site was classified as Raised peat and Mineral poorly drained (Mainly acidic).

There are no geological heritage sites or recorded landslides within 1.4 km of the site and no mineral deposit or mining sites (current or historic) within or adjacent to the proposed area.

The topography of the site is flat, with slope gradient less than 5%. Soils at the site consisted of gleyed mineral soils and cutover peat soils. Importance of soils and geology at the site are classified as *Low-Medium* as per Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2005) as soils were of medium significance on a local scale and had low-moderate fertility and volume of peat underlying the site is moderate on a local scale.

Land use on the site is one of agriculture, predominantly grassland.

7.5.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

7.5.2 Potential Effects

The excavation of site drains and mounding associated with forestry drainage and cultivation will create minor and local soil disturbance. No soil will be removed from the site. The planting of trees will have a negligible effect as this will be done manually using angle notch, pit or slit

planting. There will be no disturbance of the underlying geology of the site and therefore no effects in this regard are anticipated. Disturbance to soils is evaluated as a **temporary slight negative effect**.

Land use on the site is one of agriculture, predominantly grassland. The change of land use from one of agriculture to forestry is in keeping with the local area, and as such has a neutral impact.

Mitigation

All ground preparation will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015).

Residual Effects

No significant effects on land, geology and soils as a result of the proposed afforestation project are anticipated

7.6 SITE 4: TREANMANAGH, CO. CLARE

The GSI have mapped bedrock beneath the site as mainly Namurian shale, sandstone, siltstone & coal and this is underlain by a locally important aquifer. Soil at the site was classified as Deep well drained mineral (Mainly acidic), Peaty poorly drained mineral (Mainly acidic), Shallow, rocky, peaty/non-peaty mineral complexes (Mainly acidic), Blanket peat and Shallow peaty poorly drained mineral (Mainly acidic).

There are no geological heritage sites or recorded landslides within 8 km of the site and no mineral deposit or mining sites (current or historic) within or adjacent to the proposed area.

The topography of the site is flat to gently sloping, with slope gradient less than 10%. Soils at the site consisted of gleyed mineral soils and peaty soils. Importance of soils and geology at the site are classified as *Low* as per Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2005) as soils were of low significance on a local scale and were poorly drained and of low fertility and volume of peat underlying the site is small on a local scale.

Land use on the site is one of agriculture, predominantly grassland.

7.6.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

7.6.2 Potential Effects

The excavation of site drains and mounding associated with forestry drainage and cultivation will create minor and local soil disturbance. No soil will be removed from the site. The planting of trees will have a negligible effect as this will be done manually using angle notch, pit or slit planting. There will be no disturbance of the underlying geology of the site and therefore no effects in this regard are anticipated. Disturbance to soils is evaluated as **a temporary slight negative effect.**

The change of land use from one of agriculture to forestry is in keeping with the local area, and as such has a neutral impact.

Mitigation

All ground preparation will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015).

Residual Effects

No significant effects on land, geology and soils as a result of the proposed afforestation project are anticipated

7.7 CUMULATIVE IMPACTS

If the proposed afforestation of the four replanting sites is approved, it will be a condition of approval that all works at the sites will be undertaken in accordance with Forest Service requirements. The potential impacts associated with the proposed afforestation have been assessed as a neutral impact overall. When the proposed afforestation is considered in-combination with existing and approved projects, plans and activities in the vicinity of the four sites, and considering that the forestry guidelines are designed to minimise and prevent impacts to the receiving environment, cumulative effects on land, geology and soils are not anticipated.

8.0 NOISE AND VIBRATION

8.1 INTRODUCTION

An assessment of the potential impacts and associated effect of forestry planting at the four replanting sites on noise and vibration was undertaken. The assessment focussed on all aspects of noise and vibration of the receiving environment.

8.2 METHODOLOGY

Baseline information on the environmental setting of the proposed afforestation sites in terms of noise and vibration are set out below and the potential for impacts on them are discussed. Where necessary, appropriate mitigation measures to limit any identified significant effects to noise and vibration are recommended.

Baseline information gathered was mainly desk based after a review of the following online sources;

- Geohive (www.geohive.ie).

The impact assessment was undertaken in accordance with Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, 2017).

8.3 SITE 1: BURRISH, CO. MAYO

The nearest location which could be sensitive to noise or vibration is a dwelling house located 20m away to the south-east and is partially buffered from the site by agricultural buildings and hedging. The next nearest dwelling is 65m away and is not buffered from the site by any buildings or vegetation.

The general existing noise and vibration climate at the site would be typical of those in rural agricultural locations. Potential sources of noise currently in the vicinity of the site would consist of agricultural machinery and a small amount of road traffic on the local public road.

8.3.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

8.3.2 Potential Effects

Any noise or vibration generated at the site as a result of the replanting works will be mainly associated with use of an excavator for ground preparation, the driving of fencing posts when fencing the site or harvesting machines during future operations. These impacts will be temporary in duration and will create similar noise and vibration levels to those of agricultural machinery used in the surrounding landscape. Noise and vibration at any given sensitive location will vary during the works, depending on the distance of machinery from the receiving properties. The impact of noise and vibration on sensitive locations is assessed as **temporary imperceptible negative effect.**

Mitigation

- Work at the site will be restricted to specified working hours, thereby controlling noise at the site. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause nuisance.
- Machinery will be switched off when not in use.
- All construction plant to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations, 1988 (as amended).

Residual Effects

No significant effects as a result of noise and vibration from the proposed afforestation project are anticipated.

8.4 SITE 2: MOYNE, CO. ROSCOMMON

The nearest location which could be sensitive to noise or vibration is a dwelling house located 14m away in the centre of the site and is partially buffered from the site by a hedgerow on its southern boundary. The next nearest dwelling is located 15m west and buffered from the site by a treeline and hedgerow.

The general existing noise and vibration climate at the site would be typical of those in rural agricultural locations. Potential sources of noise currently in the vicinity of the site would consist of agricultural machinery and a small amount of road traffic on the local public road.

8.4.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

8.4.2 Potential Effects

Any noise or vibration generated at the site as a result of the replanting works will be mainly associated with use of an excavator for ground preparation, the driving of fencing posts when fencing the site or harvesting machines during future operations. These impacts will be temporary in duration and will create similar noise and vibration levels to those of agricultural machinery used in the surrounding landscape. Noise and vibration at any given sensitive location will vary during the works, depending on the distance of machinery from the receiving properties. The impact of noise and vibration on sensitive locations is assessed as **temporary imperceptible negative effect.**

Mitigation

- Work at the site will be restricted to specified working hours, thereby controlling noise at the site. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause nuisance.
- All construction plant to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations, 1988 (as amended).

Residual Effects

No significant effects as a result of noise and vibration from the proposed afforestation project are anticipated.

