

Assessment of Proposed Replanting Lands

Proposed Wind Farm Development at
Ardderroo & adjacent Townlands,
Co. Galway



Planning & Environmental Consultants

DOCUMENT DETAILS

Client: Ardderroo Windfarm Ltd.

Project title: Ardderroo Wind Farm

Project Number: 160815

Document Title: Assessment of Proposed Replanting

Doc. File Name: 160815 – Replanting – 2018.11.14 – F

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Document Issue:

Rev	Status	Issue Date	Document File Name	Author(s)	Approved By:
01	Draft	29.03.2017	160502 – Replanting – 2017.03.29 – D1	JOC/JS	MW
02	Draft	08.11.2017	160502 – Replanting – 2017.11.08 – D2	EM/JS	MW
03	Final	14.11.2018	160502 – Replanting – 2017.11.22 – F	EM/JS	MW

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Appendix 1 – Appropriate Assessment Screening Reports

1 INTRODUCTION

1.1 Introduction

This report has been prepared by McCarthy Keville O’Sullivan Ltd. on behalf of Ardderroo Wind Farm Ltd., who intends to apply to An Bord Pleanála (Board) for planning permission to construct a wind energy development and all associated infrastructure in the townlands of Letter, Ardderroo and Finnaun, near Roscahill, County Galway

The total replanting requirement for the proposed Ardderroo development is 65.7 hectares (Ha). Four potential replanting areas have been identified for assessment purposes, with a combined availability of 74.71 hectares. These lands have been granted Forest Service Technical Approval for afforestation (see Appendix 1 for technical approval documents) and these or similarly approved will be used for replanting should the windfarm project receive planning permission. A description of the proposed replanning lands and an assessment of the potential impacts associated with afforestation at each location are provided in this document.

1.2 Report Structure

The main sections of this report are presented as follows:

- Section 2: Project Background and Description
- Section 3: Planning Policy and Planning History
- Section 4: Impact Assessment Methodology
- Section 5: Biodiversity
- Section 6: Land, Soils and Geology
- Section 7: Hydrology and Hydrogeology
- Section 8: Landscape
- Section 9: Cultural Heritage
- Section 10: Air, Climate and Noise
- Section 11: Population and Human Health
- Section 12: Material Assets

2 PROJECT BACKGROUND AND DESCRIPTION

2.1 Background

2.1.1 Replanting Approval

Replanting or off-site afforestation is a requirement of the Forestry Act 2014 and its consent is regulated under *Statutory Instrument 558 of 2010, European Communities (Forest Consent and Assessment) Regulations 2010 as amended*. Approval for afforestation is not granted by the Forest Service on lands where there is the potential for significant environmental impacts.

The lands addressed in this document have been granted Technical Approval by the Forest Service for afforestation. The Technical Approvals for the sites at Ballyduff Beg, Rahilisk and Knockavrogeen have expired and new Technical Approvals have been applied for.

To afforest any land where the area involved is greater than 0.1 hectares requires the approval of the Minister under the 2010 Regulations. The application for approval is known as Pre-Planting Approval – Form 1 and is subject to the following procedures:

- The application is referred to the relevant Forest Service Inspector for assessment and recommendations;
- If there are any environmental considerations identified, the application is referred to the relevant external body, e.g. National Parks and Wildlife Services, National Monuments Service, Regional Fisheries Boards, Local Authorities, etc., for consideration;
- If the proposed development is greater than 25 hectares the application is referred to the relevant Local Authority;
- If the site is greater than 2.5 hectares the application is advertised on the Department’s website;
- If the site is greater than 50 hectares an Environmental Impact Assessment and planning permission are required.

The Pre-Planting Approval – Form 1 requires a wide range of details in relation to the proposed area to be forested. Notwithstanding the size of the proposed application, the environmental considerations which must be answered/considered for the approval are listed in Table 2.1 below. The Pre-Planting Approval – Form 1 notes that, if present, all items listed may require the Department to consult with prescribed bodies, while those in bold type may require the Department to undertake public consultation.

Table 2.1 Environmental Considerations in Afforestation Applications for Approval – Form 1

	Environmental Considerations
1	Water Quality
1.1	Is the area designated potentially acid sensitive by this Department (DAFM)?
1.2	Is the area >5 ha and sensitive for fisheries?
1.3	Is the area non-sensitive for fisheries and >40 ha?
1.4	Is the area >10 ha and within a catchment area of a Local Authority designated water scheme?
2	Designated Habitats

Environmental Considerations	
2.1	Is the area within a NHA, pNHA, SAC, SPA or National Park?
2.2	If the area is within a NHA, is a completed notifiable Action Form/ Action Requiring Consent Form (consent from National Parks and Wildlife Service) included?
2.3	If the area within a Hen Harrier SPA, will operations occur between the 1 st of April and the 15 th August inclusive?
2.4	Is the area within a NPWS referral zone for NHA, pNHA, SAC or SPA?
2.5	Is the area within 3 km upstream of a NHA, pNHA, SAC, SPA or National Park?
2.6	Is the area within a Fresh Water Pearl Mussel 6 km zone? If yes the Forestry and Fresh Water Pearl Mussel Requirements Forms A and B should be included with the Application
2.7	Is the area within a Freshwater Pearl Mussel Catchment?
2.8	Does the area contain a current REPS plan habitat?
3	Archaeology
3.1	Does the area contain an archaeological site or feature with intensive public usage?
3.2	Does the area contain or adjoin a listed archaeological site or monument?
4	Landscape
4.1	Is the area within a prime scenic area in the County Development Plan?
4.2	Are there any other High Amenity Landscape considerations?
5	Size for Notification to Local Authority
5.1	Is the area greater than 25 ha?
6	Other Environmental Considerations
6.1	Specify

2.2 Proposed Replanting Lands

Five potential areas have been identified for assessment purposes, and any replanting associated with the Ardderroo Wind Farm will take place at these lands or similarly Technically Approved lands. The list of Technically Approved lands assessed in this report is presented in Table 2.2.

Table 2.2 Proposed Replanting Lands

Location No.	Property Name	Location	Proposed Replanting Area (hectares)
1	Ballyduff Beg	Co. Clare	14.15
2	Curragherd	Co. Roscommon	9.22
3	Claraghatlea North	Co. Cork	19.2
4	Rahilisk	Co. Cork	17.31
5	Knockavrogeen	Co. Kerry	14.66
Total Area			74.54

The lands listed in Table 2.2 have each been assessed as part of the Afforestation Approval – Form 1 process and obtained Technical Approval for Afforestation from the Forest Service. The combined approved area for replanting afforestation at the sites is 74.71 hectares, which is available to the applicant and would meet the total Ardderroo replanting requirement of 74.71 hectares. Site location maps and further details on each site are provided in Sections 2.2.1 to 2.2.4 below.

2.2.1 Replanting Area 1: Ballyduff Beg, Co. Clare

This replanting area is in the townland of Ballyduff Beg, Co. Clare. The Ballyduff Beg property is located approximately 0.3 kilometres east of Inagh. The site location and arial view are presented in Figure 2.1 and 2.2. The property is accessed via a track directly off the N85 National Secondary road. The Technical Approval area for afforestation at Molougha measures 14.15 hectares in total. The current land use is agricultural for pastoral farming.

2.2.2 Replanting Area 2: Curraghard, Co. Roscommon

This replanting area is in the townland of Curraghard, Co. Roscommon. The Molougha property is located approximately 4.7 kilometres north west of Loughglinn. The site location and arial view are presented in Figure 2.3 and 2.4. The property is accessed via local road. The Technical Approval area for afforestation at Molougha measures 9.22 hectares in total. The current land use is agricultural for pastoral farming.

2.2.3 Replanting Area 3: Claraghatlea North, Co. Cork

This replanting area is in the townland of Claraghatlea North in Co. Cork. The site is approximately 1.5km from Millstreet which lies to the south-east. The site location and arial view are presented in figure 2.5 and 2.6. The Technical approval area for afforestation at this site is 18.77 hectares. The site is accessed via local roads which lead to the R582. Existing forestry sites lie to the east.

2.2.4 Replanting Area 4: Rahalisk, Co. Cork

The Rahalisk site is located in the townland of Rahalisk, approximately 7.8 kilometres north of Macroom, Co. Cork. The Technical approval area for afforestation for this site is 17.31 hectares. The site location and aerial view are presented in Figures 2.7 and 2.8. The site is located on the southern slopes of the Boggeragh Mountains and is accessed via a local road. The proposed replanting lands at Rahalisk are currently used for agricultural purposes. Existing forestry sites adjoin the land to the north and south.

2.2.5 Replanting Area 5: Knockavrogeen, Co. Kerry

This replanting area is located in Knockavrogeen, Co. Kerry, approximately 3.0km north of Dingle. The total approved area for replanting afforestation at the sites is 14.66 hectares. The site location and aerial view are presented in Figure 2.9 and 2.10. The property is accessed via a local public road off the R559 Regional Road. The current land use is agricultural for pastoral farming.

2.3 Proposed Afforestation Techniques

2.3.1 Forest Service Best Practice

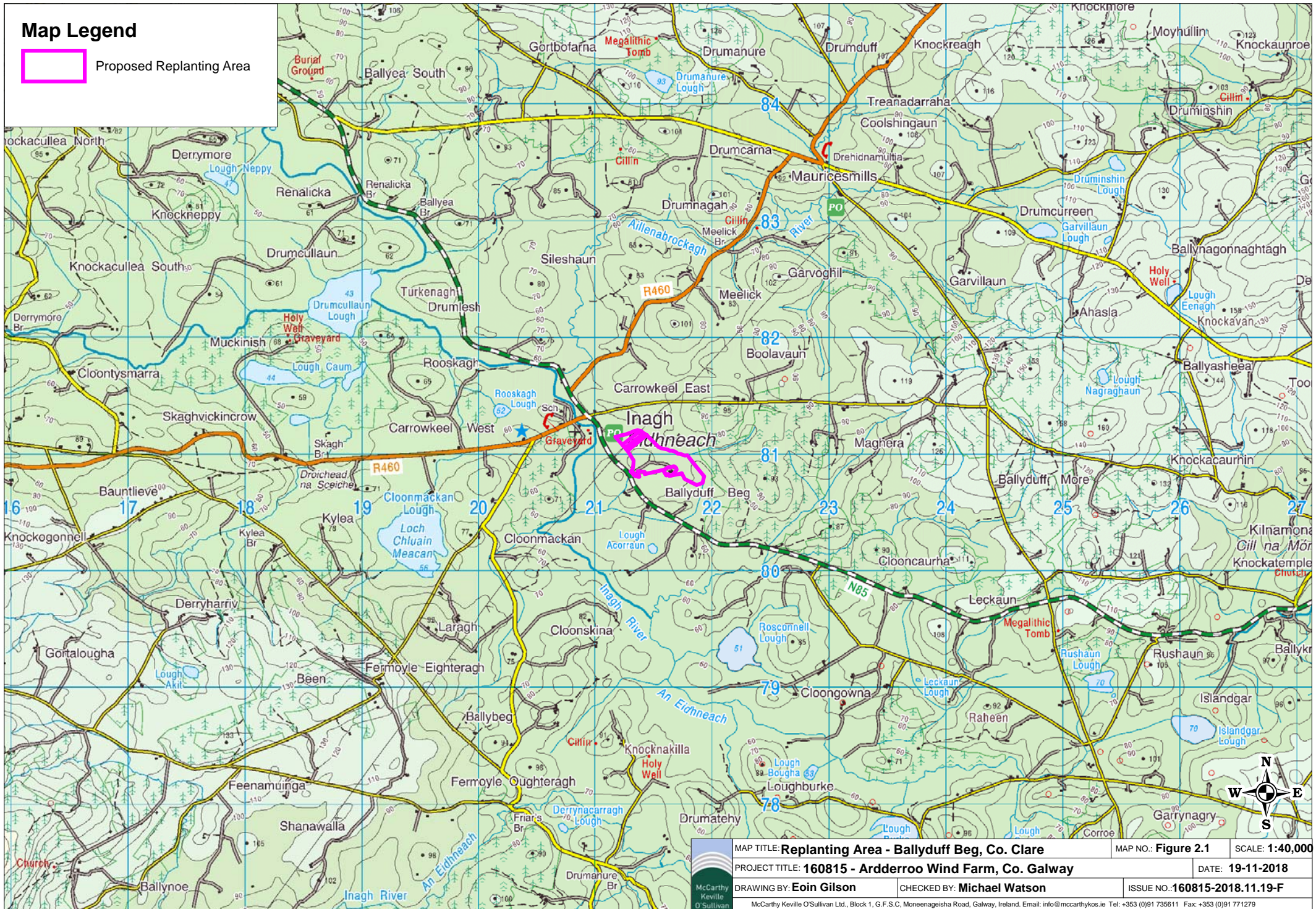
Afforestation and subsequent harvesting will conform to current best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte produced guidance documents, including the specific guidelines listed below, to ensure that newly planted trees remain viable and afforestation provide minimal potential impacts to the receiving environment.

- *“Environmental Requirements for Afforestation”* [2016]
- *Land Types for Afforestation* [2016]
- *‘Forestry Protection Guidelines’* (2002)
- *‘Forestry Harvesting and Environmental Guidelines’* (2000)
- *‘Forest Operations & Water Protection Guidelines’* (2009)

Map Legend




Proposed Replanting Area



	MAP TITLE: Replanting Area - Ballyduff Beg, Co. Clare	MAP NO.: Figure 2.1	SCALE: 1:40,000
	PROJECT TITLE: 160815 - Ardderroo Wind Farm, Co. Galway	DATE: 19-11-2018	
	DRAWING BY: Eoin Gilson	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.19-F
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Map Legend

 Proposed Replanting Area



	MAP TITLE: Replanting Area - Ballyduff Beg, Co. Clare	MAP NO.: Figure 2.2	SCALE: 1:5,000
	PROJECT TITLE: 160815 - Ardderroo Wind Farm, Co. Galway	DATE: 19-11-2018	
	DRAWING BY: Eoin Gilson	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.19-F
	McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthykos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279		

Map Legend

 Site Boundary



	MAP TITLE: Replanting Area - Curraghard, Co. Roscommon	MAP NO.: Figure 2.3	SCALE: 1:40,000	
	PROJECT TITLE: 160815 - Enerco - Ardderroe Wind Farm EIS	DATE: 20-11-2018		
	DRAWING BY: Eoin Gilson	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.20-F	
	<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthynos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279</small>			

Map Legend

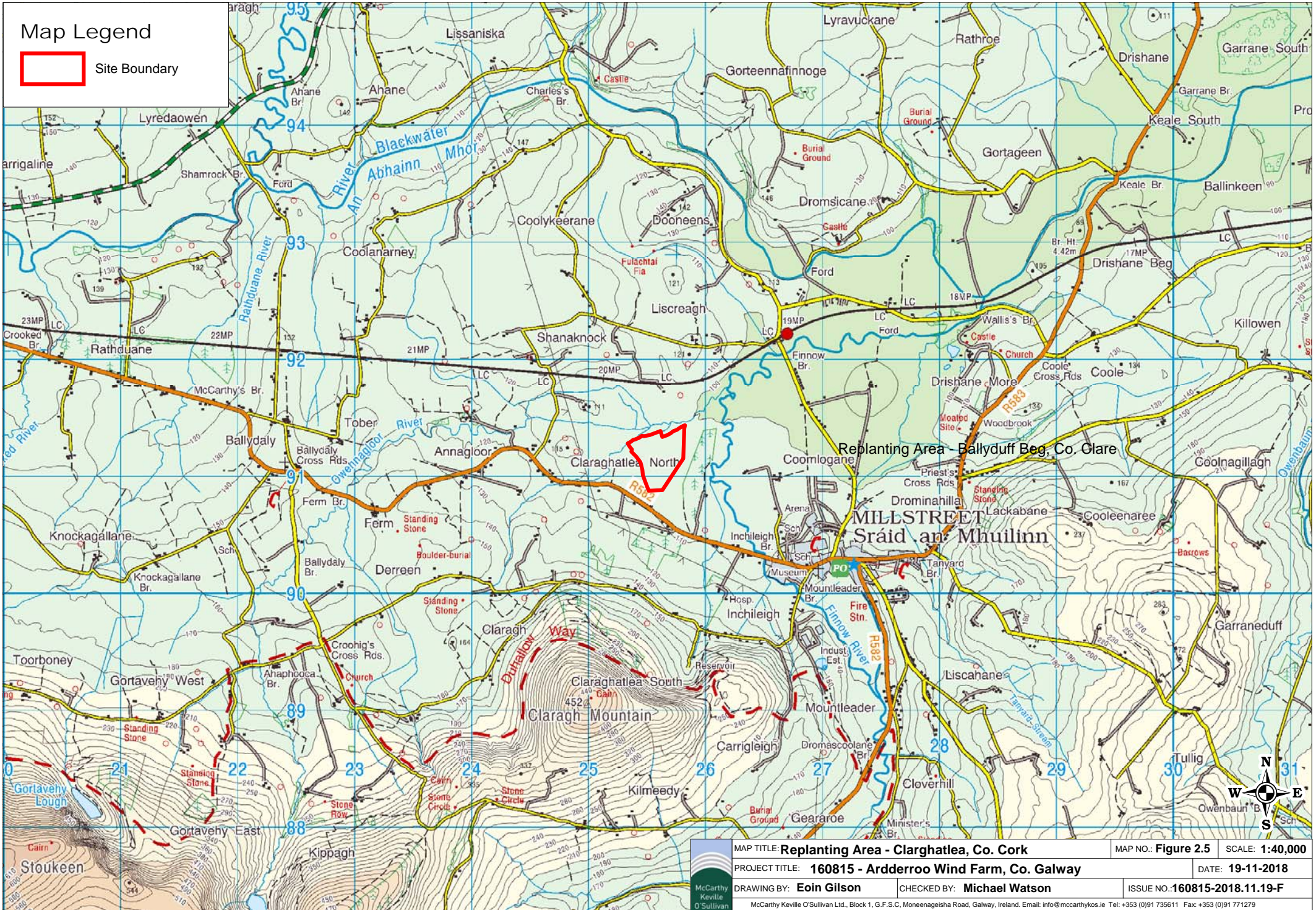
 Site Boundary



	MAP TITLE: Replanting Area - Curragher, Co. Roscommon	MAP NO.: Figure 2.4	SCALE: 1:5,000
	PROJECT TITLE: 160815 - Enerco - Ardderroo Wind Farm EIS	DATE: 20-11-2018	
	DRAWING BY: Eoin Gilson	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.20-F
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Map Legend

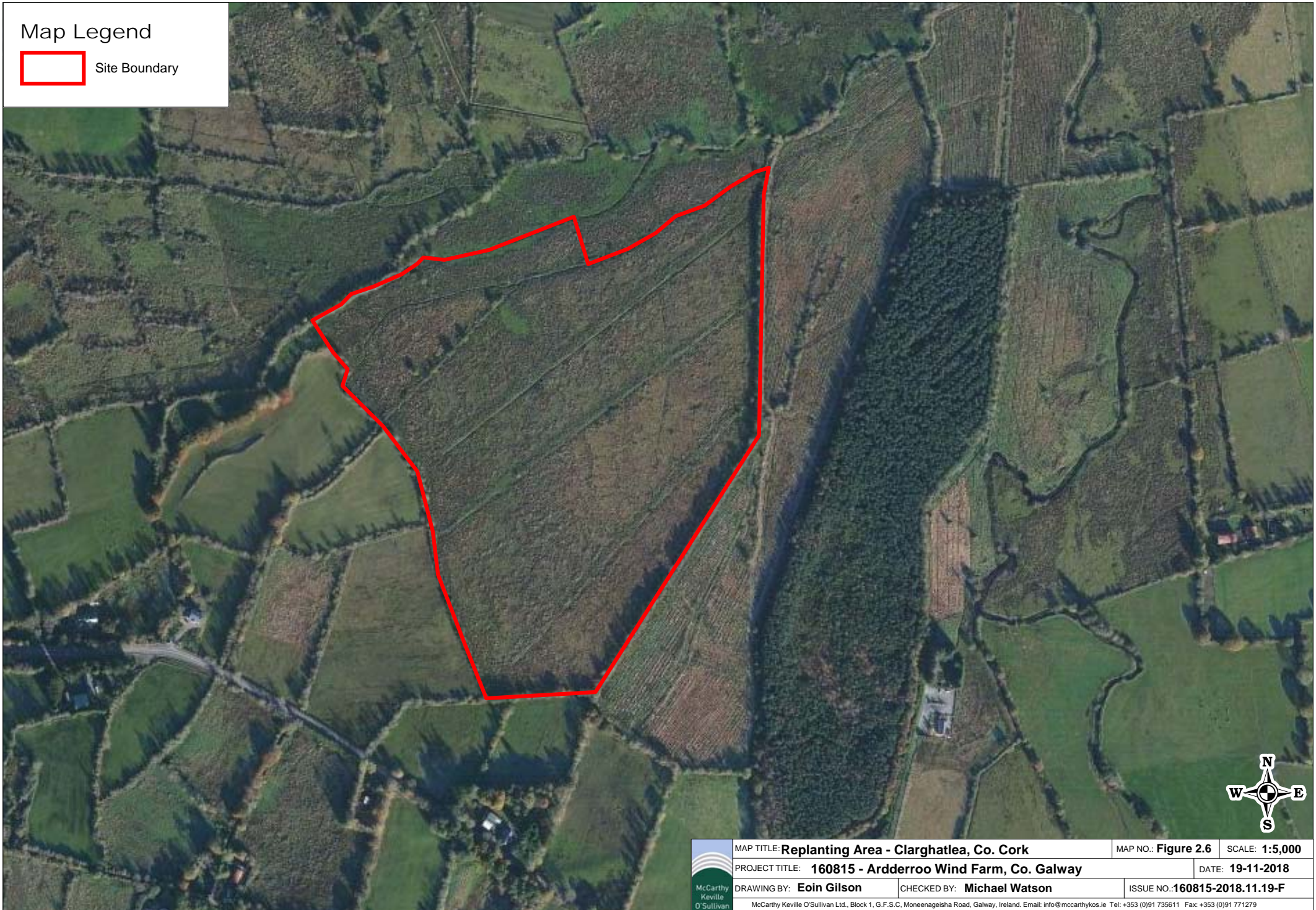
 Site Boundary



	MAP TITLE: Replanting Area - Clarghatlea, Co. Cork	MAP NO.: Figure 2.5	SCALE: 1:40,000
	PROJECT TITLE: 160815 - Ardderroe Wind Farm, Co. Galway	DATE: 19-11-2018	
	DRAWING BY: Eoin Gilson	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.19-F
<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthycos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279</small>			

Map Legend

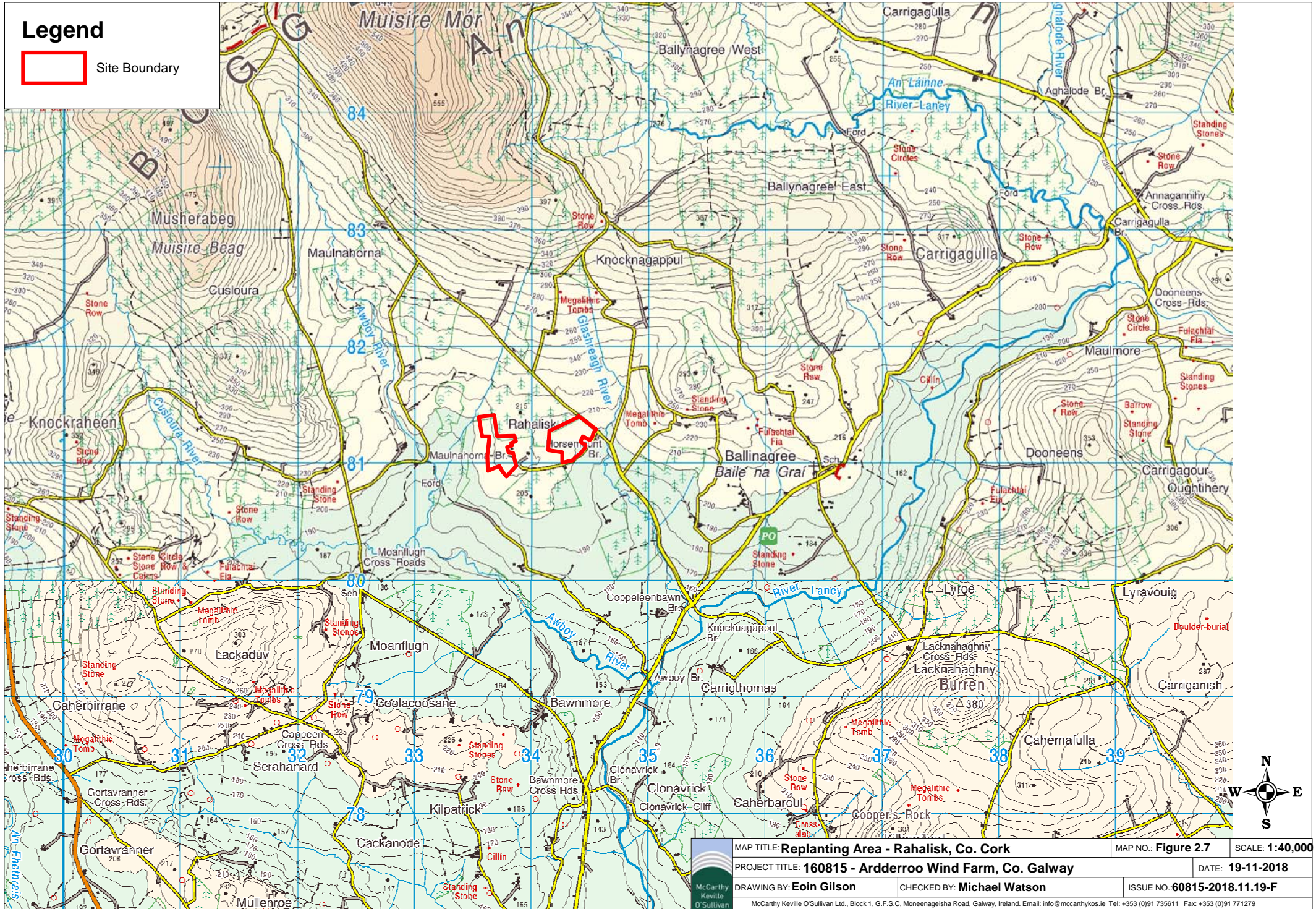
 Site Boundary



	MAP TITLE: Replanting Area - Clarghatlea, Co. Cork	MAP NO.: Figure 2.6	SCALE: 1:5,000
	PROJECT TITLE: 160815 - Ardderroo Wind Farm, Co. Galway	DATE: 19-11-2018	
	DRAWING BY: Eoin Gilson	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.19-F
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Legend

 Site Boundary



MAP TITLE: **Replanting Area - Rahalisk, Co. Cork**

MAP NO.: **Figure 2.7**

SCALE: **1:40,000**

PROJECT TITLE: **160815 - Arderroo Wind Farm, Co. Galway**

DATE: **19-11-2018**

DRAWING BY: **Eoin Gilson**

CHECKED BY: **Michael Watson**

ISSUE NO. **60815-2018.11.19-F**

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Map Legend

 Site Boundary



	MAP TITLE: Replanting Area - Rahilisk, Co. Cork	MAP NO.: Figure 2.8	SCALE: 1:5,000
	PROJECT TITLE: 160815 - Ardderroo Wind Farm, Co. Galway	DATE: 19-11-2018	
	DRAWING BY: Eoin Gilson	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.19-F
	<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthykos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279</small>		


Map Legend

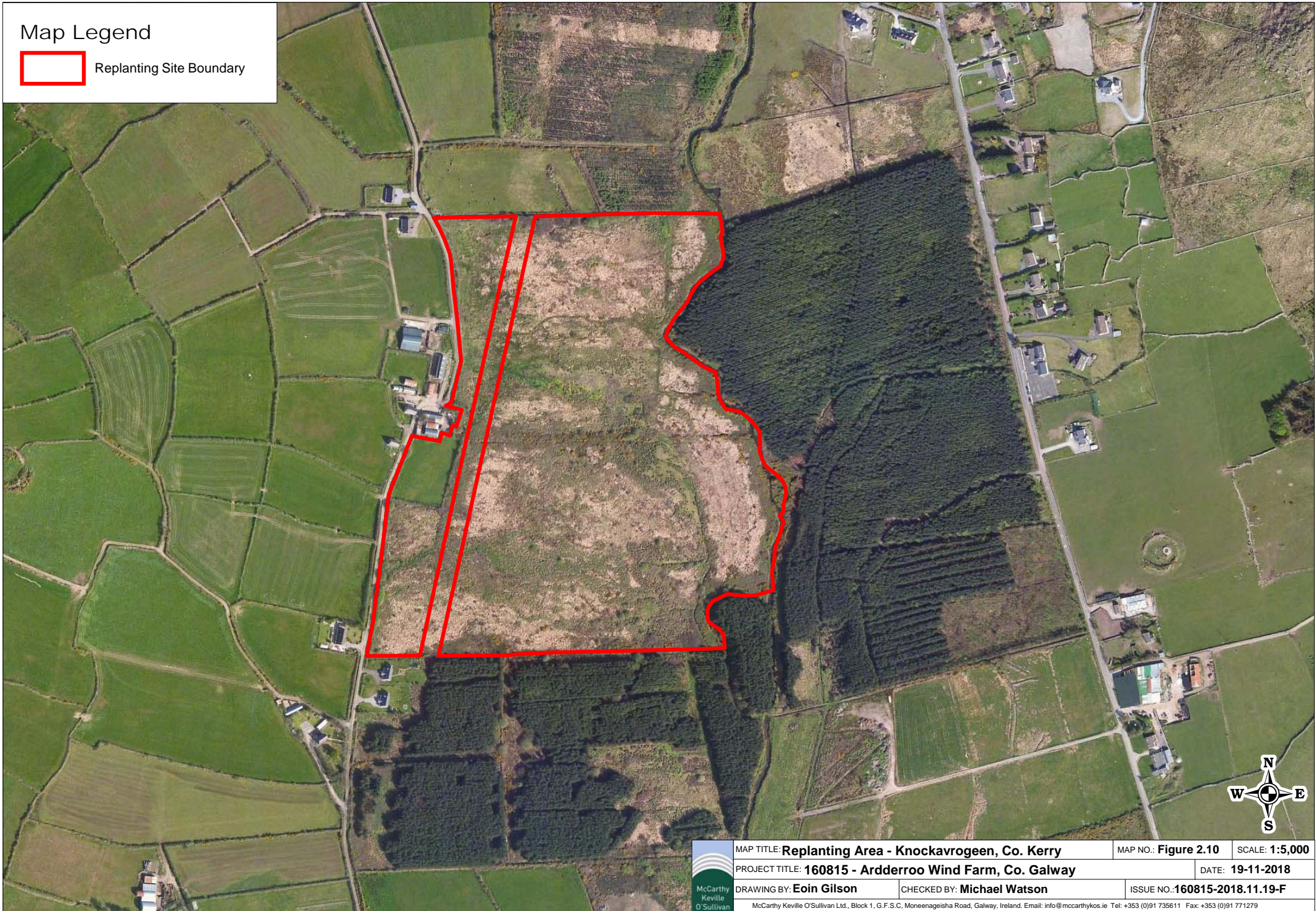
 Replanting Site Boundary



MAP TITLE: Replanting Area - Knochavrogeen, Co. Kerry	MAP NO.: Figure 2.9	SCALE: 1:40,000
PROJECT TITLE: 160815 - Ardderroo Wind Farm, Co. Galway	DATE: 19-11-2018	
DRAWING BY: Eoin Gilson	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.19-F
<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthykos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279</small>		

Map Legend

 Replanting Site Boundary



	MAP TITLE: Replanting Area - Knockavrogeen, Co. Kerry	MAP NO.: Figure 2.10	SCALE: 1:5,000
	PROJECT TITLE: 160815 - Ardderroo Wind Farm, Co. Galway	DATE: 19-11-2018	
	DRAWING BY: Eoin Gilson	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.19-F
<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthykos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279</small>			

- *'Methodology for Clear Felling Harvesting Operations'* (2009)

Planting will be carried out in accordance with the *'Forestry Schemes Manual'* (Forest Service, 2011), which provides guidance in relation to ground cultivation, stocking and spacing, plant handling, planting dates, fertiliser application, fencing, fire, and weed control. Certain specific silvicultural and environmental conditions are also set out in the Forest Service Technical Approvals for each site, which will be adhered to.

2.3.2 Planting

Planting will be by hand. The main forms of planting, as described in the Forestry Schemes Manual, are set out as follows.

Slit Planting

A spade is used to make a vertical slit in the ground. The trees roots are carefully positioned in the slit to ensure that roots are equally spaced in the vertical slit created. The slit is closed and firmed up ensuring the tree is vertical and upright. It is important to ensure that roots are not bent over which can lead to poor development, e.g. J root. This form of planting can be suitable for ribbons, mounds and ripped ground.

Angle Notch

A spade is used to cut a T or L-shaped slit in the ground. The spade is used to lift the slit and the trees roots placed underneath to ensure good root distribution without causing damage. The slit is closed and firmed up to ensure that stem is left vertical and upright.

Pit Planting

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

The Technical Approvals for the proposed replanting lands include the species approved for afforestation.

2.3.3 Drainage

Drainage and sediment control at each site will conform to Forest Service best practice. Appropriate drainage designs will include collector drains, interceptor drains and cut-off drains. A description of each drain type, as per the Forestry Schemes Manual, is set out below. Figure 2.11 presents a schematic diagram of each drain type.

Collector Drains

Collector drains collect water from mound drains, plough furrows, mole drains, etc., and discharge via sediment traps and/or an interceptor drain. Collector drains are excavated to a depth not greater than 10-15 cm below the depth of mound drains. Where collector drains have to be extended into erodible material, 'mini' silt traps are placed appropriately by deepening the drains in places.

Interceptor Drains

Interceptor drains are constructed along the edges of aquatic buffer zones, i.e. areas where forest operations are curtailed and which are managed for environmental protection and enhancement. Interceptor drains collect the discharge from the drainage sub-catchment and allow it to overflow into the buffer zone. In most cases, slope will allow for drainage channels to taper out or be connected to an interceptor

drain rather than enter a buffer zone. However on flat sites, or those with low slopes, it will be necessary to connect drains into the aquatic zone. This may be done only where it will not result in sediment or any pollutants entering the aquatic zone.

Cut off Drains

Cut off drains are constructed immediately up slope of a site and are designed to direct water away from the site.

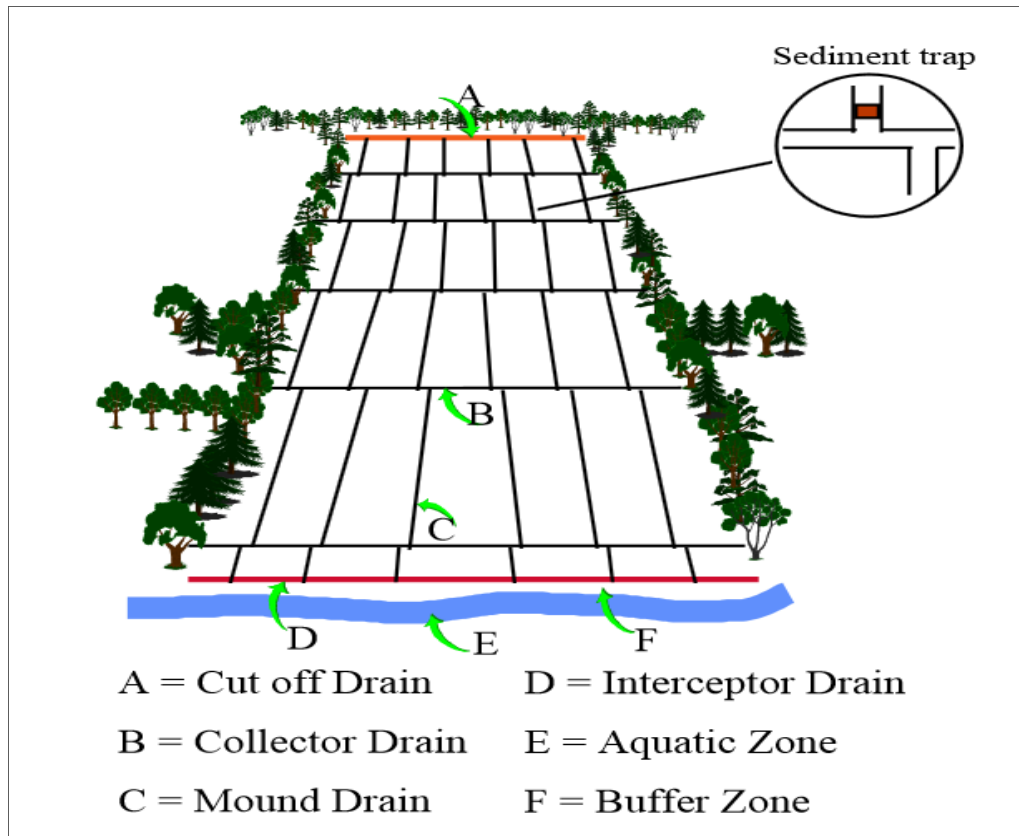


Figure 2.11 Standard Forestry Drainage (*Forestry Schemes Manual*, Forest Service, 2011)

Designs similar to the one above may be suitable for steeper erodible sites.

3 PLANNING POLICY AND PLANNING HISTORY

This section contains relevant National and Local policies regarding forestry. This includes reference to several National forestry policy documents, the National Climate Change Strategy, as well as County Development Plans for Cork, Roscommon, Kerry and Clare.

This section of the report also addresses the planning history within and in the vicinity of the proposed replanting lands.

3.1 Planning Policy

3.1.1 National Policy

National Policy includes Forest Policy as well as policy on climate change. Forestry policy in Ireland is overseen by the Forest Policy Section of the Department of Agriculture, Food and the Marine (DAFM). At a European and International level, the Forest Policy Section is responsible for the transposition of EU Directives and Regulations into Irish Law as well as representing the Forest Service at a European Level. On a National Level, the policy Section deals with issues relating to climate change, carbon sequestration, wood energy, forestry and the environment, legislative framework and liaison with stakeholders which includes other Government agencies.

National Policy is aimed towards increasing Ireland's forest cover in a sustainable manner. The document *Forests, products and people: Ireland's forest policy – a renewed vision* (DAFM, 2014) sets out an updated national forest policy strategy that takes account of the substantial changes that have occurred in Irish forestry since the publication of its forerunner *Growing for the Future* in 1996. As part of the Department's policy to ensure compatibility between forestry development and the protection of the environment, the Forest Service is implementing Sustainable Forest Management (SFM) with a view to ensuring that all timber produced in Ireland is derived from sustainably managed forests. This work is in accordance with Ireland's commitment to the six pan-European criteria for SFM adopted at the Third Ministerial Conference on the Protection of Forests in Europe, Lisbon, 1998. The implementation of SFM within Ireland is supported by the Irish National Forest Standard, the Code of Best Forest Practice and a suite of environmental guidelines (relating to water quality, landscape, archaeology, biodiversity and harvesting) as well as the work of the Forestry Inspectorate and the ongoing review of Irish forest legislation.

The Environmental Requirements for Afforestation, released in December 2016, incorporate more recent developments in relation to environmental regulation, research and changes in forest practices, and consolidate into one single coherent document those measures and safeguards relating to afforestation which were previously contained within the following Forest Service Environmental 'Guidelines': Forestry & Water Quality Guidelines, Forestry & Archaeology Guidelines, Forestry & the Landscape Guidelines and Forest Biodiversity Guidelines. The use of the word 'requirements' in the title was selected over 'guidelines', in order to underline the mandatory nature of the measures therein.

These environmental guidelines are referred to in Section 3.1.3 below.

3.1.1.1 Forests, Products and People: Ireland’s Forest Policy – A Renewed Vision

This document, published in 2014, contains strategic goals and recommendations of the Forest Policy Review Group. The Strategic goal is to

“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.”

The report notes the increasing economic, environmental social role of forestry in Ireland, stating that forestry accounts for 10.8% of the land area of the country, which is low in comparison with other European countries. The strong forest growth rates found in Ireland when compared to other European countries is also noted. The role of forestry in rural development and diversification as well as rural employment is also recognised.

The document notes also the contribution of forests to mitigation of climate change through carbon sequestration which is referred to in the National Climate Change Strategy (see Section 3.1.1.3 below) and notes that Irish forests will sequester approximately 4.8 million tonnes of CO₂ in 2020. This document’s afforestation policy therefore supports Ireland’s efforts to reach the greenhouse gas emission reduction targets as well as reducing dependence on fossil fuels.

The role of the forest resource in contributing to the renewable energy policy goals such as achieving a percentage of power generation by co-firing with biomass, as well as biomass in power generation is also noted. The report notes that the contribution of forestry to achieving renewable energy targets is dependent on the scale and accessibility of the resource, and that a continuation of afforestation in order to maintain a sustainable level supply of small roundwood would result in confidence for investment in Combined Heat and Power and other wood energy mechanisms.

Some recommended relevant policies and actions include:

- *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 that 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.*

3.1.1.2 Forestry Programme 2014-2020

This document was submitted in accordance with EU Guidelines on State aid for agriculture and forestry in rural areas 2014-2020 and represents Ireland’s proposals for 100% State aid funding for a new forestry programme 2014-2020. These measures are consistent with the document *‘Forests, products and people; Ireland’s forest policy – a renewed vision’* as referred to in Section 3.1.1 above.

This document contains a number of responses to the actions and policies identified in the above document, and these include an Afforestation scheme - this is the main response to the policy entitled '*Expansion the forest resource*'.

An identification of needs was carried out by the Department of Agriculture, Food and the Marine (DAFM) in relation to forestry, and these needs are as follows:

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

A number of measures are proposed to meet these needs, and the most relevant of these refers to the first measure, which is aimed at increasing Ireland's forest cover (at approximately 10.7% which is well below the EU average of 38%. The aim is to increase forest cover to 18% by the mid-century. The second need, that to increase forest-based biomass in order to meet the stated targets for renewable energy by 2020.

3.1.1.3 National Climate Change Strategy 2007-2020

The National Climate Change Strategy notes that forest residues and thinnings are recognised as a major biomass resource alongside dedicated energy crops and farm wastes. It also notes that the Department of Agriculture run several schemes to encourage afforestation (Afforestation Grant Scheme) and early harvesting (Forest Roding Scheme), as well as schemes aimed at encouraging the growth of biomass crops such as miscanthus and willow. Such schemes are complimented by the RETROFIT 3 scheme, which aims to create a demand for the biomass by encouraging the bioenergy industry.

3.1.2 Local Policy

3.1.2.1 Cork County Development Plan 2014

Cork County Development Plan 2014 contains some information and objectives relating to forestry, in terms of promoting and controlling afforestation, as well as tourism. The Cork Landscape Character Assessment is also a source of information and is referred to in further detail in Section 8 of this document.

3.1.2.1.1 Economy and Employment Objectives

At the time of writing the plan, approximately 10.5% of Cork was covered in forestry. The plan acknowledges that forestry is an important economic activity in rural areas, particularly as a way for farmers to diversify their income, and will also play an important role in the future of the bio-energy sector. The Cork County Development Plan (CDP) includes Objective EE 10-1, which is to:

"Generally, to support sustainable forestry development throughout the County, it is important to protect sensitive areas, water supplies and fisheries and to ensure that the development is compatible with the protection of the environment and nature conservation areas."

3.1.2.1.2 Tourism

The plan states that tourism in Cork is based on the natural and built heritage. The plan describes the county's tourism product features as including forest/woodland areas

alongside rivers and lakes, mountains and uplands, agricultural lands, peatlands, the rugged coastline, peninsulas and beaches. The Cork County Development Plan (CDP) includes Objective TO 1-2, which is to:

“Facilitate the development of the tourism sector and provide for the delivery of a unique combination of tourism opportunities drawing on the network of attractions in Cork County and potential future attractions.”

3.1.2.2 Clare County Development Plan 2017-2023

The Clare County Development Plan 2011-2017 contains a number of policies and objectives relating to Natural Resources and forestry. The County Clare Landscape Character Assessment and general policies on landscape are also referred to in Section 8 of this report.

Section 10 of the Clare County Development Plan contains objectives regarding Natural Resources, and notes that Clare is the fourth most afforested County and recognises the potential for job creation within the forestry sector and related industries. The Plan states that the Council will support the diversification and sustainable development of appropriate lands to forestry and associated enterprises subject to normal landscape and ecological considerations. Objective 10.7 is:

“To facilitate, encourage and appropriately manage the development of natural resources of the county and to ensure that this is done in a sensitive way, eliminating any significant adverse effects on the natural environment and in compliance with all relevant legislation, as set out in Objective CDP2.1.”

Section 10 of the Clare County Development Plan (Rural Development and Natural Resources) deals with policies and objectives relating to forestry. The Plan refers to the forestry sector as the largest and most readily available biomass resource and also refers to the scope for wood to replace dependence on fossil fuels, as well as potential economic and social gains. The Plan states that the Council will seek to actively encourage and facilitate where appropriate the sustainable development of the forestry sector in a scale and manner which maximizes its contribution to the local rural economy. The Plan also notes the role of forestry in Bioenergy. Objective 13.8 states it is an objective of Clare County Council:

- a) *To promote and encourage state and private afforestation and reforestation throughout the countryside in appropriate locations, in compliance with Objective CDP2.1, and on suitable soil types as a means of promoting rural diversity and strengthening both the rural and urban economy;*
- b) *To support the development of enterprises ancillary to the forestry industry, in particular value-improvement enterprises relating to timber extracted from County Clare forests;*
- c) *To encourage the sustainable development of native woodlands to enhance biodiversity, the landscape and recreational amenity, to provide climate change mitigation and an education resource and to strengthen the rural economy.*

The plan also notes the role that forestry can play in tourism, with Objective 9.10c stating:

It is an objective of Clare County Council to work in collaboration with Coillte, private forestry owners, community organisations and other interested parties to develop new forest accommodation, access, signage and trails for walking, cycling, mountain-biking and horse-riding (bridle paths).

3.1.2.3 Roscommon County Development Plan 2014

The Roscommon County Development Plan 2014 contains information and objectives relating to forestry, in terms of promoting and controlling afforestation. The Roscommon Landscape Character Assessment is also a source of information and is referred to in further detail in Section 8 of this document.

Chapter 3 of the Roscommon County Development Plan and contains objectives regarding Natural Resources. The Plan states that over 21,000ha of forestry has been planted in County Roscommon, representing 8.7% of the total area of the County.

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 Planning and Development (Amendment) (No. 2) Regulations 2011 transferred management of development for initial afforestation from the relevant Planning Authorities to the Forest Service (part of the Department of Agriculture, Food and the Marine). Roscommon County Council as the relevant local authority is now a consultation body and in this role the Planning Authority submit observations on applications for initial afforestation where appropriate.

3.1.2.4 Kerry County Development Plan 2015-2021

Kerry County Development Plan 2015-2021 contains some information and objectives relating to forestry, in terms of promoting and controlling afforestation, as well as tourism.

3.1.2.4.1 Economy and Employment Objectives

In Kerry, approximately 55,000 ha (11.5%) of all the land in the County is covered by forestry. The forest estate in Kerry is relatively unique to the rest of the country in that it is predominantly in private ownership. Chapter 8 of the Kerry County Development Plan (Rural Development and Natural Resources) deals with policies and objectives relating to forestry. Some forestry-related objectives are:

- NR-9 Encourage and promote sustainable forestry development in the County, while ensuring environmental protection through the implementation of the Plan and the relevant regulations, guidelines and standards relating to forestry development operated by other relevant statutory bodies.
- NR-10 Encourage, promote, provide and facilitate access to forestry and woodlands, in co-operation with Coillte, the Forest Service and other agencies for walking routes (including looped walks), mountain trails, nature trails, mountain bike trails, bridle paths, orienteering and other recreational activities for the benefit of local people and tourists and take into account the Forest Service 2006 Publication "Forest Recreation Guide for Owners and Managers" based on National Spatial Strategy.
- NR-11 Support the continued sustainable expansion and diversification of the forestry sector, in a manner that maximises its contribution to the social and economic well being of the County and which is compatible with the protection and enhancement of the environment and heritage of County Kerry.
- NR-13 Encourage the appropriate use of forests for timber, energy, biodiversity, recreation and tourism and shelter and development of associated businesses and enterprise at local level. Proposals shall be in accordance the provisions of the Renewable Energy Strategy Kerry County

Council 2012), the objectives, policies and development standards of this Plan as they relate to the natural environment.

Chapter 8 also refers to the move to divert forestry resources into biomass production with the view to penetrating the national and local heat markets. The use of the County's forestry resources in biomass is being strongly supported by the Forest Service, Department of Agriculture, Food and Marine and the Teagasc Forestry Development Unit as well as other local partners.

3.1.2.4.2 Forest Recreation

The Plan states that developing a forest provides a resource for the local community and for visitors to the area and that forest recreation creates the basis for a wide range of related enterprises and opportunities for income generation. Objective NR-19 is:

Encourage the sustainable development of forest parks and other tourist related amenities at appropriate locations within forested areas in accordance with the Forest Recreation in Ireland; A Guide for Forest Owners and Managers published by the Department of Agriculture and Food (2006), the Forestry Landscape Guidelines and the objectives, policies and development standards of this plan as they relate to the natural and built environment.

3.1.3 Forest Service Guidelines

The Environmental Requirements for Afforestation, released in December 2016, incorporate more recent developments in relation to environmental regulation, research and changes in forest practices, and consolidate into one single coherent document those measures and safeguards relating to afforestation which were previously contained within the following Forest Service Environmental 'Guidelines': Forestry & Water Quality Guidelines, Forestry & Archaeology Guidelines, Forestry & the Landscape Guidelines and Forest Biodiversity Guidelines. The use of the word 'requirements' in the title was selected over 'guidelines', in order to underline the mandatory nature of the measures therein.

The overall aim of the Environmental Requirements for Afforestation is to ensure that the establishment of forests is carried out in a way that is compatible with the protection and enhancement of the environment, in regard to water quality, biodiversity, archaeology, landscape and other environmental receptors. In relation to water, the focus is on reducing and eliminating sources of pollution, and preventing the creation of pathways to receiving waters. The Requirements provide an enhanced 'baseline' level of protection regarding afforestation and water, with the water setback representing an important feature. They will also support the Plan for Forestry & Freshwater Pearl Mussel in Ireland, by providing an enhanced baseline level of protection regarding afforestation and water.

The Environmental Requirements for Afforestation are set out in three stages that reflect the project development process, i.e. pre-application design, site works, and ongoing site management. While some overlap exists, these three stages reflect the typical sequence of activities undertaken by an Applicant and her / his Registered Forester, and the corresponding sequence of mandatory environmental measures that apply, throughout afforestation up until the end of the premium period (or 15 years, for non-grant aided forests).

Afforestation at the proposed replanting lands will be carried out in accordance with the Environmental Requirements for Afforestation document, as stated in the conditions attached to each Technical Approval.

3.2 Planning History

A planning history search was carried out for the proposed replanting lands and the lands in their immediate vicinity. This entailed reference to the Planning Application search facility and maps on the website of each relevant Planning Authority, i.e. Cork County Council, Roscommon County Council, Kerry County Council and Clare County Council. The planning history searches found that planning applications in the vicinity of the proposed replanting lands comprise one-off houses. No projects or plans were identified that would be incompatible with the proposed replanting or give rise to significant cumulative impacts.

4 IMPACT ASSESSMENT METHODOLOGY

The impacts of afforestation at the potential replanting lands described in Section 2.2 of this report have been assessed under the following key environmental headings:

- Biodiversity
- Land, Soils and Geology
- Hydrology and Hydrogeology
- Landscape
- Cultural Heritage
- Air, Climate and Noise
- Human Beings
- Material Assets

Each site is addressed separately under the key environmental headings, and described in terms of Baseline Environment, Impact Assessment, Proposed Mitigation Measures and Residual Impacts and Significance of Effects. The findings of the assessment are presented in Sections 5 to 12 of this report.

Impacts are described in terms of quality, significance, duration and type, where possible. The classification of impacts in this report uses the standard best-practice terms provided in the Environmental Protection Agency document, *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA, August 2017), Table 1.1 (page 1-6) of the EIAR submitted as part of the Ardderroo wind farm planning application presents a copy of the EPA glossary of terms.

Appropriate mitigation measures are presented where relevant to reduce, remedy or eliminate potential impacts. Residual impacts are also presented following any impact for which mitigation measures are prescribed.

5 BIODIVERSITY

This report provides a description of the proposed replanting land and an assessment of the potential ecological impacts including cumulative impacts associated with afforestation at the following locations:

- Ballyduff Beg, Co. Clare
- Curragherd, Co. Roscommon
- Claraghtlea North, Co. Cork
- Rahilisk, Co. Cork
- Knockavrogeen, Co. Kerry

5.1 Methodology and Limitations

The flora and habitats of the proposed afforestation sites were assessed by means of a desk study of information and literature pertinent to the site and surrounding area, information pertaining to legislation/designations and other notable ecological records. In addition, a field survey of the site, including a general habitat and mammal survey, was carried out by a suitably qualified ecologist.

A field visit was made to the sites in March 2017 & October 2018. Habitats within and adjacent to the proposed afforestation sites were classified according to the guidelines set out in *'A Guide to Habitats in Ireland'* (Fossitt, 2000), which classifies habitats based on the vegetation present and management history. The sites were walked systematically and habitats were assessed and classified. The walkover survey was designed to detect the presence, or likely presence, of a range of protected habitats and species. All bird species observed or heard within the site were recorded and the presence or signs of mammals, amphibians and reptiles were noted during the visit.

Seasonal factors that affect distribution patterns and habits of species were taken into account when conducting the surveys. The potential of the sites to support certain populations (in particular those of conservation importance that may not have been recorded during the field survey due to their seasonal absence or nocturnal/cryptic habits) was assessed. It is concluded that the habitats and species that could potentially be impacted by the proposed afforestation were readily identified and assessed during the field surveys conducted in March and a thorough and comprehensive ecological assessment was achieved.

Features within the sites were visually assessed for potential as bat roosting habitat using a protocol set out in BCT *Bat Surveys for Professional Ecologists: good practice Guidelines (3rd edn)* (Collins, J (ed.), 2016). Table 4.1 of the 2016 Guidelines identifies a grading protocol for assessing structures, trees and commuting/foraging habitat for bats. The protocol is divided into four Suitability Categories: High, Moderate, Low and Negligible.

5.1.1 Identification of Designated Sites Within the Zone of Influence

5.1.1.1 Background to Designated Sites

European Sites

The Habitats Directive (together with the Birds Directive) forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. All in all the directive protects over 1,000 animal and plant species and over 200 "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance.

With the introduction of the EU Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC) which were transposed into Irish law as S.I. No. 94/1997 *European Communities (Birds and Natural Habitats) Regulations 1997*, the European Union formally recognised the significance of protecting rare and endangered species of flora and fauna, and also, more importantly, their habitats. The 1997 Regulations and their amendments were subsequently revised and consolidated in S.I. No. 477/2011-*European Communities (Birds and Natural Habitats) Regulations 2011*. This legislation requires the establishment and conservation of a network of sites of particular conservation value that are to be termed 'European Sites'.

Potential impacts on European Sites are not discussed in this report but are assessed in an Appropriate Assessment Screening Report for each of the afforestation sites (Appendix 1).

Nationally Designated Sites

Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs) are heritage sites that were designated for the protection of flora, fauna, habitats and geological sites under the Wildlife (Amendment) Act 2000. These sites do not form part of the Natura 2000 network and the AA process, or screening for same, does not apply to NHAs or pNHAs. Potential for impact on these Nationally designated sites is addressed below for each of the afforestation sites.

5.1.1.2 Identification of the Designated Sites Likely Zone of Influence of the Project

Using the GIS software, MapInfo (Version 10.0), designated sites a within a radius of 15 kilometres of the proposed development were identified (as per the DoEHLG Guidance (2010)). In addition, using the precautionary principle, designated Sites located outside the 15km buffer zone were also taken into account and assessed.

5.1.2 Methodology for Assessment of Effects

5.1.2.1 Geographical Framework

Guidance on Ecological Impact Assessment (CIEEM 2016) recommends categories of ornithological or nature conservation value that relate to a geographical framework (e.g. international, through to local). This assessment utilises the geographical framework described in *Guidelines for Assessment of Ecological Impact of National Road Schemes* (NRA 2009). The guidelines provide a basis for determination of whether any particular site is of importance on the following scales:

- International
- National
- County

- Local Importance (Higher Value)
- Local Importance (Lower Value)

Locally Important (lower value) receptors contain habitats and species that are widespread and of low ecological significant and of any importance only in the local area. Internationally Important sites are designated for conservation as part of the Natura 2000 Network (SAC or SPA) or provide the best examples of habitats or internationally important populations of protected flora and fauna.

5.1.2.2 Impact Assessment –EPA Criteria (2017)

Impacts are identified as per the ‘Draft Guidelines on the Information to be contained in Environmental Impact Statements’ (EPA, 2017) and are shown below (Table 5.1).

Table 5.1 Impact Classification Terminology (EPA, 2017)

Impact Characteristic	Term	Description
Quality	Positive	A change which improves the quality of the environment.
	Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative	A change which reduces the quality of the environment.
Significance	Imperceptible	An effect capable of measurement but without significant consequences.
	Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging trends.
	Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound	An effect which obliterates sensitive characteristics.
Extent & Context	Extent	Describe the size of the area, number of sites and the proportion of a population affected by an effect
	Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions
Probability	Likely	The effects that can reasonably be expected to occur because of the development if all mitigation measures are properly implemented.

Impact Characteristic	Term	Description
	Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration and Frequency	Momentary Effects	Effects lasting from seconds to minutes.
	Brief Effects	Effects lasting less than a day.
	Temporary Effects	Effects lasting less than a year.
	Short-term	Effects lasting one to seven years.
	Medium-term	Effects lasting seven to fifteen years.
	Long-term	Effects lasting fifteen to sixty years.
	Permanent	Effects lasting over sixty years.
	Reversible Effects	Effects that can be undone.
	Frequency	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)
Type	Indirect Effects	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative	The addition of many minor or significant effects to create one larger, more significant effect.
	'Do Nothing'	The environment as it would be in the future should no development of any kind be carried out.
	Indeterminable	When the full consequences of a change in the environment cannot be described.
	Irreversible	When the character, distinctiveness, diversity, or reproductive capacity of an environment is permanently lost.
	Residual	Degree of environmental change that will occur after the proposed mitigation measures have taken effect.
	Synergistic	Where the resultant effect is of greater significance than the sum of its constituents.
	'Worst Case'	The effects arising from a development in the case where mitigation measures substantially fail.

5.2 Replanting Site 1: Ballyduff Beg, Co. Clare

The proposed replanting land at Ballyduff Beg, Co. Clare (the 'Ballyduff Beg site') has been assessed as part of the Afforestation Approval – Form 1 process described above, and has obtained Technical Approval for Afforestation from the Forest Service. The site location is presented in Figure 2.1.

5.2.1 Desk Study

The following sections detail the results of the searches of published material that were consulted as part of the desk study for the Ballyduff beg site.

5.2.2 Identification of the Designated Sites Likely Zone of Influence of the Project

Using GIS software MapInfo (Version 10.0), sites designated for nature conservation within the potential zone of influence (ZOI) of the proposed development were identified. The ZOI was derived utilising a precautionary approach.

The designated sites are listed below in Table 5.2 and displayed on Figure 5.1.







Table 5.2: Designated sites within 15 kilometres of the study area

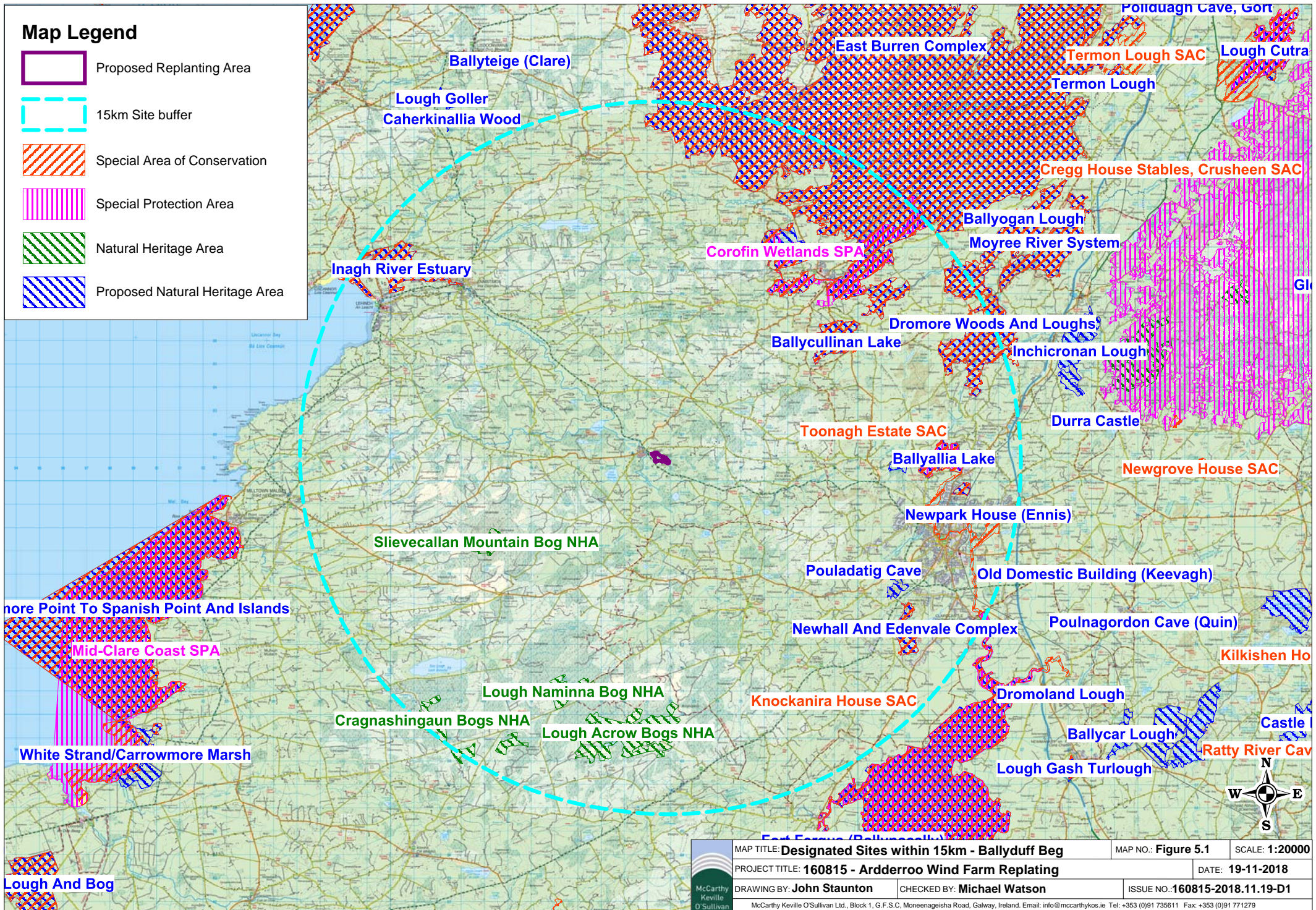
Designated Site	Distance from Proposed Afforestation (km)
Special Areas of Conservation (SAC)	
Ballycullinan Lake SAC (000016)	7.5km
East Burren Complex SAC (001926)	8.2km
Toonagh Estate SAC (002247)	8.6km
Ballycullinan, Old Domestic Building SAC (002246)	9.1km
Pouladatig Cave SAC (000037)	9.3km
Ballyallia Lake SAC (000014)	10.6km
Inagh River Estuary SAC (000036)	10.8km
Lower River Shannon SAC (002165)	11.1km
Newhall and Edenvale Complex SAC (002091)	11.6km
Old Farm Buildings, Ballymacrogan SAC (002245)	12.0km
Dromore Woods and Loughs SAC (000032)	12.3km
Knockanira House SAC (002318)	12.4km
Moneen Mountain SAC (000054)	12.6km
Special Protection Area (SPA)	
Corofin Wetlands SPA (004220)	8.2km
Ballyallia Lough SPA (004041)	10.6km
River Shannon and River Fergus Estuaries SPA (004077)	14.8km
Natural Heritage Areas (NHA)	
Slievecallan Mountain Bog NHA (002397)	7.2km
Lough Naminna Bog NHA (002367)	9.7km
Lough Acrow Bogs NHA (002421)	10.2km
Cragnashingaun Bogs NHA (002400)	13.0km
Proposed Natural Heritage Areas (pNHA)	
Ballycullinan Lake (000016)	7.5km
East Burren Complex (001926)	8.2km
Pouladatig Cave (000037)	9.3km
Lough Cleggan (001331)	9.4km
Ballyallia Lake (000014)	10.6km
Cahircalla Wood (001001)	10.7km
Inagh River Estuary (000036)	10.8km
Newhall And Edenvale Complex (002091)	11.6km
Dromore Woods And Loughs (000032)	12.3km
Moneen Mountain (000054)	12.6km
Newpark House (Ennis) (000061)	13.8km
Fergus Estuary And Inner Shannon, North Shore (002048)	14.8km

5.2.3 New Flora Atlas

A search was made in the New Atlas of the British & Irish Flora (Preston et al, 2002) to investigate whether any rare or unusual plant species listed under Annex I of the EU

Map Legend

-  Proposed Replanting Area
-  15km Site buffer
-  Special Area of Conservation
-  Special Protection Area
-  Natural Heritage Area
-  Proposed Natural Heritage Area



	MAP TITLE: Designated Sites within 15km - Ballyduff Beg	MAP NO.: Figure 5.1	SCALE: 1:20000
	PROJECT TITLE: 160815 - Arderroo Wind Farm Replanting	DATE: 19-11-2018	
	DRAWING BY: John Staunton	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.19-D1
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Habitats Directive had been recorded in the relevant 10km square in which the study site is situated (R28), during the 1987-1999 atlas survey. No species protected under the Flora (Protection) Order, 1999 (as amended 2015) have been previously recorded within the hectad.

5.2.4 National Biodiversity Data Centre Notable Records

A search of the National Biodiversity Data Centre (NBDC) website was conducted with a focus on records of protected fauna recorded from hectad M36. The results of the database search are provided below in Table 5.3. Table 5.4 includes records of non-native invasive species listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015).

Table 5.3 Notable species that occur within 10km Grid Square M36
HD = EU Habitats Directive; BD = EU Birds Directive; WA = Wildlife Acts (1979-2012)

Common Name	Scientific Name	Designation
Smooth Newt	<i>Lissotriton vulgaris</i>	WA
Common Frog	<i>Rana temporaria</i>	HD, WA
Common Kingfisher	<i>Alcedo atthis</i>	BD, WA
Greater White-fronted Goose	<i>Anser albifrons</i>	BD, WA
Canada Goose	<i>Branta canadensis</i>	BD, WA
Dunlin	<i>Calidris alpina</i>	BD, WA
Black Tern	<i>Chlidonias niger</i>	BD, WA
Hen Harrier	<i>Circus cyaneus</i>	BD, WA
Corn Crake	<i>Crex crex</i>	BD, WA
Bewick's Swan	<i>Cygnus columbianus subsp. bewickii</i>	BD, WA
Whooper Swan	<i>Cygnus cygnus</i>	BD, WA
Little Egret	<i>Egretta garzetta</i>	BD, WA
Merlin	<i>Falco columbarius</i>	BD, WA
Peregrine Falcon	<i>Falco peregrinus</i>	BD, WA
Great Northern Diver	<i>Gavia immer</i>	BD, WA
Ruff	<i>Philomachus pugnax</i>	BD, WA
European Golden Plover	<i>Pluvialis apricaria</i>	BD, WA
Wood Sandpiper	<i>Tringa glareola</i>	BD, WA
Marsh Fritillary	<i>Euphydryas aurinia</i>	HD
European Otter	<i>Lutra lutra</i>	HD, WA
Pine Marten	<i>Martes martes</i>	HD, WA
Eurasian Badger	<i>Meles meles</i>	WA
Daubenton's Bat	<i>Myotis daubentonii</i>	HD, WA
Whiskered Bat	<i>Myotis mystacinus</i>	HD, WA
Natterer's Bat	<i>Myotis nattereri</i>	HD, WA
Lesser Noctule	<i>Nyctalus leisleri</i>	HD, WA
Pipistrelle	<i>Pipistrellus pipistrellus sensu lato</i>	HD, WA
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	HD, WA
Brown Long-eared Bat	<i>Plecotus auritus</i>	HD, WA
Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>	HD, WA
Eurasian Red Squirrel	<i>Sciurus vulgaris</i>	WA

Table 5.4. NBDC records for invasive species in hectad M36

Common Name	Scientific Name
Canadian Waterweed	<i>Elodea canadensis</i>

Japanese Knotweed	<i>Fallopia japonica</i>
Zebra Mussel	<i>Dreissena (Dreissena) polymorpha</i>
Fallow Deer	<i>Dama dama</i>
American Mink	<i>Mustela vison</i>
Canada Goose	<i>Branta canadensis</i>

5.2.5 Water Quality

The proposed afforestation site is located within the Mal Bay Catchment. The Carrowkeal East Stream runs along a section of the eastern border the site, flowing into the river Inagh draining in a north westerly direction.

There is no EPA water quality monitoring station down stream from the Carrowkeal East Stream at the Inagh Bridge to provide a River Water Quality assessment score. The Water Framework Directive (WFD) river waterbody risk score for the Carrowkeal East Stream has been assessed as 'At Risk of Not Achieving a Good Status' for the river. The WFD River Waterbody status for the Carrowkeal East Stream classifies the stream's waterbody status as 'Good'.

5.2.6 Freshwater Pearl Mussel Sensitive Areas

The site is not located within a Pearl Mussel (*Margaritifera margaritifera*) sensitive area. The site has no connectivity to any pearl mussel sensitive areas.

5.2.7 Conclusions of the Desktop Study

The afforestation site is not located within any site designated for nature conservation.. The mammal species recorded within the relevant hectad have widespread range and distributions and are likely to be recorded frequently throughout Ireland. A number of rare and protected habitats, flora and fauna have been recorded from the hectad in which the proposed development is located. The field surveys will identify if any of the identified habitats, flora or fauna or additional ecological receptors occur within the study area.

5.2.8 Habitats present

The site consisted of agricultural fields subject to ongoing drainage and land management, containing semi-improved Wet Grassland (GS4). Field boundaries consisted of Hedgerows (WL1), narrow strips of Scrub (WS1) and Treelines (WL2).

The southern portion of the site consisted of Wet Grassland (GS4) (Plate 5.1) Species recorded within this section included Knapweed (*Centaurea nigra*), Greater Plantain (*Plantago major*), Self-Heal (*Prunella vulgaris*), Red Clover (*Trifolium pratense*), Creeping Buttercup (*Ranunculus repens*), Meadow Buttercup (*Ranunculus acris*), Mouse-Eared Chickweed (*Cerastium vulgatum*), Glaucous Sedge (*Carex flacca*) and Rushes (*Juncus sp.*).

The remainder of the site is comprised of Wet Grassland (GS4) (Plate 5.2) which is dominated extensively by rushes (*Juncus spp.*). Grass species recorded throughout the site included Creeping Bent (*Agrostis stolonifera*), Yorkshire Fog (*Holcus lanatus*), and Purple Moor grass (*Molinia caerulea*). Other species recorded in this area included Creeping Buttercup (*Ranunculus repens*), Meadow buttercup (*Ranunculus acris*), Meadow Sweet (*Filipendula ulmaria*), Silverweed (*Potentilla anserine*), Marsh Bedstraw (*Galium palustre*), Ragwort (*Senecio jacobaea*), Brambles (*Rubus fruticosus*), and Common Sorrell (*Rumex acetosa*).

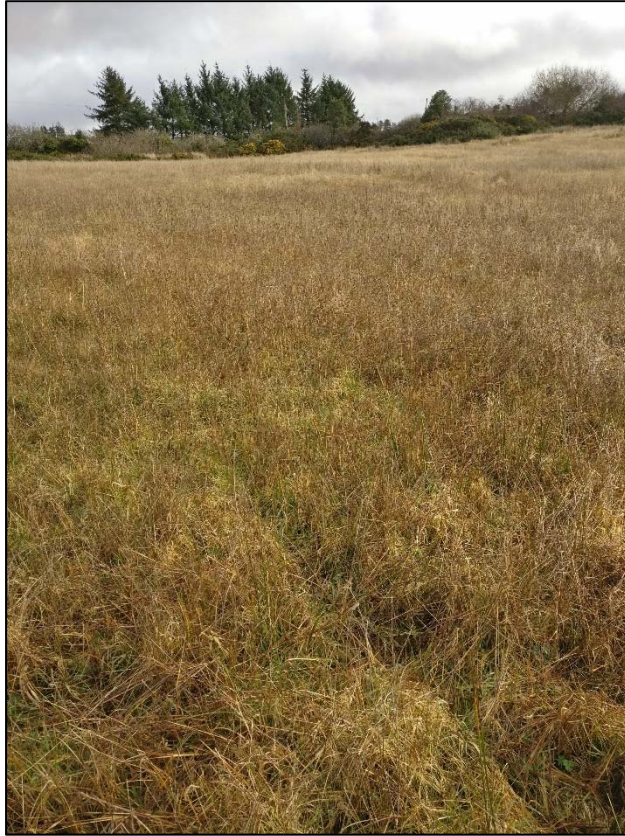


Plate 5.1 Wet Grassland (GS4) on the study site.



Plate 5.2 Wet Grassland (GS4) on the study site.

The field boundaries within the site are composed of Hedgerows (WL1), narrow strips of Scrub (WS1) and Treelines (WL2). Species recorded within these habitats included Gorse (*Ulex europaeus*), Willow (*Salix spp.*), Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Hazel (*Corylus avellana*), Cotoneaster (*Cotoneaster spp.*), Laurel (*Prunus laurocerasus*), and Pine (*Pinus spp.*). Other species included Bramble, Ivy (*Hedera helix*), Bracken (*Pteridium aquilinum*), Hard Fern (*Blechnum spicant*).

5.2.9 Invasive Species

No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were identified within the site boundaries during field survey.

5.2.10 Significance of Habitats

Ecological evaluation within this section follows a methodology that is set out in Chapter 3 of the 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009).

No habitats which correspond to those that are listed in the EU Habitats Directive were identified during the site visit. The wet grassland, given its managed state, is considered to be of **Local Importance (Lower Value)**. The hedgerows, treelines, and scrub is considered to be of **Local Importance (Higher Value)** as these habitats have a higher level of biodiversity within the context of the local environment.

5.2.11 Fauna in the existing environment

Birds

Snipe (*Gallinago gallinago*), and Rook (*Corvus frugilegus*) were recorded incidentally within the site. No birds listed on Annex I of the EU Birds Directive were recorded during the field survey.

Terrestrial Mammals

A number of mammal trails through the wet grassland were observed. These were likely created by fox (*Vulpes Vulpes*) in the area. No evidence of protected mammal species were recorded within the site boundaries.

Bats

There are no structures within the site which may provide suitable roosting habitat for bats. A large open landscape structure dominates the site and though linear features may be used by foraging and commuting bats, overall the site is considered to have low suitability for bat species. In addition, the replanting is highly unlikely to result in impacts on bat species as all linear features within the site will be retained.

5.2.12 Significance of Fauna

No evidence of Annex listed species, or other species of conservation concern were recorded within the site boundaries. In addition, no suitable habitat for species of conservation concern including Marsh Fritillary was identified within the proposed afforestation site.

Bird species recorded within the site boundaries are common generally and assigned a value of **Local Importance (Lower Value)**. The site of the proposed development provides some limited foraging, commuting and nesting habitats for these and other common bird species in general. Similar habitat is widespread in the locality and so a significant impact as a result of a loss of suitable habitat.