8.5 SITE 3: COOLNAGUN, CO. WESTMEATH

The nearest location which could be sensitive to noise or vibration is a dwelling house located 30m away to the west and is buffered from the site by hedgerows. The next nearest dwelling is 65m away and buffered from the site by a treeline and hedgerow.

The general existing noise and vibration climate at the site would be typical of those in rural agricultural locations. Potential sources of noise currently in the vicinity of the site would consist of agricultural machinery and a small amount of road traffic on the local public road.

8.5.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

8.5.2 Potential Effects

Any noise or vibration generated at the site as a result of the replanting works will be mainly associated with use of an excavator for ground preparation, the driving of fencing posts when fencing the site or harvesting machines during future operations. These impacts will be temporary in duration and will create similar noise and vibration levels to those of agricultural machinery used in the surrounding landscape. Noise and vibration at any given sensitive location will vary during the works, depending on the distance of machinery from the receiving properties. The impact of noise and vibration on sensitive locations is assessed as **temporary imperceptible negative effect.**

Mitigation

- Work at the site will be restricted to specified working hours, thereby controlling noise at the site. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause nuisance.
- All construction plant to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations, 1988 (as amended).

Residual Effects

No significant effects as a result of noise and vibration from the proposed afforestation project are anticipated.

8.6 SITE 4: TREANMANAGH, CO. CLARE

The nearest location which could be sensitive to noise or vibration is a dwelling house located 5m away and which borders the site to the west. The next nearest dwelling is 10m away on the western site boundary and is partially buffered from the site by treelines.

The general existing noise and vibration climate at the site would be typical of those in rural agricultural locations. Potential sources of noise currently in the vicinity of the site would consist of agricultural machinery and a small amount of road traffic on the local public road.

8.6.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

8.6.2 Potential Effects

Any noise or vibration generated at the site as a result of the replanting works will be mainly associated with use of an excavator for ground preparation, the driving of fencing posts when fencing the site or harvesting machines during future operations. These impacts will be temporary in duration and will create similar noise and vibration levels to those of agricultural machinery used in the surrounding landscape. Noise and vibration at any given sensitive location will vary during the works, depending on the distance of machinery from the receiving properties. The impact of noise and vibration on sensitive locations is assessed as **temporary slight negative effect.**

Mitigation

- Work at the site will be restricted to specified working hours, thereby controlling noise at the site. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause nuisance.
- All construction plant to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations, 1988 (as amended).

Residual Effects

No significant effects as a result of noise and vibration from the proposed afforestation project are anticipated.

8.7 CUMULATIVE IMPACTS

Given the nature and scale of the proposed afforestation projects and the mitigation measures put in place to minimise noise and vibration impacts, significant effects are not anticipated. Noise and vibration associated with the proposed projects will be minimal and similar to those of agricultural activities which exist in rural landscapes. When the proposed afforestation is considered in-combination with existing and approved projects, plans and activities in the vicinity of the four sites, and considering the mitigation to minimise and prevent impacts to the receiving environment, cumulative effects as a result of noise and vibration are not anticipated.

9.0 AIR QUALITY AND CLIMATE

An assessment of the potential impacts and associated effect of forestry planting at the four replanting sites on air quality and climate was undertaken.

9.1 METHODOLOGY

Baseline information on the environmental setting of the proposed afforestation sites in terms of air quality and climate are set out below and the potential for impacts on them are discussed. Where necessary, appropriate mitigation measures to limit any identified significant effects to air quality and climate are recommended.

Baseline information gathered was mainly desk based after a review of the following sources;

- Geohive (www.geohive.ie).
- Air quality data from the EPA map viewer (wwe.epa.ie)
- Walsh (2012) A Summary of Climate Averages for Ireland 1981-2010

The impact assessment was undertaken in accordance with Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, 2017).

9.2 SITE 1: BURRISH, CO. MAYO

The primary land-uses within and in the vicinity of the subject site comprise agriculture with smaller quantities of forestry. Due to the non-industrial nature of afforestation and the general character of the surrounding environment, it is expected that air quality in the existing environment is good, since there are no major sources of air pollution [e.g. heavy industry in the vicinity of the site] and the nearest large urban centre, Claremorris, is over 7km away.

Based on the EPA Air Quality Zones for Ireland, the site is Zone D (rural area) as per Article 6 of the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) where air quality is good to very good based on the air quality limits set by S.I. No. 180 of 2011 – Air Quality Standards Regulations, 2011. The site is located in the Rural West Air Quality Index Region and has an Air Quality Index rating of '2-Good'.

The proposed project site is located in the west of Ireland which has a temperate oceanic climate. The proposed project site is located in a region which had average annual rainfall of 1200-1400mm and average annual temperature of 9-10° C (Walsh, 2012).

9.2.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

9.2.2 Potential Effects

The growth of forestry has no direct atmospheric emissions. There are some minor indirect emissions associated with site preparation, planting and harvesting from vehicular and dust emissions. These will be small in scale and temporary in duration.

The forest plantation will not generate ongoing air emissions. Forestry can contribute positively in carbon sequestration, thereby offsetting the production of greenhouse gases in addition to the production of oxygen This will have a long-term slight positive effect for climate.

Due to the duration, nature and scale of the proposed development, effects on air quality from vehicular emissions and dust are considered to be **temporary Imperceptible Negative Effects**.

No significant negative effects are anticipated with regards to climate. There will be a long-term slight neutral effect on climate associated with the fixation of atmospheric carbon.

Mitigation Measures

All construction machinery will be regularly serviced and maintained in good operational order while on-site, minimising any emissions that are likely to arise.

Residual effects

No significant effects are anticipated with regard to air quality or climate.

9.3 SITE 2: MOYNE, CO. ROSCOMMON

The primary land-uses within and in the vicinity of the subject site comprise agriculture, turf cutting for domestic use and forestry. Due to the non-industrial nature of afforestation and the general character of the surrounding environment, it is expected that air quality in the existing environment is good, since there are no major sources of air pollution [e.g. heavy industry in the vicinity of the site] and the nearest large urban centre, Ballaghadereen, is over 6km away.

Based on the EPA Air Quality Zones for Ireland, the site is Zone D (rural area) as per Article 6 of the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) where air quality is good to very good based on the air quality limits set by S.I. No. 180 of 2011 – Air Quality Standards Regulations, 2011. The site is located in the Rural West Air Quality Index Region and has an Air Quality Index rating of '2-Good'.

The proposed project site is located in the west of Ireland which has a temperate oceanic climate. The proposed project site is located in a region which had average annual rainfall of 1200-1400mm and average annual temperature of 9-10° C (Walsh, 2012).

9.3.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

9.3.2 Potential Effects

The growth of forestry has no direct atmospheric emissions. There are some minor indirect emissions associated with site preparation, planting and harvesting from vehicular and dust emissions. These will be small in scale and temporary in duration.

The forest plantation will not generate ongoing air emissions. Forestry can contribute positively in carbon sequestration, thereby offsetting the production of greenhouse gases.

Due to the duration, nature and scale of the proposed development, effects on air quality from vehicular emissions and dust are considered to be **Temporary Imperceptible Negative Effects**.

No significant negative effects are anticipated with regards to climate. There will be a long-term slight neutral effect on climate associated with the fixation of atmospheric carbon.

Mitigation Measures

All construction machinery will be regularly serviced and maintained in good operational order while on-site, minimising any emissions that are likely to arise.

Residual effects

No significant effects are anticipated with regard to air quality or climate.

9.4 SITE 3: COOLNAGUN, CO. WESTMEATH

The primary land-uses within and in the vicinity of the subject site comprise agriculture, industrial peat extraction and forestry. Due to the non-industrial nature of afforestation and the general character of the surrounding environment, it is expected that air quality in the existing environment is good, since there are no major sources of air pollution [e.g. heavy industry in the vicinity of the site] and the nearest large urban centre, Mullingar, is over 16km away.

Based on the EPA Air Quality Zones for Ireland, the site is Zone D (rural area) as per Article 6 of the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) where air quality is good to very good based on the air quality limits set by S.I. No. 180 of 2011 – Air Quality Standards Regulations, 2011. The site is located in the Rural East Air Quality Index Region and has an Air Quality Index rating of '2-Good'.

The proposed project site is located in the north midlands of Ireland which has a temperate oceanic climate. The proposed project site is located in a region which had average annual rainfall of 1000-1200mm and average annual temperature of 9-10° C (Walsh, 2012).

9.4.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

9.4.2 Potential Effects

The growth of forestry has no direct atmospheric emissions. There are some minor indirect emissions associated with site preparation, planting and harvesting from vehicular and dust emissions. These will be small in scale and temporary in duration.

The forest plantation will not generate ongoing air emissions. Forestry can contribute positively in carbon sequestration, thereby offsetting the production of greenhouse gases.

Due to the duration, nature and scale of the proposed development, effects on air quality from vehicular emissions and dust are considered to be **Temporary Imperceptible Negative Effects**.

No significant negative effects are anticipated with regards to climate. There will be a long-term slight neutral effect on climate associated with the fixation of atmospheric carbon.

Mitigation Measures

All construction machinery will be regularly serviced and maintained in good operational order while on-site, minimising any emissions that are likely to arise.

Residual effects

No significant effects are anticipated with regard to air quality or climate.

9.5 SITE 4: TREANMANAGH, CO. CLARE

The primary land-uses within and in the vicinity of the subject site comprise agriculture, wind energy and forestry. Due to the non-industrial nature of afforestation and the general character of the surrounding environment, it is expected that air quality in the existing environment is good, since there are no major sources of air pollution [e.g. heavy industry in the vicinity of the site] and the nearest large urban centre, Ennis, is over 24km away.

Based on the EPA Air Quality Zones for Ireland, the site is Zone D (rural area) as per Article 6 of the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) where air quality is good to very good based on the air quality limits set by S.I. No. 180 of 2011 – Air Quality Standards Regulations, 2011. The site is located in the Rural West Air Quality Index Region and has an Air Quality Index rating of '3-Good'.

The proposed project site is located in the south-west of Ireland which has a temperate oceanic climate. The proposed project site is located in a region which had average annual rainfall of 1200-1400mm and average annual temperature of 10-11° C (Walsh, 2012).

9.5.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

9.5.2 Potential Effects

The growth of forestry has no direct atmospheric emissions. There are some minor indirect emissions associated with site preparation, planting and harvesting from vehicular and dust emissions. These will be small in scale and temporary in duration.

The forest plantation will not generate ongoing air emissions. Forestry can contribute positively in carbon sequestration, thereby offsetting the production of greenhouse gases.

Due to the duration, nature and scale of the proposed development, effects on air quality from vehicular emissions and dust are considered to be **Temporary Imperceptible Negative Effects**.

No significant negative effects are anticipated with regards to climate. There will be a long-term slight neutral effect on climate associated with the fixation of atmospheric carbon.

Mitigation Measures

All construction machinery will be regularly serviced and maintained in good operational order while on-site, minimising any emissions that are likely to arise.

Residual effects

No significant effects are anticipated with regard to air quality or climate.

9.6 CUMULATIVE IMPACTS

Given the nature and scale of the proposed afforestation projects and the mitigation measures put in place to minimise emissions, significant effects as a result of the proposed replanting projects are not anticipated. Changes to air quality and climate associated with the proposed projects will be minimal. When the proposed afforestation is considered in-combination with existing and approved projects, plans and activities of the four sites, and considering the mitigation to minimise and prevent impacts to the receiving environment, cumulative effects on air quality and climate are not anticipated.

10.0 POPULATION, HUMAN HEALTH AND MATERIAL ASSETS

An assessment of the potential impacts and associated effect of forestry planting at the four replanting sites on population, human health and material assets was undertaken.

10.1 METHODOLOGY

Baseline information on the environmental setting of the proposed afforestation sites in terms of population, human health and material assets are set out below and the potential for impacts on them are discussed. Where necessary, appropriate mitigation measures to limit any identified significant effects to population, human health and material assets are recommended.

Baseline information gathered was mainly desk based after a review of the following online sources;

- Geohive (www.geohive.ie).
- Census of Ireland 2016 (www.cso.ie)

The impact assessment was undertaken in accordance with Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, 2017).

10.2 SITE 1: BURRISH, CO. MAYO

The proposed afforestation site is located in a rural townland, Burrish, Co. Mayo, approximately 8km south-east of Claremorris town, which had a population of 3,687 in the 2016 Census. Irishtown village is located 1.1km south of the site.

Land use at the proposed project site is for agriculture with a small area of commercial broadleaf forestry. Land within the surrounding landscape is used primarily for agriculture with smaller areas of forestry.

Due to the rural nature of the area employment is likely to be focussed primarily on agriculture with various other small commercial activities in the area. Housing density in the surrounding area is medium-low and nearest dwelling is located 20m east of the site.

The nearest community facilities and amenities are located in the village of Irishtown which contains a local school and Catholic church. There are no designated walking routes in the area. There are no tourist attractions within or adjoining the proposed project site.

The proposed project site is accessed via a local road. A number of dwellings are located on the road and therefore current traffic levels are moderate. There will be no significant long-term increases in traffic activity as a result of the proposed project. Traffic anticipated during planting will consist of working vehicles such as an individual excavator (2-3 weeks), an individual tractor for fencing (1-2 days) and 2-3 cars or vans for site operatives (3 weeks). Harvesting and forwarder machines will be used at the site during harvesting operations. Machinery activity at the site will be similar to levels associated with agricultural activities.