5.2.13 Impact Assessment

Do Nothing' Impact

Were the site to remain unplanted the management on site would likely remain as it is presently i.e. grazed by livestock and drained. However, given that the site has received Technical Approval from the Forest Service as described above it will be afforested per the provisions of the approval at a later date.

Loss of Floral Habitat

Long-Term Neutral Impact

The loss of habitat is likely to be restricted to wet agricultural grassland. The impacted habitats are not considered to be of ecological sensitivity and their loss will constitute a neutral impact when compared with the coniferous forestry to be planted.

Mitigation

All works will be carried out in accordance with the relevant Forest Service requirements. The Technical Approval document specifies the area that should contain at suitable broadleaf and conifer species. This management would allow for the retention of the Local Value (Higher Importance) habitats.

Residual Impact

The replacement of Wet Grassland habitat with coniferous forestry is considered to be a **Long Term Neutral Impact**.

Loss of Faunal Habitat

Long Term Neutral Impact

The proposed planting site is not of high value or importance as a faunal habitat, being an open expanse of degraded Wet Grassland with little to no cover or shelter for faunal species. It is likely that the proposed planting of forestry will result in some loss of faunal habitat for common species such as Fox (*Vulpes vulpes*) and other small mammals, along with local bird species. This habitat is widespread in the local area and this loss is considered to be negligible. The afforestation, in particular that of broadleaf species will result in the recreation of cover and shelter for a range of species. This will, overall, result in a **Long Term Neutral Impact**.

Water Pollution

Short-Term Minor Negative Impact

There is potential for water pollution to occur through discharge to the adjacent river as a result of the proposed works in the form of acidification, siltation or erosion.

Mitigation

The works associated with planting, maintenance, thinning and harvesting will be carried out in accordance with the forest services requirements and buffer zone widths for the water courses applied accordingly.

Residual Impact

No impacts on water quality are anticipated as a result of any element of the proposed afforestation.

Cumulative Impacts

The proposed afforestation has Technical Approval from the Forest Service and will be undertaken accordingly. This approval is conditional to all associated works being undertaken in accordance with Forest Service requirements. The impacts associated

with this afforestation have been classified overall as a neutral impact. As such, when considered in combination with the other land uses in the area, and considering that the forestry guidelines are designed to minimise and prevent impacts to habitats that are outside the site, cumulative impacts on sensitive ecological receptors are not anticipated.

5.3 Replanting Site 2: Curraghard Co. Roscommon

The proposed replanting land at Curraghard Co. Roscommon (the ‘Curraghard site’) has been assessed as part of the Afforestation Approval – Form 1 process described above, and has obtained Technical Approval for Afforestation from the Forest Service. The site location is presented in Figure 2.3.

5.3.1 Desk Study

The following sections detail the results of the searches of published material that were consulted as part of the desk study for the Ballyduff beg site.

5.3.2 Identification of the Designated Sites Likely Zone of Influence of the Project







Using GIS software MapInfo (Version 10.0), sites designated for nature conservation within the potential zone of influence (ZOI) of the proposed development were identified. The ZOI was derived utilising a precautionary approach.

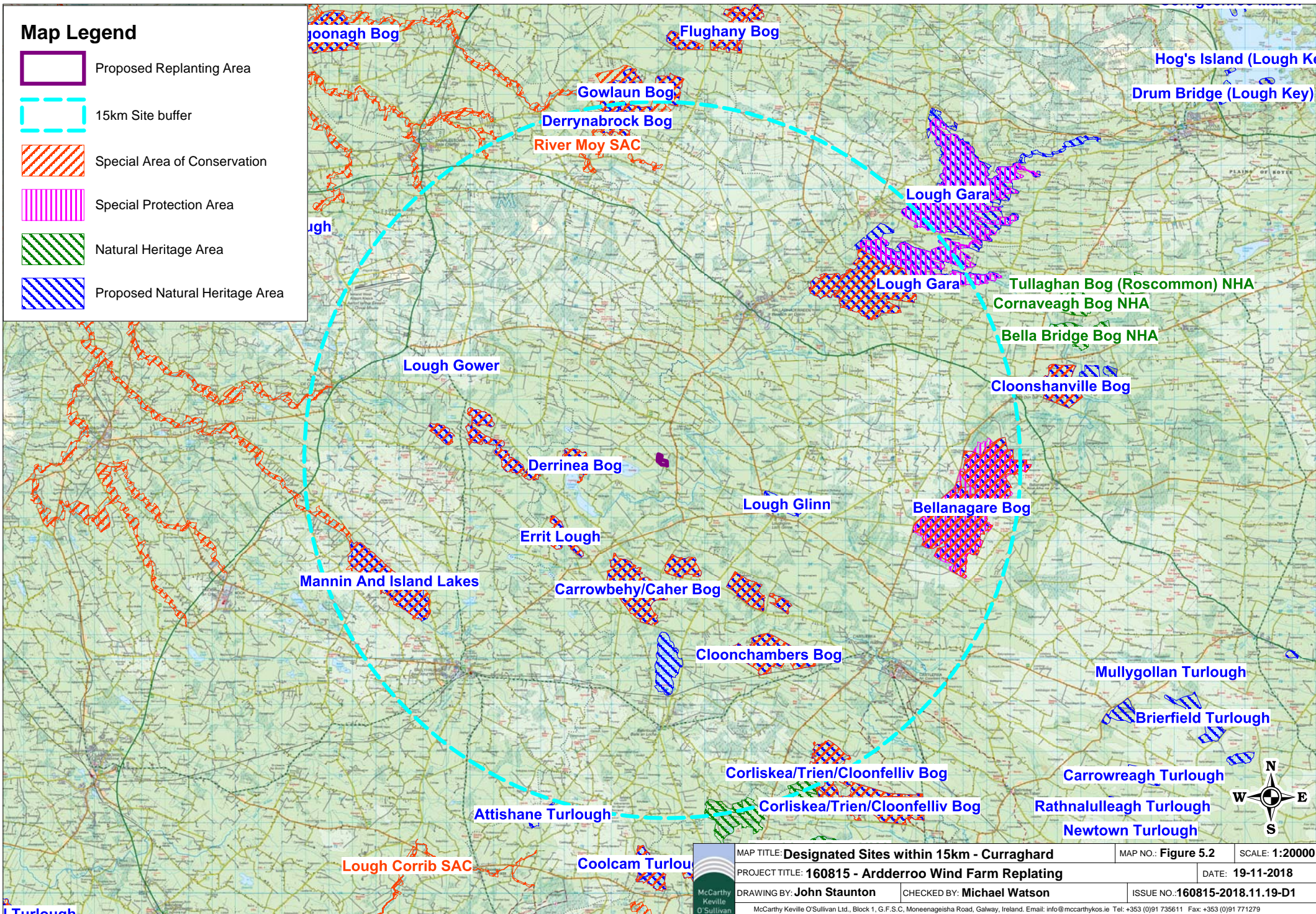
The designated sites are listed below in Table 5.5 and displayed on Figure 5.2.

5.3.3 Desk Study

The following sections detail the results of the searches of published material that were consulted as part of the desk study for the Curraghard site.

Map Legend

-  Proposed Replanting Area
-  15km Site buffer
-  Special Area of Conservation
-  Special Protection Area
-  Natural Heritage Area
-  Proposed Natural Heritage Area



	MAP TITLE: Designated Sites within 15km - Curraghard	MAP NO.: Figure 5.2	SCALE: 1:20000
	PROJECT TITLE: 160815 - Arderroo Wind Farm Replanting	DATE: 19-11-2018	
	DRAWING BY: John Staunton	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.19-D1
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Table 5.5: Designated sites within 15 kilometres of the study area

Designated Site	Distance from Proposed Afforestation (km)
Natural Heritage Areas (NHA)	
Lough Namucka Bog NHA [000220]	14.3km
Moorfield Bog/Farm Cottage NHA [000221]	14.5km
Proposed Natural Heritage Areas (pNHA)	
Derrinea Bog [000604]	3.0km
Drumalough Bog [002338]	3.8km
Carrowbehy/Caher Bog [00597]	4.3km
Lough Glinn pNHA	4.3km
Errit Lough [000607]	4.8km
Urlaur Lakes [001571]	5.0km
Lough O'Flynn pNHA	7.1km
Cloonchambers Bog [000600]	8.0km
Lough Gower pNHA	9.3km
Tullaghanrock Bog [002354]	9.4km
Lough Gara [004048]	9.9km
Bellanagare Bog [004105]	10.8km
Mannin and Island Lakes pNHA	11.3km
Corliskea/Trien/Cloonfolliv Bog SAC [002110]	13.3km
Derrynabrock Bog pNHA	13.5km
Kilgarriff Bog oNHA	14.1km
Gowlaun Bog pNHA	14.6km
Tawnaghbeg Bog pNHA	14.8km

5.3.4 New Flora Atlas

A search was made in the New Atlas of the British & Irish Flora (Preston *et al*, 2002) to investigate whether any rare or unusual plant species listed under Annex I of the EU Habitats Directive had been recorded in the relevant 10km square in which the study site is situated (M58), during the 1987-1999 atlas survey. Autumn Gentian (*Gentianella amarella*) which is designated as a Near Threatened species on the Red List was recorded within the hectad pertaining to the site. No other species protected under the Flora (Protection) Order, 1999 (as amended 2015) have been previously recorded within hectad M58.

5.3.5 National Biodiversity Data Centre Notable Records

According to the National Biodiversity Data centre online mapper there are records for a number of Annex I listed bird species and Annex II, IV and V species of fauna for the 10km grid square M58. These species are shown in Table 5.6.

Table 5.6 Notable species that occur within 10km Grid Square M58

Common Name	Scientific Name	Designation
West European Hedgehog	<i>Erinaceus europaeus</i>	WA
European Otter	<i>Lutra lutra</i>	HD, WA
Eurasian Badger	<i>Meles meles</i>	WA
Daubenton's Bat	<i>Myotis daubentonii</i>	HD, WA
Fallow Deer	<i>Dama dama</i>	WA
Pipistrelle	<i>Pipistrellus pipistrellus sensu lato</i>	HD, WA
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	HD, WA
Freshwater White-clawed Crayfish	<i>Austropotamobius pallipes</i>	HD, WA
Marsh Fritillary	<i>Euphydryas aurinia</i>	HD
Large White-moss	<i>Leucobryum glaucum</i>	HD
Pine Marten	<i>Martes martes</i>	HD, WA
Common Lizard	<i>Zootoca vivipara</i>	WA
Bewick's Swan	<i>Cygnus columbianus subsp. bewickii</i>	BD, WA
Common Tern	<i>Sterna hirundo</i>	BD, WA
Corn Crane	<i>Crex crex</i>	BD, WA
Dunlin	<i>Calidris alpina</i>	BD, WA
European Golden Plover	<i>Pluvialis apricaria</i>	BD, WA
Greater White-fronted Goose	<i>Anser albifrons</i>	BD, WA
Hen Harrier	<i>Circus cyaneus</i>	BD, WA
Peregrine Falcon	<i>Falco peregrinus</i>	BD, WA
Whooper Swan	<i>Cygnus Cygnus</i>	BD, WA
Kingfisher	<i>Alcedo atthis</i>	BD, WA

HD = EU Habitats Directive; BD = EU Birds Directive; WA = Wildlife Acts (Ireland)

5.3.6 Invasive Species

The NBDC database also contains records of invasive species identified within the relevant hectads. Records of 'high impact' invasive species for hectad M58 are provided in Table 5.7 below.

Table 5.7. NBDC records for invasive species in hectad M58

Common Name	Scientific Name
Japanese Knotweed	<i>Fallopia japonica</i>
American Mink	<i>Mustela vison</i>
Canadian Waterweed	<i>Elodea canadensis</i>
Zebra Mussel	<i>Dreissena (Dreissena) polymorpha</i>
Fallow Deer	<i>Dama dama</i>

5.3.7 Water Quality

The proposed afforestation site is located within the the Upper Shannon catchment. The closest waterbodies to the site are two tributaries to the Lung River, which are located approximately 380m south and 520m north of the site. The Lung River drains into the Tullaghanrock Bog SAC approximately 9.4km (straight line) and Callow Bog approximately 9.9km (straight line) north east of the study site.

The nearest EPA water quality monitoring station is Lissydaly Bridge to the north of the study site. This station provides a River Water Quality assessment score of “Q4-5, Q5 – High”. The Water Framework Directive (WFD) river waterbody risk score for the Lung Stream has been assessed as ‘Not at risk’.

5.3.8 Freshwater Pearl Mussel Sensitive Areas

The site is not located within a Pearl Mussel (*Margaritifera margaritifera*) sensitive area. The site has no connectivity to any pearl mussel sensitive areas.

5.3.9 Conclusions of the Desktop Study

A number of rare and protected habitats, flora and fauna have been recorded from the hectad in which the proposed afforestation site is located. The field survey was designed to identify if any of these species or habitats or additional ecological receptors occur within the site.

5.3.10 Flora in the Existing Environment

5.3.10.1 Habitats Present at the Site

The northern fields within the site boundary comprised an improved agricultural grassland/wet grassland (GS4) mosaic with field boundaries demarcated by Treeline (WL2) (plate 5.3). The grassland is extensively dominated by rushes (*Juncus* spp.). Other grassland species recorded include Cock’s-foot (*Dactylus glomerata*), Perennial Rye-grass (*Lolium perenne*), Creeping Buttercup (*Ranunculus repens*) and Sorrel (*Rumex acetosa*). The treelined comprised species such as Ash (*Fraxinus excelsior*), Hawthorn (*Crataegus monogyna*) and Sycamore (*Acer pseudoplatanus*). The fields to the eastern extent of the site were categorised as wet grassland (GS4). Occasional areas of Gorse (*Ulex europaeus*) Scrub (WS1) are growing within the site and fields are bordered by a Drainage ditch (FW4) in places (plate 5.4). Species within the wet grassland included Angelica (*Angelica sylvestris*), Purple Moor-grass (*Molinia caerulea*), Knapweed (*Centaurea nigra*), Meadow Buttercup (*Ranunculus acris*), Tormentil (*Potentilla erecta*), Devil’s-bit Scabious (*Succisa pratensis*), Red Fescue (*Festuca rubra*), Meadowsweet (*Filipendula ulmaria*) and Compact Rush (*Juncus conglomeratus*).



Plate 5.3 Field towards the north of the site categorised as improved agricultural grassland (GA1)/wet grassland (GS4) bordered by Treeline (WL2).



Plate 5.4 Drainage ditch (FW4) and field of Wet grassland (GS4) in eastern section of the site

5.3.10.2 Invasive Species

No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were identified within the site boundaries during field survey.

5.3.11 Fauna in the existing environment

Birds

Records of birds seen and heard on the site of the proposed development were taken. More detailed and extensive bird surveys were not considered necessary due to the limited ecological value of the habitat which is widespread in the locality.

Bird species recorded during field survey included Jackdaw (*Corvus monedula*) and Woodpigeon (*Columba palumbus*). No birds listed on Annex I of the EU Birds Directive were recorded during the field survey.

Terrestrial Mammals

No evidence of any protected faunal species was recorded within the site boundaries. Other common mammals including Pygmy Shrew (*Sorex minutus*) may make use of the site, however evidence of these species was not recorded during the field survey.

Bats

While an open landscape structure dominates the site generally, the treelines and linear features within the site may provide suitable habitat for commuting or foraging bat species. A dedicated bat survey was not completed as the overall site is dominated by open habitat which has poor suitability for bat species.

5.3.12 Character of Habitats

The site at Curragherd has the character of an agricultural farmland that has been modified from its natural state through grazing and drainage of the site.

5.3.13 Significance of Habitats

The eastern fields were dominated by species poor wet grasslands. There were very small, isolated patches of a more species rich grassland in this area with some Devils Bit Scabious (*Succisa pratensis*), Angelica (*Angelica sylvestris*), Purple Moor-grass (*Molinia caerulea*), Knapweed (*Centaurea nigra*), Meadow Buttercup (*Ranunculus acris*) and Tormentil (*Potentilla erecta*) present. These were very limited in extent and number and were insignificant in the context of the habitat as a whole. The wet grassland, scrub and drainage ditches that are present within the site are of Local Importance (Lower Value) as they are typical of habitats found in the immediate wider area. The treelines are of Local Importance (Higher Value) as these habitats have a higher level of biodiversity within the context of the local environment and provide links between habitats of higher ecological value.

5.3.14 Significance of Fauna

Whilst there were some small isolated patches of Devils Bit Scabious (the foodplant of Marsh Fritillary larvae) within the eastern fields, these were insignificant and did not provide significant habitat for Marsh Fritillary (*Euphydryas aurinia*).

Bird species recorded within the site boundaries are common and typical of agricultural farmland habitats. The site of the proposed afforestation provides some foraging, commuting and nesting habitats for these and other common bird species. Similar habitat is widespread in the locality.

Overall, it is considered that the site of the proposed afforestation site is of relatively low value to faunal species due to the existing levels of disturbance from agricultural activity and the low sensitivity of habitats present on the site.

5.3.15 Impact Assessment

Do Nothing' Impact

Were the site to remain unplanted the management on site would likely remain as it is presently i.e. occasionally grazed by livestock and drained. However, given that the site has received Technical Approval from the Forest Service as described above it will likely be afforested per the provisions of the approval at a later date.

Loss of Floral Habitat

Long-Term Neutral Impact

The loss of habitat is likely to be restricted to wet grassland improved agricultural grassland/wet grassland mosaic. The impacted habitat is not considered to be of great ecological sensitivity and its loss will constitute a neutral impact when compared with the coniferous forestry to be planted.

Mitigation

All works will be carried out in accordance with the relevant Forest Service requirements

Residual Impact

The replacement of wet grassland and improved agricultural grassland/wet grassland habitat with coniferous forestry is assessed as a **Long Term Neutral Impact**.

Loss of Faunal Habitat

Long Term Neutral Impact

The habitats in which the proposed afforestation will take place, wet grassland and improved agricultural grassland/wet grassland, is not of high value or great importance as a faunal habitat. It is likely that the proposed planting of forestry will result in some loss of faunal habitat for species such as Fox (*Vulpes vulpes*) and other small mammals along with a range of bird species. The impacted habitat is widespread in the local area and this loss is negligible. The afforestation, in particular that of broadleaf species will result in the recreation of cover and shelter for a range of species such as songbirds, Badger and Fox in the long term, resulting in an overall **Long Term Neutral Impact**

Water Pollution

Short Term Minor Negative Impact

The proposed afforestation site is located within the Upper Shannon Catchment. The closest waterbodies to the site are two tributaries to the Lung River located 380m to the south and 520m to the north of the site. The Lung River drains into Tullaghanrock Bog SAC approximately 9.4km (straight line) and Callow Bog approximately 9.9km (straight line) north east of the study site. Both of these SACs are designated for terrestrial habitats and therefore are not sensitive to potential water pollution. The study site is not located within or connected to any *Margaritifera* sensitive area.

Mitigation

All works will be carried out in accordance with the relevant Forest Service requirements and buffer zone widths for the water courses calculated accordingly.

Residual Impact

No impacts on water quality are anticipated as a result on any element of the proposed afforestation.

Cumulative Impacts

The proposed afforestation has Technical Approval from the Forest Service and will be undertaken accordingly. This approval is conditional to all associated works being undertaken in accordance with Forest Service guidelines. The impacts associated with this afforestation have been classified overall as a neutral impact. As such, when considered in combination with the other land uses in the area and considering that the forestry guidelines are designed to minimise and prevent impacts to habitats that are outside the site, cumulative impacts on sensitive ecological receptors are not anticipated.

5.4 Replanting Site 3: Claraghtlea North, Co. Cork

The proposed replanting land at Claraghtlea North, Co. Cork (the ‘Claraghtlea site’) has been assessed as part of the Afforestation Approval - Form 1 process described above, and has obtained Technical Approval for Afforestation from the Forest Service. The site location is presented in Figures 2.5.

5.4.1 Desk Study

The following sections detail the results of the searches of published material that were consulted as part of the desk study for the Claraghtlea site.







5.4.2 Identification of the Designated Sites Likely Zone of Influence of the Project

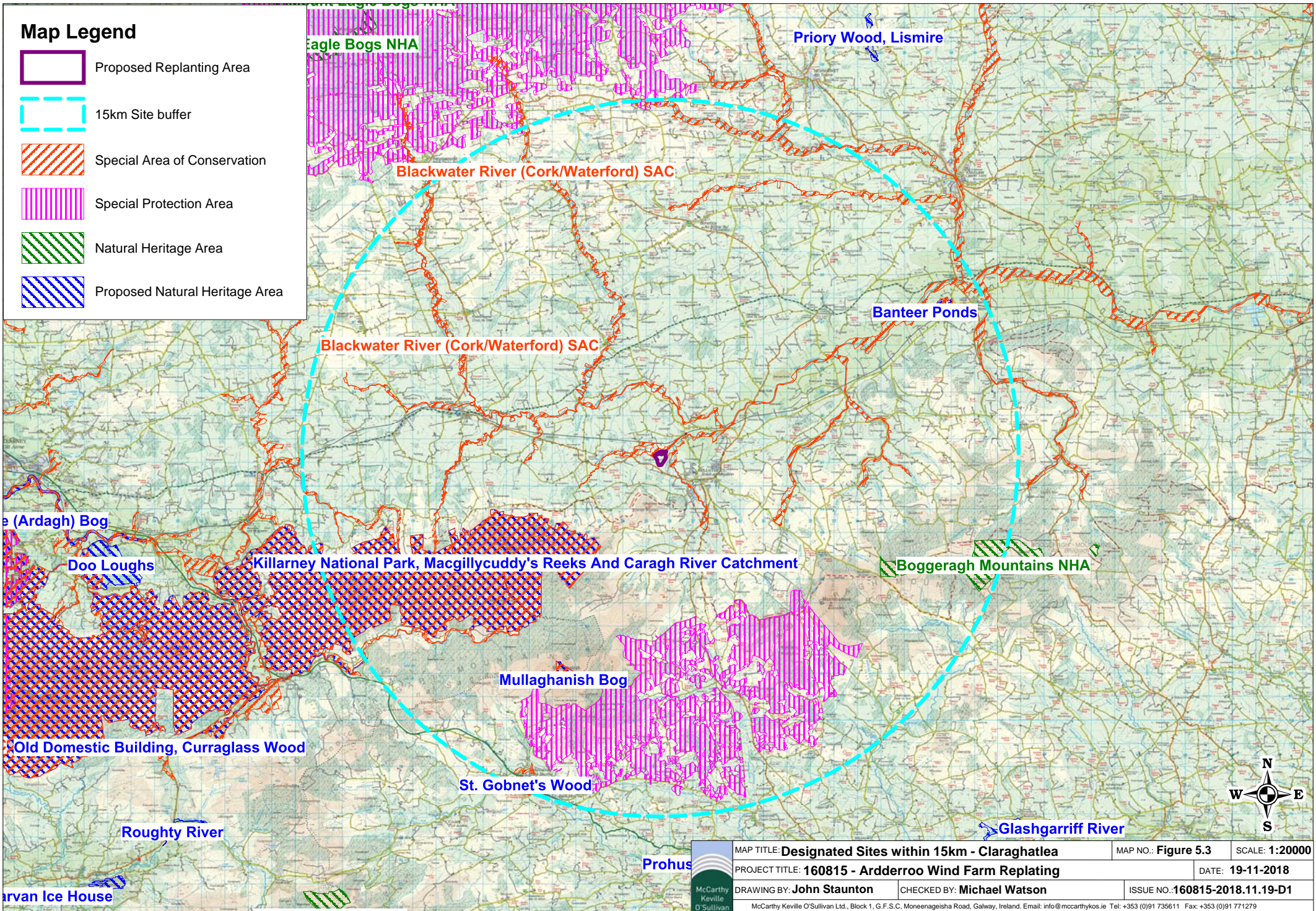
Using GIS software MapInfo (Version 10.0), sites designated for nature conservation within the potential zone of influence (ZOI) of the proposed development were identified. The ZOI was derived utilising a precautionary approach. The designated sites are listed below in Table 5.8 and displayed on Figure 5.3.

Table 5.8: Designated sites within 15 kilometres of the study area

Designated Site	Distance from Proposed Afforestation (km)
Special Protection Area (SPA)	
Mullaghanish to Musheramore Mountains SPA (004162)	6.6km
Stack’s to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	14.6km
Special Area of Conservation (SAC)	
Blackwater River (Cork/Waterford) SAC (002170)	0
Killarney National Park, Macgillycuddy’s Reeks and Caragh River Catchment SAC (000365)	4.1km
Mullaghanish Bog SAC (001890)	9.4km
Mullaghanish Bog SAC (001890)	9.7km
St. Gobnet’s Wood SAC (000106)	13.8km
Natural Heritage Areas (NHA)	
Boggeragh Mountains NHA (002447)	10.0km

Map Legend

-  Proposed Replanting Area
-  15km Site buffer
-  Special Area of Conservation
-  Special Protection Area
-  Natural Heritage Area
-  Proposed Natural Heritage Area



	MAP TITLE: Designated Sites within 15km - Claraghatlea	MAP NO.: Figure 5.3	SCALE: 1:20000
	PROJECT TITLE: 160815 - Ardderroo Wind Farm Replanting	DATE: 19-11-2018	
	DRAWING BY: John Staunton	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.19-D1
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Proposed Natural Heritage Areas (pNHA)	
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment (000365)	4.1km
Mullaghanish Bog (001890)	9.4km
Banteer Ponds (001036)	12.2km
St. Gobnet's Wood (000106)	14.5km

5.4.3 New Flora Atlas

A search was made in the New Atlas of the British & Irish Flora (Preston et al, 2002) to investigate whether any rare or unusual plant species listed under Annex I of the EU Habitats Directive had been recorded in the relevant 10km square in which the study site is situated (W29), during the 1987-1999 atlas survey. No species protected under the Flora (Protection) Order, 1999 (as amended 2015) have been previously recorded within the hectad.

5.4.4 National Biodiversity Data Centre Notable Records

A search of the National Biodiversity Data Centre (NBDC) website was conducted with a focus on records of protected fauna recorded from hectads W29. The results of the database search are provided below in Table 5.9.

Table 5.10 includes records of non-native invasive species listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015).

Table 5.9 Notable species that occur within 10km Grid Square W29

Common Name	Scientific Name	Designation
Common Frog	<i>Rana temporaria</i>	BD, WA
Hen Harrier	<i>Circus cyaneus</i>	BD, WA
Little Egret	<i>Egretta garzetta</i>	BD, WA
Merlin	<i>Falco columbarius</i>	BD, WA
Freshwater Pearl Mussel	<i>Margaritifera (Margaritifera) margaritifera</i>	HD, WA
West European Hedgehog	<i>Erinaceus europaeus</i>	WA
European Otter	<i>Lutra lutra</i>	HD, WA
Eurasian Badger	<i>Meles meles</i>	WA
Daubenton's Bat	<i>Myotis daubentonii</i>	HD, WA
Lesser Noctule	<i>Nyctalus leisleri</i>	HD, WA
Pipistrelle	<i>Pipistrellus pipistrellus sensu lato</i>	HD, WA
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	HD, WA

HD = EU Habitats Directive; BD = EU Birds Directive; WA = Wildlife Acts (1979-2012)

Table 5.10. NBDC records for invasive species in hectad R05

Common Name	Scientific Name
Japanese Knotweed	<i>Fallopia japonica</i>
Giant-rhubarb	<i>Gunnera tinctoria</i>
Sika Deer	<i>Cervus nippon</i>
American Mink	<i>Mustela vison</i>

5.4.5 Water Quality

The proposed afforestation site is located within the Blackwater (Munster) Catchment. The Owenagloo stream runs along the northern boundary, and the Claraghtlea North Stream runs through the northern section of the site. The Owenagloo stream, and its riparian border form part of the Blackwater River (Cork/Waterford) SAC. The boundary of the SAC overlaps with the northern section of the proposed afforestation site.

The nearest EPA water quality monitoring station is titled “Bridge Upstream of the Finnow River Confluence” to the east of the study site. This station provides a River Water Quality assessment score of “Q4-5, Q5 – High”. The Water Framework Directive (WFD) river waterbody risk score for the Owenagloo stream has been assessed as ‘At Risk of Not Achieving a Good Status’. The WFD River Waterbody status has not been assigned for either of the streams.

5.4.6 Freshwater Pearl Mussel Sensitive Areas

The NPWS Margaritifera sensitive areas dataset V6 was reviewed. The site is located within the Munster Blackwater Pearl Mussel (*Margaritifera margaritifera*) sensitive area, which is a catchment for SAC populations of the species.

5.4.7 Conclusions of the Desktop Study

The afforestation site is not located within any site designated for nature conservation. No protected floral species have been recorded from the area. Given that this hectad includes a large area outside of the study site, including coastal areas, species which are recorded within the hectad will not be found within the study site due to its inland and terrestrial nature. The remaining mammal species recorded within the relevant hectad have widespread range and distributions and are likely to be recorded frequently throughout Ireland. The field surveys will identify if any of the identified habitats or additional ecological receptors occur within the study area.

5.4.8 Flora in the Existing Environment

5.4.8.1 Habitats Present at the Site

The site is comprised primarily of Wet Grassland (GS4) (Plate 5.5). At the time of the visit the grassland was overgrown and dominated in places almost entirely by rushes (*Juncus* spp.). Grass species recorded include Perennial Ryegrass (*Lolium perenne*), Creeping Bent (*Agrostis stolonifera*), and Yorkshire Fog (*Holcus lanatus*). Other species recorded in this habitat include Creeping Buttercup (*Ranunculus repens*), Meadow buttercup (*Ranunculus acris*), Ragwort (*Senecio jacobaea*), Common Sorrel (*Rumex acetosa*). The boundaries of the site were comprised of treelines (WL2) and hedgerows (WL1). Species recorded within these habitats include Willow (*Salix* spp.), Ash (*Fraxinus excelsior*), Gorse (*Ulex europaeus*) Hawthorn (*Crataegus monogyna*), and Brambles (*Rubus fruticosus*).

A stream (FW1) (Plate 5.6) and an extensive network of drainage ditches (FW4) were found running through the site. Vegetation bordering the stream again contained rushes but included Lesser Celandine (*Ficaria verna*), Primrose (*Primula vulgaris*), Dandelion (*Taraxacum vulgaria*), Ragwort (*Senecio jacobaea*), Broadleaved Dock, and Common Sorrel. Drainage ditches were typically overgrown with rushes, and contained standing water.



Plate 5.5 Overgrown Wet Grassland (GS4) with drainage ditch (FW4) on the study site.



Plate 5.6 Wet Grassland (GA4) adjacent to stream (FW1) and SAC border with treeline (WL2) in the distance

5.4.8.2 Invasive Species

No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were identified within the site boundaries during field survey.

5.4.9 Significance of Habitats

Ecological evaluation within this section follows a methodology that is set out in Chapter 3 of the *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (NRA, 2009).

No habitats which correspond to those that are listed in the EU Habitats Directive were identified during the site visit. The wet grassland, and drainage ditches that are present within the site, given their highly modified nature, are considered to be of Local Importance (Lower Value). The hedgerows are considered to be of Local Importance (Higher Value) as it has a higher level of biodiversity within the context of the local environment.

5.4.10 Fauna in the existing environment

Birds

Records of birds seen and heard on the site of the proposed development were taken. More detailed and extensive bird surveys were not considered necessary due to the limited extent of the proposed development site which occurs within habitat which is widespread in the locality.

A number of bird species were recorded during field survey including Snipe (*Gallinago gallinago*), Rooks (*Corvus frugilegus*) and Wood Pigeon (*Columba palumbus*). No birds listed on Annex I of the EU Birds Directive were recorded during the field survey.

Terrestrial Mammals

No evidence of protected faunal species were recorded within the site boundaries. No evidence of other faunal species were recorded within the site boundaries.

Bats

There are no structures within the site which may provide suitable roosting habitat for bats. A large open landscape structure dominates the site and though linear features may be used by foraging and commuting bats, overall the site is considered to have low suitability for bat species. A dedicated bat survey was therefore not required

5.4.10.1 Significance of Fauna

No evidence of Annex listed species, or other species of conservation concern were recorded within the site boundaries. In addition, no suitable habitat for species of conservation concern including Marsh Fritillary was identified within the proposed afforestation site.

Bird species recorded within the site boundaries are common generally. The site of the proposed development provides some limited foraging, commuting and nesting habitats for these and other common bird species in general. Similar habitat is widespread in the locality and so a significant impact as a result of a loss of suitable habitat.

5.4.11 Impact Assessment

Do Nothing' Scenario

Were the site to remain unplanted, the management onsite would likely remain as it is presently i.e. regularly grazed by livestock. However, given that the site has received Technical Approval from the Forest Service it will likely be afforested according to the provisions of the approval document.

Loss of Floral Habitat

Long-Term Neutral Impact

The loss of habitat is likely to be restricted to wet agricultural grassland and drainage ditches. These impacted habitats are not considered to be of ecological sensitivity and their loss will constitute a neutral impact when compared with the coniferous forestry to be planted.

Mitigation

All works will be carried out in accordance with the relevant Forest Service requirements. The Technical Approval document specifies the area that should contain at suitable broadleaf and conifer species. This management would allow for the retention of the Local Value (Higher Importance) habitats.

Residual Impact

The replacement of Wet Grassland habitat with coniferous forestry is considered to be a **Long Term Neutral Impact**.

5.4.11.1 Loss of Faunal Habitat

Long Term Neutral Impact

The proposed planting site is not of high value as a faunal habitat, being degraded Wet Grassland with little to no cover or shelter for faunal species. It is likely that the proposed planting of forestry will result in some loss of faunal habitat for mammal and bird species. This habitat is widespread in the local area and this loss is considered to be negligible. The afforestation, in particular that of broadleaf species will result in the recreation of cover and shelter for a range of species, resulting in an overall **Long Term Neutral Impact**

5.4.11.2 Water Pollution

Short-Term Minor Negative Impact

Whilst no watercourses were identified on the site with the exception of drainage ditches, there is potential for water pollution to occur through discharge to the adjacent river as a result of the proposed works in the form of acidification, siltation or erosion.

Mitigation

The works associated with planting, maintenance, thinning and harvesting will be carried out in accordance with the Environmental Requirements for Afforestation and buffer zone widths for the water courses applied accordingly.

Residual Impact

No impacts on water quality are anticipated as a result of any element of the proposed afforestation.

5.4.11.3 Cumulative Impacts

The proposed afforestation has Technical Approval from the Forest Service and will be undertaken accordingly. This approval is conditional to all associated works being undertaken in accordance with Forest Service guidelines. The impacts associated with this afforestation have been classified overall as a neutral impact. As such, when considered in combination with the other land uses in the area, and considering that the forestry guidelines are designed to minimise and prevent impacts to habitats that are outside the site, cumulative impacts on sensitive ecological receptors are not anticipated

5.5 Replanting Site 4: Rahilisk, Co. Cork

5.5.1 Desk Study

The proposed replanting land at Rahilisk, Co. Cork (the 'Rahalisk site') has been assessed as part of the Afforestation Approval - Form 1 process described above, and has obtained Technical Approval for Afforestation from the Forest Service. The site location is presented in Figures 2.7. The following sections detail the results of the searches of published material that were consulted as part of the desk study for the Rahilisk site.

5.5.2 Identification of the Designated Sites within the Likely Zone of Influence of the Project

Using GIS software MapInfo (Version 10.0), sites designated for nature conservation within the potential zone of influence (ZOI) of the proposed development were identified. The ZOI was derived utilising a precautionary approach. The designated sites are listed below in Table 5.11 and displayed on Figure 5.4.