All operations at the proposed project site will follow the Forestry Standards Manual (DAFM, 2015) and Code of Best Forest Practice (DAFM, 1998) with regard to health and safety and forest operations.

10.2.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

10.2.2 Potential Effects

The proposed project is located 20m from the nearest dwelling house. Therefore, the proposed project could result in Long-term Moderate Negative Effects.

Due to the temporary nature of proposed works, the nature and scale of the proposed project and it distance from other human habitation and urban areas, **no significant negative effects are anticipated with regard to population, human health or material asserts**. The proposed project has the potential to result in a temporary positive effect in the form of employment. The use of machinery and chemicals (pesticides, hydrocarbons, etc.) during the afforestation works and future forest operations will have the potential to cause a health and safety risk to any workers. This would have a potential temporary negative impact on Human Health.

Mitigation Measures

- Setbacks from dwellings will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015).
- All use of chemicals and fertiliser will be done in accordance with Forest Service best practice as per Environmental Requirements for Afforestation (DAFM, 2016) and Forestry Standards Manual (DAFM, 2015).
- All operations at the proposed project site will follow the Forestry Standards Manual (DAFM, 2015) and Code of Best Forest Practice (DAFM, 1998) with regard to health and safety and forest operations.

Residual effects

No significant effects are anticipated with regard to population, human health or material assets.

10.3 SITE 2: MOYNE, CO. ROSCOMMON

The proposed afforestation site is located in a rural townland, Moyne, Co. Roscommon, approximately 6km south of Ballaghaderreen town, which had a population of 1,808 in the 2016 Census. Loughglinn village is located 1.2km south-west of the site.

Land use at the proposed project site is entirely for agriculture. Land within the surrounding landscape is used primarily for agriculture, forestry and turf cutting for domestic use.

Due to the rural nature of the area employment is likely to be focussed primarily on agriculture with various other small commercial activities in the area. Housing density in the surrounding area is low and the nearest dwelling is located adjacent to the site.

The nearest community facilities and amenities are located in the village of Loughglinn which contains a local school, shop and Catholic church. There are no designated walking routes in the area. There are no tourist attractions within or adjoining the proposed project site.

The proposed project site is accessed via a local road. Three dwellings are located on the road and therefore current traffic levels are low. There will be no significant long-term increases in

traffic activity as a result of the proposed project. Traffic anticipated during planting will consist of working vehicles such as an individual excavator (2-3 weeks), an individual tractor for fencing (1-2 days) and 2-3 cars or vans for site operatives (3 weeks). Harvesting and forwarder machines will be used at the site during harvesting operations. Machinery activity at the site will be similar to levels associated with agricultural activities.

ESB power lines traverse part of the site. It is a requirement of the Forest Service that unplanted corridors a left beneath powerlines.

All operations at the proposed project site will follow the Forestry Standards Manual (DAFM, 2015) and Code of Best Forest Practice (DAFM, 1998) with regard to health and safety and forest operations.

10.3.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

10.3.2 Potential Effects

The proposed project is located adjacent to a dwelling house (14m away). Therefore, the proposed project could result in **Long-term Moderate Negative Effects**.

ESB powerlines traverse the site and if forestry is planted too close to this infrastructure it could result in **Long-term Moderate Negative Effects** on material assets.

Due to the temporary nature of proposed works, the nature and scale of the proposed project and it distance from other human habitation and urban areas, **no significant negative effects are anticipated with regard to population, human health or material assets**. The proposed project has the potential to result in a temporary positive effect in the form of employment. The use of machinery and chemicals (pesticides, hydrocarbons, etc.) during the afforestation works and future forest operations will have the potential to cause a health and safety risk to any workers. This would have a potential temporary negative impact on Human Health.

Mitigation Measures

- Setbacks from dwellings will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015).
- Unplanted corridors will be left beneath power lines in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015).
- All use of chemicals and fertiliser will be done in accordance with Forest Service best practice as per Environmental Requirements for Afforestation (DAFM, 2016) and Forestry Standards Manual (DAFM, 2015).
- All operations at the proposed project site will follow the Forestry Standards Manual (DAFM, 2015) and Code of Best Forest Practice (DAFM, 1998) with regard to health and safety and forest operations.

Residual effects

No significant effects are anticipated with regard to population, human health or material assets.

10.4 SITE 3: COOLNAGUN, CO. WESTMEATH

The proposed afforestation site is located in a rural townland, Coolnagun, Co. Westmeath, approximately 8km north-west of Castlepollard town, which had a population of 1,163 in the 2016 Census. Coole village is located 2.2km north-east of the site.

Land use at the proposed project site is entirely for agriculture. Land within the surrounding landscape is used primarily for agriculture, forestry and industrial peat extraction.

Due to the rural nature of the area employment is likely to be focussed primarily on agriculture and peat harvesting along with various other small commercial activities in the area. Housing density in the surrounding area is low and the nearest dwelling is located 30m from the site.

The nearest community facilities and amenities are located in the village of Coole which contains a local school, shop, medical centre, post office and Catholic church. There are no designated walking routes in the area. There are no tourist attractions within or adjoining the proposed project site.

The proposed project site is accessed via a local road which is a *cul de sac*. A number of dwellings are located on the road and therefore current traffic levels are medium-low. There will be no significant long-term increases in traffic activity as a result of the proposed project. Traffic anticipated during planting will consist of working vehicles such as an an individual excavator (2-3 weeks), an individual tractor for fencing (1-2 days) and 2-3 cars or vans for site operatives (3 weeks). Harvesting and forwarder machines will be used at the site during harvesting operations. Machinery activity at the site will be similar to levels associated with agricultural activities.

ESB power lines traverse part of the site. It is a requirement of the Forest Service that unplanted corridors a left beneath powerlines.

All operations at the proposed project site will follow the Forestry Standards Manual (DAFM, 2015) and Code of Best Forest Practice (DAFM, 1998) with regard to health and safety and forest operations.

10.4.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

10.4.2 Potential Effects

The proposed project is located adjacent to a dwelling house (30m away). Therefore, the proposed project could result in **Long-term Moderate Negative Effects**.

ESB powerlines traverse the site and if forestry is planted too close to this infrastructure it could result in **Long-term Moderate Negative Effects** on material assets.

Due to the temporary nature of proposed works, the nature and scale of the proposed project and it distance from other human habitation and urban areas, **no significant negative effects are anticipated with regard to population, human health or material asserts**. The proposed project has the potential to result in a temporary positive effect in the form of employment. The use of machinery and chemicals (pesticides, hydrocarbons, etc.) during the afforestation works and

future forest operations will have the potential to cause a health and safety risk to any workers. This would have a potential temporary negative impact on Human Health.