Table 5.11: Designated sites within 15 kilometres of the study area

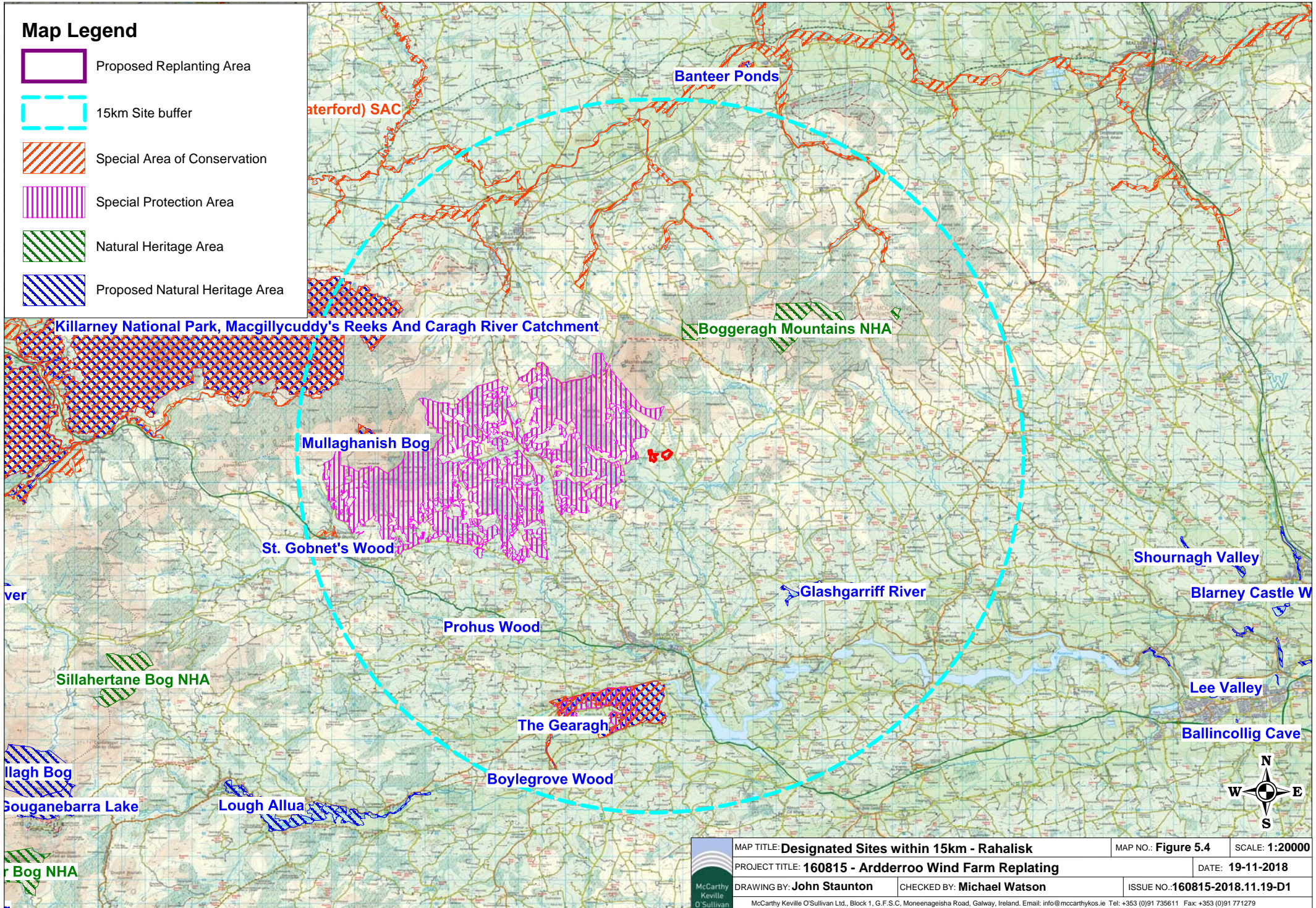
Designated Site	Distance from Proposed Afforestation (km)
Special Protection Area (SPA)	
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	7.5km
Mullaghanish to Musheramore Mountains SPA (004162)	14.0km
Special Area of Conservation (SAC)	
Blackwater River (Cork/Waterford) SAC (002170)	2.1km
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)	8.6km
Lower River Shannon SAC (002165)	14.0km
Mullaghanish Bog SAC (001890)	14.9km
Natural Heritage Areas (NHA)	
Mount Eagle Bogs NHA (002449)	13.5km
Proposed Natural Heritage Areas (pNHA)	
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment (000365)	8.6km
Mullaghanish Bog (001890)	14.9km

5.5.3 New Flora Atlas

A search was made in the New Atlas of the British & Irish Flora (Preston et al, 2002) to investigate whether any rare or unusual plant species listed under Annex I of the EU

Map Legend

-  Proposed Replanting Area
-  15km Site buffer
-  Special Area of Conservation
-  Special Protection Area
-  Natural Heritage Area
-  Proposed Natural Heritage Area



	MAP TITLE: Designated Sites within 15km - RahaLisk PROJECT TITLE: 160815 - Ardderroo Wind Farm Replanting DRAWING BY: John Staunton	MAP NO.: Figure 5.4 DATE: 19-11-2018 CHECKED BY: Michael Watson	SCALE: 1:20000 ISSUE NO.: 160815-2018.11.19-D1
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Habitats Directive had been recorded in the relevant 10km square in which the study site is situated (W29), during the 1987-1999 atlas survey. No species protected under the Flora (Protection) Order, 1999 (as amended 2015) have been previously recorded within hectad W29.

5.5.4 National Biodiversity Data Centre Notable Records

According to the National Biodiversity Data centre online mapper there are records for a number of Annex I listed bird species and Annex II, IV and V species of fauna for the 10km grid square W29. These species are shown in Table 5.12.

Table 5.12 Notable species that occur within 10km Grid Square W29

Common Name	Scientific Name	Designation
Common Frog	<i>Rana temporaria</i>	BD, WA
Hen Harrier	<i>Circus cyaneus</i>	BD, WA
Little Egret	<i>Egretta garzetta</i>	BD, WA
Merlin	<i>Falco columbarius</i>	BD, WA
Freshwater Pearl Mussel	<i>Margaritifera (Margaritifera) margaritifera</i>	HD, WA
West European Hedgehog	<i>Erinaceus europaeus</i>	WA
European Otter	<i>Lutra lutra</i>	HD, WA
Eurasian Badger	<i>Meles meles</i>	WA
Daubenton's Bat	<i>Myotis daubentonii</i>	HD, WA
Lesser Noctule	<i>Nyctalus leisleri</i>	HD, WA
Pipistrelle	<i>Pipistrellus pipistrellus sensu lato</i>	HD, WA
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	HD, WA

D = EU Habitats Directive; BD = EU Birds Directive; WA = Wildlife Acts (Ireland)

5.5.5 Invasive Species

The NBDC database also contains records of invasive species identified within the relevant hectads. Records of 'high impact' invasive species for hectad W29 are provided in Table 5.13 below.

Table 5.13. NBDC records for invasive species in hectad W29

Common Name	Scientific Name
Japanese Knotweed	<i>Fallopia japonica</i>
Giant-rhubarb	<i>Gunnera tinctoria</i>
Sika Deer	<i>Cervus nippon</i>
American Mink	<i>Mustela vison</i>

5.5.6 Water Quality

The proposed afforestation site is located within the Blackwater (Munster) Catchment. The closest waterbody is the Euglaune Stream, which is located 800m north of the site. The Euglaune drains into the Blackwater River SAC approximately 2.6km (straight line) south east of the study site. The site is located within the Munster Blackwater Pearl

Mussel (*Margaritifera margaritifera*) sensitive area, which is a catchment for SAC populations of the species.

There is no EPA water quality monitoring station on the Euglaune Stream to provide a River Water Quality assessment score. The Water Framework Directive (WFD) river waterbody quality (2010-'12) has been not assessed for the stream. The WFD River Waterbody status for the Euglaune Stream classifies the stream as 'High'.

5.5.7 Conclusions of the Desktop Study

The desktop study has provided good information about the existing environment in hectad W29, within which the proposed afforestation site is located. No protected floral species within the relevant hectad were identified during the desk study. The mammal species recorded within the relevant hectad have widespread range and distributions in Ireland and are likely to be recorded frequently throughout Ireland. The review of water quality documents provided have highlighted that the site is located within the Munster Blackwater Pearl Mussel (*Margaritifera margaritifera*) sensitive catchment area.

5.5.8 Flora in the Existing Environment

5.5.8.1 Habitats Present at the Site

The site is comprised almost entirely of overgrown, Wet Grassland (GS4) (Plate 5.7). The grassland is extensively dominated by rushes (*Juncus* spp.). Grass species recorded include Creeping Bent (*Agrostis stolonifera*), and Yorkshire Fog (*Holcus lanatus*). There was very little in terms of species recorded within the grassland, with the species recorded in this habitat include Creeping Buttercup (*Ranunculus repens*), Common Sorrell (*Rumex acetosa*), and Water Dock (*Rumex hydrolapathum*). The boundaries of the site were comprised of hedgerows (WL1) and thin strips of scrub (WS1) and conifer plantation (WD4). Species recorded within these habitats include Willow (*Salix* spp.), Gorse (*Ulex europaeus*) Hawthorn (*Crataegus monogyna*), and Brambles (*Rubus fruticosus*). Drainage ditches were recorded along the borders of the site (Plate 5.8), with one running through the centre of the site. Drainage ditches were typically overgrown with rushes, brambles and in some cases gorse (plate 5.7). Vegetation bordering the stream included rushes, Lesser Celandine (*Ficaria verna*), Primrose (*Primula vulgaris*), Herb Robert (*Geranium robertianum*), Dandelion (*Taraxacum vulgaria*), Bracken (*Pteridium aquilinum*), and Hard Fern (*Blechnum spicant*).



Plate 5.7 Wet Grassland (GS4) on the study site with bordering Conifer Plantation (WD4).



Plate 5.8 Drainage ditch (FW4) bordering the site.

5.5.8.2 Invasive Species

No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were identified within the site boundaries during field survey.

5.5.9 Fauna in the existing environment

Birds

Records of birds seen and heard on the site of the proposed development were taken. More detailed and extensive bird surveys were not considered necessary due to the limited ecological value of the habitat which is widespread in the locality.

Bird species recorded during field survey included Snipe (*Gallinago gallinago*), and Meadow Pipit (*Anthus pratensis*). No birds listed on Annex I of the EU Birds Directive were recorded during the field survey.

Terrestrial Mammals

No evidence of any protected faunal species were recorded within the site boundaries. Other common mammals including Pygmy Shrew (*Sorex minutus*) may make use of the site, however evidence of these species was not recorded during the field survey.

Bats

There are no structures within the site which may provide suitable roosting habitat for bats. While an open landscape structure dominates the site generally, the hedgerows and linear features within the site may provide suitable habitat for commuting or foraging bat species. A dedicated bat survey was not completed as the overall site is dominated by open habitat which has poor suitability for bat species.

5.5.10 Character of Habitats

The site at Glantane Beg has the character of an agricultural farmland that has been highly modified from its natural state through grazing and drainage of the site.

5.5.11 Significance of Habitats

No habitats which correspond to those that are listed in the EU Habitats Directive were identified during the site visit. The wet grassland and drainage ditches that are present within the site, given their highly modified nature, are of Local Importance (Lower Value) as they contain areas which are of some local importance for wildlife. The hedgerows and scrub are of Local Importance (Higher Value) as these habitats have a higher level of biodiversity within the context of the local environment, and provide links between habitats of higher ecological value.

5.5.12 Significance of Fauna

No evidence of Annex II faunal species or other species of conservation concern were recorded within the site boundaries. In addition, no suitable habitat for species of conservation concern including Marsh Fritillary was identified within the proposed afforestation site.

Bird species recorded within the site boundaries are common generally. The site of the proposed development provides some limited foraging, commuting and nesting habitats for these and other common bird species in general. Similar habitat is widespread in the locality and so a significant impact because of a loss of suitable habitat is not anticipated.

Overall, it is considered that the site of the proposed afforestation is of relatively low value to faunal species due to the existing levels of disturbance from agricultural activity and the low sensitivity of habitats present on the site.

5.5.13 Impact Assessment

Do Nothing' Impact

Were the site to remain unplanted the management on site would likely remain as it is presently i.e. occasionally grazed by livestock and drained. However, given that the site has received Technical Approval from the Forest Service as described above it will likely be afforested per the provisions of the approval at a later date.

Loss of Floral Habitat

Long-Term Neutral Impact

The loss of habitat is likely to be restricted to wet grassland. The impacted habitat is not considered to be of great ecological sensitivity and its loss will constitute a neutral impact when compared with the coniferous forestry to be planted.

Mitigation

All works will be carried out in accordance with the relevant Forest Service requirements

Residual Impact

The replacement of Wet Grassland habitat with coniferous forestry is assessed as a **Long Term Neutral Impact**.

Loss of Faunal Habitat

Long Term Neutral Impact

The habitats in which the proposed afforestation will take place, wet grassland, is not of high value or great importance as a faunal habitat. It is likely that the proposed planting of forestry will result in some loss of faunal habitat for species such as Fox (*Vulpes vulpes*) and other small mammals along with a range of bird species. The impacted habitat is widespread in the local area and this loss is negligible. The afforestation, in particular that of broadleaf species will result in the recreation of cover and shelter for a range of species such as songbirds, Badger and Fox in the long term, resulting in an overall **Long Term Neutral Impact**

Water Pollution

Short Term Minor Negative Impact

The proposed afforestation site is located within the Blackwater (Munster) Catchment. The closest waterbody is the Euglaune Stream, which is located 800m north of the site. The Euglane drains into the Blackwater River SAC approximately 2.6km (straight line) south east of the study site. The site is located within the Munster Blackwater Pearl Mussel (*Margaritifera margaritifera*) sensitive area, which is a catchment for SAC populations of the species. Given the highly sensitive nature of this SAC, any deterioration in water quality have the potential to cause an impact on the qualifying interests of this SAC.

Mitigation

All works will be carried out in accordance with the relevant Forest Service requirements

and buffer zone widths for the water courses calculated accordingly.

Residual Impact

No impacts on water quality are anticipated as a result on any element of the proposed afforestation.

Cumulative Impacts

The proposed afforestation has Technical Approval from the Forest Service and will be undertaken accordingly. This approval is conditional to all associated works being undertaken in accordance with Forest Service guidelines. The impacts associated with this afforestation have been classified overall as a neutral impact. As such, when considered in combination with the other land uses in the area, and considering that the forestry guidelines are designed to minimise and prevent impacts to habitats that are outside the site, cumulative impacts on sensitive ecological receptors are not anticipated.

5.6 Replanting Site 5: Knockavrogeen, Co. Kerry







5.6.1 Desk Study

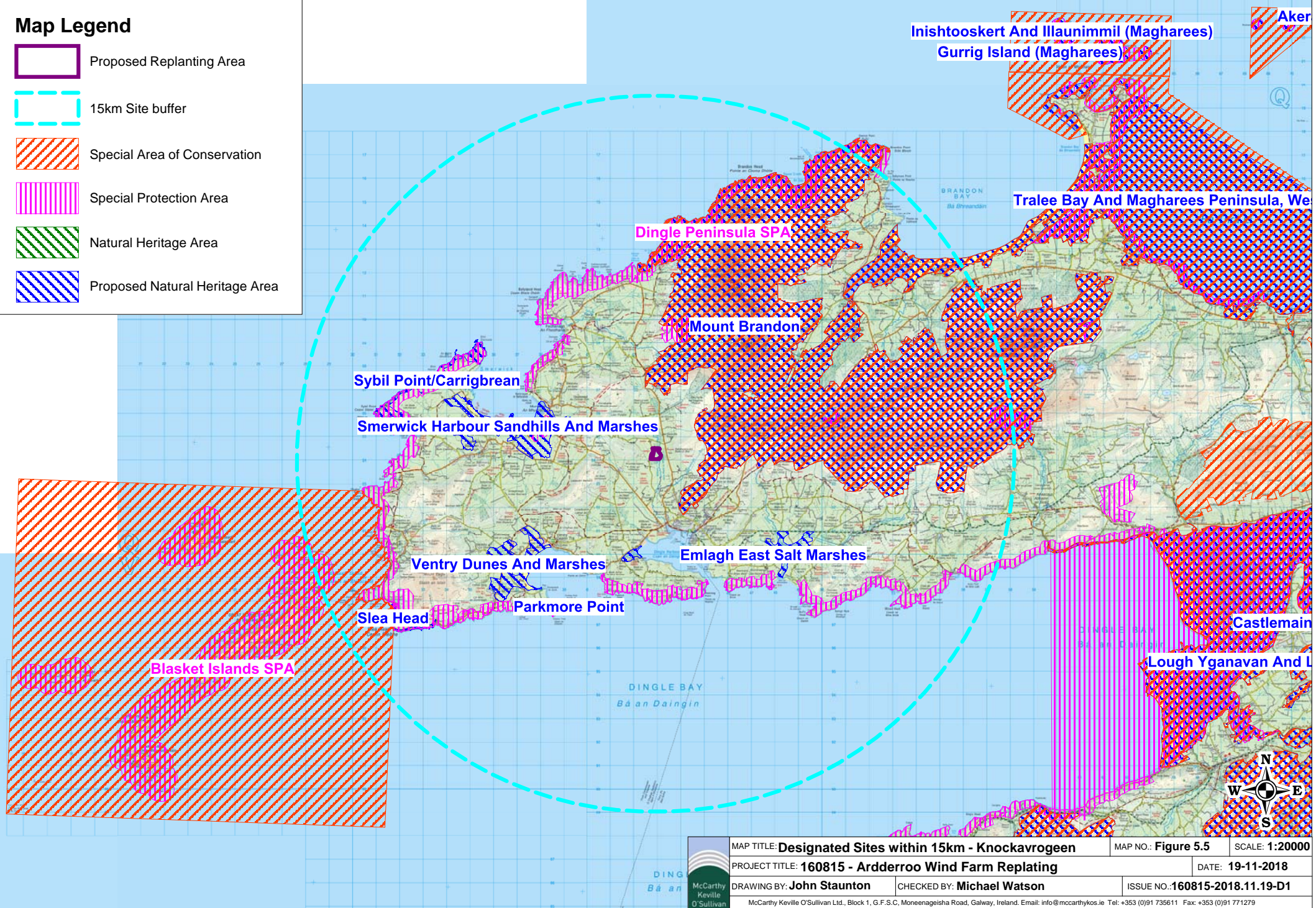
The proposed replanting land at Knockavrogeen, Co. Kerry (the 'Knockavrogeen site') has been assessed as part of the Afforestation Approval - Form 1 process described above, and has obtained Technical Approval for Afforestation from the Forest Service. The site location is presented in Figures 2.9. The following sections detail the results of the searches of published material that were consulted as part of the desk study for the Knockavrogeen site.

5.6.2 Identification of the Designated Sites within the Likely Zone of Influence of the Project

Using GIS software MapInfo (Version 10.0), sites designated for nature conservation within the potential zone of influence (ZOI) of the proposed development were identified. The ZOI was derived utilising a precautionary approach. The designated sites are listed below in Table 5.14 and displayed on Figure 5.5.

Map Legend

-  Proposed Replanting Area
-  15km Site buffer
-  Special Area of Conservation
-  Special Protection Area
-  Natural Heritage Area
-  Proposed Natural Heritage Area



	MAP TITLE: Designated Sites within 15km - Knockavrogeen	MAP NO.: Figure 5.5	SCALE: 1:20000
	PROJECT TITLE: 160815 - Ardderroo Wind Farm Replanting	DATE: 19-11-2018	
	DRAWING BY: John Staunton	CHECKED BY: Michael Watson	ISSUE NO.: 160815-2018.11.19-D1
	<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthykos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279</small>		

Table 5.14: Designated sites within 15 kilometres of the study area

Designated Site	Distance from Proposed Afforestation (km)
Special Protection Area (SPA)	
Dingle Peninsula SPA (004153)	4.4km
Blasket Islands SPA (004008)	14.26km
Special Area of Conservation (SAC)	
Mount Brandon SAC (000375)	1.63
Blasket Islands SAC (002172)	11.6
Tralee Bay And Magharees Peninsula, West To Cloghane SAC (002070)	10.1
Natural Heritage Areas (NHA)	
No NHAs were identified within the Likely Zone of Impact	
Proposed Natural Heritage Areas (pNHA)	
Mount Brandon	1.63
Smerwick Harbour Sandhills And Marshes	3.66
Burnham Inlet	3.71
Ventry Dunes and Marshes	5.61
Emlagh East Salt Marshes	5.66
Parkmore Point	7.07
Sybil Point/Carrigbrean	8.08
Tralee Bay and Magharees Peninsula, West to Cloghane	10.14
Slea Head	11.39

5.6.3 New Flora Atlas

A search was made in the New Atlas of the British & Irish Flora (Preston et al, 2002) to investigate whether any rare or unusual plant species listed under the Flora Protection Order or Annex II of the EU Habitats Directive had been previously recorded in the relevant 10km square in which the replanting site is situated (Q40), during the 1987-1999 atlas survey.

One Annex II and FPO listed species was previously recorded in hectad Q40; Killarney fern (*Trichomanes speciosum* (sporophyte)).

5.6.4 National Biodiversity Data Centre

A search of the National Biodiversity Data Centre (NBDC) website was conducted on 24/07/2018 with a focus on records of protected fauna recorded from hectad Q40. The results of the database search are provided below in Tables 5.15 and 5.16. Table 5.17 includes records of non-native invasive species listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015).

Table 5.15 NBDC European protected fauna records within hectad Q40

Common Name	Scientific Name	Conservation Status
Bottle-nosed Dolphin	<i>Tursiops truncatus</i>	Annex II, Annex IV, WA
Kerry Slug	<i>Geomalacus (Geomalacus) maculosus</i>	Annex II, Annex IV, WA
European Otter	<i>Lutra lutra</i>	Annex II, Annex IV, WA
Common Porpoise	<i>Phocoena phocoena</i>	Annex II, Annex IV, WA
Grey Seal	<i>Halichoerus grypus</i>	Annex II, Annex V, WA
Sea Lamprey	<i>Petromyzon marinus</i>	Annex II
Marsh Fritillary	<i>Euphydryas aurinia</i>	Annex II
Common Dolphin	<i>Delphinus delphis</i>	Annex IV, WA
Fin Whale	<i>Balaenoptera physalus</i>	Annex IV, WA
Long-finned Pilot Whale	<i>Globicephala melas</i>	Annex IV, WA
Pygmy Sperm Whale	<i>Kogia breviceps</i>	Annex IV, WA
Striped Dolphin	<i>Stenella coeruleoalba</i>	Annex IV, WA
Leathery Turtle	<i>Dermochelys coriacea</i>	Annex IV, WA
Common Frog	<i>Rana temporaria</i>	Annex V, WA
Eurasian Badger	<i>Meles meles</i>	WA
West European Hedgehog	<i>Erinaceus europaeus</i>	WA

Annex II, Annex IV, Annex V – Of EU Habitats Directive, WA – Irish Wildlife Acts (1976-2017).

**Table 5.16 NBDC European protected fauna records within hectad Q40
Annex I – Of EU Birds Directive, WA – Irish Wildlife Acts (1976-2017).**

Common Name	Scientific Name	Conservation Status
Great Northern Diver	<i>Gavia immer</i>	Annex I, WA
Little Egret	<i>Egretta garzetta</i>	Annex I, WA
Little Gull	<i>Larus minutus</i>	Annex I, WA
Peregrine Falcon	<i>Falco peregrinus</i>	Annex I, WA
European Golden Plover	<i>Pluvialis apricaria</i>	Annex I, WA
Common Kingfisher	<i>Alcedo atthis</i>	Annex I, WA
Corn Crane	<i>Crex crex</i>	Annex I, WA
Dunlin	<i>Calidris alpina</i>	Annex I, WA
Mediterranean Gull	<i>Larus melanocephalus</i>	Annex I, WA
Merlin	<i>Falco columbarius</i>	Annex I, WA
Red-billed Cough	<i>Pyrhacorax pyrrhacorax</i>	Annex I, WA
Hen Harrier	<i>Circus cyaneus</i>	Annex I, WA
Bar-tailed Godwit	<i>Limosa lapponica</i>	Annex I, WA
Red-throated Diver	<i>Gavia stellata</i>	Annex I, WA
Sandwich Tern	<i>Sterna sandvicensis</i>	Annex I, WA
Short-eared Owl	<i>Asio flammeus</i>	Annex I, WA
Whooper Swan	<i>Cygnus cygnus</i>	Annex I, WA

Table 5.17. NBDC Third schedule non-native invasive species within hectad Q40

Common Name	Scientific Name
Japanese Knotweed	<i>Fallopia japonica</i>
Bohemian Knotweed	<i>Fallopia japonica x sachalinensis = F. x bohemica</i>
American Mink	<i>Mustela vison</i>
Brown Rat	<i>Rattus norvegicus</i>
Leathery Sea Squirt	<i>Styela clava</i>
Canada Goose	<i>Branta canadensis</i>
Three-cornered Garlic	<i>Allium triquetrum</i>
Greylag Goose	<i>Anser anser</i>

5.6.5 National Bat Database of Ireland

The National Bat Database of Ireland was searched for records of bat activity and roosts within a 10 km radius of the proposed afforestation site (IG Ref: E042860, N104221). Two observations have been previously recorded including one roost and one transect. The results of the database search are provided in Table 5.18.

Table 5.18 BCI data within 10km radius

Survey Type	Location	Species	Survey	Designation
Roost	Dingle Peninsula, Co. Kerry	Roost type: Building Species: Brown long-eared bat	EIS & Road Surveys	Annex IV
Transect	Slievadrehid Townland	Brown long-eared bat, unidentified bat	Waterways Survey	Annex IV

5.6.6 Water Quality

The proposed afforestation site is located within the Laune-Maine-Dingle Bay Catchment. The Milltown River runs along the eastern border the site, flowing into Dingle Bay to the south. There is no EPA water quality monitoring station on the Milltown River to provide a River Water Quality assessment score (Q-Value). The Water Framework Directive (WFD) river waterbody status (2010-2015) for the Milltown River was assessed as ‘Poor’ status.

5.6.7 Freshwater Pearl Mussel Sensitive Areas

The site is not located within a pearl mussel (*Margaritifera margaritifera*) sensitive area. The site has no connectivity to any pearl mussel sensitive areas.

5.6.8 Conclusions of the Desk Study

The afforestation site is not located within any site designated for nature conservation. The protected species recorded within the relevant hectad are dominated by marine species that lack suitable habitats within the proposed afforestation site. Many of the other species have widespread ranges and distributions and are likely to be recorded frequently throughout Ireland.

A number of rare and protected habitats, flora and fauna have been recorded from the hectad in which the proposed afforestation site is located. The field survey was designed to identify if any of these species or habitats or additional ecological receptors occur within the site.

5.6.9 Flora in the Existing Environment

5.6.9.1 Habitats Present at the Site

The site was dominated by **Wet Grassland (GS4)** (Plate 5.9). The larger eastern section of the site has been subject to substantial disturbance. Earth has been banked in rows and wet grassland formed a mosaic with **Recolonising Bare Ground (ED3)** (Plate 5.10). Species included soft rush (*Juncus effuses*), European gorse (*Ulex europaeus*), creeping buttercup (*Ranunculus repens*), dock (*Rumex* sp.), sheep's fescue (*Festuca ovina*), creeping bent-grass (*Agrostis stolonifera*), Yorkshire fog (*Holcus lanatus*), daisy (*Bellis perennis*), clover (*Trifolium* sp.), primrose (*Primula vulgaris*) and purple moor grass (*Molinia caerulea*).

In the narrow section to the west, grazing was more evident and **Wet Grassland (GS4)** formed a mosaic with **Improved Agricultural Grassland (GA1)** (Plate 5.11). Soft rush (*J. effuses*) was less frequent and species such as creeping buttercup (*Ranunculus repens*), dock (*Rumex* sp.), sheep's' fescue (*Festuca ovina*), creeping bent-grass (*Agrostis stolonifera*) and Yorkshire fog (*Holcus lanatus*), were more abundant.

The Milltown River borders the eastern side of the site and a drain (FW4) bisects the eastern side of the site, running north-south (Plate 5.12). Coniferous forestry also borders the site to the east and south. Boundaries to the north and west are composed of Hedgerows (WL1), comprising willow shrub (*Salix* sp.), blackthorn (*Prunus spinosa*), European gorse (*Ulex europaeus*), Cotoneaster, ivy (*Hedera helix*), bramble (*Rubus fruticosus*), creeping buttercup (*Ranunculus repens*), dock (*Rumex* sp.), creeping bent-grass (*Agrostis stolonifera*), soft rush (*Juncus effuses*), nettle (*Urtica dioica*) and Montbretia.



Plate 5.9: Wet Grassland (GS4) within eastern section of site



Plate 5.10: Recolonising Bare Ground (ED3) within eastern section of site



Plate 5.11: Agricultural Grassland (GA1)/Wet Grassland (GS4) mosaic within western section of site



Plate 5.12: Drain (FW4) running north – south through eastern section of site

5.6.9.1.1 Invasive Species

No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were identified within the site boundaries during field survey.

5.6.10 Fauna in the existing environment

Birds

Snipe (*Gallinago gallinago*), pheasant (*Phasianus colchicus*) and blackbird (*Turdus merula*) were recorded incidentally within the site. No birds listed on Annex I of the EU Birds Directive were recorded during the field survey.

Terrestrial Mammals

No evidence of protected mammal species was recorded within the site boundary. There is no suitable habitat for otter present within the site. In addition, there were no structures or trees within the site which may provide suitable roosting habitat for bats. Overall, the site was considered to have low suitability for bat species.

No evidence of marsh fritillary or Kerry slug, or their habitats, was recorded during the site visit.

5.6.11 Character of Habitats

The site at Knockavogreen has the character of an agricultural farmland that has been highly modified from its natural state through drainage and removal of topsoil.

5.6.12 Significance of Habitats

Ecological evaluation within this section follows a methodology that is set out in Chapter 3 of the *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (NRA, 2009).

No habitats which correspond to those that are listed in the EU Habitats Directive were identified during the site visit. Grassland habitats within the site, given their highly modified and very disturbed state, are of **Local Importance (Lower Value)**.

5.6.13 Significance of Fauna

No evidence of Annex listed species, or other species of conservation concern were recorded within the site boundaries. In addition, no suitable habitat for species of conservation concern including otter, marsh fritillary or Kerry slug was identified within the proposed afforestation site.

Bird species recorded within the site boundaries are common generally and assigned a value of **Local Importance (Lower Value)**: The site of the proposed afforestation provides some limited foraging, commuting and nesting habitats for these and other common bird species in general. Similar habitat is widespread in the locality and so a significant impact as a result of a loss of suitable habitat is not predicted.

5.6.14 Impact Assessment

Do Nothing' Impact

Were the site to remain unplanted the management on site would likely remain as it is presently i.e. grazed by livestock and drained. However, given that the site has received Technical Approval from the Forest Service, it will likely be afforested per the provisions of the approval at a later date.

Loss of Floral Habitat

Long-Term Neutral Impact

The loss of habitat will be restricted to highly disturbed wet agricultural grasslands. The impacted habitats are not considered to be of ecological sensitivity and their loss will constitute a neutral impact when compared with the coniferous forestry to be planted.

Mitigation

All works will be carried out in accordance with the relevant Forest Service requirements

Residual Impact

The replacement of wet agricultural grassland habitats with coniferous forestry is a **Long Term Neutral Impact**.

Loss of Faunal Habitat

Long Term Neutral Impact

The proposed planting site is not of high value or importance as a faunal habitat, being an open expanse of degraded wet agricultural grassland. It is likely that the proposed planting of forestry will result in some loss of faunal habitat for common species such as Fox (*Vulpes vulpes*) and other small mammals, along with local bird species. This habitat is widespread in the local area and this loss is negligible. The afforestation will result in the recreation of cover and shelter for a range of species. This will, overall, result in a **Long Term Neutral Impact**.

Water Pollution

Short-Term Minor Negative Impact

There is potential for water pollution to occur through discharge to the adjacent river in the form of acidification, siltation or erosion.

Mitigation

The works associated with planting, maintenance, thinning and harvesting will be carried out in accordance with the Forest Service requirements and buffer zone widths for the water courses applied accordingly.

Residual Impact

No impacts on water quality are anticipated as a result of any element of the proposed afforestation.

Cumulative Impacts

The proposed afforestation has Technical Approval from the Forest Service and will be undertaken accordingly. This approval is conditional to all associated works being undertaken in accordance with Forest Service Guidelines. The impacts associated with this afforestation have been classified overall as a neutral impact. As such, when considered in combination with the other land uses in the area, and considering that the forestry guidelines are designed to minimise and prevent impacts to habitats that are outside the site, cumulative impacts on sensitive ecological receptors are not anticipated.

6 SOILS AND GEOLOGY

6.1 Introduction

This section of the report provides baseline information on the environmental setting of the approved afforestation lands in terms of soils and geology and discusses the potential impacts and associated effect that the activity may have on them. Where required, appropriate mitigation measures to limit any identified significant impacts to soils and geology are recommended.

6.1.1 Desk Study

This desk study involved collecting all relevant geological data for each site and its surrounding area. This included consultation of the following:

- Environmental Protection Agency database (www.epa.ie);
- Geological Survey of Ireland - National Draft Bedrock Aquifer map;
- Geological Survey of Ireland - Groundwater Database (www.gsi.ie);
- Bedrock Geology 1:100,000 Scale Map Series. Geological Survey of Ireland (GSI, 2003);
- Geological Survey of Ireland – 1:25,000 Field Mapping Sheets; and,
- General Soil Map of Ireland 2nd edition (www.epa.ie);

6.1.2 Impact Assessment Methodology

Using information from the desk study, an estimation of the importance of the soil and geological environment within each of the study areas is assessed using the criteria set out in Table 6.1 (NRA, 2005).

Table 6.1 Estimation of Importance of Soil and Geology Criteria (NRA, 2005)

Importance	Criteria	Typical Example
Very High	Attribute has a high quality, significance or value on a regional or national scale. Degree or extent of soil contamination is significant on a national or regional scale. Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale.	Geological feature rare on a regional or national scale (NHA). Large existing quarry or pit. Proven economically extractable mineral resource
High	Attribute has a high quality, significance or value on a local scale. Degree or extent of soil contamination is significant on a local scale. Volume of peat and/or soft organic soil underlying site is significant on a local scale.	Contaminated soil on site with previous heavy industrial usage. Large recent landfill site for mixed wastes Geological feature of high value on a local scale (County Geological Site). Well drained and/or highly fertility soils. Moderately sized existing quarry or pit Marginally economic extractable mineral resource.

Medium	Attribute has a medium quality, significance or value on a local scale. Degree or extent of soil contamination is moderate on a local scale. Volume of peat and/or soft organic soil underlying site is moderate on a local scale.	Contaminated soil on site with previous light industrial usage. Small recent landfill site for mixed Wastes. Moderately drained and/or moderate fertility soils. Small existing quarry or pit. Sub-economic extractable mineral Resource.
Low	Attribute has a low quality, significance or value on a local scale. Degree or extent of soil contamination is minor on a local scale. Volume of peat and/or soft organic soil underlying site is small on a local scale.	Large historical and/or recent site for construction and demolition wastes. Small historical and/or recent landfill site for construction and demolition wastes. Poorly drained and/or low fertility soils. Uneconomically extractable mineral Resource.

The statutory criteria (EPA, 2002 and EPA, 2003) for the assessment of impacts require that likely impacts are described with respect to their extent, magnitude, complexity, probability, duration, frequency, reversibility and transfrontier nature (if applicable). The descriptors used in this environmental impact assessment are those set out in EPA (2002) Glossary of Impacts as shown in Section 1 of the EIS which accompanied the application. In addition, the two impact characteristics proximity and probability are described for each impact and these are defined in Table 6.2.

In order to provide an understanding of this descriptive system in terms of the geological/hydrological environment, elements of this system of description of impacts are related to examples of potential impacts on the hydrology and morphology of the existing environment, as listed in Table 6.3.

Table 6.2 Additional Impact Characteristics

Impact Characteristic	Degree/Nature	Description
Proximity	Direct	An impact which occurs within the area of the proposed project, as a direct result of the proposed project.
	Indirect	An impact which is caused by the interaction of effects, or by off-site developments.
Probability	Low	A low likelihood of occurrence of the impact.
	Medium	A medium likelihood of occurrence of the impact.
	High	A high likelihood of occurrence of the impact.

Table 6.3 Impact descriptors related to the receiving environment

Impact Characteristics		Potential Hydrological Impacts
Quality	Significance	
Negative only	Profound	Widespread permanent impact on: - The extent or morphology of a cSAC. - Regionally important aquifers. - Extents of floodplains. Mitigation measures are unlikely to remove such impacts.
Positive or Negative	Significant	Local or widespread time dependent impacts on: -The extent or morphology of a cSAC / ecologically important area. -A regionally important hydrogeological feature (or widespread effects to minor hydrogeological features). -Extent of floodplains. Widespread permanent impacts on the extent or morphology of an NHA/ecologically important area, Mitigation measures (to design) will reduce but not completely remove the impact – residual impacts will occur.
Positive or Negative	Moderate	Local time dependent impacts on: - The extent or morphology of a cSAC / NHA / ecologically important area. - A minor hydrogeological feature. - Extent of floodplains. Mitigation measures can mitigate the impact OR residual impacts occur, but these are consistent with existing or emerging trends
Positive, Negative or Neutral	Slight	Local perceptible time dependent impacts not requiring mitigation.
Neutral	Imperceptible	No impacts, or impacts which are beneath levels of perception, within normal bounds of variation, or within the bounds of measurement or forecasting error.

6.2 Proposed Replanting Lands

6.2.1 Replanting Area 1: Ballyduff Beg, Co. Clare

6.2.1.1 Geology and Subsoils

Information on the main geological formations and subsoils underlying replanting area 1 (Ballyduff Beg) is shown in Table 6.4.

Table 6.4 Information on geology and subsoil under site in Ballyduff Beg, Co. Clare

Site	Geological Formation	Subsoil Type
Ballyduff Beg	<ul style="list-style-type: none"> ▪ Sandstone, siltstone & mudstone 	<ul style="list-style-type: none"> ▪ Cutover Peat ▪ Sandstone Till

The site at Ballyduff Beg is underlain with sandstone, siltstone and mudstone, with the subsoil being composed of cutover peat and sandstone derived till. The area surrounding the site is underlain with similar subsoils to the site, with Cutover Peat being the most widespread and areas of Blanket Peat. The peat is interspersed with Nemerian Sandstone Till in pockets of varying size. There are also pockets of Alluvian soil in the surrounding area.

6.2.1.2 Geological Resource Importance

The sandstone bedrock at the site could be classified as “Medium” importance. The bedrock could be used on a “sub-economic” local scale for construction purposes. The bedrock at the site has not been used in the past for this purpose.

The peat deposits at the site could be classified as “low” importance. While peat has not been cut at this site, it is not designated in this area, is of a small volume, is used for agricultural purposes and is poorly drained. Refer to Table 6.1 for criteria.

6.2.1.3 Geological Heritage and Designated Sites

There are no recorded Geological Heritage sites, mineral deposit sites or mining sites (current or historic) within the proposed development area.

6.2.1.4 Potential Impacts

6.2.1.4.1 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

6.2.1.4.2 Likely and Significant Impacts and Associated Mitigation Measures

The likely impacts of the proposed development and mitigation measures that will be put in place to eliminate or reduce them are described below.

Construction of Drains and Planting of Trees

There will be some minor disturbance of soils, associated with the construction of drains through the site. Planting of trees will be carried out by hand using the slit planting method, so soil disturbance from this will be insignificant. There are no likely impacts of this afforestation on the underlying geology.

Site Roads & Tracks Construction

Forestry felling can occur within 0.8-1km of access points (roads & tracks) to the main forest body. Due to the small size of this site, additional access tracks or roads will not be required. This site is located adjacent an existing road network with existing entrances which will not require alteration.

6.2.1.4.3 Mitigation Measures

Planting of trees will be carried out by hand. Any drains will be generally shallow and will be constructed in accordance with the forestry service best practice guidelines described in detail in Section 2. Soils will remain in situ at the site and will not be removed offsite.

6.2.1.4.4 Residual Impact

There will be no impacts on soils and geology associated with the proposed afforestation.

6.2.1.4.5 *Significance of the Effects*

Based on the above, there will be no significant effects on soils and geology at this site.

6.2.2 Replanting Area 2: Curraghard, Co. Roscommon

6.2.2.1 Geology and Subsoils

Information on the main geological formations and subsoils underlying the proposed replanting area is shown in Table 6.5.

Table 6.5 Information on geology and subsoil under replanting area in Claraghatalea North, Co. Cork

Site	Geological Formation	Subsoil Type
Curraghard	<ul style="list-style-type: none"> ▪ Limestone, Black Calcareenites and shale 	<ul style="list-style-type: none"> ▪ Cut-over Peat ▪ Till derived from Devonian and Carboniferous sandstones and shales

The predominant subsoil in the area is Till derived from Devonian and Carboniferous sandstones and shales with a smaller section of cut-over peat. Peaty poorly drained mineral and Shallow well drained mineral are the predominant soils found on the site with a small section of cut-over peat to the east of the site.

6.2.2.2 Geological Resource Importance

The peat deposits at the site could be classified as “Low” importance as the peat is not designated in this area and is significantly degraded in most places at the site as a result of agriculture related drainage. Refer to Table 6.1 for criteria.

The shale and limestone bedrock at the site could be classified as “Medium” importance. The bedrock could be used on a “sub-economic” local scale for construction purposes. The bedrock has not been used in the past at the site for this purpose.

6.2.2.3 Geological Heritage and Designated Sites

There are no recorded Geological Heritage sites, mineral deposit sites or mining sites (current or historic) within the proposed development area. The proposed development is not located within any designated site.

6.2.2.4 Potential Impacts

6.2.2.4.1 *‘Do-Nothing’ Scenario*

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

6.2.2.4.2 *Likely and Significant Impacts and Associated Mitigation Measures*

The likely impacts of the proposed development and mitigation measures that will be put in place to eliminate or reduce them are shown below.

Construction of Drains and Planting of Trees

There will be some minor disturbance of soils, associated with the construction of drains through the site. Planting of trees will be carried out by hand using the slit

planting method, so soil disturbance from this will be insignificant. There are no likely impacts of this afforestation on the underlying geology.

Site Access

Forestry felling can occur within 0.8-1km of access points (roads and tracks) to the main forest body. Due to the small size of this site, additional access tracks or roads will not be required. This site is located adjacent an existing road network with existing entrances which will not require upgrading or alteration.

6.2.2.4.3 Mitigation Measures

Planting of trees will be carried out by hand. Any drains will be generally shallow and will be constructed in accordance with the forestry service best practice guidelines described in detail in Section 2. Soils will remain in situ at the site and will not be removed offsite.

6.2.2.4.4 Residual Impact

There will be no impacts on soils and geology associated with the proposed afforestation.

6.2.2.4.5 Significance of the Effects

Based on the above, there will be no significant effects on soils and geology at this site.

6.2.3 Replanting Area 3: Claraghatlea North, Co. Cork

6.2.3.1 Geology and Subsoils

Information on the main geological formations and subsoils underlying the proposed replanting area is shown in Table 6.6.

Table 6.6 Information on geology and subsoil under replanting area in Claraghatlea North, Co. Cork

Site	Geological Formation	Subsoil Type
Claraghatlea North	<ul style="list-style-type: none"> ▪ Numerian (Undifferentiated) Shale and Sandstone 	<ul style="list-style-type: none"> ▪ Blanket Peat ▪ Alluvium

Blanket Peat is the dominant subsoil type under the site. Alluvium is present to the north and is found 20 meters inside the northern boundary of the site by the banks of the Owennagleo river. The surrounding wider area consists of a combination of Devonian Till, Blanket Peat, Alluvium and Bedrock Outcrops.

6.2.3.2 Geological Resource Importance

The peat deposits at the site could be classified as “Low” importance as the peat is not designated in this area and is significantly degraded in most places at the site as a result of agriculture related drainage. Refer to Table 6.1 for criteria.

The shale and sandstone bedrock at the site could be classified as “Medium” importance. The bedrock could be used on a “sub-economic” local scale for construction purposes. The bedrock has not been used in the past at the site for this purpose.

6.2.3.3 Geological Heritage and Designated Sites

There are no recorded Geological Heritage sites, mineral deposit sites or mining sites (current or historic) within the proposed development area. The proposed development is not located within any designated site.

6.2.3.4 Potential Impacts

6.2.3.4.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

6.2.3.4.2 Likely and Significant Impacts and Associated Mitigation Measures

The likely impacts of the proposed development and mitigation measures that will be put in place to eliminate or reduce them are shown below.

Construction of Drains and Planting of Trees

There will be some minor disturbance of soils, associated with the construction of drains through the site. Planting of trees will be carried out by hand using the slit planting method, so soil disturbance from this will be insignificant. There are no likely impacts of this afforestation on the underlying geology.

Site Access

Forestry felling can occur within 0.8-1km of access points (roads and tracks) to the main forest body. Due to the small size of this site, additional access tracks or roads will not be required. This site is located adjacent an existing road network with existing entrances which will not require upgrading or alteration.

6.2.3.4.3 Mitigation Measures

Planting of trees will be carried out by hand. Any drains will be generally shallow and will be constructed in accordance with the forestry service best practice guidelines described in detail in Section 2. Soils will remain in situ at the site and will not be removed offsite.

6.2.3.4.4 Residual Impact

There will be no impacts on soils and geology associated with the proposed afforestation.

6.2.4 Replanting Area 4: Rahaliska, Co. Cork

6.2.4.1 Geology and Subsoils

Information on the main geological formations and subsoils underlying the proposed replanting area is shown in Table 6.7.

Table 6.7 Information on geology and subsoil under replanting area in Rahaliska, Co. Cork

Site	Geological Formation	Subsoil Type
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Rahalisk	<ul style="list-style-type: none"> ▪ Gortanimill Formation (Sandstone and Siltstone) ▪ Caha Mountain Formation (Purple and Green Sandstone and Siltstone) 	<ul style="list-style-type: none"> ▪ Till derived from Devonian Sandstones ▪ Bedrock Outcrop ▪ Blanket Peat
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The large majority of the replanting site is underlain by Devonian the Gortanimill Formation (Sandstone and Siltstone), while the north-western end of the site consists of Caha Mountain Formation (Purple and Green Sandstone and Siltstone. Sandstone Till is the main subsoil type of the replanting site, with an area of peat on the eastern side of the site. In addition, there are small pockets of Bedrock Outcrop on the site. The area surrounding the site is underlain with similar subsoil to the site itself, with Devonian Sandstone Till being the dominant type with some scattered outcrops of bedrock and areas of peat and alluvium.

6.2.4.2 Geological Resource Importance

The peat deposits at the site could be classified as “Low” importance as the peat is not designated in this area and is significantly degraded in most places at the site as a result of agriculture related drainage. Refer to Table 6.1 for criteria. The bedrock at the site could be classified as “Medium” importance. The bedrock could be used on a “sub-economic” local scale for construction purposes. The bedrock has not been used in the past at the site for this purpose.

6.2.4.3 Geological Heritage and Designated Sites

There are no recorded Geological Heritage sites, mineral deposit sites or mining sites (current or historic) within the proposed development area. The proposed development is not located within any designated site.

6.2.4.4 Potential Impacts

6.2.4.4.1 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

6.2.4.4.2 Likely and Significant Impacts and Associated Mitigation Measures

The likely impacts of the proposed development and mitigation measures that will be put in place to eliminate or reduce them are shown below.

Construction of Drains and Planting of Trees

There will be some minor disturbance of soils, associated with the construction of drains through the site. Planting of trees will be carried out by hand using the slit planting method, so soil disturbance from this will be insignificant. There are no likely impacts of this afforestation on the underlying geology.

Site Access

Forestry felling can occur within 0.8-1km of access points (roads and tracks) to the main forest body. Due to the small size of this site, additional access tracks or roads will not be required. This site is located adjacent an existing road network with existing entrances which will not require upgrading or alteration.

6.2.5 Replanting Area 5: Knockavrogeen, Co. Kerry

6.2.5.1 Geology and Subsoils

Information on the main geological formations and subsoils underlying the proposed replanting area is shown in Table 6.8.

Table 6.8 Information on geology and subsoil under replanting area in Glantane Beg, Co. Cork

Site	Geological Formation	Subsoil Type
Knockavrogeen	▪ Sandstone	▪ blanket peat with sandstone till

The site at Knockavrogeen East is underlain by sandstone, with the subsoil being composed of mostly blanket peat with sandstone till beneath fringes of the site. The area surrounding the site is underlain with similar subsoils to the site, with pockets of blanket peat and alluvium.

6.2.5.2 Geological Resource Importance

The sandstone bedrock at the site could be classified as “Medium” importance. The bedrock could be used on a “sub-economic” local scale for construction purposes. The bedrock at the site has not been used in the past for this purpose.

The peat deposits at the site could be classified as “low” importance. While peat has not been cut at this site, it is not designated in this area, is of a small volume, is used for agricultural purposes and is poorly drained. Refer to Table 6.1 for criteria.

6.2.5.3 Geological Heritage and Designated Sites

There are no recorded Geological Heritage sites, mineral deposit sites or mining sites (current or historic) within the proposed development area.

6.2.5.4 Potential Impacts

6.2.5.4.1 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Knocknamork Renewable Energy Development proceed or not.

6.2.5.4.2 Likely and Significant Impacts and Associated Mitigation Measures

The likely impacts of the proposed development and mitigation measures that will be put in place to eliminate or reduce them are described below.

Construction of Drains and Planting of Trees

There will be some minor disturbance of soils, associated with the construction of drains through the site. Planting of trees will be carried out by hand using the slit planting method, so soil disturbance from this will be insignificant. There are no likely impacts of this afforestation on the underlying geology.

Site Roads & Tracks Construction

Forestry felling can occur within 0.8-1km of access points (roads & tracks) to the main forest body. Due to the small size of this site, additional access tracks or roads will not be required. This site is located adjacent to the existing public road network.

6.2.5.4.3 Mitigation Measures

Planting of trees will be carried out by hand. Any drains will be generally shallow and will be constructed in accordance with the forestry service best practice guidelines described in detail in Section 2. Soils will remain in situ at the site and will not be removed offsite.

6.2.5.4.4 Residual Impact

There will be no impacts on soils and geology associated with the proposed afforestation.

7 HYDROLOGY AND HYDROGEOLOGY

7.1 Introduction

7.1.1 Background and Objectives

McCarthy Keville O’Sullivan was engaged to undertake an assessment of the potential impacts and associated effect of forestry planting at 4 no. site locations on water aspects (hydrology and hydrogeology) of the receiving environment. The objective of the assessment is to:

- Produce a baseline study of the existing water environment (surface and groundwater) in the area of the site locations;
- Identify likely positive and negative impacts of the proposed development on surface and groundwater during all phases of the development; and,
- Identify mitigation measures to avoid, remediate or reduce significant negative impacts.

This section of the report provides baseline information on the environmental setting of the approved afforestation sites in terms of hydrology and hydrogeology and discusses the potential impacts that the activity may have on them. Where required, appropriate mitigation measures to limit any identified significant impacts to site hydrology and hydrogeology are recommended.

7.1.2 Methodology

7.1.2.1 Desk Study

A desk study of the site and the surrounding areas involved collecting all relevant geological, hydrological, hydrogeological and meteorological data for the area. This included consultation with the following:

- Environmental Protection Agency database (www.epa.ie);
- Geological Survey of Ireland - National Draft Bedrock Aquifer map;
- Geological Survey of Ireland - Groundwater Database (www.gsi.ie);
- Met Eireann Meteorological Databases (www.met.ie);
- National Parks & Wildlife Services Public Map Viewer (www.npws.ie);
- Water Framework Directive “*WaterMaps*” Map Viewer (www.wfdireland.ie);
- Bedrock Geology 1:100,000 Scale Map Series, Geological Survey of Ireland (GSI, 2003);
- OPW Indicative Flood Maps (www.floodmaps.ie);
- Environmental Protection Agency – “Hydrotool” Map Viewer (www.epa.ie);
- CFRAM Preliminary Flood Risk Assessment (PFRA) maps (www.cfram.ie); and,
- Department of Environment, Community and Local Government on-line mapping viewer (www.myplan.ie).

7.1.2.2 Impact Assessment Methodology

Please refer to Section 1 of the EIAR which accompanied the application for details on the impact assessment methodology (EPA, 2002 & 2003). In addition to the above methodology the sensitivity of the water environment receptors were assessed on completion of the desk study. Levels of sensitivity which are defined in Table 7.1 are then used to assess the potential effect that the proposed development may have on them.

Table 7.1 Receptor Sensitivity Criteria (Adapted from www.sepa.org.uk)

Sensitivity of Receptor	
Not sensitive	Receptor is of low environmental importance (e.g. surface water quality classified by EPA as A3 waters or seriously polluted), fish sporadically present or restricted). Heavily engineered or artificially modified and may dry up during summer months. Environmental equilibrium is stable and is resilient to changes which are considerably greater than natural fluctuations, without detriment to its present character. No abstractions for public or private water supplies. GSI groundwater vulnerability “Low” – “Medium” classification and “Poor” aquifer importance.
Sensitive	Receptor is of medium environmental importance or of regional value. Surface water quality classified by EPA as A2. Salmonid species may be present and may be locally important for fisheries. Abstractions for private water supplies. Environmental equilibrium copes well with all natural fluctuations but cannot absorb some changes greater than this without altering part of its present character. GSI groundwater vulnerability “High” classification and “Locally” important aquifer.
Very sensitive	Receptor is of high environmental importance or of national or international value i.e. NHA or SAC. Surface water quality classified by EPA as A1 and salmonid spawning grounds present. Abstractions for public drinking water supply. GSI groundwater vulnerability “Extreme” classification and “Regionally” important aquifer

7.2 Proposed Drainage

The proposed replanting lands will be drained in accordance with the Forestry Guidelines. Forestry plantations are generally drained by a network of mound drains which typically run perpendicular to the topographic contours of the site and feed into collector drains, which discharge to interceptor drains down-gradient of the plantation.

Mound drains are generally spaced approximately every 15m. Interceptor drains are generally located up-gradient (cut-off drains) and down-gradient of forestry plantations. A schematic of a typical standard forestry drainage network and one which is representative of the proposed site drainage network is shown in Figure 2.11 of this report.

7.3 Replanting Area 1: Ballyduff Beg, Co. Clare

7.3.1 Baseline Environment and Local Hydrology

Ground level elevations range between approximately 58m and 69m OD (meters above Ordnance Datum).

There are no streams or rivers within the site or adjacent the site boundary. The nearest surface water course is the river Inagh located approximately 200m to the west of the northern end of the site across the N85. This river rises approximately 8km to the south west and flows through the village of Inagh before it enters the Atlantic in Lahinch, 13.3 km to the north west.

There are numerous manmade drains within the site and surrounds that are in place predominately to drain the surrounding lands for agricultural purposes and the neighbouring forestry plantations

7.3.1.1 Water Balance

While the process of afforestation may result in a slight alteration in the water runoff of the site, the small size of the site (0.141 km²) when compared with the Mal Bay catchment (848.6 km²) means that any potential impacts this may have would be insignificant. The afforestation will lead to an imperceptible reduction in the runoff volumes in the longer term as the trees mature.

7.3.1.2 Regional Hydrology

The site is located in the Mal Bay River Catchment (IE_28), and forms part of the Inagh [Ennistymon]_SC_010 subcatchment (Code: IE_SH_28I010100). The subcatchment here has an overall status of 'Good' condition. It flows in an east to west direction, discharging into the Inagh Estuary in Lahinch.

7.3.1.3 Flood Risk Identification

OPW's indicative river and coastal flood map (www.floodmaps.ie), CFRAM Preliminary Flood Risk Assessment (PFRA) maps (www.cfram.ie), Department of Environment, Community and Local Government on-line planning mapping (www.myplan.ie) were consulted to identify those areas as being at risk of flooding.

No records or risks associated with flooding were identified in the published data sets.

7.3.1.4 Surface Water Hydrochemistry

Slightly acidic pH values of surface waters would be typical of peatland environments due to the decomposition of peat. In addition, the sandstone bedrock (and related till subsoils) which underlie the area would have slightly acidic groundwater characteristics which would have some effect on surface water chemistry specifically during dry periods when baseflow is likely to be more prevalent.

7.3.1.5 Hydrogeology

The underlying bedrock at the site is mapped as being sandstone, siltstone and black mudstone. (refer to Section 6 – Soils & Geology). The GSI has classified the bedrock formation here as a Locally Important Aquifers (LI – bedrock which is moderately productive only in local zones).

7.3.1.6 Groundwater Vulnerability

The vulnerability rating of the aquifer within the site ranges from "Low vulnerability" to "Moderate vulnerability" (Low in the south and moderate in the North) and this reflects the varying depth of local subsoils and peat. There are areas of 'High vulnerability' and area of 'X' rating (Rock at or near Surface or Karst) to the immediate east and west of the site.

7.3.1.7 Surface Water Body Status

The EU Water Framework Directive aims to protect, enhance and restore all waters with aim to achieve at least good status by 2021.

Under the first cycle of the Water Framework Directive Local surface water Body status reports were available for download from www.wfdireland.ie. Local surface water body (1st and 2nd cycle) information is available for viewing from www.catchments.ie.

The proposed afforestation site is located adjacent to the Inagh River (INAGH [ENNISTYMON]_020; 2nd cycle code: IE_SH_28I010206), which was deemed to be of 'good' status and 'under review' for it's risk of not achieving good status by 2021.

7.3.1.8 Groundwater Body Status

Under the first cycle of the Water Framework Directive Local Groundwater Body status reports were available for download from www.wfdireland.ie. and information related to the 1st and 2nd cycles of the WFD is available at www.catchments.ie.

The proposed afforestation site lies on the Miltown Malbay (Code: IE_SH_G_167) groundwater body (GWB) as classified during the 2010-2015 assessment cycle. This GWB extends southwest to near Kilkee, east past Inagh and north past Lisdoonvarna. It was classified during the 2010-2015 assessment cycle as having 'Good Status' and its risk of not achieving good status by 2021 was under review.

7.3.1.9 Designated Sites and Habitats

Designated sites include National Heritage Areas (NHAs), Proposed National Heritage Areas (pNHAs) Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSAC) and Special Protection Areas (SPAs). The proposed forestry development site is not located within any designated conservation-site. Designated sites in proximity to the proposed development site are described Section 5, Flora and Fauna.

7.3.1.10 Water Resources

There is a borehole well (name-1117NWW016) and a dug well located in the area of the site and its adjacent land, according to www.gsi.ie. These are most likely associated with clustered houses to the northwest and southwest of the site, and were both constructed in the early 1960s. The exact location of these wells can not be determined from the online database.

7.3.1.11 Receptor Sensitivity

Due to the nature of afforestation, being near surface construction activities, impacts on groundwater are generally negligible and surface water is generally the main sensitive receptor assessed during impact assessments. The primary risk to groundwater at the site would be from nutrients associated with fertilisers.

Based on criteria set out in Table 7.1 groundwater at the site can be classed as Sensitive to pollution because the sandstone bedrock is classified as a locally important Aquifer. However, the majority of the site is covered in peat which acts as a protective cover to the underlying aquifer. Any contaminants which may be accidentally released on-site are more likely to travel to nearby streams within surface runoff.

Surface waters such as the River Inagh are sensitive to potential contamination. This river is known to be of trout potential and is important locally for fishing.

Surface water mitigation and controls are outlined in Section 7.3 below to ensure protection of all downstream receiving waters. Mitigation measures will ensure that surface runoff from the afforested areas of the site will be of a high quality and will therefore not impact on the quality of downstream surface water bodies.

7.3.2 Proposed Site Drainage

The site will be drained in accordance with the Forestry Guidelines. Forestry plantations are generally drained by a network of mound drains which typically run perpendicular to the topographic contours of the site and feed into collector drains, which discharge to interceptor drains down-gradient of the plantation.

Mound drains are generally spaced approximately every 15m. As illustrated in Figure 2.11, Interceptor drains are generally located up-gradient (cut-off drains) and down-gradient of forestry plantations. A schematic of a typical standard forestry drainage network and one which is representative of the proposed site drainage network is shown above as Figure 2.11.

7.3.3 Proposed Drainage Management

Runoff control and drainage management are key elements in terms of mitigation against impacts on surface water bodies. Two distinct methods will be employed to manage drainage water within the proposed development. The first method involves 'keeping clean water clean' by avoiding disturbance to natural drainage features. The second method involves collecting any drainage waters from planted areas within the site that might carry silt or sediment, and nutrients, using cut off drains to control direct discharge into streams.

7.3.4 Potential Impacts

The potential impacts of the proposed development and mitigation measures that will be put in place to eliminate or reduce them are set out below.

7.3.4.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

7.3.4.2 Likely and Significant Impacts and Associated Mitigation measures

7.3.4.2.1 Excavation of Forestry Drains and Planting

Pathways: Drainage and surface water discharge routes.

Receptors: Surface waters and associated dependent ecosystems.

Potential Impacts: Indirect, negative, slight, short term, medium probability impact.

Shallow forestry drains will be constructed using an excavator throughout the site to a similar drainage pattern as Figure 2.11. There are no surface water courses on or adjacent the site and so the drains will ultimately discharge to the existing offsite field drain networks.

Potential impacts during drain construction occur mainly from:

- Exposure of soil and subsoils due to excavation, vehicle tracking, and skidding resulting in a source of suspended sediment which can become entrained in surface water runoff and enter drains;
- Nutrient release.

7.3.4.2.2 Harvesting Operations

Pathways: Drainage and surface water discharge routes.

Receptors: Surface waters and associated dependant ecosystems.

Potential Impacts: Indirect, negative, moderate, short term, medium probability impact.

Potential impacts during tree felling occur mainly from:

- Exposure of soil and subsoils due to vehicle tracking, and skidding or forwarding extraction methods resulting in a source of suspended sediment which can become entrained in surface water runoff

- Release of sediment attached to timber in stacking areas; and,
- Nutrient release.

7.3.4.2.3 Site Access

Forestry felling can occur within 0.8-1km of access points (roads & tracks) to the main forest body. Due to the small size of this site, additional access tracks or roads will not be required. This site is located adjacent an existing road network with existing entrances which will not require upgrading or alteration.

7.3.4.2.3.1 Proposed Mitigation Measures

Best practice methods related to water incorporated into the forestry management and mitigation measures have been derived from:

- Forest Service (2016) Environmental Requirements for Afforestation
- Forestry Commission (2004): Forests and Water Guidelines, Fourth Edition. Publ. Forestry Commission, Edinburgh;
- Coillte (2009): Forest Operations & Water Protection Guidelines;
- Forest Service (Draft): Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures

Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:

- Machine combinations will be chosen which are most suitable for ground conditions at the time of excavation and felling, and which will minimise surrounding soils disturbance;
- Where possible, existing drains will not be disturbed during drainage works;
- Drains and sediment traps will be installed during ground preparation and felling. Collector drains will be excavated at an acute angle to the contour (~0.3%-3% gradient), to minimise flow velocities. Main drains to take the discharge from collector drains will include water drops and rock armour, as required, where there are steep gradients, and should avoid being placed at right angles to the contour;
- Drains and silt traps will be maintained throughout all planting works, ensuring that they are clear of sediment build-up and are not severely eroded. Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimised and controlled;

Buffer Zones

7.3.4.2.3.2 There is a requirement in the Forest Service Code of Practice, Environmental Requirements for Afforestation document and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage. Residual Impact

Indirect, slight, short term, low probability impact.

7.3.4.2.4 Potential Release of Hydrocarbons during drainage works

Pathway: Groundwater flow paths and site drainage network.

Receptor: Groundwater and surface water.

Potential Impact: Indirect, negative, slight, temporary, medium probability impact to surface water quality.

Indirect, negative, slight, temporary, medium probability impact to local groundwater quality.

The replanting will be carried out by hand but it may be necessary to employ one excavator to create shallow drainage channels prior to planting. There is the potential for minor leaks from the excavator.

7.3.4.2.4.1 Proposed Mitigation Measures:

Mitigation measures proposed to avoid release of hydrocarbons at the site are as follows:

- Maintenance will not be carried out on site.
- Fuels will not be stored on site.
- The plant used will be regularly inspected for leaks and fitness for purpose;

7.3.4.2.4.2 Residual Impact

Indirect, negative, imperceptible, short term, low probability impact.

7.3.4.2.5 Potential Hydrological Impacts on Designated Sites

The proposed afforestation site is located within the Mal Bay catchment. There will however be no direct discharges from the site and the hydrological regime locally will not be altered by the afforestation due to its small scale.

Pathway: Surface water flow paths.

Receptor: Down-gradient water quality & designated sites.

Potential Impact: Indirect, negative, imperceptible, short term, low probability impact.

7.3.4.2.5.1 Impact Assessment & Proposed Mitigation Measures

The proposed mitigation measures which will include buffer zones and drainage control measures (*i.e.* cut off drains, tapered drains before buffer zones) will ensure that the quality of runoff from proposed development areas will be very high. The proposed development site is located in the Mal Bay catchment. There could potentially be an “*imperceptible, short term, low probability impact*” on local streams and rivers but this would be very localised and over a very short time period (*i.e.* hours).

7.3.4.2.5.2 Residual Impact

No residual impacts.

7.3.5 Significance of the Effects

Based on the above, there will be no significant effects on hydrology and hydrogeology at this site.

7.4 Replanting Area 2: Curragherd, Co. Roscommon

7.4.1 Baseline Environment and Local Hydrology

Ground level elevations range between approximately 80m and 95m OD (meters above Ordnance Datum) for Molougha.

The replanting site is drained by the Lung River which flows along the northern edge of the site. The lung river discharges into the Lough Gara. There is a small lake approximately 0.5km to the south west of the site called Cloonacooly Lough.

In addition to the lung river, there are numerous manmade drains that are in place predominately to drain the surrounding lands for agriculture and the neighbouring forestry plantations.

7.4.1.1 Water Balance

While the process of afforestation may result in a slight alteration in the water runoff of the sites due to transpiration, the small size of the site (0.0922 km²) when compared with the upper Shannon catchment (674.13 km²) means that any potential impacts this would be insignificant. The afforestation will lead to an imperceptible reduction in the runoff volumes in the longer term as the trees mature.

7.4.1.2 Regional Hydrology

The site is located in the Upper Shannon Catchment (Code: 26B), and mostly forms part of the Lung_SC_010 subcatchment (Code: 26B2). The site is located south of the Lissy Daly stream (IE_SH_26L030100) which flows east and discharges into the Lung River (IE_SH_26L030275). The Lung River flows in a north-east direction, discharging into Lough Gara (26_728)

7.4.1.3 Flood Risk Identification

OPW's indicative river and coastal flood map (www.floodmaps.ie), CFRAM Preliminary Flood Risk Assessment (PFRA) maps (www.cfram.ie), Department of Environment, Community and Local Government on-line planning mapping (www.myplan.ie) were consulted to identify those areas as being at risk of flooding.

No areas are indicated for flooding in the Curraghard site.

7.4.1.4 Surface Water Hydrochemistry

Slightly acidic pH values of surface waters would be typical of peatland environments due to the decomposition of peat. In addition, the shale bedrock (and related till subsoils) which underlie the area would have slightly acidic groundwater characteristics which would have some effect on surface water chemistry specifically during dry periods when baseflow is likely to be more prevalent. However, as Limestone bedrock is also present, this could possibly lower the pH values of the surface waters.

7.4.1.5 Hydrogeology

The underlying bedrock at the replanting site is mapped as being Limestone, Black Calcarenes and shale. The GSI has classified the site as being located on a Regionally Important Aquifer.

7.4.1.6 Groundwater Vulnerability

The vulnerability rating of the aquifer within the site is "Moderate vulnerability" and this reflects the varying depth of local subsoils and peat. Just south of the site there is "Low vulnerability" rating and north of the site is an area of "High vulnerability".

7.4.1.7 Surface Water Body Status

The EU Water Framework Directive aims to protect, enhance and restore all waters with aim to achieve at least good status by 2021.

Under the first cycle of the Water Framework Directive Local surface water Body status reports were available for download from www.wfdireland.ie. Local surface water body (1st and 2nd cycle) information is available for viewing from www.catchments.ie.

The proposed afforestation site is mostly located adjacent to the Lissy Daly stream (26_3847; 2nd cycle code: IE_SH_26L030100), which was deemed to be of 'Good' status. The site is also located near the River Lung (26_3813; 2nd cycle code: IE_SH_26L030100), which was also found to be of 'Good' status.

7.4.1.8 Groundwater Body Status

Under the first cycle of the Water Framework Directive Local Groundwater Body status reports were available for download from www.wfdireland.ie. and information related to the 1st and 2nd cycles of the WFD is available at www.catchments.ie.

The proposed afforestation site lies on the Carrick-on-Shannon (Code: IE_SH_G_048) groundwater body (GWB) as classified during the 2010-2015 assessment cycle. It was classified during the 2010-2015 assessment cycle as having 'Good Status' and it's risk of not achieving good status by 2021 was under review.

7.4.1.9 Designated Sites and Habitats

Designated sites include National Heritage Areas (NHAs), Proposed National Heritage Areas (pNHAs) Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSAC) and Special Protection Areas (SPAs). The proposed forestry development site is located 13.3km from the Corliskea/Trien/Cloonfelliv Bog SAP. Designated sites in proximity to the proposed development site are described in Section 5, Flora and Fauna.

7.4.1.10 Water Resources

The nearest borehole well identified was approximately 9km to the east of the site in the GSI well database (www.gsi.ie). It has a location accuracy of 1km so its presence is of little concern. This well is located within the same groundwater catchment as the proposed development site.

7.4.1.11 Receptor Sensitivity

Due to the nature of afforestation, being near surface construction activities, impacts on groundwater are generally negligible and surface water is generally the main sensitive receptor assessed during impact assessments. The primary risk to groundwater at the site would be from nutrients associated with fertilisers.

Based on criteria set out in Table 7.1, groundwater at the site can be classed as very sensitive to pollution because the bedrock is classified as a locally and regionally important Aquifer. However, the majority of the site is covered in sandstone and shale till and peat which acts as a protective cover to the underlying aquifer. Any contaminants which may be accidentally released on-site are more likely to travel to nearby streams within surface runoff.

Surface waters such as the Lung River are sensitive to potential contamination.

Surface water mitigation and controls are outlined in Section 7.4.3 below to ensure protection of all downstream receiving waters. Mitigation measures will ensure that surface runoff from the afforested areas of the site will be of a high quality and will therefore not impact on the quality of downstream surface water bodies.

7.4.2 Proposed Site Drainage

The site will be drained in accordance with the Forestry Guidelines. Forestry plantations are generally drained by a network of mound drains which typically run perpendicular to the topographic contours of the site and feed into collector drains, which discharge to interceptor drains down-gradient of the plantation.

Mound drains are generally spaced approximately every 15m. As illustrated in Figure 2.11, Interceptor drains are generally located up-gradient (cut-off drains) and down-gradient of forestry plantations. A schematic of a typical standard forestry drainage network and one which is representative of the proposed site drainage network is shown above as Figure 2.11.

7.4.3 Proposed Drainage Management

Runoff control and drainage management are key elements in terms of mitigation against impacts on surface water bodies. Two distinct methods will be employed to manage drainage water within the proposed development. The first method involves 'keeping clean water clean' by avoiding disturbance to natural drainage features. The second method involves collecting any drainage waters from planted areas within the site that might carry silt or sediment, and nutrients, using cut off drains to control direct discharge into streams.

7.4.4 Potential Impacts

The potential impacts of the proposed development and mitigation measures that will be put in place to eliminate or reduce them are set out below.

7.4.4.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

7.4.4.2 Likely and Significant Impacts and Associated Mitigation measures

7.4.4.2.1 Excavation of Forestry Drains

Pathways: Drainage and surface water discharge routes.

Receptors: Surface waters and associated dependent ecosystems.

Potential Impacts: Indirect, negative, slight, short term, medium probability impact.

Shallow forestry drains will be constructed using an excavator throughout the site to a similar drainage pattern as shown in Figure 2.11 above. There are no surface water courses on or adjacent the site and so the drains there will ultimately discharge to the existing offsite field drain networks.

Potential impacts during drain construction occur mainly from:

- Exposure of soil and subsoils due to excavation, vehicle tracking, and skidding resulting in a source of suspended sediment which can become entrained in surface water runoff and enter drains/surface water;
- Nutrient release.

7.4.4.2.2 Harvesting Operations

Pathways: Drainage and surface water discharge routes.

Receptors: Surface waters and associated dependant ecosystems.

Potential Impacts: Indirect, negative, moderate, short term, medium probability impact.

Potential impacts during tree felling occur mainly from:

- Exposure of soil and subsoils due to vehicle tracking, and skidding or forwarding extraction methods resulting in a source of suspended sediment which can become entrained in surface water runoff

- Release of sediment attached to timber in stacking areas; and,
- Nutrient release.

7.4.4.2.3 Site Access

Forestry felling can occur within 0.8-1km of access points (roads & tracks) to the main forest body. Due to the small size of this site, additional access tracks or roads will not be required. This site is located adjacent an existing road network with existing entrances which will not require upgrading or alteration.

7.4.4.2.3.1 Proposed Mitigation Measures

Best practice methods related to water incorporated into the forestry management and mitigation measures have been derived from:

- Forest Service (2016) Environmental Requirements for Afforestation
- Forestry Commission (2004): Forests and Water Guidelines, Fourth Edition. Publ. Forestry Commission, Edinburgh;
- Coillte (2009): Forest Operations & Water Protection Guidelines;

Forest Service (Draft): Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures;

Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:

- Machine combinations will be chosen which are most suitable for ground conditions at the time of excavation, and which will minimise surrounding soils disturbance;
- Where possible, existing drains will not be disturbed during drainage works;
- Drains and sediment traps will be installed during ground preparation. Collector drains will be excavated at an acute angle to the contour (~0.3%-3% gradient), to minimise flow velocities. Main drains to take the discharge from collector drains will include water drops and rock armour, as required, where there are steep gradients, and should avoid being placed at right angles to the contour;
- Drains and silt traps will be maintained throughout all planting works, ensuring that they are clear of sediment build-up and are not severely eroded. Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimised and controlled;

Buffer Zones

There is a requirement in the Forest Service Code of Practice, Environmental Requirements for Afforestation document and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage. .

7.4.4.2.3.2 Residual Impact

Indirect, negative, slight, short term, low probability impact.

7.4.4.2.4 Potential Release of Hydrocarbons During Drainage Works

Pathway: Groundwater flow paths and site drainage network.

Receptor: Groundwater and surface water.

Potential Impact: Indirect, negative, slight, temporary, medium probability impact to surface water quality.

Indirect, negative, slight, temporary, medium probability impact to local groundwater quality.

The replanting will be carried out by hand but it may be necessary to employ one excavator to create shallow drainage channels prior to planting. There is the potential for minor leaks from the excavator.

7.4.4.2.4.1 Proposed Mitigation Measures

Mitigation measures proposed to avoid release of hydrocarbons at the site are as follows:

- Maintenance will not be carried out on site.
- Fuels will not be stored on site.
- The plant used will be regularly inspected for leaks and fitness for purpose;

7.4.4.2.4.2 Residual Impact

Indirect, negative, imperceptible, short term, low probability impact.

7.4.4.2.5 Potential Hydrological Impacts on Designated Sites

The proposed afforestation site is located within the Mal Bay catchment. There will however be no direct discharges from the sites and the hydrological regime locally will not be altered by the afforestation. Drainage at the both sites will adhere to Environmental Requirements for Afforestation, as specified in the technical approval for the site.

Pathway: Surface water flow paths.

Receptor: Down-gradient water quality & designated sites.

Potential Impact: Indirect, negative, imperceptible, short term, low probability impact.

7.4.4.2.5.1 Impact Assessment and Proposed Mitigation Measures

The proposed mitigation measures which will include buffer zones and drainage control measures (*i.e.* cut off drains, tapered drains before buffer zones) will ensure that the quality of runoff from proposed development areas will be very high. The proposed development site is located in the Mal Bay catchment. There could potentially be an “*imperceptible, short term, low probability impact*” on local streams and rivers but this would be very localised and over a very short time period (*i.e.* hours). Therefore, direct, or indirect impacts on the Lower River Shannon SAC will not occur.

7.4.4.2.5.2 Residual Impact

No residual impacts.

7.4.5 Significance of the Effects

Based on the above, there will be no significant effects on hydrology and hydrogeology at this site.

7.5 Replanting Area 3: Claraghatlea North, Co. Cork

7.5.1 Baseline Environment and Local Hydrology

Ground level elevations range between approximately 100m and 110m OD (meters above Ordnance Datum).

A tributary stream to the Finnow River flows along the northern edge of the site leading into the Owenagloo River before it joins the Finnow River again and flows north east away from the site. 250m to the east of the site the Finnow flows north to meet this confluence.

There are numerous manmade drains within and around the site and surrounds that are in place predominately to drain the surrounding lands for agricultural purposes.

7.5.1.1 Water Balance

While the process of afforestation may result in a slight alteration in the water runoff of the site, the small size of the site (0.187 km²) when compared with the Munster Blackwater catchment (3,108 km²) means that any potential impacts this may have would be insignificant. The afforestation will lead to an imperceptible reduction in the runoff volumes in the longer term as the trees mature.

7.5.1.2 Regional Hydrology

The site is located in the Blackwater (Munster) Catchment (Code: 18), and forms part of the Blackwater[Munster]_SC_040 subcatchment (Code: 18_9). The site is located between the River Owennagloo (OWENNAGLOO_010) and the River Finnow (FINNOW (BLACKWATER)_030) southwest of their confluence. The River Finnow flows from near the site in a northeasterly direction, discharging into the Blackwater (BLACKWATER (MUNSTER)_060).

7.5.1.3 Flood Risk Identification

OPW's indicative river and coastal flood map (www.floodmaps.ie), CFRAM Preliminary Flood Risk Assessment (PFRA) maps (www.cfram.ie), Department of Environment, Community and Local Government on-line planning mapping (www.myplan.ie) were consulted to identify those areas as being at risk of flooding.