Mitigation Measures

- Setbacks from dwellings will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015).
- Unplanted corridors will be left beneath power lines in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015).
- All use of chemicals and fertiliser will be done in accordance with Forest Service best practice as per Environmental Requirements for Afforestation (DAFM, 2016) and Forestry Standards Manual (DAFM, 2015).
- All operations at the proposed project site will follow the Forestry Standards Manual (DAFM, 2015) and Code of Best Forest Practice (DAFM, 1998) with regard to health and safety and forest operations.

Residual effects

No significant effects are anticipated with regard to population, human health or material assets.

10.5 SITE 4: TREANMANAGH, CO. CLARE

The proposed afforestation site is located in a rural townland, Treanmanagh, Co. Clare, approximately 7km south-east of Milltown Malbay, which had a population of 829 in the 2016 Census. Kilmihil village is located 6.5km south of the site.

Land use at the proposed project site is entirely for agriculture. Land within the surrounding landscape is used primarily for agriculture, forestry and wind energy.

Due to the rural nature of the area employment is likely to be focussed primarily on agriculture along with various other small commercial activities in the area. Housing density in the surrounding area is low-moderate, with three dwellings located adjacent to the site.

The nearest community facilities and amenities are located in the village of Kilmihil which contains a primary and a secondary school, two shops, pharmacy, four public houses, credit union, library, medical centre, post office and Catholic church. The nearest designated walking route is the Mid-Clare Way approximately 2km east of the proposed forestry site. There are no tourist attractions within or adjoining the proposed project site.

The proposed project site is accessed via two local roads. A small number of dwellings are located on the roads which border the site (the closest residential property being adjacent to the site) and therefore current traffic levels are medium-low. There will be no significant long-term increases in traffic activity as a result of the proposed project. Traffic anticipated during planting will consist of working vehicles such as an individual excavator (2-3 weeks), an individual tractor for fencing (1-2 days) and 2-3 cars or vans for site operatives (3 weeks). Harvesting and forwarder machines will be used at the site during harvesting operations. Machinery activity at the site will be similar to levels associated with agricultural activities.

All operations at the proposed project site will follow the Forestry Standards Manual (DAFM, 2015) and Code of Best Forest Practice (DAFM, 1998) with regard to health and safety and forest operations.

10.5.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

10.5.2 Potential Effects

The proposed project is located adjacent to three dwelling houses (10-55m away). Therefore, the proposed project could result in **Long-term Moderate Negative Effects**.

Due to the temporary nature of proposed works, the nature and scale of the proposed project and it distance from other human habitation and urban areas, **no significant negative effects are anticipated with regard to population, human health or material asserts**. The proposed project has the potential to result in a temporary positive effect in the form of employment. The use of machinery and chemicals (pesticides, hydrocarbons, etc.) during the afforestation works and future forest operations will have the potential to cause a health and safety risk to any workers. This would have a potential temporary negative impact on Human Health.

Mitigation Measures

- Setbacks from dwellings will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015).
- All use of chemicals and fertiliser will be done in accordance with Forest Service best practice as per Environmental Requirements for Afforestation (DAFM, 2016) and Forestry Standards Manual (DAFM, 2015).
- All operations at the proposed project site will follow the Forestry Standards Manual (DAFM, 2015) and Code of Best Forest Practice (DAFM, 1998) with regard to health and safety and forest operations.

Residual effects

No significant effects are anticipated with regard to population, human health or material assets.

10.6 CUMULATIVE IMPACTS

If the proposed afforestation of the four replanting sites is approved, it will be a condition of approval that all works at the sites will be undertaken in accordance with Forest Service requirements. The potential impacts associated with the proposed afforestation have been assessed as a neutral impact overall. When the proposed afforestation is considered in-combination with existing and approved projects, plans and activities in the vicinity of the four sites, and considering that the forestry guidelines are designed to minimise and prevent impacts to the receiving environment, cumulative effects on population, human health and material assets are not anticipated.

11.0 CULTURAL HERITAGE

An assessment of the potential impacts and associated effect of forestry planting at the four replanting sites on cultural heritage was undertaken.

11.1 METHODOLOGY

Baseline information on the environmental setting of the proposed afforestation sites in terms of cultural heritage are set out below and the potential for impacts on them are discussed. The provision of technical approval for these sites is subject to accordance with the 'Forestry and Archaeology Guidelines 2000'. Where necessary, appropriate mitigation measures to limit any identified significant effects to cultural heritage are provided in these guidelines.

Baseline information gathered was mainly desk based after a review of the following online sources;

- Geohive (www.geohive.ie).
- Historical environment viewer (www.archaeology.ie)

The Sites and Monuments Record (SMR) is a record of all known recorded archaeological monuments and sites which are believed to contain monuments, in addition to redundant records. The SMR provides all of the latest information, and it is updated daily. The Record of Monuments and Places (RMP), which was also consulted from the same source, is updated only periodically with sites, which means that some monuments may as a result not appear in that database. The National Inventory of Architectural Heritage (NIAH) buildings survey dataset was also consulted. All of these datasets (SMR, RMP & NIAH) were consulted for these assessments via www.archaeology.ie.

The impact assessment was undertaken in line with Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, 2017).

11.2 SITE 1: BURRISH, CO. MAYO

The nearest recorded archaeological site was 195m from the proposed project site.

- Single enclosure - located c. 195m to the south-west (MA112-010).

A review of aerial imagery and historical Ordnance Survey maps was undertaken to identify any features which may have significant cultural heritage value at the proposed project site. No such features were visible on the maps reviewed. Field boundaries were present on the 1888-1913 25-inch OS map and most of the field boundaries shown on the 25-inch OS map are still in situ.

11.2.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

11.2.2 Potential Effects

No known archaeological monuments were recorded from within the proposed project site, so there are no potential direct impacts. The nearest recorded monument is located 195m away from the site. The monument is separated from the proposed project site by a public road, stone

walls and a tall hedgerow. The monument is not visible from the road and the proposed afforestation site will not impact the views of the monument in the landscape. Due to distance from the proposed project site and the vegetative screening that is present between the monument and the replanting site no indirect effects, relating to the setting or views to or from a monument are anticipated. **Significant effects on cultural heritage as a result of the proposed project are not anticipated.**

11.3 SITE 2: MOYNE, CO. ROSCOMMON

The nearest recorded archaeological site was 550m from the proposed project site.

- Rath - located c. 400m to the east (RO014-059).

A review of aerial imagery and historical Ordnance Survey maps was undertaken to identify any features which may have significant cultural heritage value at the proposed project site. No such features were visible on the maps reviewed. Field boundaries were present on the 1888-1913 25-inch OS map and most of the field boundaries shown on the 25-inch OS map are still in situ.

11.3.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

11.3.2 Potential Effects

No known archaeological monuments were recorded from within or adjacent to the proposed project site, therefore there will be no direct impacts. The nearest recorded monument is located 550m away from the site. The monument is separated from the proposed project site by a public road and a number of tall hedgerows and treelines. The monument is not visible from the public road and the proposed afforestation site will not impact the view or landscape setting of the monument. Due to this distance from the proposed project site and the presence of vegetative screening between the monument and the replanting site no indirect effects, relating to the setting or views to or from a monument are anticipated. **Significant effects on cultural heritage as a result of the proposed project are not anticipated.**

11.4 SITE 3: COOLNAGUN, CO. WESTMEATH

One recorded archaeological site was recorded within the proposed project site.

- Windmill - located at the western extreme of the site (WM002-033).

The monument is described as the ruins of a small circular stone built structure (int. diam. 3.1m; wall T 0.8m; H c. 4m) with a solid stone built projection (L 1m; Wth 2.9m) on the SE. The structure is built of small blocks of undressed limestone with small flat stones also laid in regular course and bonded with a rough mortar. The windmill is just south of a narrow drain on the edge of Coolnagun bog.

The next nearest other recorded archaeological site was 100m north of the proposed project site.

- Road (class 1 togher) – (WM002-042)

No additional archaeological site was recorded within or immediately adjacent to the site.

A review of aerial imagery and historical Ordnance Survey maps was undertaken to identify any features which may have significant cultural heritage value at the proposed project site. No such features were visible on the maps reviewed. Field boundaries were present on the 1888-1913 25-inch OS map and most of the field boundaries shown on the 25-inch OS map are still in situ.

11.4.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

11.4.2 Potential Effects

A known archaeological monument was recorded within the proposed project site. Therefore, the proposed project could result in **Permanent Significant Negative Direct Effects** without mitigation.

The monument within the proposed project site is located at the eastern end of the site. It is located within a small field which is surrounded by treelines and woodland. The monument is located 0.8km from the nearest road and is separated from the road and houses by existing mature forestry, and woodland. The monument is not visible outside of the field it is contained in. The next nearest monument to the site is separated from the proposed afforestation site by linear woodland. Due to the presence of existing vegetative screening between the monuments and public settings such as roads and houses, no indirect effects, relating to the setting or views to or from any additional monument are anticipated.

Mitigation Measures

Setbacks from archaeological monuments will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015) and Environmental Requirements for Afforestation (DAFM, 2016).

Residual effects

No significant effects are anticipated with regard to cultural heritage.

11.5 SITE 4: TREANMANAGH, CO. CLARE

Two recorded archaeological sites were recorded within 300m of the proposed project site.

- Redundant record - located 60m west of the site (CL039-034).
- Ringfort-rath – located 295m north-west of the site (CL039-032)

No archaeological record was recorded within the site.

A review of aerial imagery and historical Ordnance Survey maps was undertaken to identify any features which may have significant cultural heritage value at the proposed project site. The site contained three gravel pits and a spring on the 25-inch OS map but these were not present on the more recent 6-inch OS Cassini map. A track was recorded on the 6-inch OS Cassini map which is still present and in use. Field boundaries were present on the 1888-1913 25-inch OS map and most of the field boundaries shown on the 25-inch OS map are still in situ.

11.5.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

11.5.2 Potential Effects

No known archaeological monuments were recorded within the proposed project site. The nearest recorded monument is located 60m away from the site and was recorded as a redundant record. According to the notes available on archaeology.ie, when it was originally recorded it was "*indicated as a D-shaped hachured area (c. 20m E-W) on the 1922 OS 6-inch map. This hachuring represents a terraced grass-covered slope which was created to provide a driveway at Doolough Lodge. This is not an archaeological monument".* The next nearest monument is separated from the proposed project site by a public road and a number of hedgerows. The monument is currently not visible from parts of the public road and the proposed afforestation site will not impact the views or landscape setting of the monument. Due to distance between the proposed project site and recorded monuments in the area, and the presence forestry as an existing land use in the area (thereby meaning that the afforestation will be in-keeping with the local landscape character, no indirect effects, relating to the setting or views to or from a monument are anticipated. **Significant effects on cultural heritage as a result of the proposed project are not anticipated.**

11.6 CUMULATIVE IMPACTS

If the proposed afforestation of the four replanting sites is approved, it will be a condition of approval that all works at the sites will be undertaken in accordance with Forest Service requirements. The potential impacts associated with the proposed afforestation have been assessed as a neutral impact overall. When the proposed afforestation is considered in-combination with existing and approved projects, plans and activities in the vicinity of the four sites, and considering that the forestry guidelines are designed to minimise and prevent impacts to the receiving environment, cumulative effects on cultural heritage are not anticipated.

12.0 LANDSCAPE AND VISUAL

An assessment of the potential impacts and associated effect of forestry planting at the four replanting sites on landscape and visual was undertaken.

12.1 METHODOLOGY

Baseline information on the environmental setting of the proposed afforestation sites in terms of landscape and visual are set out below and the potential for impacts on them are discussed. Where necessary, appropriate mitigation measures to limit any identified significant effects to landscape and visual are recommended.

Baseline information gathered was mainly desk based after a review of the following online sources;

- Geohive (www.geohive.ie).
- Mayo County Development Plan 2014-2020
- Roscommon County Development Plan 2014-2020
- Westmeath County Development Plan 2014-2020
- Clare County Development Plan 2017-2023
- DAFM (2000) Forestry and Landscape Guidelines

The impact assessment was undertaken in accordance with Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, 2017).

12.2 SITE 1: BURRISH, CO. MAYO

As per the Landscape Appraisal for County Mayo, contained in the Mayo County Development Plan 2014-2020, the proposed project site is located in Area L: South-East Mayo Plains, and is described as a mosaic of high quality pasture with distinct paddocks divided by rock walls and well-maintained hedgerows. There are occasional pockets of transitional pasture and woodland scrub throughout the gently rolling drumlins.

There are no Protected/listed views within 18km from the site.

As per the Forestry and Landscape Guidelines (DAFM, 2000), the proposed project site is best described as Rolling Fertile Farmland. The *Forestry and Landscape Guidelines* describe this landscape as follows:

> 'This landscape type is a man-made 'working landscape: The rolling hills are characterised by a patchwork of clearly defined fields with farmsteads and houses scattered throughout. These fields are typically under pasture or tillage. The scale of the landscape is usually relatively enclosed. Soil fertility should allow broadleaf plantations, with a potential for sylvicultural systems other than clear-felling.'