In April 2005 there was flooding on the River Finnow tributary near Liscreagh (1km to the north-east) and at Inchileigh Br Millstreet (800m to the south east).

7.5.1.4 Surface Water Hydrochemistry

Slightly acidic pH values of surface waters would be typical of peatland environments due to the decomposition of peat. In addition, the sandstone and shale bedrock (and related till subsoils) which underlie the area would have slightly acidic groundwater characteristics which would have some effect on surface water chemistry specifically during dry periods when baseflow is likely to be more prevalent.

7.5.1.5 Hydrogeology

The underlying bedrock at the site is mapped as being sandstone and shale. (refer to Section 6 – Soils & Geology). The GSI has classified the formations here as a Locally Important Aquifers (LI – bedrock which is moderately productive only in local zones).

7.5.1.6 Groundwater Vulnerability

The vulnerability rating of the aquifer within the site is “Low” reflecting the depth of subsoils on the site.

7.5.1.7 Surface Water Body Status

The EU Water Framework Directive aims to protect, enhance and restore all waters with aim to achieve at least good status by 2021.

Under the first cycle of the Water Framework Directive Local surface water Body status reports were available for download from www.wfdireland.ie. Local surface water body (1st and 2nd cycle) information is available for viewing from www.catchments.ie.

The proposed afforestation site is located adjacent to the River Owennagloo (OWENNAGLOO_010; 2nd cycle code: IE_SW_180070700) and the River Finnow (FINNOW (BLACKWATER)_030; 2nd cycle code: IE_SW_18F030300). The Owennagloo was deemed to be of 'Good' status while the Finnow had a status of 'Unassigned'. Both were deemed to be 'Not At risk' of not maintaining/achieving good status by 2021.

7.5.1.8 Groundwater Body Status

Under the first cycle of the Water Framework Directive Local Groundwater Body status reports were available for download from www.wfdireland.ie. and information related to the 1st and 2nd cycles of the WFD is available at www.catchments.ie.

The proposed afforestation site lies on the Rathmore West (Code: IE_SW_G_070) groundwater body (GWB) as classified during the 2010-2015 assessment cycle. This GWB extends south to Rathmore, east to Mallow and north to Freemount. It was classified during the 2010-2015 assessment cycle as having 'Good Status' and 'Not at Risk' of not maintaining good status by 2021.

7.5.1.9 Designated Sites and Habitats

Designated sites include National Heritage Areas (NHAs), Proposed National Heritage Areas (pNHAs) Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSAC) and Special Protection Areas (SPAs). The proposed forestry development site is located within the Blackwater River (Cork/Waterford) SAC. The boundary of the SAC extends approximately 50 meters into the northern end of the site. This and other designated sites in proximity to the proposed development site are described Section 5, Flora and Fauna.

7.5.1.10 Water Resources

There were no groundwater wells identified within 2km radius from the site in the GSI well database (www.gsi.ie).

7.5.1.11 Receptor Sensitivity

Due to the nature of afforestation, being near surface construction activities, impacts on groundwater are generally negligible and surface water is generally the main sensitive receptor assessed during impact assessments. The primary risk to groundwater at the site would be from nutrients associated with fertilisers.

Based on criteria set out in Table 7.1 groundwater at the site can be classed as Sensitive to pollution because the limestone bedrock is classified as a locally important Aquifer. However, the majority of the site is covered in peat which acts as a protective cover to the underlying aquifer. Any contaminants which may be accidentally released on-site are more likely to travel to nearby streams within surface runoff.

Surface water mitigation and controls are outlined below to ensure protection of all downstream receiving waters. Mitigation measures will ensure that surface runoff from the afforested areas of the site will be of a high quality and will therefore not impact on the quality of downstream surface water bodies.

7.5.2 Proposed Site Drainage

The site will be drained in accordance with the Forestry Guidelines. Forestry plantations are generally drained by a network of mound drains which typically run perpendicular to the topographic contours of the site and feed into collector drains, which discharge to interceptor drains down-gradient of the plantation.

Mound drains are generally spaced approximately every 15m. As illustrated in Figure 2.11, Interceptor drains are generally located up-gradient (cut-off drains) and down-gradient of forestry plantations. A schematic of a typical standard forestry drainage network and one which is representative of the proposed site drainage network is shown above as Figure 2.11.

7.5.3 Proposed Drainage Management

Runoff control and drainage management are key elements in terms of mitigation against impacts on surface water bodies. Two distinct methods will be employed to manage drainage water within the proposed development. The first method involves 'keeping clean water clean' by avoiding disturbance to natural drainage features. The second method involves collecting any drainage waters from planted areas within the site that might carry silt or sediment, and nutrients, using cut off drains to control direct discharge into streams.

7.5.4 Potential Impacts

The potential impacts of the proposed development and mitigation measures that will be put in place to eliminate or reduce them are set out below.

7.5.4.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

7.5.4.2 Likely and Significant Impacts and Associated Mitigation measures

7.5.4.2.1 Excavation of Forestry Drains and Planting

Pathways: Drainage and surface water discharge routes.

Receptors: Surface waters and associated dependant ecosystems.

Potential Impacts: Indirect, negative, slight, short term, medium probability impact.

Shallow forestry drains will be constructed using an excavator throughout the site to a similar drainage pattern as Figure 2.11. There are no surface water courses on or adjacent the site and so the drains will ultimately discharge to the existing offsite field drain networks.

Potential impacts during drain construction occur mainly from:

- Exposure of soil and subsoils due to excavation, vehicle tracking, and skidding resulting in a source of suspended sediment which can become entrained in surface water runoff and enter drains;
- Nutrient release.

7.5.4.2.2 Harvesting Operations

Pathways: Drainage and surface water discharge routes.

Receptors: Surface waters and associated dependant ecosystems.

Potential Impacts: Indirect, negative, moderate, short term, medium probability impact.

Potential impacts during tree felling occur mainly from:

- Exposure of soil and subsoils due to vehicle tracking, and skidding or forwarding extraction methods resulting in a source of suspended sediment which can become entrained in surface water runoff

- Release of sediment attached to timber in stacking areas; and,
- Nutrient release.

7.5.4.2.3 Site Access

Forestry felling can occur within 0.8-1km of access points (roads & tracks) to the main forest body. Due to the small size of this site, additional access tracks or roads will not be required. This site is located adjacent an existing road network with existing entrances which will not require upgrading or alteration.

7.5.4.2.3.1 Proposed Mitigation Measures

Best practice methods related to water incorporated into the forestry management and mitigation measures have been derived from:

- Forest Service (2016) Environmental Requirements for Afforestation
- Forestry Commission (2004): Forests and Water Guidelines, Fourth Edition. Publ. Forestry Commission, Edinburgh;
- Coillte (2009): Forest Operations & Water Protection Guidelines;

Forest Service (Draft): Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures;

Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:

- Machine combinations will be chosen which are most suitable for ground conditions at the time of excavation and felling, and which will minimise surrounding soils disturbance;
- Where possible, existing drains will not be disturbed during drainage works;
- Drains and sediment traps will be installed during ground preparation and felling. Collector drains will be excavated at an acute angle to the contour (~0.3%-3% gradient), to minimise flow velocities. Main drains to take the discharge from collector drains will include water drops and rock armour, as required, where there are steep gradients, and should avoid being placed at right angles to the contour;
- Drains and silt traps will be maintained throughout all planting works, ensuring that they are clear of sediment build-up and are not severely eroded. Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimized and controlled;

Buffer Zones

There is a requirement in the Forest Service Code of Practice, Environmental Requirements for Afforestation document and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage.

7.5.4.2.3.2 Residual Impact

Indirect, slight, short term, low probability impact.

7.5.4.2.4 Potential Release of Hydrocarbons During Drainage Works

Pathway: Groundwater flow paths and site drainage network.

Receptor: Groundwater and surface water.

Potential Impact: Indirect, negative, slight, temporary, medium probability impact to surface water quality.

Indirect, negative, slight, temporary, medium probability impact to local groundwater quality.

The replanting will be carried out by hand but it may be necessary to employ one excavator to create shallow drainage channels prior to planting. There is the potential for minor leaks from the excavator.

7.5.4.2.4.1 Proposed Mitigation Measures

Mitigation measures proposed to avoid release of hydrocarbons at the site are as follows:

- Maintenance will not be carried out on site.
- Fuels will not be stored on site.
- The plant used will be regularly inspected for leaks and fitness for purpose;

7.5.4.2.4.2 Residual Impact

Indirect, negative, imperceptible, short term, low probability impact.

7.5.4.2.5 Potential Hydrological Impacts on Designated Sites

The proposed afforestation site is located within the River Shannon catchment. There will however be no direct discharges from the site and the hydrological regime locally will not be altered by the afforestation due to its small scale.

Pathway: Surface water flow paths.

Receptor: Down-gradient water quality & designated sites.

Potential Impact: Indirect, negative, imperceptible, short term, low probability impact.

7.5.4.2.5.1 Impact Assessment and Proposed Mitigation Measures

The proposed mitigation measures which will include buffer zones and drainage control measures (*i.e.* cut off drains, tapered drains before buffer zones) will ensure that the quality of runoff from proposed development areas will be very high. The proposed development site is located in the River Shannon catchment but there are no rivers or streams adjacent the site. Runoff will discharge via the forestry drains to the existing local agricultural drainage network.

7.5.4.2.5.2 Residual Impact

No residual impacts.

7.5.5 Significance of the Effects

Based on the above, there will be no significant effects on hydrology and hydrogeology at this site.

7.6 Replanting Area 4: Rahalisk, Co. Cork

7.6.1 Baseline Environment and Local Hydrology

Ground level elevations range between approximately 200m and 212m OD (meters above Ordnance Datum).

There are no streams or rivers within the site or adjacent the site boundary. Two tributary streams lie to the east and the west of the site. The Laney is approximately 30 meters to the east at its closest point and the Awboy is located approximately 60m to the west of the site at its closest point. These both flow south away from the site to join their respective rivers.

There are numerous manmade drains within the site and surrounds that are in place predominately to drain the surrounding lands for agricultural purposes and the neighbouring forestry plantations

7.6.1.1 Water Balance

While the process of afforestation may result in a slight alteration in the water runoff of the site, the small size of the site (0.1731 km²) when compared with the Lee, Cork Harbour and Youghal Bay Catchment (2,000 km²) means that any potential impacts this may have would be insignificant. The afforestation will lead to an imperceptible reduction in the runoff volumes in the longer term as the trees mature.

7.6.1.2 Regional Hydrology

The site is located in the Lee, Cork Harbour and Youghal Bay Catchment (Code: 19), and forms part of the Sullane_SC_020 Subcatchment (Code: 19_7). The site lies between two small rivers. On the east of the site flows the Laney (LANEY_030 2nd cycle Code: IE_SW_19A030200) and to the west flows the Awboy river (AWBOY_030 2nd cycle Code: IE_SW_19L010400). Both of these are tributaries to the main Laney river and flow southwards draining the Sullane subcatchment.

7.6.1.3 Flood Risk Identification

OPW's indicative river and coastal flood map (www.floodmaps.ie), CFRAM Preliminary Flood Risk Assessment (PFRA) maps (www.cfram.ie), Department of Environment, Community and Local Government on-line planning mapping (www.myplan.ie) were consulted to identify those areas as being at risk of flooding.

No records or risks associated with flooding were identified in the published data sets.

7.6.1.4 Surface Water Hydrochemistry

Slightly acidic pH values of surface waters would be typical of peatland environments due to the decomposition of peat. In addition, the sandstone bedrock (and related till subsoils) which underlie the area would have slightly acidic groundwater characteristics which would have some effect on surface water chemistry specifically during dry periods when baseflow is likely to be more prevalent.

7.6.1.5 Hydrogeology

The underlying bedrock at the site is mapped as being sandstone and shale. (refer to Section 6 – Soils & Geology). The GSI has classified the bedrock formation here as a Locally Important Aquifers (LI – bedrock which is moderately productive only in local zones).

7.6.1.6 Groundwater Vulnerability

The vulnerability rating of the aquifer within the site is of “Extreme vulnerability”.

7.6.1.7 Surface Water Body Status

The EU Water Framework Directive aims to protect, enhance and restore all waters with aim to achieve at least good status by 2021.

Under the first cycle of the Water Framework Directive Local surface water Body status reports were available for download from www.wfdireland.ie. Local surface water body (1st and 2nd cycle) information is available for viewing from www.catchments.ie.

The site lies between two small rivers. On the east of the site flows the Laney (LANEY_030 2nd cycle Code:IE_SW_19A030200) and to the west flows the Awboy river (AWBOY_030 2nd cycle Code: IE_SW_19L010400). Both of these rivers were deemed as having a 'High' status and are currently not at risk.

7.6.1.8 Groundwater Body Status

Under the first cycle of the Water Framework Directive Local Groundwater Body status reports were available for download from www.wfdireland.ie. and information related to the 1st and 2nd cycles of the WFD is available at www.catchments.ie.

The proposed afforestation site lies on the Ballinhassig West (Code:IE_SW_G_005) groundwater body (GWB) as classified during the 2010-2015 assessment cycle. This GWB extends south almost as far as Shehy More Mt and north as far as Rylane Corss. The groundwater status of Ballinhassig is currently deemed as having 'Good' status.

7.6.1.9 Designated Sites and Habitats

Designated sites include National Heritage Areas (NHAs), Proposed National Heritage Areas (pNHAs) Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSAC) and Special Protection Areas (SPAs). The proposed forestry development site is not located within any designated conservation-site although the Mullaghanish to Musheramore Mountains SPA lies approximately 500 meters to the east of the site. Designated sites in proximity to the proposed development site are described Section 5, Flora and Fauna.

7.6.1.10 Water Resources

There are 3 borehole wells located on site. All 3 of them have a poor yield class with agriculture being their main use. 1 of the boreholes was drilled in 1899 and goes to a depth of 4.9 meters. The other 2 boreholes go to a depth of 25 and 36 meters with a location accuracy of 2km. These were drilled in the 1960s and 70s. (www.gsi.ie).

7.6.1.11 Receptor Sensitivity

Due to the nature of afforestation, being near surface construction activities, impacts on groundwater are generally negligible and surface water is generally the main sensitive receptor assessed during impact assessments. The primary risk to groundwater at the site would be from nutrients associated with fertilisers.

Based on criteria set out in Table 7.1 groundwater at the site can be classed as Sensitive to pollution because the sandstone bedrock is classified as a locally important Aquifer. However, the majority of the site is covered in peat which acts as a protective cover to the underlying aquifer. Any contaminants which may be accidentally released on-site are more likely to travel to nearby streams within surface runoff.

Surface water mitigation and controls are outlined in Section 7.3 below to ensure protection of all downstream receiving waters. Mitigation measures will ensure that surface runoff from the afforested areas of the site will be of a high quality and will therefore not impact on the quality of downstream surface water bodies.

7.6.2 Proposed Site Drainage

The site will be drained in accordance with the Forestry Guidelines. Forestry plantations are generally drained by a network of mound drains which typically run perpendicular to the topographic contours of the site and feed into collector drains, which discharge to interceptor drains down-gradient of the plantation.

Mound drains are generally spaced approximately every 15m. As illustrated in Figure 2.11, Interceptor drains are generally located up-gradient (cut-off drains) and down-gradient of forestry plantations. A schematic of a typical standard forestry drainage network and one which is representative of the proposed site drainage network is shown above as Figure 2.11.

7.6.3 Proposed Drainage Management

Runoff control and drainage management are key elements in terms of mitigation against impacts on surface water bodies. Two distinct methods will be employed to manage drainage water within the proposed development. The first method involves 'keeping clean water clean' by avoiding disturbance to natural drainage features. The second method involves collecting any drainage waters from planted areas within the site that might carry silt or sediment, and nutrients, using cut off drains to control direct discharge into streams.

7.6.4 Potential Impacts

The potential impacts of the proposed development and mitigation measures that will be put in place to eliminate or reduce them are set out below.

7.6.4.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

7.6.4.2 Likely and Significant Impacts and Associated Mitigation measures

7.6.4.2.1 Excavation of Forestry Drains and Planting

Pathways: Drainage and surface water discharge routes.

Receptors: Surface waters and associated dependent ecosystems.

Potential Impacts: Indirect, negative, slight, short term, medium probability impact.

Shallow forestry drains will be constructed using an excavator throughout the site to a similar drainage pattern as Figure 2.11. There are no surface water courses on or adjacent the site and so the drains will ultimately discharge to the existing offsite field drain networks.

Potential impacts during drain construction occur mainly from:

- Exposure of soil and subsoils due to excavation, vehicle tracking, and skidding resulting in a source of suspended sediment which can become entrained in surface water runoff and enter drains;
- Nutrient release.

7.6.4.2.2 Harvesting Operations

Pathways: Drainage and surface water discharge routes.

Receptors: Surface waters and associated dependant ecosystems.

Potential Impacts: Indirect, negative, moderate, short term, medium probability impact.

Potential impacts during tree felling occur mainly from:

- Exposure of soil and subsoils due to vehicle tracking, and skidding or forwarding extraction methods resulting in a source of suspended sediment which can become entrained in surface water runoff

- Release of sediment attached to timber in stacking areas; and,
- Nutrient release.

7.6.4.2.3 Site Access

Forestry felling can occur within 0.8-1km of access points (roads & tracks) to the main forest body. Due to the small size of this site, additional access tracks or roads will not be required. This site is located adjacent an existing road network with existing entrances which will not require upgrading or alteration.

7.6.4.2.3.1 Proposed Mitigation Measures

Best practice methods related to water incorporated into the forestry management and mitigation measures have been derived from:

- Forest Service (2016) Environmental Requirements for Afforestation
- Forestry Commission (2004): Forests and Water Guidelines, Fourth Edition. Publ. Forestry Commission, Edinburgh;
- Coillte (2009): Forest Operations & Water Protection Guidelines;
Forest Service (Draft): Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures

Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:

- Machine combinations will be chosen which are most suitable for ground conditions at the time of excavation and felling, and which will minimise surrounding soils disturbance;
- Where possible, existing drains will not be disturbed during drainage works;
- Drains and sediment traps will be installed during ground preparation and felling. Collector drains will be excavated at an acute angle to the contour (~0.3%-3% gradient), to minimise flow velocities. Main drains to take the discharge from collector drains will include water drops and rock armour, as required, where there are steep gradients, and should avoid being placed at right angles to the contour;
- Drains and silt traps will be maintained throughout all planting works, ensuring that they are clear of sediment build-up and are not severely eroded. Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimised and controlled;

Buffer Zones

There is a requirement in the Forest Service Code of Practice, Environmental Requirements for Afforestation document and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage.

7.6.4.2.3.2 Residual Impact

Indirect, slight, short term, low probability impact.

7.6.4.2.4 Potential Release of Hydrocarbons during drainage works

Pathway: Groundwater flow paths and site drainage network.

Receptor: Groundwater and surface water.

Potential Impact: Indirect, negative, slight, temporary, medium probability impact to surface water quality.

Indirect, negative, slight, temporary, medium probability impact to local groundwater quality.

The replanting will be carried out by hand but it may be necessary to employ one excavator to create shallow drainage channels prior to planting. There is the potential for minor leaks from the excavator.

7.6.4.2.4.1 Proposed Mitigation Measures:

Mitigation measures proposed to avoid release of hydrocarbons at the site are as follows:

- Maintenance will not be carried out on site.
- Fuels will not be stored on site.
- The plant used will be regularly inspected for leaks and fitness for purpose;

7.6.4.2.4.2 Residual Impact

Indirect, negative, imperceptible, short term, low probability impact.

7.6.4.2.5 Potential Hydrological Impacts on Designated Sites

The proposed afforestation site is located within the Lee, Cork Harbour and Youghal Bay Catchment. There will however be no direct discharges from the site and the hydrological regime locally will not be altered by the afforestation due to its small scale.

Pathway: Surface water flow paths.

Receptor: Down-gradient water quality & designated sites.

Potential Impact: Indirect, negative, imperceptible, short term, low probability impact.

7.6.4.2.5.1 Impact Assessment & Proposed Mitigation Measures

The proposed mitigation measures which will include buffer zones and drainage control measures (*i.e.* cut off drains, tapered drains before buffer zones) will ensure that the quality of runoff from proposed development areas will be very high. The proposed development site is located in the Mal Bay catchment. There could potentially be an “*imperceptible, short term, low probability impact*” on local streams and rivers but this would be very localised and over a very short time period (*i.e.* hours).

7.6.4.2.5.2 Residual Impact

No residual impacts.

7.7 Replanting Area 5: Knockavrogeen, Co. Kerry

7.7.1 Baseline Environment and Local Hydrology

Ground level elevations range between approximately 25m and 40m OD (meters above Ordnance Datum).

There are no streams or rivers within the site boundary, however the Milltown River delineates the eastern boundary of the site.. This river rises approximately 4km to the northeast of the replanting site and flows through the village of Milltown before it enters Dingle Harbour , 2.75km to the south of the replanting site.

There are numerous manmade drains within the site and surrounds that are in place predominately to drain the surrounding lands for agricultural purposes and the neighbouring forestry plantations

7.7.1.1 Water Balance

While the process of afforestation may result in a slight alteration in the water runoff of the site, the small size of the site (0.146 km²) when compared with the Ballynahow Commons subcatchment (2,029 km²) means that any potential impacts this may have would be insignificant. The afforestation will lead to an imperceptible reduction in the runoff volumes in the longer term as the trees mature.

7.7.1.2 Regional Hydrology

The proposed replanting site is located within the Dunmanus-Bantry-Kenmare catchment within Hydrometric Area 22 of the South Western River Basin District (SWRBD). The Dunmanus-Bantry-Kenmare catchment can be further broken down in sub-catchments with the replanting site being located within the Ballynahow Commons subcatchment.

7.7.1.3 Flood Risk Identification

OPW's indicative river and coastal flood map (www.floodmaps.ie), CFRAM Preliminary Flood Risk Assessment (PFRA) maps (www.cfram.ie), Department of Environment, Community and Local Government on-line planning mapping (www.myplan.ie) were consulted to identify those areas as being at risk of flooding.

No records with flooding at the site were identified in the published data sets. The PRFA maps indicate that the Milltown River is subject to fluvial (1-in-100 year) flooding adjacent to the replanting site. However, the PRFA mapping also indicates that flooding would occur on the eastern bank of the river.

7.7.1.4 Surface Water Hydrochemistry

Slightly acidic pH values of surface waters would be typical of peatland environments due to the decomposition of peat. In addition, the sandstone bedrock (and related till subsoils) which underlie the area would have slightly acidic groundwater characteristics which would have some effect on surface water chemistry specifically during dry periods when baseflow is likely to be more prevalent.

7.7.1.5 Hydrogeology

The underlying bedrock at the site is mapped as being sandstone (refer to Section 6 – Soils & Geology). The GSI has classified the bedrock formation here as a Locally Important Aquifers (LL – bedrock which is moderately productive only in local zones).

7.7.1.6 Groundwater Vulnerability

The vulnerability rating of the aquifer within the site ranges is 'High' and this reflects the shallow depths of local subsoils and peat. There are areas of 'Extreme vulnerability' and area of 'X' rating (Rock at or near Surface or Karst) to the east and west of the site.

7.7.1.7 Surface Water Body Status

The EU Water Framework Directive aims to protect, enhance and restore all waters with aim to achieve at least good status by 2021.

Under the first cycle of the Water Framework Directive Local surface water Body status reports were available for download from www.wfdireland.ie. Local surface water body (1st and 2nd cycle) information is available for viewing from www.catchments.ie.

The proposed replanting site is located adjacent to the Milltown River (Milltown (Kerry)_022; 2nd cycle code: IE_SW_22M030300), which was deemed to be of 'poor' status and 'under review' for its risk of not achieving good status by 2021.

7.7.1.8 Groundwater Body Status

Under the first cycle of the Water Framework Directive Local Groundwater Body status reports were available for download from www.wfdireland.ie. and information related to the 1st and 2nd cycles of the WFD is available at www.catchments.ie.

The proposed replanting site lies on the Dingle (Code: IE_SW_G_033) groundwater body (GWB) as classified during the 2010-2015 assessment cycle. This GWB covers the entire southern half of the Dingle Peninsula. It was classified during the 2010-2015 assessment cycle as having 'Good Status' and was also deemed to not be at risk of not achieving 'Good Status' in 2021.

7.7.1.9 Designated Sites and Habitats

Designated sites include National Heritage Areas (NHAs), Proposed National Heritage Areas (pNHAs) Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSAC) and Special Protection Areas (SPAs). The proposed forestry development site is not located within any designated conservation-site. Designated sites in proximity to the proposed development site are described Section 5, Flora and Fauna.

7.7.1.10 Water Resources

The closest water extraction point to the replanting site is a borehole well (GSI Name- 0209NEW009) located approximately 1km south of the site, according to www.gsi.ie. This well is associated with an industrial estate and is for industrial use. The exact location of these wells can not be determined from the online database.

7.7.1.11 Receptor Sensitivity

Due to the nature of afforestation, being near surface construction activities, impacts on groundwater are generally negligible and surface water is generally the main sensitive receptor assessed during impact assessments. The primary risk to groundwater at the site would be from nutrients associated with fertilisers.

Based on criteria set out in Table 7.1 groundwater at the site can be classed as Sensitive to pollution because the sandstone bedrock is classified as a locally important Aquifer. However, the majority of the site is covered in peat which acts as a protective cover to the underlying aquifer. Any contaminants which may be accidentally released on-site are more likely to travel to nearby streams within surface runoff.

Surface waters such as the Milltown River are sensitive to potential contamination. This river is a closed fishery for trout.

Surface water mitigation and controls are outlined in Section 7.3 below to ensure protection of all downstream receiving waters. Mitigation measures will ensure that surface runoff from the afforested areas of the site will be of a high quality and will therefore not impact on the quality of downstream surface water bodies.

7.7.2 Proposed Site Drainage

The site will be drained in accordance with the Forestry Guidelines. Forestry plantations are generally drained by a network of mound drains which typically run

perpendicular to the topographic contours of the site and feed into collector drains, which discharge to interceptor drains down-gradient of the plantation.

Mound drains are generally spaced approximately every 15m. Interceptor drains are generally located up-gradient (cut-off drains) and down-gradient of forestry plantations. A schematic of a typical standard forestry drainage network and one which is representative of the proposed site drainage network is shown above as Figure 2.11.

7.7.3 Proposed Drainage Management

Runoff control and drainage management are key elements in terms of mitigation against impacts on surface water bodies. Two distinct methods will be employed to manage drainage water within the proposed development. The first method involves 'keeping clean water clean' by avoiding disturbance to natural drainage features. The second method involves collecting any drainage waters from planted areas within the site that might carry silt or sediment, and nutrients, using cut off drains to control direct discharge into streams.

7.7.4 Potential Impacts

The potential impacts of the proposed afforestation and mitigation measures that will be put in place to eliminate or reduce them are set out below.

7.7.4.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Knocknamork Renewable Energy Development proceed or not.

7.7.4.2 Likely and Significant Impacts and Associated Mitigation measures

7.7.4.3 Excavation of Forestry Drains and Planting

Pathways: Drainage and surface water discharge routes.

Receptors: Surface waters and associated dependent ecosystems.

Potential Impacts: Indirect, negative, slight, short term, medium probability impact.

Shallow forestry drains will be constructed using an excavator throughout the site to a similar drainage pattern as Figure 2.11. There are no surface water courses on or adjacent the site and so the drains will ultimately discharge to the existing offsite field drain networks.

Potential impacts during drain construction occur mainly from:

- Exposure of soil and subsoils due to excavation, vehicle tracking, and skidding resulting in a source of suspended sediment which can become entrained in surface water runoff and enter drains;
- Nutrient release.

7.7.4.4 Harvesting Operations

Pathways: Drainage and surface water discharge routes.

Receptors: Surface waters and associated dependant ecosystems.

Potential Impacts: Indirect, negative, moderate, short term, medium probability impact.

Potential impacts during tree felling occur mainly from:

- Exposure of soil and subsoils due to vehicle tracking, and skidding or forwarding extraction methods resulting in a source of suspended sediment which can become entrained in surface water runoff
- Release of sediment attached to timber in stacking areas; and,
- Nutrient release.

7.7.4.5 Site Access

Forestry felling can occur within 0.8-1km of access points (roads & tracks) to the main forest body. Due to the small size of this site, additional access tracks or roads will not be required. This site is located adjacent an existing road network with existing entrance which may require some widening.

7.7.4.6 Proposed Mitigation Measures

Best practice methods related to water incorporated into the forestry management and mitigation measures have been derived from:

- Forest Service (2016) Environmental Requirements for Afforestation
- Forestry Commission (2004): Forests and Water Guidelines, Fourth Edition. Publ. Forestry Commission, Edinburgh;
- Coillte (2009): Forest Operations & Water Protection Guidelines;
- Forest Service (Draft): Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures.

Mitigation measures which will reduce the risk of entrainment of suspended solids and nutrient release in surface watercourses comprise best practice methods which are set out as follows:

- Machine combinations will be chosen which are most suitable for ground conditions at the time of excavation and felling, and which will minimise surrounding soils disturbance;
- Where possible, existing drains will not be disturbed during drainage works;
- Drains and sediment traps will be installed during ground preparation and felling. Collector drains will be excavated at an acute angle to the contour (~0.3%-3% gradient), to minimise flow velocities. Main drains to take the discharge from collector drains will include water drops and rock armour, as required, where there are steep gradients, and should avoid being placed at right angles to the contour;
- Drains and silt traps will be maintained throughout all planting works, ensuring that they are clear of sediment build-up and are not severely eroded. Correct drain alignment, spacing and depth will ensure that erosion and sediment build-up are minimised and controlled;

Buffer Zones

There is a requirement in the Forest Service Code of Practice, Environmental Requirements for Afforestation document and in the FSC Certification Standard for the installation of buffer zones adjacent to aquatic zones at planting stage. Residual Impact Indirect, slight, short term, low probability impact.

7.7.4.7 Potential Release of Hydrocarbons during drainage works

Pathway: Groundwater flow paths and site drainage network.

Receptor: Groundwater and surface water.

Potential Impact: Indirect, negative, slight, temporary, medium probability impact to surface water quality.

Indirect, negative, slight, temporary, medium probability impact to local groundwater quality.

The replanting will be carried out by hand but it may be necessary to employ one excavator to create shallow drainage channels prior to planting. There is the potential for minor leaks from the excavator.

7.7.4.8 Proposed Mitigation Measures

Mitigation measures proposed to avoid release of hydrocarbons at the site are as follows:

- Maintenance will not be carried out on site.
- Fuels will not be stored on site.
- The plant used will be regularly inspected for leaks and fitness for purpose;

7.7.4.9 Residual Impact

Indirect, negative, imperceptible, short term, low probability impact.

7.7.4.10 Potential Hydrological Impacts on Designated Sites

The proposed afforestation site is located within the Dunmanus-Bantry-Kenmare catchment. There will however be no direct discharges from the site and the hydrological regime locally will not be altered by the afforestation due to its small scale.

Pathway: Surface water flow paths.

Receptor: Down-gradient water quality & designated sites.

Potential Impact: Indirect, negative, imperceptible, short term, low probability impact.

7.7.4.11 Impact Assessment & Proposed Mitigation Measures

The proposed mitigation measures which will include buffer zones and drainage control measures (*i.e.* cut off drains, tapered drains before buffer zones) will ensure that the quality of runoff from proposed development areas will be very high. The proposed development site is located in the Mal Bay catchment. There could potentially be an “*imperceptible, short term, low probability impact*” on local streams and rivers but this would be very localised and over a very short time period (*i.e.* hours).

7.7.4.12 Residual Impact

No residual impacts.

7.7.4.13 Significance of the Effects

Based on the above, there will be no significant effects on hydrology and hydrogeology at this site.

8 LANDSCAPE AND VISUAL

8.1 Introduction

This section of the report addresses the landscape and visual impacts of the proposed replanting areas at Ballyduff Beg, Co. Clare, Curraghard, Co. Roscommon, Claraghtlea North, Co. Cork, Rahilisk, Co. Cork, and Knockavrogeen, Co. Kerry. It includes a description of the relevant County Council landscape policy for each site and describes the sites' landscape values and sensitivity. The landscape of each area is described in terms of its character, which includes a description of landform and landcover. An impact assessment of the proposed replanting is then undertaken. Documents consulted include:

- *'Landscape and Landscape Assessment: Consultation Draft of Guidelines for Planning Authorities'* (Department of the Environment and Local Government 2000)
- *'Guidelines for Landscape and Visual Impact Assessment'* (The Landscape Institute/Institute of Environmental Management & Assessment, 2013)
- *'Environmental Requirements for Afforestation'* (Forest Service, 2016)

8.1.1 Baseline Landscape Assessment Methodology

In order to carry out this assessment, a desk study was undertaken which identified relevant policies and guidelines, both at national and local level. This includes policies on forestry, landscape and landscape character, designated landscapes, and scenic routes. Maps and up to date aerial images of the proposed replanting sites were also studied.

8.2 Replanting Area 1: Ballyduff Beg, Co. Clare

8.2.1 Landscape Policy Context

This section of the report refers to the Clare County Development Plan 2017 – 2023 and the Landscape Character Assessment of County Clare, as well as to the Environmental Requirements for Afforestation document.

8.2.1.1 Clare County Development Plan 2017-2023

8.2.1.1.1 Forestry Policy and Objectives

Section 10 of the Clare County Development Plan (Rural Development and Natural Resources) deals with policies and objectives relating to forestry. The Plan refers to the forestry sector as the largest and most readily available biomass resource and also refers to the scope for wood to replace dependence on fossil fuels, as well as potential economic and social gains. The policies are listed in Chapter 3.

8.2.1.1.2 Landscape Policies and Objectives

Section 13 of the Clare County Development Plan sets out the objectives required to sustainably manage the diverse landscape throughout Clare, and includes objectives as they relate to the different landscapes throughout the County. Objectives for the future planning of rural areas in County Clare have been developed by considering the County to comprise three types of areas or 'Living Landscapes', which are illustrated on Map 13A of the Clare County Development Plan and comprise Settled Landscapes,

Working Landscapes and Heritage Landscapes. The replanting site lies within a Settled Landscape.

Uses envisaged by the Plan within Settled Landscapes, include agriculture, energy, forestry, extraction, transportation, industry and commerce, tourism, recreation and leisure, education, healthcare and social infrastructure.

8.2.1.1.3 Scenic Routes

Section 13.5 of the County Development Plan addresses Scenic Routes. Objective CDP 13.7 of the Plan states it is an objective of Clare County Council:

- To protect sensitive areas from inappropriate development while providing for development and change that will benefit the rural community;
- To ensure that proposed developments take into consideration their effects on views from the public road towards scenic features or areas and are designed and located to minimise their impact;
- To ensure that appropriate standards of location, siting, design, finishing and landscaping are achieved.”

Appendix 5 of the County Development Plan lists all routes within the county which are designated as Scenic Routes. The proposed replanting site at Ballyduff Beg is not located along or adjacent to a scenic route.

8.2.1.1 Landscape Character Assessment of County Clare

The current Development Plan has a revised policy approach called Clare’s Living Landscapes, as described above. The Landscape Character Assessment of County Clare (2003) identifies 26 Landscape Types as well as 21 Landscape Character Areas.

The proposed replanting site is located within the Landscape Character Area (LCA) 16 Cullenagh River Farmlands, in Landscape Type 26 uplands. This LCA is described as an area of intact rural landscape that has few detractors. The low drumlins, streams, loughs and river valley combined with hedgerows help create a diverse and well-wooded landscape. This area is influenced by the Cullenagh river valley and drumlin farmland, and is framed by Sliabh Callan to the south, Kilnamona High Drumlin land to the north and eastwards beyond Kilmaley.

The principles for landscape management include careful consideration of siting and planting regime of new forestry plantations, in small scale irregular plantations with a good proportion of deciduous trees and recommend irregular edges which follow the landform and a varied age structure.

8.2.1.2 Environmental Requirements for Afforestation

The Forest Service have produced the ‘*Environmental Requirements for Afforestation (2016)*’ which provide recommendations on forest planning and design which aim to ensure that the proposed forest is sympathetic to the landscape character of the location. It has an objective:

To ensure that the proposed forest is designed so that it is visually acceptable and in keeping with landscape and amenity sensitivities.

The requirements identify measures which can be applied as required, taking account of the size of the proposed plantation, its position in the landscape, and its visibility from key vantage points, near and far. These are:

- Shape
- Margins
- Diversity
- Environmental setbacks and future operational areas
- Other Considerations

The Ballyduff Beg site has been granted Technical Approval for afforestation. The Technical Approval document for this site includes as a condition that all Forest Service guidelines will apply to afforestation at this location. In addition, the document specifies the approved species to be planted on the site this being mostly Sitka Spruce and some alternate broadleaf species. Hedgerows are to be retained where possible. There are three houses in proximity to the site, but the proposed replanting area is set back from these in accordance with the Guidelines.

8.2.2 Baseline Landscape

8.2.2.1 Landscape Character

The topography, vegetation and anthropological features on the land surface in an area combine to set limits on the amount of the 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 site is located directly to the south east to the town of Inagh. and the topography of the site ranges from above 58 metres to approximately 69 metres O.D. The National Road N85 and the Inagh River run by the west of the site. The surrounding countryside to the site is composed of rolling hills with a mixture of farmland and forestry.

Landcover on the subject site itself is currently composed of wet agricultural grassland which comprises several fields, and a number of hedgerows. The boundaries of the proposed replanting site follow the field patterns. Landcover in the areas surrounding is composed of a mixture of coniferous plantations, and agricultural fields.

The proposed replanting area which has been given technical approval is 14.51 hectares (ha). This represents a relatively large area of cover, and is similar in size to the plantations to the east and west of the site.

The proposed replanting site is located within the Mal Bay catchment. There are no surface water features on the site.