The topography, vegetation and anthropological features on the land surface in an area combine to set limits on the amount of landscape that can be seen at any one time. These physical restrictions form individual areas or units known as physical units whose character can be defined by aspect, slope, scale and size. A physical unit is generally delineated by topographical boundaries and is defined by landform and landcover.

The proposed afforestation site is located on low lying, approximately 75m OD, relatively flat land. The site itself is dominated by grassland, with some planted broadleaf trees and ornamental shrubs. The site is surrounded by grazing pasture and the surrounding landscape is dominated by intensive agriculture. The site is adjacent to the nearest dwelling. Field boundaries are prominent within and adjacent to the site and the boundaries of the proposed replanting site follow the existing field patterns.

12.2.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

12.2.2 Potential Effects

The site preparation and planting phase will entail site works in terms of woody weed clearance and construction of forestry drains and will use the angle notch, slit or pit planting described in Section 2. These activities will have a temporary neutral effect on the landscape character, which is that of a rural working landscape with a mixture of agricultural and forestry land uses. A neutral effect is a change which does not affect the quality of the environment (EPA, 2002). The site clearance and replanting activities will assimilate well into the receiving environment, and are therefore classed as an imperceptible effect, i.e. an effect capable of measurement but without noticeable consequences.

The proposed replanting is to be carried out in an area where there are some existing pockets of conifer plantations among intensively managed agricultural fields in the surrounding landscape, and therefore the proposed replanting is not introducing a new land use but conforming to an existing one in the area. The area to be planted is relatively small. However, as the proposed planting site is immediately adjacent to a dwelling house, the predicted visual effect of the proposed replanting is therefore a **Long Term, Moderate Negative Effect.**

Mitigation Measures

Setbacks from dwellings and appropriate landscape planting will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015) and Environmental Requirements for Afforestation (DAFM, 2016).

Residual effects

No significant effects are anticipated with regard to landscape and visual.

12.3 SITE 2: MOYNE, CO. ROSCOMMON

As per the Landscape Character Assessment for County Roscommon, contained in the Roscommon County Development Plan 2014-2020, the proposed project site is located in Mullaghnashee Wet Farmland Plateau, and is described as bogland and wet farmland and categorised as Moderate landscape value.

There are no Protected/listed views within 4km from the site.

As per the Forestry and Landscape Guidelines (DAFM, 2000), the proposed project site is best described as Rolling Fertile Farmland. The *Forestry and Landscape Guidelines* describe this landscape as follows:

'This landscape type is a man-made 'working landscape: The rolling hills are characterised by a patchwork of clearly defined fields with farmsteads and houses scattered throughout. These fields are typically under pasture or tillage. The scale of the landscape is usually relatively enclosed. Soil fertility should allow broadleaf plantations, with a potential for sylvicultural systems other than clear-felling.'

The topography, vegetation and anthropological features on the land surface in an area combine to set limits on the amount of landscape that can be seen at any one time. These physical restrictions form individual areas or units known as physical units whose character can be defined by aspect, slope, scale and size. A physical unit is generally delineated by topographical boundaries and is defined by landform and landcover.

The proposed afforestation site is located on low lying, approximately 90m OD, relatively flat land. The site itself is dominated by grassland. The site is surrounded by grazing pasture and cutover bog and the surrounding landscape is dominated by intensive agriculture and forestry. The site is adjacent to the nearest dwelling. Field boundaries are prominent within and adjacent to the site and the boundaries of the proposed replanting site follow the existing field patterns.

12.3.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

12.3.2 Potential Effects

The site preparation and planting phase will entail site works in terms of woody weed clearance and construction of forestry drains and will use the angle notch, slit or pit planting described in Section 2. These activities will have a temporary neutral effect on the landscape character, which is that of a rural working landscape with a mixture of agricultural and forestry land uses. A neutral effect is a change which does not affect the quality of the environment (EPA, 2002). The site clearance and replanting activities will assimilate well into the receiving environment, and are therefore classed as an imperceptible effect, i.e. an effect capable of measurement but without noticeable consequences.

The proposed replanting is to be carried out in an area where there are already existing conifer plantations with agricultural fields, and therefore the proposed replanting is in-keeping with a well established local land use and landscape feature. However, the proposed planting site is adjacent to a dwelling house. The predicted visual effect of the proposed replanting is a **Long Term, Moderate Negative Effect.**

Mitigation Measures

Setbacks from dwellings and appropriate landscape planting will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015) and Environmental Requirements for Afforestation (DAFM, 2016).

Residual effects

No significant effects are anticipated with regard to landscape and visual.

12.4 SITE 3: COOLNAGUN, CO. WESTMEATH

As per the Landscape Character Assessment for County Westmeath, contained in the Westmeath County Development Plan 2014-2020, the proposed project site is located in Inny River Lowlands, and is described as low-lying ground around the Inny River from Finnea to Ballynacarrigy and the Royal Canal including pastoral landscapes, extensive areas of cutaway bog, industrial peat production and conifer plantations.

There are no Protected/listed views within 2km from the site.

As per the Forestry and Landscape Guidelines (DAFM, 2000), the proposed project site is best described as Rolling Fertile Farmland. The *Forestry and Landscape Guidelines* describe this landscape as follows:

> 'This landscape type is a man-made 'working landscape: The rolling hills are characterised by a patchwork of clearly defined fields with farmsteads and houses scattered throughout. These fields are typically under pasture or tillage. The scale of the landscape is usually relatively enclosed. Soil fertility should allow broadleaf plantations, with a potential for sylvicultural systems other than clear-felling.'

The topography, vegetation and anthropological features on the land surface in an area combine to set limits on the amount of landscape that can be seen at any one time. These physical restrictions form individual areas or units known as physical units whose character can be defined by aspect, slope, scale and size. A physical unit is generally delineated by topographical boundaries and is defined by landform and landcover.

The proposed afforestation site is located on low lying, approximately 64m OD, relatively flat land. The site itself is dominated by grassland. The site is surrounded by grazing pasture, forestry and cutover bog and the surrounding landscape is dominated by intensive agriculture, industrial cutover bog and forestry. The site is approximately 30 metres (across a local road) from the nearest dwelling. Field boundaries are prominent within and adjacent to the site and the boundaries of the proposed replanting site follow the existing field patterns.

12.4.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

12.4.2 Potential Effects

The site preparation and planting phase will entail site works in terms of woody weed clearance and construction of forestry drains and will use the angle notch, slit or pit planting described in

Section 2. These activities will have a temporary neutral effect on the landscape character, which is that of a rural working landscape with a mixture of agricultural and forestry land uses. A neutral effect is a change which does not affect the quality of the environment (EPA, 2002). The site clearance and replanting activities will assimilate well into the receiving environment, and are therefore classed as an imperceptible effect, i.e. an effect capable of measurement but without noticeable consequences.

The proposed replanting is to be carried out in an area where there are already existing conifer plantations among agricultural fields, and therefore the proposed replanting is not introducing a new land use but conforming to an established one. The proposed planting site is 30m from a dwelling house, the predicted visual effect of the proposed replanting is therefore a **Long Term, Moderate Negative Effect.**

Mitigation Measures

Setbacks from dwellings and appropriate landscape planting will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015) and Environmental Requirements for Afforestation (DAFM, 2016).

Residual effects

No significant effects are anticipated with regard to landscape and visual.

12.5 SITE 4: TREANMANAGH, CO. CLARE

As per the Landscape Character Assessment for County Clare, contained in the Clare County Development Plan 2017-2023, the proposed project site is located in the Malbay Coastal Farmland, and is categorised as a Settled Landscape in the Council's Living Landscape Types designations.

The nearest designated scenic route/view from the site is the R-474 over 4.5km to the north.

As per the Forestry and Landscape Guidelines (DAFM, 2000), the proposed project site is best described as Rolling Fertile Farmland. The *Forestry and Landscape Guidelines* describe this landscape as follows:

> 'This landscape type is a man-made 'working landscape: The rolling hills are characterised by a patchwork of clearly defined fields with farmsteads and houses scattered throughout. These fields are typically under pasture or tillage. The scale of the landscape is usually relatively enclosed. Soil fertility should allow broadleaf plantations, with a potential for sylvicultural systems other than clear-felling.'

The topography, vegetation and anthropological features on the land surface in an area combine to set limits on the amount of landscape that can be seen at any one time. These physical restrictions form individual areas or units known as physical units whose character can be defined by aspect, slope, scale and size. A physical unit is generally delineated by topographical boundaries and is defined by landform and landcover.

The proposed afforestation site is located on low lying, between 80m-114m OD, gently sloping land. The site itself is dominated by grassland. The site is surrounded by grazing pasture, forestry and wet heath, and the surrounding landscape is dominated by intensive agriculture, wind energy production and forestry. The nearest forest plantation is 123m away to the north-east.

The site is approximately 5 metres from the nearest dwelling. Field boundaries are prominent within and adjacent to the site and the boundaries of the proposed replanting site follow the existing field patterns.

12.5.1 Do-Nothing Scenario

The proposed replanting lands will be forested regardless of whether the proposed Castlebanny Wind Farm proceeds or not, subject to receiving technical approval.

12.5.2 Potential Effects

The site preparation and planting phase will entail site works in terms of the creation of forestry drains and planting will be undertaken using the angle notch, slit or pit planting described in Section 2. A small amount of scrub clearance will also be required. These activities will have a temporary neutral effect on the landscape character, which is that of a rural working landscape with a mixture of agricultural and forestry land uses. A neutral effect is a change which does not affect the quality of the environment (EPA, 2002). The site clearance and replanting activities will assimilate well into the receiving environment, and are therefore classed as an imperceptible effect, i.e. an effect capable of measurement but without noticeable consequences.

The proposed replanting is to be carried out in an area where existing conifer plantations already exist in the landscape with agricultural fields. The proposed replanting of this site is therefore in line with an established local land use and not introducing a new one. The proposed planting site is adjacent to a dwelling house, however the primary views from this house would be to the south-west towards lower ground, away from the proposed afforestation. The predicted visual effect of the proposed replanting is a **Long Term, Moderate Negative Effect.**

Mitigation Measures

Setbacks from dwellings and appropriate landscape planting will be done in accordance with Forest Service guidance, Forestry Standards Manual (DAFM, 2015) and Environmental Requirements for Afforestation (DAFM, 2016).

Residual effects

No significant effects are anticipated with regard to landscape and visual.

12.6 CUMULATIVE IMPACTS

If the proposed afforestation of the four replanting sites is approved, it will be a condition of approval that all works at the sites will be undertaken in accordance with Forest Service requirements. The potential impacts associated with the proposed afforestation have been assessed as a neutral impact overall. When the proposed afforestation is considered in-combination with existing and approved projects, plans and activities in the vicinity of the four sites, and considering that the forestry guidelines are designed to minimise and prevent impacts to the receiving environment, cumulative effects on landscape and visual are not anticipated.

13.0 CUMULATIVE EFFECTS CONCLUSION

The proposed Castlebanny Wind Farm is located in an entirely different county and surface water catchment to the proposed afforestation sites and at a closest distance of c. 135km away from any of the proposed replanting lands and therefore the replanting lands and the windfarm will not result in cumulative effects on each other.

Documentation to facilitate Appropriate Assessment for the proposed afforestation of the four sites is provided in the NIS accompanying the planning application .

No significant effects were identified after the design and mitigation of the proposed project were considered, as is evidenced by the description of residual effects.

The potential for cumulative impacts to occur with regard to each of the topics covered in this report was assessed individually for each topic;

- Biodiversity
- Hydrology, Hydrogeology and Water Quality
- Land, Soils and Geology
- Air and Climate
- Noise and Vibration
- Population, Human Health and Material Assets
- Cultural Heritage
- Landscape and Visual

The cumulative impact of the replanting sites are considered as being Long Term Imperceptible Neutral Impacts when considered with the known existing and approved projects in the vicinity.

14.0 ASSESSMENT CONCLUSIONS

The proposed project will not result in significant effects on any national or European designated sites. In addition, significant effects on the biodiversity of the surroundings are not anticipated due to the relatively low biodiversity value of the habitats within the location of the proposed replanting sites. Linear landscape features will be retained as part of the replant project.

Significant effects are not anticipated on hydrological, land, soils and geological or archaeological features.

The proposed sites are located in landscapes dominated by intensively managed agricultural fields and commercial forestry. Therefore, there will be no significant changes to the character of the surrounding landscape.

There will be no significant effects on the material assets, cultural heritage, human environment (population or health) or sensitive landscapes as a result of the proposed project. Appropriate setback distances from dwellings, in accordance with the relevant DAFM guidelines will be fully adhered to.

The proposed replanting sites are small-scale and works will be temporary in duration. All proposed activities will be carried out in accordance with the various Guidelines described in Section 2 and the Technical Approvals issued by the Forest Service. In addition, Coillte fully adhere to FSC and PEFC certification protocols, which they are audited annually on, to ensure compliance with sustainable forestry practices. Should the proposed replanting lands become unavailable for any reason, then other similarly suitable and approved lands will be used.

Post incorporation of the project design and mitigation measures outlined in this report, it is not anticipated that the proposed project will result in significant effects, either individually or cumulatively with other plans and existing or proposed projects, on the surrounding environment.

Overall, there are no significant negative effects associated with the proposed replanting projects.