8.2.2.2 Landscape Sensitivity

The sensitivity of a landscape to development and therefore to change varies according to its character and to the importance that is attached to any combination of landscape values. The sensitivity of a landscape is derived from consideration of designations such as Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Natural Heritage Areas (NHAs) and National Parks, from information such as tourist maps, guidebooks and brochures, and from the evaluation of indicators such as uniqueness, popularity, distinctiveness, and quality of the elements of the area.

A desktop assessment of landscape sensitivity in the vicinity of the proposed replanting site was carried out. The methodology for this assessment was based on that set out in the Department of the Environment and Local Government (DoEHLG) guidance document *'Landscape and Landscape Assessment – Consultation Draft of Guidelines*

for *Planning Authorities*' (2000). This document recommends an assessment of landscape sensitivity based on an evaluation of individual features, such as the quality, integrity, etc. The results of the assessment are presented in Table 8.1.

Table 8.1 Ballyduff Beg Site: Landscape Sensitivity

Feature	Description
Quality	The quality of the landscape in this area can be described as modified due to agriculture and forestry plantations.
Integrity	The current development site has been modified by the interaction of man with the environment.
Distinctiveness	There are no distinctive features on the site.
Popularity	A sense of popularity is created where landscape features are widely recognised or appreciated. There are no popular features on the proposed replanting site.
Rarity	There are no Natura 2000 sites within the vicinity of the site
Cultural Meaning	A sense of cultural meaning arises where a site or features within a site are deemed to explain, represent or inspire cultural values. There are no archaeological monuments close to the site and none within the site.
Sense of Public Ownership & Social Importance	A sense of public ownership arises due to ease of accessibility, visibility or a widely shared meaning. The site is privately owned and has no special social importance.

The proposed replanting site is therefore considered to be of low landscape sensitivity.

8.2.2.3 Landscape Context and Site Visibility

Views towards the site would be upwards towards the sloping ground from the N85, and the hill that lies to the east of the road will partially block views from the main area to be afforested.

8.2.3 Impact Assessment

8.2.3.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not, with a mixture of Sitka Spruce and broadleaves.

8.2.3.2 Site Preparation and Planting Phase

8.2.3.2.1 Impacts on Landscape Character – Temporary Imperceptible Neutral Impact

The planting of the forestry will entail site works in terms of woody weed clearance construction of forestry drains. The forestry drains are to be mound drains where deemed necessary along contours, or at most at a 30% acute angle to the contours, as outlined in the Conditions in the Technical Approval Document. Mitigation measures for the construction of the drainage and planting methods have been included as indicated in the Technical Document, and as a mitigation measure the planting method will be pit planting and mound drains constructed. The proposed replanting will be carried out in line with the recommendations of the Environmental Requirements for Afforestation. These activities will have a temporary neutral impact on the landscape character which is a rural working landscape with a mixture of agricultural and forestry land uses. A neutral impact 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 impact, i.e. an impact capable of measurement but without noticeable consequences.

8.2.3.2.2 Impacts on Visual Amenity - Long Term Imperceptible Neutral Impact

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 predicted residual visual impact of the proposed replanting is Long Term, Imperceptible Neutral Impact.

8.2.3.3 Operational Phase

8.2.3.3.1 Impacts on Landscape Character – Long Term Imperceptible Neutral Impact

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 and contributing to the patchwork of forestry plantations with open land. The predicted residual visual impact of the proposed replanting is Long Term, Imperceptible Neutral Impact.

8.2.3.3.2 Impacts on Visual Amenity - Long Term Imperceptible Neutral Impact

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 and contributing to the patchwork of forestry plantations with open land. Felling will be carried out in accordance with the Environmental Requirements for Afforestation. The predicted residual visual impact of the proposed replanting is Long Term, Imperceptible Neutral Impact.

8.2.4 Proposed Mitigation Measures

The forestry drains are to be mound drains where deemed necessary along contours, or at most at a 30% acute angle to the contours, as outlined in the Conditions in the Technical Approval Document. Mitigation measures for the construction of the drainage and planting methods have been included as indicated in the Technical Document, and as a mitigation measure the planting method will be pit planting and mound drains constructed.

8.2.5 Residual Impacts

Following mitigation, the Residual Impact on Landscape Character will be Long Term Imperceptible Neutral Impact while the Residual Impact on Visual Amenity will be Long Term Imperceptible Neutral Impact.

8.2.6 Cumulative Impacts

Cumulative impacts are described as additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments or actions that occurred in the past, present or are likely to occur in the foreseeable future. The cumulative impact assessment is based on the Planning History search carried out and described in Section 2 and the existing landuses. The cumulative impact arising from the proposed replanting in conjunction with the existing forestry plantations in the immediate vicinity and future development is assessed as Long Term, Imperceptible Neutral Impact. The cumulative impact of the proposed replanting site is assessed as Long Term Imperceptible Neutral Impact.

8.3 Replanting Area 2: Molougha, Co. Clare

8.3.1 Landscape Policy Context

8.3.1.1 Clare County Development Plan 2017-2023

This section of the report refers to the Clare County Development Plan 2017 – 2023 and the Landscape Character Assessment of County Clare, as well as to the Environmental Requirements for Afforestation document.

8.3.1.2 Landscape Character Assessment of County Clare 2004

8.3.1.2.1 Landscape Character Areas

The Molougha site is located within Landscape Character Area 18: Shannon Estuary Farmland. This LCA is described as being a prominently ridged landscape, with linear hills aligned south-west to north-west. Secluded areas interspersed with more open views. Coastal fringe is flatter and slopes down towards the sea. There is a complex pattern of pasture, woodland and scrub habitats

8.3.1.3 Environmental Requirements for Afforestation

The Forest Service 'Environmental Requirements for Afforestation (2016)' provides recommendations on forest planning and design which aim to ensure that the proposed forest is sympathetic to the landscape character of the location. It is described in Section 8.2.1.2 above.

The Molougha site has been granted Technical Approval for afforestation. The Technical Approval document for each site includes as a condition that all Forest Service guidelines will apply to afforestation at these locations. In addition, the document specifies the approved species to be planted on the sites.

8.3.2 Baseline Environment

8.3.2.1 Landscape Character

The proposed replanting site at Molougha is located adjacent to a local road. To the southeast of the site across the road, lies a large area of coniferous forestry, and this is a feature of the wider landscape. The site is bordered by agricultural grassland. Field boundaries are evident. The site lies at between 30 and 45metres OD and is relatively flat.

The site is located within the Shannon Estuary North Catchment. The northern boundary of the Molougha site is delineated by a tributary of the Knockerry East. There are no surface water features located on the Molougha site.

8.3.2.2 Landscape Sensitivity

A desktop assessment of landscape sensitivity of the site has been carried out, as per the methodology described in Section 8.2.2.2 above. The Results are shown in Table 8.2.

Table 8.2 Molougha Site: Landscape Sensitivity

Feature	Description
Quality	The quality of the landscape of the proposed replanting area has been modified by forestry and agriculture in the surrounding area.
Integrity	The proposed replanting sites have been modified by the interaction of man with the environment, primarily in the

Feature	Description
	form of coniferous forestry and agriculture as well as turf cutting.
Distinctiveness	There are a number of ringforts in the surrounding landscape but there are none on the site itself. The nearest one is across the local road adjacent to the site.
Popularity	A sense of popularity is created where landscape features are widely recognised or appreciated. There are no such features on these sites.
Rarity	The proposed replanting properties are not considered to represent a rare or unique landscape type, at a local or regional scale. Neither property is located within a designated ecological area. The closest Natura 2000 site, i.e. Special Area of Conservation (SAC) or Special Protection Area (SPA), is the Lower River Shannon SAC and SPA, located approximately 3.4 kilometres south of the Molougha site, at its nearest point.
Cultural Meaning	A sense of cultural meaning arises where a site or features within a site are deemed to explain, represent or inspire cultural values. The site has a recorded archaeological monument on site (Barrow).
Sense of Public Ownership & Social Importance	A sense of public ownership arises due to ease of accessibility, visibility or a widely shared meaning. The proposed replanting sites are located on privately owned land and there is no sense of public ownership pertaining to either site.

The proposed replanting sites are therefore considered to be of low landscape sensitivity.

8.3.2.3 Landscape Context and Site Visibility

The Molougha site is visible from the local road which passes adjacent to the site, while intermittent vegetation partially screens views.

8.3.3 Impact Assessment

8.3.3.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

8.3.3.2 Site Preparation and Planting Phase

8.3.3.2.1 Impacts on Landscape Character –Temporary Imperceptible Neutral Impact

The planting of forestry will entail site works in terms of construction of forestry drains and the use of the slit planting technique. These activities will have a temporary imperceptible neutral impact on the landscape character, which is that of a rural working landscape with a mixture of agricultural and forestry land uses. A neutral impact 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 impact, i.e. an impact capable of measurement but without noticeable consequences.

8.3.3.2 Impacts on Visual Amenity - Temporary Imperceptible Neutral Impact

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 predicted visual impact of the proposed replanting is therefore a Long Term, Imperceptible Neutral Impact.

8.3.3.3 Operational Phase

8.3.3.3.1 Impacts on Landscape Character – Long Term Imperceptible Neutral Impact

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 contributing to the patchwork of forestry plantations. The predicted impact of the proposed replanting on landscape character is a Long Term, Imperceptible Neutral Impact.

8.3.3.3.2 Impacts on Visual Amenity - Long Term Neutral Imperceptible Impact

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 and contributing to the patchwork of forestry plantations within open land. Felling will be carried out in accordance with the Environmental Requirements for Afforestation. The predicted long-term visual impact of the proposed replanting is therefore a Long Term, Imperceptible Neutral Impact.

8.3.4 Proposed Mitigation Measures

Mitigation measures for the construction of the drainage and planting methods have been included in the Technical Approval document. The planting method will be slit planting and mound drains will be constructed. The proposed replanting will be carried out in line with the recommendations of the Environmental Requirements for Afforestation document.. Archaeological mitigation measures specified for the Barrow are contained in the Technical Approval Document.

8.3.5 Residual Impacts

Following mitigation, the Residual Impact on Landscape Character will be Long Term Imperceptible Neutral Impact while the Residual Impact on Visual Amenity will be Long Term Imperceptible Neutral Impact.

8.3.6 Cumulative Impacts

Cumulative impacts are described as additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments or actions that occurred in the past, present or are likely to occur in the foreseeable future. The cumulative impact assessment is based on the Planning History search carried out and described in Section 2 and the existing landuses. The cumulative impact of the proposed Molougha replanting site is assessed as Long Term Imperceptible Neutral Impact.

8.4 Replanting Area 3: Claraghatlea North, Co. Cork

8.4.1 Landscape Policy Context

This section of the report refers to policies of the Cork County Development Plan 2014 and the Landscape Character Assessment of Co. Cork, as well as to the Environmental Requirements for Afforestation document.

8.4.1.1 Cork County Development Plan 2014

8.4.1.1.1 Landscape Policy and Objectives

The following policies relate to Landscape Character Assessment: County Development Plan Objective GI 6-1: Landscape

- Protect the visual and scenic amenities of County Cork's built and natural environment
- Landscape issues will be an important factor in all land-use proposals, ensuring that a proactive view of development is undertaken while maintaining respect for the environment and heritage generally in line with the principle of sustainability.
- Ensure that new development meets high standards of siting and design.
- Protect skylines and ridgelines from development.
- Discourage proposals necessitating the removal of extensive amounts of trees, hedgerows and historic walls or other distinctive boundary treatments.

8.4.1.1.2 High Amenity Areas

County Cork has a number of areas designated as High Amenity Areas. The proposed replanting site is not within a High Amenity Area and is deemed a medium value landscape type.

8.4.1.2 Landscape Character Assessment of County Cork

8.4.1.2.1 Background

Chapter 13 of the County Development Plan refers to landscape character of Cork's landscape. The Landscape Character Assessment for Cork divides the county into 76 Landscape Character Areas (LCAs). This high number reflects the complexity and diversity of the entire county.

8.4.1.2.2 Landscape Character Areas

The proposed replanting area is located within LCA 11 Broad Marginal Middleground Valley, in the north-west of the county near the Kerry border. This landscape is characterized by its relative evenness of terrain across the broad shallow valley of the river Balckwater, fed by several tributaries draining the higher ground to the north and the south.

There are a number of landscape recommendation policies relating to this area, and the relevant policies are listed below:

- Ensure that additional conifer planting is at a small scale and is in sympathy with the landscape. Plantations and replantations should be planned and managed in a way that enhances the landscape and should be set back from peaks and ridges.

- Minimise disturbance of hedgerows in rural areas and encourage appropriate landscaping and screen planting of proposed developments by introducing deciduous edges to existing conifer plantations to soften their appearance. New plantations should respect landscape pattern (see forestry guidelines)

8.4.1.3 Environmental Requirements for Afforestation

The Forest Service 'Environmental Requirements for Afforestation (2016)' provides recommendations on forest planning and design which aim to ensure that the proposed forest is sympathetic to the landscape character of the location. It is described in Section 8.2.1.2

The proposed replanting site has been awarded Technical Approval for forestry and requires compliance with Departmental Guidelines including Landscape and Harvesting Guidelines. In addition, the Technical Approval document specifies the species to be planted. The proposed replanting area is in proximity to an existing dwelling and a setback distance as outlined in the Guidelines will be observed.

8.4.2 Baseline Environment

8.4.2.1 Landscape Character

The topography, vegetation and anthropological features on the land surface in an area combine to set limits on the amount of the 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 replanting site occupies 18.7 hectares, and lies within an area of approximately 100 metres OD, and is generally flat. The landcover of the proposed replanting site is peatland with a conifer plantation already present along its eastern border. There are hedgerows around the site boundary and only one hedgerow within the site. The landcover of the surrounding fields consists of agricultural grassland to the south, while to the northwest there are patches of peat cover with some open fields in between. Land uses in the area are mainly agricultural. Roadside vegetation is plentiful and reduces long distance views.

The Owenagloo river runs along the northern edge of the site for approximately 300 meters.

8.4.2.2 Landscape Sensitivity

A desktop assessment of landscape sensitivity of the site has been carried out, as per the methodology described in Section 8.2.2.2 above. The Results are shown in Table 8.3.

Table 8.3 Claraghatlea North, Co. Cork: Landscape Sensitivity

Feature	Description
Quality	The quality of the landscape of the proposed site and its immediate environs can be described as modified.
Integrity	The current development site has been modified by the interaction of man with the environment, primarily in the form of agriculture and in the wider area, commercial forestry.
Distinctiveness	There is no particular feature of distinctiveness on the site or in the immediate area.

Feature	Description
Popularity	A sense of popularity is created where landscape features are widely recognised or appreciated. There are no such features on this site.
Rarity	The site is located within a designated ecological area. The closest Natura 2000 site, i.e. Special Area of Conservation (SAC) or Special Protection Area (SPA), is the Blackwater river (Cork/Waterford) SAC, which is located within the northern boundary of the site.
Cultural Meaning	A sense of cultural meaning arises where a site or features within a site are deemed to explain, represent or inspire cultural values. There are no recorded sites or monuments located within or around this site. The nearest recorded features are a series of ringforts in the surrounding countryside.
Sense of Public Ownership & Social Importance	A sense of public ownership arises due to ease of accessibility, visibility or a widely shared meaning. This is privately owned land and there is no sense of public ownership.

8.4.2.3 Landscape Context and Site Visibility

Views from and around the site are restricted due to intermittent roadside vegetation.

8.4.3 Impact Assessment

8.4.3.1 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

8.4.3.2 Site Preparation and Planting Phase

8.4.3.2.1 Impacts on Landscape Character – Temporary Imperceptible Neutral Impact

The planting of forestry will entail site works in terms of woody weed clearance and construction of forestry drains and the use of the slit planting technique. These activities will have a temporary neutral impact on the landscape character, which is that of a rural working landscape with a mixture of agricultural and forestry land uses. A neutral impact 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 impact, i.e. an impact capable of measurement but without noticeable consequences.

8.4.3.2.2 Impacts on Visual Amenity - Temporary Imperceptible Neutral Impact

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 a locally established one. The predicted visual impact of the proposed replanting is therefore a Long Term, Imperceptible Neutral Impact.

8.4.3.3 Operational Phase

8.4.3.3.1 Impacts on Landscape Character – Long Term Imperceptible Neutral Impact

The proposed replanting is to be carried out in an area where there are already existing conifer plantations to the northwest, among agricultural fields, and therefore the proposed replanting is contributing to the patchwork of forestry plantations. The

predicted impact of the proposed replanting on landscape character is a Long Term, Imperceptible Neutral Impact.

8.4.3.3.2 Impacts on Visual Amenity - Long Term Imperceptible Neutral Impact

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 and contributing to the patchwork of forestry plantations within open land. Felling will be carried out in accordance with the Environmental Requirements for Afforestation. The predicted long-term visual impact of the proposed replanting is therefore a Long Term, Imperceptible Neutral Impact.

8.4.4 Proposed Mitigation Measures

8.4.4.1 Site Preparation and Planting Phase

Mitigation measures for the construction of the drainage and planting methods have been included in the Technical Approval document. The planting method will be slit planting and mound drains will be constructed. The proposed replanting will be carried out in line with the recommendations of the Environmental Requirements for Afforestation document.

8.4.5 Residual Impacts

Following mitigation, the Residual Impact on Landscape Character will be Long Term Imperceptible Neutral Impact while the Residual Impact on Visual Amenity will be Long Imperceptible Term Neutral Impact.

8.4.6 Cumulative Impacts

Cumulative impacts are described as additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments or actions that occurred in the past, present or are likely to occur in the foreseeable future. The cumulative impact assessment is based on the Planning History search carried out and described in Section 2 and the existing land-uses. The cumulative impact arising from the proposed replanting in conjunction with the existing forestry plantations and future development is assessed as Long Term, Imperceptible Neutral Impact.

8.5 Replanting Area 4: Glantane Beg, Co. Cork

8.5.1 Landscape Policy Context

This section of the report refers to policies of the Cork County Development Plan 2014 and the Landscape Character Assessment of Co. Cork, as well as to the Environmental Requirements for Afforestation document.

8.5.1.1 Cork County Development Plan 2014

The Cork County Development Plan is described (in terms of Landscape) in Section 8.4.1

8.5.1.2 Landscape Character Assessment of County Cork

8.5.1.2.1 Background

Chapter 13 of the County Development Plan refers to landscape character of Cork's landscape. The Landscape Character Assessment for Cork divides the county into 76

Landscape Character Areas (LCAs). This high number reflects the complexity and diversity of the entire county.

8.5.1.2.2 Landscape Character Areas

The proposed replanting area is located within LCA 11 Broad Marginal Middleground Valley, in the north-west of the county near the Kerry border. This landscape is characterized by its relative evenness of terrain across the broad shallow valley of the river Balckwater, fed by several tributaries draining the higher ground to the north and the south.

There are a number of landscape recommendation policies relating to this area, and the relevant policies are listed below:

- Ensure that additional conifer planting is at a small scale and is in sympathy with the landscape. Plantations and replantations should be planned and managed in a way that enhances the landscape and should be set back from peaks and ridges.
- Minimise disturbance of hedgerows in rural areas and encourage appropriate landscaping and screen planting of proposed developments by introducing deciduous edges to existing conifer plantations to soften their appearance. New plantations should respect landscape pattern (see forestry guidelines)

8.5.1.2.3 Landscape Value

8.5.1.3 Environmental Requirements for Afforestation

The Forest Service '*Environmental Requirements for Afforestation (2016)*' provides recommendations on forest planning and design which aim to ensure that the proposed forest is sympathetic to the landscape character of the location. It is described in Section 8.2.1.2 The proposed replanting site will be filling in a gap in the existing forestry plantation to the north of the site. Hedgerows are to be retained where possible.

The proposed replanting site has been awarded Technical Approval for forestry and requires compliance with Departmental Guidelines including Landscape and Harvesting Guidelines. In addition, the Technical Approval document specifies the species to be planted. The proposed replanting area is in proximity to an existing dwelling and a setback distance as outlined in the Guidelines will be observed.

8.5.2 Baseline Environment

8.5.2.1 Landscape Character

The topography, vegetation and anthropological features on the land surface in an area combine to set limits on the amount of the 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 replanting site occupies 2.93 hectares, and lies within an area of approximately 185 metres OD, and is generally flat. The landcover of the proposed replanting site is peatland with a conifer plantation already present along its northern

and southern border. There are hedgerows around the site boundary and only one hedgerow within the site. The landcover of the surrounding fields consists of a patchwork of agricultural grassland, peatland and coniferous plantations. Land uses in the area are mainly agricultural. Roadside vegetation is plentiful and reduces long distance views.

8.5.2.2 Landscape Sensitivity

A desktop assessment of landscape sensitivity of the site has been carried out, as per the methodology described in Section 8.2.2.2 above. The Results are shown in Table 8.4.

Table 8.4 Glantane Beg, Co. Cork: Landscape Sensitivity

Feature	Description
Quality	The quality of the landscape of the proposed site and its immediate environs can be described as modified.
Integrity	The current development site has been modified by the interaction of man with the environment, primarily in the form of commercial forestry and in the wider area agriculture.
Distinctiveness	There is no particular feature of distinctiveness on the site or in the immediate area.
Popularity	A sense of popularity is created where landscape features are widely recognised or appreciated. There are no such features on this site.
Rarity	The site is not located within a designated ecological area. The closest Natura 2000 site, i.e. Special Area of Conservation (SAC) or Special Protection Area (SPA), is the Blackwater river (Cork/Waterford) SAC, which is located 3km to the east of the site.
Cultural Meaning	A sense of cultural meaning arises where a site or features within a site are deemed to explain, represent or inspire cultural values. There are no recorded sites or monuments located within or around this site. The nearest recorded features are a series of standing stones 1km to the east of the site.
Sense of Public Ownership & Social Importance	A sense of public ownership arises due to ease of accessibility, visibility or a widely shared meaning. This is privately owned land and there is no sense of public ownership.

8.5.2.3 Landscape Context and Site Visibility

Views from and around the site are restricted due to intermittent roadside vegetation.

8.5.3 Impact Assessment

8.5.3.1 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

8.5.3.2 Site Preparation and Planting Phase

8.5.3.2.1 Impacts on Landscape Character –Temporary Imperceptible Neutral Impact

The planting of forestry will entail site works in terms of woody weed clearance and construction of forestry drains and the use of the slit planting technique. These

activities will have a temporary neutral impact on the landscape character, which is that of a rural working landscape with a mixture of agricultural and forestry land uses. A neutral impact 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 impact, i.e. an impact capable of measurement but without noticeable consequences.

8.5.3.2.2 Impacts on Visual Amenity - Temporary Imperceptible Neutral Impact

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 predicted visual impact of the proposed replanting is therefore a Long Term, Imperceptible Neutral Impact.

8.5.3.3 Operational Phase

8.5.3.3.1 Impacts on Landscape Character – Long Term Imperceptible Neutral Impact

The proposed replanting is to be carried out in an area where there are already existing conifer plantations to the northwest, among agricultural fields, and therefore the proposed replanting is contributing to the patchwork of forestry plantations. The predicted impact of the proposed replanting on landscape character is a Long Term, Imperceptible Neutral Impact.

8.5.3.3.2 Impacts on Visual Amenity - Long Term Imperceptible Neutral Impact

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 and contributing to the patchwork of forestry plantations within open land. Felling will be carried out in accordance with the Environmental Requirements for Afforestation. The predicted long-term visual impact of the proposed replanting is therefore a Long Term, Imperceptible Neutral Impact.

8.5.4 Proposed Mitigation Measures

8.5.4.1 Site Preparation and Planting Phase

Mitigation measures for the construction of the drainage and planting methods have been included in the Technical Approval document. The planting method will be slit planting and mound drains will be constructed. The proposed replanting will be carried out in line with the recommendations of the Environmental Requirements for Afforestation document..

8.5.5 Residual Impacts

Following mitigation, the Residual Impact on Landscape Character will be Long Term Imperceptible Neutral Impact while the Residual Impact on Visual Amenity will be Long Imperceptible Term Neutral Impact.

8.5.6 Cumulative Impacts

Cumulative impacts are described as additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments or actions that occurred in the past, present or are likely to occur in the foreseeable future. The cumulative impact assessment is based on the Planning History search carried out and described in Section 2 and the existing land-uses. The cumulative impact arising from the proposed replanting in conjunction with the existing forestry

plantations and future development is assessed as Long Term, Imperceptible Neutral Impact.

8.6 Replanting Area 5: Knockavrogeen, Co. Kerry

8.6.1 Landscape Policy Context

This section of the report refers to policies of the Kerry County Development Plan 2015-2021 and the Landscape Character Assessment of Co. Cork, as well as to the Environmental Requirements for Afforestation document.

8.6.1.1 Kerry County Development Plan 2015-2021

8.6.1.1.1 Landscape Policy and Objectives

The following relate to Landscape in the County Development Plan:

- Objective ZL-1 Protect the landscape of the County as a major economic asset and an invaluable amenity which contributes to the quality of people's lives.
- Objective ZL-2 Prepare a Landscape Character Assessment of the County following the publication of the proposed National Landscape Strategy. This assessment will include capacity studies for different forms of development and will involve consultation with adjoining local authorities.
- Objective ZL-3 Determine the zoning of lands in rural areas having regard to the sensitivity of the landscape as well as its capacity to absorb further development.
- Objective ZL-4 Regulate residential development in Rural Areas in accordance with the zoned designation of that area and the policies outlined in the Rural Settlement Strategy set out in Section 3.3 of this Plan.
- Objective ZL-5 Preserve the views and prospects as defined on Map No's 12.1, 12.1a – 12.1u.
- Objective ZL-6 Facilitate the sustainable development of existing viewing points as identified by Fáilte Ireland along the route of the Wild Atlantic Way, while ensuring the protection of environmental attributes in the area through the implementation of environmental protection objectives, standards and guidelines of this Plan.

8.6.1.1.2 Areas of outstanding natural beauty

County Kerry has a number of areas designated as areas of outstanding natural beauty. The proposed replanting site is not within a High Amenity Area and is deemed a medium value landscape type.

8.6.1.2 Environmental Requirements for Afforestation

The Forest Service '*Environmental Requirements for Afforestation (2016)*' provides recommendations on forest planning and design which aim to ensure that the proposed forest is sympathetic to the landscape character of the location. It is described in Section 8.2.1.2

The proposed replanting site has been awarded Technical Approval for forestry and requires compliance with Departmental Guidelines including Landscape and Harvesting Guidelines. In addition, the Technical Approval document specifies the species to be planted.

8.6.2 Baseline Environment

8.6.2.1 Landscape Character

The topography, vegetation and anthropological features on the land surface in an area combine to set limits on the amount of the 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 replanting site occupies 14.6 hectares, and lies within an area of approximately 25-35 metres OD, and is generally flat. The landcover of the proposed replanting site is a grassland and peatland mosaic with a conifer plantation already present along its southern, eastern and northern borders. There are hedgerows and watercourses around the site boundary and short amounts of hedgerow within the site. The landcover of the surrounding fields consists of agricultural grassland to the west and northwest, while to the south, east and northeast there forestry. Land uses in the area are mainly agricultural. Roadside vegetation is plentiful and reduces long distance views.

The Milltown river runs along the full eastern edge of the site.

8.6.2.2 Landscape Sensitivity

A desktop assessment of landscape sensitivity of the site has been carried out, as per the methodology described in Section 8.2.2.2 above. The Results are shown in Table 8.5.

Table 8.5 Knockavrogeen, Co. Kerry: Landscape Sensitivity

Feature	Description
Quality	The quality of the landscape of the proposed site and its immediate environs can be described as modified.
Integrity	The current development site has been modified by the interaction of man with the environment, primarily in the form of agriculture and in the wider area, commercial forestry.
Distinctiveness	There is no particular feature of distinctiveness on the site or in the immediate area.
Popularity	A sense of popularity is created where landscape features are widely recognised or appreciated. There are no such features on this site.
Rarity	The site is not located within a designated ecological area. The closest Natura 2000 site, i.e. Special Area of Conservation (SAC) or Special Protection Area (SPA), is the Mount Brandon pNHA and SAC, which is located approx.. 1.6km east of the site.
Cultural Meaning	A sense of cultural meaning arises where a site or features within a site are deemed to explain, represent or inspire cultural values. There are no recorded sites or monuments located within or around this site. The nearest recorded feature is a fulacht fia, located approximately 62 metres to the east of the site within existing forestry.
Sense of Public Ownership & Social Importance	A sense of public ownership arises due to ease of accessibility, visibility or a widely shared meaning. This is privately owned land and there is no sense of public ownership.

8.6.2.3 Landscape Context and Site Visibility

Views from and around the site are restricted due to intermittent roadside vegetation.

8.6.3 Impact Assessment

8.6.3.1 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

8.6.3.2 Site Preparation and Planting Phase

8.6.3.2.1 Impacts on Landscape Character – Temporary Imperceptible Neutral Impact

The planting of forestry will entail site works in terms of woody weed clearance and construction of forestry drains and the use of the slit planting technique. These activities will have a temporary neutral impact on the landscape character, which is that of a rural working landscape with a mixture of agricultural and forestry land uses. A neutral impact 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 impact, i.e. an impact capable of measurement but without noticeable consequences.

8.6.3.2.2 Impacts on Visual Amenity – Temporary Imperceptible Neutral Impact

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 a locally established one. The predicted visual impact of the proposed replanting is therefore a Long Term, Imperceptible Neutral Impact.

8.6.3.3 Operational Phase

8.6.3.3.1 Impacts on Landscape Character – Long Term Imperceptible Neutral Impact

The proposed replanting is to be carried out in an area where there are already existing conifer plantations to the northwest, among agricultural fields, and therefore the proposed replanting is contributing to the patchwork of forestry plantations. The predicted impact of the proposed replanting on landscape character is a Long Term, Imperceptible Neutral Impact.

8.6.3.3.2 Impacts on Visual Amenity – Long Term Imperceptible Neutral Impact

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 and contributing to the patchwork of forestry plantations within open land. Felling will be carried out in accordance with the Environmental Requirements for Afforestation. The predicted long-term visual impact of the proposed replanting is therefore a Long Term, Imperceptible Neutral Impact.

8.6.4 Proposed Mitigation Measures

8.6.4.1 Site Preparation and Planting Phase

Mitigation measures for the construction of the drainage and planting methods have been included in the Technical Approval document. The planting method will be slit planting and mound drains will be constructed. The proposed replanting will be carried

out in line with the recommendations of the Environmental Requirements for Afforestation document.

8.6.5 Residual Impacts

Following mitigation, the Residual Impact on Landscape Character will be Long Term Imperceptible Neutral Impact while the Residual Impact on Visual Amenity will be Long Imperceptible Term Neutral Impact.

8.6.6 Cumulative Impacts

Cumulative impacts are described as additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments or actions that occurred in the past, present or are likely to occur in the foreseeable future. The cumulative impact assessment is based on the Planning History search carried out and described in Section 2 and the existing land-uses. The cumulative impact arising from the proposed replanting in conjunction with the existing forestry plantations and future development is assessed as Long Term, Imperceptible Neutral Impact.

9 CULTURAL HERITAGE

9.1 Introduction

This section presents the results of an archaeological and cultural heritage impact assessment for the proposed afforestation of the proposed replanting areas.

The purpose of this section is to assess the potential impacts of the afforestation on the surrounding archaeological, architectural and cultural heritage landscape. An assessment of potential impacts is presented and a number of mitigation measures are recommended where appropriate.

9.2 Methodology

A desk-based study of the proposed replanting areas was undertaken in order to assess the archaeological, architectural and cultural heritage potential of the area and to identify constraints or features of archaeological/cultural heritage significance within or adjacent to the sites. Each of the proposed sites have been Technically Approved for afforestation which will be completed in accordance with the Environmental Requirements for Afforestation. The guidelines provide specific mitigation measures to be employed for afforestation which will minimise potential impacts on this resource.

9.2.1 Statutory Context

9.2.1.1 Current Legislation

Archaeological monuments are safeguarded through national and international policy, which is designed to secure the protection of the cultural heritage resource. This is undertaken in accordance with the provisions of the European Convention on the Protection of the Archaeological Heritage (Valletta Convention). This was ratified by Ireland in 1997.

Both the National Monuments Acts 1930 to 2004 and relevant provisions of the Cultural Institutions Act 1997 are the primary means of ensuring protection of archaeological monuments, the latter of which includes all man-made structures of whatever form or date. There are a number of provisions under the National Monuments Acts which ensure protection of the archaeological resource. These include the Register of Historic Monuments (1997 Act) which means that any interference to a monument is illegal under that Act. All registered monuments are included on the Record of Monuments and Places (RMP).

The Record of Monuments and Places (RMP) was established under Section 12 (1) of the National Monuments (Amendment) Act 1994 and consists of a list of known archaeological monuments and accompanying maps. The Record of Monuments and Places affords some protection to the monuments entered therein. Section 12 (3) of the 1994 Amendment Act states that any person proposing to carry out work at or in relation to a recorded monument must give notice in writing to the Minister (Environment, Heritage and Local Government) and shall not commence the work for a period of two months after having given the notice. All proposed works, therefore, within or around any archaeological monument are subject to statutory protection and legislation (National Monuments Acts 1930-2004).

Under the Heritage Act [1995] architectural heritage is defined to include *'all structures, buildings, traditional and designed, and groups of buildings including street-scapes and urban vistas, which are of historical, archaeological, artistic, engineering, scientific, social or technical interest, together with their setting, attendant grounds, fixtures, fittings and contents...'* A heritage building is also defined to include *'any building, or part thereof, which is of significance because of its intrinsic architectural or artistic quality or its setting or because of its association with the commercial, cultural, economic, industrial, military, political, social or religious history of the place where it is situated or of the country or generally'*.

9.2.1.2 Granada Convention

The Council of Europe, in Article 2 of the 1985 Convention for the Protection of the Architectural Heritage of Europe (Granada Convention), states that *'for the purpose of precise identification of the monuments, groups of structures and sites to be protected, each member State will undertake to maintain inventories of that architectural heritage'*. The Granada Convention emphasises the importance of inventories in underpinning conservation policies.

The National Inventory of Architectural Heritage (NIAH) was established in 1990 to fulfill Ireland's obligations under the Granada Convention, through the establishment and maintenance of a central record, documenting and evaluating the architectural heritage of Ireland. Article 1 of the Granada Convention establishes the parameters of this work by defining *'architectural heritage'* under three broad categories of Monument, Groups of Buildings, and Sites:

- **Monument:** all buildings and structures of conspicuous historical, archaeological, artistic, scientific, social or technical interest, including their fixtures and fittings;
- **Group of buildings:** homogeneous groups of urban or rural buildings conspicuous for their historical, archaeological, artistic, scientific, social or technical interest, which are sufficiently coherent to form topographically definable units;
- **Sites:** the combined works of man and nature, being areas which are partially built upon and sufficiently distinctive and homogenous to be topographically definable, and are of conspicuous historical, archaeological, artistic, scientific, social or technical interest.

The Council of Europe's definition of architectural heritage allows for the inclusion of structures, groups of structures and sites which are considered to be of significance in their own right, or which are of significance in their local context and environment. The NIAH believes it is important to consider the architectural heritage as encompassing a wide variety of structures and sites as diverse as post boxes, grand country houses, mill complexes and vernacular farmhouses.

9.2.2 Desktop Assessment

A primary cartographic source and base-line data for the archaeological assessment was the consultation of the Sites and Monuments Record (SMR) and Record of Monuments and Places (RMP) through the electronic database of recorded monuments which may be accessed at www.archaeology.ie. All known recorded archaeological monuments are indicated on 6 inch Ordnance Survey (OS) maps and are listed in this record.

The following sources were consulted for this assessment report:

- Electronic database of recorded monuments (www.archaeology.ie)
- Aerial photographs (copyright of Ordnance Survey Ireland (OSI.ie))

9.2.2.1 Recorded Monuments and Places

The Sites and Monuments Record (SMR) and Record of Monuments and Places (RMP) is a record of all known recorded archaeological monuments. The SMR/RMP is not a complete record of all monuments as newly discovered sites may not appear in the list or accompanying maps. In conjunction with the consultation of the SMR and RMP, the electronic database of recorded monuments which may be accessed at www.archaeology.ie was consulted.

Aerial Photograph Analysis

Aerial photographs of the sites were examined and no previously unrecorded archaeological features could be seen. Sources included Bing, Google Maps and Ordnance Survey of Ireland.

9.2.3 Archaeology

Archaeological heritage is a non-renewable resource. The overall objective of this assessment of impacts of the proposed development is to ensure that where a potential impact has been identified, that it can be mitigated against to ensure that the archaeological heritage will be available for future generations. The potential impacts on the recorded archaeological heritage are assessed here.

Potential impact are assessed on the basis of the impact classification terminology outlined in Table 5.1 of this Report, with the significance of impacts being defined as either imperceptible, slight, moderate, significant or profound, or if no impact is predicted to occur, 'No Impact'.

9.2.4 Potential Impacts

Potential afforestation impacts include direct destruction of recorded and unrecorded sites and indirect impacts on archaeological potential of nearby sites.

9.3 Replanting Area 1: Ballyduff Beg, Co. Clare

9.3.1 Existing Environment

9.3.1.1 Recorded Monuments within the Study Area

There are no recorded archaeological features on or in the vicinity of the study site. The Electronic database of recorded monuments (www.archaeology.ie) was used to compile a list of known sites which occur in the vicinity of the site.

The nearest recorded features are a rigfort, located approximately 1km to the north-east of the site.

9.3.2 Potential Impacts

9.3.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

9.3.2.2 Potential Direct Impacts on the Archaeological Heritage

Direct Impact refers to a 'physical impact' on a monument. The afforestation will require some minor earthmoving activities such as drainage and the provision of access tracks. Harvesting will require tree felling.

There are no recorded monuments on the site and therefore there will be no direct impacts.

9.3.2.3 Potential Indirect Impacts on the Archaeological Heritage

Potential indirect impacts may arise where a monument or area of archaeological potential is situated in relative close proximity to a proposed development but is not directly (physically) affected by the development. In such cases the impact on the setting of the monument or views to and from it are assessed.

There are no recorded monuments in the vicinity of the site and therefore there will be no indirect impacts.

9.3.2.4 Cumulative Impacts

There will be no cumulative impact associated with the afforestation of the site as there are no features close to the site. A planning history search of applications in the vicinity of the proposed replanting lands has also been carried out, as described in Section 3.2 of this report. There are no developments located in the vicinity of the site that would give rise to cumulative impacts in conjunction with the proposed on features of cultural heritage significance.

9.3.3 Significance of the Effects

Based on the above, there will be no significant effects, on cultural heritage or archaeology, associated with afforestation the at this site.

9.4 Replanting Area 2:Curraghard, Co. Roscommon

9.4.1 Existing Environment

9.4.1.1 Recorded Monuments within the Study Area

There are no recorded monuments located within the site at Curraghard. The Electronic database of recorded monuments (www.archaeology.ie) was used to compile a list of known sites which occur within (and adjacent to) the Curraghard site. There are a number of ringforts in the vicinity of the study site with the closest one beng 300 meters to the north-west of the site. A childrens burial ground can also be found 400 meters to the north-west of the site.

9.4.2 Potential Impacts

9.4.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

9.4.2.2 Potential Direct Impacts and Mitigation Measures

Direct Impact refers to a 'physical impact' on a monument. The afforestation will require some minor earthmoving activities such as drainage and the provision of access tracks. Harvesting will require tree felling.

There are no recorded monuments on the site and therefore there will be no direct impacts.

9.4.2.3 Potential Indirect Impacts and Mitigation Measures

Potential indirect impacts may arise where a monument or area of archaeological potential is situated in relative close proximity to a proposed development but is not directly (physically) affected by the development. In such cases the impact on the setting of the monument or views to and from it are assessed.

It is not expected that there will be any indirect impact on the recorded archaeological features due to the incorporated exclusion area and proposed mitigation measures described above.

9.4.2.4 Cumulative Impacts

It is not expected that there will be any cumulative impact associated with the proposed afforestation provided the project is completed in accordance with the Guidance document and employing the mitigation measures described above.

A planning history search of applications in the vicinity of the proposed replanting lands has also been carried out, as described in Section 3.2 of this report. There are no developments located in the vicinity of the site that would give rise to cumulative impacts in conjunction with the proposed on features of cultural heritage significance.

9.4.3 Significance of the Effects

Based on the above, there will be no significant effects, on cultural heritage or archaeology, associated with afforestation the at this site.

9.5 Replanting Area 3: Claraghatlea North, Co. Cork

9.5.1 Existing Environment

9.5.1.1 Recorded Monuments within the Study Area

There are no recorded archaeological features within the study site. The Electronic database of recorded monuments (www.archaeology.ie) was used to compile a list of known sites which occur in the vicinity of the site.

The nearest recorded features are ringforts surrounding the site, the nearest of which is found approximately 200 meters to the south east and 200 meters to the north.

9.5.2 Potential Impacts

9.5.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

9.5.2.2 Potential Direct Impacts on the Archaeological Heritage

Direct Impact refers to a 'physical impact' on a monument. The afforestation will require some minor earthmoving activities such as drainage and the provision of access tracks. Harvesting will require tree felling.

There are no recorded monuments on the site and therefore there will be no direct impacts.

9.5.2.3 Potential Indirect Impacts on the Archaeological Heritage

Potential indirect impacts may arise where a monument or area of archaeological potential is situated in relative close proximity to a proposed development but is not directly (physically) affected by the development. In such cases the impact on the setting of the monument or views to and from it are assessed.

There are no recorded monuments in the vicinity of the site and therefore there will be no indirect impacts.

9.5.2.4 Cumulative Impacts

There will be no cumulative impact associated with the afforestation of the site as there are no features close to the site. A planning history search of applications in the vicinity of the proposed replanting lands has also been carried out, as described in Section 3.2 of this report. There are no developments located in the vicinity of the site that would give rise to cumulative impacts in conjunction with the proposed on features of cultural heritage significance.

9.5.3 Significance of the Effects

Based on the above, there will be no significant effects, on cultural heritage or archaeology, associated with afforestation the at this site.

9.6 Replanting Area 4: Rahalisk, Co. Cork

9.6.1 Existing Environment

9.6.1.1 Recorded Monuments within the Study Area

There are no recorded archaeological features within the study site. The Electronic database of recorded monuments (www.archaeology.ie) was used to compile a list of known sites which occur in the vicinity of the site.

The nearest archaeological features to the site are found 500 metres to the east of the site. They are a Megalithic Tomb, a Standing Stone and a Fulachtalí Fiadh

9.6.2 Potential Impacts

9.6.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

9.6.2.2 Potential Direct Impacts on the Archaeological Heritage

Direct Impact refers to a 'physical impact' on a monument. The afforestation will require some minor earthmoving activities such as drainage and the provision of access tracks. Harvesting will require tree felling.

There are no recorded monuments on the site and therefore there will be no direct impacts.

9.6.2.3 Potential Indirect Impacts on the Archaeological Heritage

Potential indirect impacts may arise where a monument or area of archaeological potential is situated in relative close proximity to a proposed development but is not

directly (physically) affected by the development. In such cases the impact on the setting of the monument or views to and from it are assessed.

There are no recorded monuments in the vicinity of the site and therefore there will be no indirect impacts.

9.6.2.4 Cumulative Impacts

There will be no cumulative impact associated with the afforestation of the site as there are no features close to the site. A planning history search of applications in the vicinity of the proposed replanting lands has also been carried out, as described in Section 3.2 of this report. There are no developments located in the vicinity of the site that would give rise to cumulative impacts in conjunction with the proposed on features of cultural heritage significance.

9.7 Replanting Area 5: Knockavrogeen, Co. Kerry

9.7.1 Existing Environment

9.7.1.1 Recorded Monuments within the Study Area

There are no recorded archaeological features within the proposed replanting site. The Electronic database of recorded monuments (www.archaeology.ie) was used to compile a list of known sites which occur in the vicinity of the site.

The nearest recorded feature is a fulacht fia, located approximately 62 metres to the east of the site within existing forestry. The technical approval document for the site included a letter from the Department of Arts, Heritage and the Gaeltacht, providing additional archaeological conditions as a result of monuments in the wider area.

9.7.2 Potential Impacts

9.7.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the proposed Knocknamork Renewable Energy Development proceed or not.

9.7.2.2 Potential Direct Impacts on the Archaeological Heritage

Direct Impact refers to a 'physical impact' on a monument. The afforestation will require some minor earthmoving activities such as drainage and the provision of access tracks. Harvesting will require tree felling.

There are no recorded monuments on the site and therefore there will be no direct impacts.

9.7.2.3 Potential Indirect Impacts on the Archaeological Heritage

Potential indirect impacts may arise where a monument or area of archaeological potential is situated in relative close proximity to a proposed development but is not directly (physically) affected by the development. In such cases the impact on the setting of the monument or views to and from it are assessed.

There are no recorded monuments in the vicinity of the site and therefore there will be no indirect impacts.

9.7.2.4 Cumulative Impacts

There will be no cumulative impact associated with the afforestation of the site as there are no features within the site. A planning history search of applications in the vicinity of the proposed replanting lands has also been carried out, as described in Section 3.2 of this report. There are no developments located in the vicinity of the site that would give rise to cumulative impacts in conjunction with the proposed on features of cultural heritage significance.

9.7.3 Significance of the Effects

Based on the above, there will be no significant effects, on cultural heritage or archaeology, associated with afforestation the at this site.

10 AIR, CLIMATE AND NOISE

10.1 Air

10.1.1 Background

The primary land-uses within and in the vicinity of the 5 no. site locations comprise agriculture, forestry and some peat extraction. Due to the non-industrial nature of afforestation and the general character of the surrounding environment, air quality sampling was deemed to be unnecessary for this study. 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 sites.

The growth of forestry has no direct atmospheric emissions. Some minor indirect emissions associated with site preparation, planting and harvesting include vehicular and dust emissions.

10.1.2 Air Quality Standards

In 1996, the Air Quality Framework Directive (96/62/EC) was published. This Directive was transposed into Irish law by the Environmental Protection Agency Act 1992 (Ambient Air Quality Assessment and Management) Regulations 1999. The Directive was followed by four Daughter Directives, which set out limit values for specific pollutants:

- The first Daughter Directive (1999/30/EC) deals with sulphur dioxide, oxides of nitrogen, particulate matter and lead.
- The second Daughter Directive (2000/69/EC) addresses carbon monoxide and benzene. The first two Daughter Directives were transposed into Irish law by the Air Quality Standards Regulations 2002 (SI No. 271 of 2002).
- A third Daughter Directive, Council Directive (2002/3/EC) relating to ozone was published in 2002 and was transposed into Irish law by the Ozone in Ambient Air Regulations 2004 (SI No. 53 of 2004).
- The fourth Daughter Directive, published in 2007, deals with polyaromatic hydrocarbons (PAHs), arsenic, nickel, cadmium and mercury in ambient air.

The Air Quality Framework Directive and the first three Daughter Directives have been replaced by the Clean Air for Europe (CAFE) Directive (Directive 2008/50/EC on ambient air quality), which encompasses the following elements:

- The merging of most of the existing legislation into a single Directive (except for the Fourth Daughter Directive) with no change to existing air quality objectives.
- New air quality objectives for PM_{2.5} (fine particles) including the limit value and exposure concentration reduction target.
- The possibility to discount natural sources of pollution when assessing compliance against limit values.
- The possibility for time extensions of three years (for particulate matter PM₁₀) or up to five years (nitrogen dioxide, benzene) for complying with limit values, based on conditions and the assessment by the European Commission.

Table 10.1 below sets out the limit values of the CAFE Directive, as derived from the Air Quality Framework Daughter Directives. Limit values are presented in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$) and parts per billion (ppb). The notation PM₁₀ is used to

describe particulate matter or particles of ten micrometres or less in aerodynamic diameter. PM_{2.5} represents particles measuring less than 2.5 micrometres in aerodynamic diameter.

Table 10.1 Limit values of Directive 2008/50/EC, 1999/30/EC and 2000/69/EC (Source: EPA)

Pollutant	Limit Value Objective	Averaging Period	Limit Value (µg/m ³)	Limit Value (ppb)	Basis of Application of Limit Value	Attainment Date
Sulphur dioxide (SO ₂)	Protection of Human Health	1 hour	350	132	Not to be exceeded more than 24 times in a calendar year	1 st Jan 2005
Sulphur dioxide (SO ₂)	Protection of human health	24 hours	125	47	Not to be exceeded more than 3 times in a calendar year	1 st Jan 2005
Sulphur dioxide (SO ₂)	Protection of vegetation	Calendar year	20	7.5	Annual mean	19 th Jul 2001
Sulphur dioxide (SO ₂)	Protection of vegetation	1 st Oct to 31 st Mar	20	7.5	Winter mean	19 th Jul 2001
Nitrogen dioxide (NO ₂)	Protection of human health	1 hour	200	105	Not to be exceeded more than 18 times in a calendar year	1 st Jan 2010
Nitrogen dioxide (NO ₂)	Protection of human health	Calendar year	40	21	Annual mean	1 st Jan 2010
Nitrogen monoxide (NO) and nitrogen dioxide (NO ₂)	Protection of ecosystems	Calendar year	30	16	Annual mean	19 th Jul 2001
Particulate matter 10 (PM ₁₀)	Protection of human health	24 hours	50	-	Not to be exceeded more than 35 times in a calendar year	1 st Jan 2005
Particulate matter 2.5 (PM _{2.5})	Protection of human health	Calendar year	40	-	Annual mean	1 st Jan 2005
Particulate matter 2.5 (PM _{2.5}) Stage 1	Protection of human health	Calendar year	25	-	Annual mean	1 st Jan 2015
Particulate matter 2.5 (PM _{2.5}) Stage 2	Protection of human health	Calendar year	20	-	Annual mean	1 st Jan 2020
Lead (Pb)	Protection of human health	Calendar year	0.5	-	Annual mean	1 st Jan 2005

Pollutant	Limit Value Objective	Averaging Period	Limit Value ($\mu\text{g}/\text{m}^3$)	Limit Value (ppb)	Basis of Application of Limit Value	Attainment Date
Carbon Monoxide (CO)	Protection of human health	8 hours	10,000	8,620	-	1 st Jan 2005
Benzene (C ₆ H ₆)	Protection of human health	Calendar Year	5	1.5	-	1 st Jan 2010

The Ozone Daughter **Directive 2002/3/EC** is different from the other Daughter Directives in that it sets target values and long-term objectives for ozone rather than limit values. Table 10.2 presents the limit and target values for ozone.

Table 10.2 Target values for Ozone Defined in Directive 2008/50/EC

Objective	Parameter	Target Value for 2010	Target Value for 2020
Protection of human health	Maximum daily 8 hour mean	120 mg/m ³ not to be exceeded more than 25 days per calendar year averaged over 3 years	120 mg/m ³
Protection of vegetation	AOT ₄₀ calculated from 1 hour values from May to July	18,000 mg/m ³ .h averaged over 5 years	6,000 mg/m ³ .h
Information Threshold	1 hour average	180 mg/m ³	-
Alert Threshold	1 hour average	240 mg/m ³	-

AOT₄₀ is a measure of the overall exposure of plants to ozone. It is the sum of the excess hourly concentrations greater than 80 $\mu\text{g}/\text{m}^3$ and is expressed as $\mu\text{g}/\text{m}^3$ hours.

10.1.3 Air Quality Zones

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

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

These zones were defined to meet the criteria for air quality monitoring, assessment and management described in the Framework Directive and Daughter Directives. The sites for afforestation lie within Zone D, which represents rural areas located away from large population centres.

10.1.4 Likely and Significant Impacts and Associated Mitigation Measures

10.1.4.1 'Do-Nothing' Impact

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

10.1.4.2 Long Term Slight Positive Impact

The growth of trees will result in the fixation of atmospheric carbon, and the production of oxygen.

10.1.4.3 Short-term Imperceptible Negative Impact

Some minor emissions associated with the use of an excavator for site drainage works are expected. This potential impact will not be significant and will be restricted to the duration of the drainage works.

10.1.4.3.1 Mitigation

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

10.1.4.4 Short-term Imperceptible Negative Impact

Potential dust emission sources include the working of an excavator. This potential impact will not be significant and will be restricted to the duration of the drainage works.

10.1.4.4.1 Mitigation

Areas of excavation will be kept to a minimum, and all works will be carried out in accordance with the forestry service best practice guidelines described in detail in Section 2.

10.1.5 Significance of the Effects

Based on the above, there will be no significant effects, on air quality, associated with afforestation the at this site.

10.2 Climate

10.2.1 Climate Change and Greenhouse Gases

Although climate change is thought to be a natural process, the rate at which the climate is changing has been accelerated rapidly by human activities. Climate change is one of the most challenging global issues facing us today and is primarily the result of increased levels of greenhouse gases in the atmosphere. These greenhouse gases come primarily from the combustion of fossil fuels in energy use. Changing climate patterns are thought to increase the frequency of extreme weather conditions such as storms, floods and droughts. In addition, warmer weather trends can place pressure on animals and plants that cannot adapt to a rapidly changing environment. Moving away from our reliance on coal, oil and other fossil fuel-driven power plants is essential to reduce emissions of greenhouse gases and combat climate change.

10.2.1.1 The Kyoto Protocol

Ireland is a Party to the Kyoto Protocol, which is an international agreement that sets limitations and reduction targets for greenhouse gases for developed countries. It is a protocol to the United Nations Framework for the Convention on Climate Change. The Kyoto Protocol came into effect in 2005, as a result of which, emission reduction targets agreed by developed countries, including Ireland, are binding.

At Kyoto in 2007, the European Union committed to an average annual greenhouse gas (GHG) emission reduction of 8% below the 1990 levels, over the five year period 2008-2012, with the reductions to be shared between EU Member States. Ireland negotiated an increase of 13% above the 1990 level for the period 2008-2012. Other Member States committed to a reduction of more than 8% to facilitate Ireland's increase in emissions.

In Doha, Qatar, on 8th December 2012, the ‘Doha Amendment to the Kyoto Protocol’ was adopted. The amendment includes:

- New commitments for Annex I Parties (including Ireland) to the Kyoto Protocol who agreed to take on commitments in a second commitment period from 1 January 2013 to 31 December 2020;
- A revised list of greenhouse gases (GHG) to be reported on by Parties in the second commitment period; and
- Amendments to several articles of the Kyoto Protocol which specifically referenced issues pertaining to the first commitment period and which needed to be updated for the second commitment period.

During the first commitment period, 37 industrialised countries and the European Community committed to reduce GHG emissions to an average of five percent against 1990 levels. During the second commitment period, Parties committed to reduce GHG emissions by at least 18 percent below 1990 levels in the eight-year period from 2013 to 2020; however, the composition of Parties in the second commitment period is different from the first. Under the protocol, countries must meet their targets primarily through national measures, although market based mechanisms (such as international emissions trading can also be utilised).

10.2.2 Replanting Area 1: Ballyduff Beg, Co. Clare

10.2.2.1 Baseline Environment

County Clare has a temperate oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Shannon Airport is the nearest weather and climate monitoring station to the site, located approximately 26.6 kilometres south east of the site. Meteorological data recorded at Claremorris over the 30-year period from 1981-2010 is shown in Table 10.3 overleaf. The wettest months are October and December, and April is usually the driest. July is the warmest month with an average temperature of 19.8° Celsius.

Table 10.3 Data from Met Éireann Weather Station at Claremorris, 1971 to 2000 Monthly and Annual Mean and Extreme Values

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
TEMPERATURE (degrees Celsius)													
Mean daily max	8.8	9.2	11.1	13.3	16.0	18.3	19.8	19.6	17.7	14.3	11.1	9.0	14.0
Mean daily min	3.2	3.2	4.5	5.7	8.2	10.9	12.9	12.7	10.8	8.2	5.5	3.6	7.4
Mean temperature	6.0	6.2	7.8	9.5	12.1	14.6	16.4	16.2	14.2	11.2	8.3	6.3	10.7
Absolute max.	14.8	15.5	18.3	23.5	27.2	30.2	30.6	29.8	26.1	22.3	17.6	15.3	30.6
Absolute Min.	-11.2	-5.5	-5.8	-2.3	0.2	3.6	6.7	4.4	1.7	-2.0	-6.6	-11.4	-11.4
Mean No. of Days With Air Frost	5.3	5.1	2.1	0.7	0.0	0.0	0.0	0.0	0.0	0.5	2.3	4.8	20.8
Mean No. of Days With Ground Frost	13.7	12.6	11.0	8.3	3.3	0.3	0.0	0.1	1.2	3.8	9.5	12.5	76.3
RELATIVE HUMIDITY (%)													
Mean at 0900UTC	87.1	87.0	85.0	79.8	76.3	76.8	80.0	82.1	84.7	87.0	88.9	88.4	83.6
Mean at 1500UTC	80.5	74.6	70.5	64.4	63.3	65.1	68.0	68.2	69.2	75.2	80.5	83.1	71.9
SUNSHINE (Hours)													
Mean daily duration	1.6	2.3	3.2	5.1	5.8	5.2	4.5	4.5	3.9	2.9	2.0	1.4	3.5
Greatest daily duration	8.1	10.2	11.0	13.6	15.6	15.8	15.7	14.4	12.2	10.1	8.3	7.1	15.8
Mean no. of days with no sun	9.2	6.4	5.7	2.4	1.9	2.0	2.4	2.3	2.9	5.5	7.8	11.1	59.8
RAINFALL (mm)													
Mean monthly total	102.3	76.2	78.7	59.2	64.8	69.8	65.9	82.0	75.6	104.9	94.1	104.0	977.6
Greatest daily total	38.2	29.4	28.1	40.2	25.0	40.6	39.5	51.0	52.3	36.9	26.9	41.2	52.3
Mean num. of days with >= 0.2mm	20	16	19	16	16	15	16	18	16	20	20	19	211
Mean num. of days with >= 1.0mm	16	12	14	11	12	11	12	13	12	16	15	15	159
Mean num. of days with >= 5.0mm	8	5	5	4	4	4	4	5	4	7	6	7	63
WIND (knots)													
Mean monthly speed	10.3	10.2	10.0	9.0	8.9	8.5	8.5	8.2	8.4	9.2	9.1	9.4	9.1
Max. gust	75	80	65	62	59	51	52	55	62	71	66	83	83
Max. mean 10-minute speed	52	46	44	40	37	37	38	35	40	47	41	57	57
Mean num. of days with gales	1.7	0.9	0.8	0.3	0.2	0.1	0.0	0.1	0.1	0.6	0.7	1.2	6.7
WEATHER (Mean No. of Days With:)													
Snow or sleet	2.3	2.3	1.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.3	8.0
Snow lying at 0900UTC	0.6	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9
Hail	3.6	3.3	3.4	2.2	1.2	0.1	0.1	0.1	0.3	0.9	1.1	2.4	18.6
Thunder	0.9	0.5	0.4	0.3	0.5	0.5	0.8	0.4	0.2	0.4	0.4	0.5	5.7
Fog	3.3	2.0	2.1	1.9	1.5	1.4	1.4	2.0	2.9	2.9	3.9	4.2	29.6

10.2.2.2 Impact Assessment

10.2.2.2.1 Short Term Imperceptible Negative Impact

The use of machinery during the drainage works will result in the emission of greenhouse gases. Operations such as the transport of materials are typical examples of machinery use. This impact is considered to be imperceptible only, given the insignificant quantity of greenhouse gases that will be emitted. Planting will be carried out by hand.

10.2.2.2.2 Long Term Slight Positive Impact

The growth of forestry allows for the fixation of atmospheric carbon as it grows.

10.2.2.3 Proposed Mitigation Measures

Planting of trees will be carried out by hand using the slit planting method. Any drains will be constructed in accordance with the forestry service best practice guidelines described in detail in Section 2.

10.2.2.4 Residual Impacts

On balance there will be positive impacts on air and climate associated with the proposed afforestation.

10.2.2.5 Significance of the Effects

Based on the above, there will be no significant effects, on climate, associated with afforestation the at this site.

10.2.3 Replanting Area 2: Curraghard, Co. Roscommon

10.2.3.1 Baseline Environment

County Roscommon has a temperate oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Claremorris is the nearest weather and climate monitoring station to the site, located approximately 26 kilometres south-west of the site. Meteorological data recorded at Claremorris over the 30-year period from 1981-2010 is shown above in Table 10.3. The wettest months are October and December, and April is usually the driest. July is the warmest month with an average temperature of 19.8° Celsius.

10.2.3.2 Impact Assessment

10.2.3.2.1 Short Term Imperceptible Negative Impact

The use of machinery during the drainage works will result in the emission of greenhouse gases. Operations such as the transport of materials are typical examples of machinery use. This impact is considered to be imperceptible only, given the insignificant quantity of greenhouse gases that will be emitted. Planting will be carried out by hand.

10.2.3.2.2 Long Term Slight Positive Impact

The growth of forestry allows for the fixation of atmospheric carbon as it grows.

10.2.3.3 Proposed Mitigation Measures

Planting of trees will be carried out by hand using the slit planting method. Any drains will be constructed in accordance with the forestry service best practice guidelines described in detail in Section 2 of this document.

10.2.3.4 Residual Impacts

On balance there will be positive impacts on air and climate associated with the proposed afforestation.

10.2.3.5 Significance of the Effects

Based on the above, there will be no significant effects, on climate, associated with afforestation the at this site.

10.2.4 Replanting Area 3: Claraghatlea North, Co. Cork

10.2.4.1 Baseline Environment

County Cork has a temperate oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Cork Airport is the nearest weather and climate monitoring station to the site, located approximately 48 kilometres south-east of the site. Meteorological data recorded at Cork Airport over the 30-year period from 1981-2010 is shown in Table 10.4 overleaf. The wettest month is October, and July is usually the driest. July is also the warmest month with an average temperature of 18.7° Celsius.

Table 10.4 Data from Met Éireann Weather Station at Cork Airport, 1981 to 2010 Monthly and Annual Mean and Extreme Values

	Jan	Feb	Mar	Ar	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
TEMPERATURE (degrees Celsius)													
Mean daily max	8.2	8.3	9.9	11.8	14.4	17.0	18.7	18.5	16.5	13.2	10.3	8.5	12.9
Mean daily min	3.0	3.1	4.0	4.9	7.4	10.0	11.8	11.8	10.2	7.7	5.2	3.7	6.9
Mean temperature	5.6	5.7	6.9	8.4	10.9	13.5	15.3	15.2	13.3	10.5	7.8	6.1	9.9
Absolute max.	16.1	14.0	15.7	21.2	23.6	27.5	28.7	28.0	24.7	21.4	16.2	13.8	28.7
Absolute Min.	-8.0	-4.7	-4.3	-2.3	-0.9	3.7	6.7	5.3	2.3	-0.9	-3.3	-7.2	-8.0
Mean No. of Days With Air Frost	4.6	4.1	1.8	1.2	0.0	0.0	0.0	0.0	0.0	0.2	1.2	3.6	16.7
Mean No. of Days With Ground Frost	12.8	11.8	9.7	7.8	2.1	0.1	0.0	0.0	0.5	2.4	7.3	11.0	65.3
RELATIVE HUMIDITY (%)													
Mean at 0900UTC	89.8	89.4	87.8	83.1	80.6	81.3	83.2	85.4	88.4	90.1	90.7	90.5	86.7
Mean at 1500UTC	83.7	78.9	75.5	71.3	70.9	71.5	72.9	72.8	75.4	80.4	83.4	85.4	76.8
SUNSHINE (Hours)													
Mean daily duration	1.8	2.4	3.3	5.3	6.2	5.8	5.4	5.2	4.3	3.0	2.3	1.7	3.9
Greatest daily duration	8.5	10.0	11.5	13.6	15.5	16.0	15.3	14.4	11.9	10.3	8.7	7.6	16.0
Mean no. of days with no sun	10.1	7.9	6.3	3.1	2.1	2.5	2.0	2.6	3.6	6.4	8.6	11.9	67.1
RAINFALL (mm)													
Mean monthly total	131.4	97.8	97.6	76.5	82.3	80.9	78.8	96.8	94.6	138.2	120.0	133.1	1227.9
Greatest daily total	45.7	49.9	55.2	34.2	34.9	59.7	73.2	60.9	58.9	52.1	47.9	41.9	73.2
Mean num. of days with >= 0.2mm	20	17	19	16	15	14	15	15	16	19	19	19	204
Mean num. of days with >= 1.0mm	16	13	14	11	12	10	10	11	11	15	14	15	152
Mean num. of days with >= 5.0mm	9	6	5	5	5	5	5	5	5	8	7	8	73
WIND (knots)													
Mean monthly speed	12.1	12.0	11.6	10.3	10.1	9.4	9.0	9.0	9.4	10.7	10.9	11.6	10.5
Max. gust	78	83	70	62	59	49	57	54	58	75	66	80	65.9
Max. mean 10-minute speed	52	54	43	40	40	33	40	38	39	48	46	56	44.1
Mean num. of days with gales	2.3	1.8	1.3	0.3	0.3	0.0	0.1	0.2	0.3	1.0	1.2	1.9	10.8
WEATHER (Mean No. of Days With:)													
Snow or sleet	3.1	3.1	2.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.2	11.3
Snow lying at 0900UTC	0.7	0.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.0
Hail	1.0	1.1	1.4	1.9	0.7	0.2	0.1	0.0	0.1	0.3	0.2	0.4	7.4
Thunder	0.2	0.1	0.1	0.1	0.6	0.5	0.8	0.3	0.0	0.4	0.1	0.1	3.3
Fog	7.8	6.8	8.5	7.5	7.6	7.6	8.4	8.8	9.1	8.7	7.6	8.4	96.8

10.2.4.2 Impact Assessment

10.2.4.2.1 Short Term Imperceptible Negative Impact

The use of machinery during the drainage works will result in the emission of small amounts of greenhouse gases. This impact is considered to be imperceptible only, given the insignificant quantity of greenhouse gases that will be emitted. Planting will be carried out by hand.

10.2.4.2.2 Long Term Slight Positive Impact

The growth of forestry allows for the fixation of atmospheric carbon as it grows.

10.2.4.3 Proposed Mitigation Measures

Planting of trees will be carried out by hand using the slit planting method. Any drains will be constructed in accordance with the forestry service best practice guidelines described in detail in Section 2.

10.2.4.4 Residual Impacts

On balance there will be positive impacts on air and climate associated with the proposed afforestation.

10.2.5 Replanting Area 4: Rahalisk, Co. Cork

10.2.5.1 Baseline Environment

County Cork has a temperate oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Cork Airport is the nearest weather and climate monitoring station to the site, located approximately 35 kilometres south-east of the site. Meteorological data recorded at Cork Airport over the 30-year period from 1981-2010 is shown in Table 10.4 above. The wettest month is October, and July is usually the driest. July is also the warmest month with an average temperature of 18.7° Celsius.

10.2.5.2 Impact Assessment

10.2.5.2.1 Short Term Imperceptible Negative Impact

The use of machinery during the drainage works will result in the emission of small amounts of greenhouse gases. This impact is considered to be imperceptible only, given the insignificant quantity of greenhouse gases that will be emitted. Planting will be carried out by hand.

10.2.5.2.2 Long Term Slight Positive Impact

The growth of forestry allows for the fixation of atmospheric carbon as it grows.

10.2.5.3 Proposed Mitigation Measures

Planting of trees will be carried out by hand using the slit planting method. Any drains will be constructed in accordance with the forestry service best practice guidelines described in detail in Section 2.

10.2.5.4 Residual Impacts

On balance there will be positive impacts on air and climate associated with the proposed afforestation.

10.2.5.5 Significance of the Effects

Based on the above, there will be no significant effects, on climate, associated with afforestation the at this site.

10.2.6 Replanting Area 5: Knockavrogeen, Co. Kerry

10.2.6.1 Baseline Environment

Ireland has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Valentia, Co. Kerry, is the nearest weather and climate monitoring station to the proposed development site that has meteorological data recorded for the 30-year period from 1981-2010. The monitoring station is located approximately 26 kilometres northeast of the site. Meteorological data recorded at Malin Head over the 30-year period from 1981 - 2010 is shown in Table 10.5 overleaf. The wettest months are October and December, and January is usually the driest. July and August are the warmest months with a mean daily temperature of 14.8° Celsius.

Table 10.5 Data from Met Éireann Weather Station at Valentia, 1981 to 2010 Monthly and Annual Mean and Extreme Values

	Monthly and Annual Mean and Extreme Values												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
TEMPERATURE (degrees Celsius)													
Mean daily max	9.3	9.3	10.5	12.2	14.3	16.4	17.9	18.0	16.6	14.3	11.4	10.1	13.4
Mean daily min	4.2	3.9	4.6	5.5	7.5	10.1	11.7	11.6	10.3	8.6	6.0	5.0	7.4
Mean temperature	6.8	6.6	7.6	8.9	10.9	13.3	14.8	14.8	13.5	11.5	8.7	7.6	10.4
Absolute max.	13.6	15.1	20.3	24.0	26.9	25.7	29.7	28.4	25.9	22.5	19.8	15.3	29.7
Absolute Min.	-5.9	-7.3	-5.1	-1.6	0.5	2.8	5.3	3.3	2.8	-1.4	-4.0	-5.3	-7.3
Mean No. of Days With Air Frost	3.4	3.3	2.2	0.6	0.0	0.0	0.0	0.0	0.0	0.1	1.3	3.0	13.9
Mean No. of Days With Ground Frost	7.5	7.1	6.1	4.3	1.1	0.1	0.0	0.0	0.2	1.1	4.5	6.8	38.7
RELATIVE HUMIDITY (%)													
Mean at 0900UTC	84	83	83	79	78	81	84	85	85	86	84	85	83
Mean at 1500UTC	80	77	75	73	73	77	79	79	78	80	79	81	78
SUNSHINE (Hours)													
Mean daily duration	1.41	2.16	3.05	5.00	5.81	5.12	4.53	4.50	3.61	2.53	1.72	1.17	3.39
Greatest daily duration	7.5	9.0	11.1	13.5	15.1	15.8	15.6	14.4	12.1	9.6	8.1	6.4	15.8
Mean no. of days with no sun	11	7	6	3	2	4	4	4	4	7	9	13	75
RAINFALL (mm)													
Mean monthly total	167	123.1	121.7	77	88.5	79.9	73.3	111.2	124.9	157.3	147.1	159.3	1430.3
Greatest daily total	45.6	46.2	37.1	52.7	37.5	58.3	32.4	85.6	55.6	64.6	86.6	62.0	86.6
Mean num. of days with >= 0.2mm	23	19	21	17	18	17	17	19	19	22	22	24	239
Mean num. of days with >= 1.0mm	20	16	16	12	14	13	12	15	15	19	18	19	187
Mean num. of days with >= 5.0mm	11	8	8	5	7	5	5	7	8	11	10	10	95
WIND (knots)													
Mean monthly speed	13.1	12.6	12.1	10.1	10.3	9.1	8.5	8.9	10.0	11.4	11.8	12.6	10.9
Max. gust	87	79	67	63	61	58	53	60	88	75	70	82	88
Max. mean 10-minute speed	54	49	40	38	39	40	31	36	58	49	45	47	58
Mean num. of days with gales	2.5	2.0	1.3	0.3	0.4	0.0	0.0	0.1	0.5	0.8	1.5	1.8	11.2
WEATHER (Mean No. of Days With:)													
Snow or sleet	1.5	1.7	1.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.8	5.6
Snow lying at 0900UTC	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8
Hail	5.1	4.2	4.6	2.5	1.1	0.1	0.0	0.1	0.3	0.9	2.9	3.6	25.5
Thunder	1.2	0.8	0.6	0.2	0.3	0.3	0.6	0.4	0.5	0.7	0.8	0.7	7.1
Fog	0.4	0.4	0.2	0.9	0.9	1.2	1.5	1.2	0.7	0.6	0.4	0.4	8.9

10.2.6.2 Impact Assessment

10.2.6.2.1 Short Term Imperceptible Negative Impact

The use of machinery during the drainage works will result in the emission of greenhouse gases. Operations such as the transport of materials are typical examples of machinery use. This impact is considered to be imperceptible only, given the insignificant quantity of greenhouse gases that will be emitted. Planting will be carried out by hand.

10.2.6.2.2 Long Term Slight Positive Impact

The growth of forestry allows for the fixation of atmospheric carbon as it grows.

10.2.6.3 Proposed Mitigation Measures

Planting of trees will be carried out by hand using the slit planting method. Any drains will be constructed in accordance with the forestry service best practice guidelines described in detail in Section 2.

10.2.6.4 Residual Impacts

On balance there will be positive impacts on air and climate associated with the proposed afforestation.

10.2.7 Significance of the Effects

Based on the above, there will be no significant effects, on climate, associated with afforestation the at this site.

10.3 Noise

10.3.1 Replanting Area 1: Ballyduff Beg, Co. Clare

10.3.1.1 Receiving Environment

The nearest sensitive location to the afforestation site is the residential dwellings located adjacent to the site boundary on the north-western side at the village of Inagh. There are no dwelling houses close to the eastern and southern boundaries of the site. In general, the existing noise climate is typical of a rural agricultural location. There are existing forestry plantations located in the vicinity of the site, along with a small number of agricultural yards.

10.3.1.2 Likely and Significant Impacts and Associated Mitigation Measures

10.3.1.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

10.3.1.3 Planting Phase

10.3.1.3.1 Construction Activities

Negative Imperceptible Short-term Impact

There will potentially be an increase in noise levels in the vicinity of the proposed development site during the planting phase, as a result of the use of an excavator for drainage works. These impacts will be short-term in duration and are not considered significant. The noise levels will be similar to the existing agricultural machinery in use

in the vicinity of the lands which is a working rural environment. Noise at any given noise sensitive location will be variable throughout the works, depending on the distance from the excavator to the receiving properties.

Mitigation

Best practice measures for noise control will be adhered to onsite during the planting phase of the afforestation in order to mitigate the potentially imperceptible short-term negative impact associated with this phase of the development. The measures include:

- Noise will be controlled by prescribing that all work will be restricted to the specified working hours. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause a nuisance.
- The excavator used on the site shall be well maintained and will comply with E.U. and Irish legislation in relation to noise emissions. The timing of on- and off-site movements of plant near occupied properties will be controlled.

10.3.1.4 Operational Phase

10.3.1.4.1 Negative Slight Short-term Impact

There will be an intermittent increase in noise levels in the vicinity of the proposed development site during the operational phase, as a result of the use of machinery for timber harvesting works. These impacts will be short-term in duration. Noise at any given noise sensitive location will be variable throughout the harvesting works, depending on the distance from the machinery to the receiving properties.

Mitigation

Best practice measures for noise control will be adhered to onsite during the timber harvesting at the proposed afforestation site in order to mitigate the slight short-term negative impact associated with this phase of the development. The measures include:

- Harvesting noise will be controlled by prescribing that all construction work will be restricted to the specified working hours. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause a nuisance.
- The machinery used on the site shall be well maintained and will comply with E.U. and Irish legislation in relation to noise emissions. The timing of on- and off-site movements of plant near occupied properties will be controlled.

Residual Impacts

Potential residual impacts will be imperceptible and temporary in nature and not dissimilar to the existing noise sources of a working rural environment.

10.3.1.5 Significance of the Effects

Based on the above, there will be no significant effects, in relation to noise, associated with afforestation the at this site.

10.3.2 Replanting Area 2: , Curraghard, Co. Roscommon

10.3.2.1 Receiving Environment

The nearest sensitive location to the Curraghard afforestation site is mixture of farm and residential dwellings to the north and south of the site. There are no dwellings close to the west or eastern edge of the site. In general, the existing noise climate is typical

of a rural agricultural location. There are existing forestry plantations located in the vicinity of the sites, along with a small number of agricultural yards.

10.3.2.2 Likely and Significant Impacts and Associated Mitigation Measures

10.3.2.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

10.3.2.3 Planting Phase

Negative Imperceptible Short-term Impact

There will potentially be an increase in noise levels in the vicinity of the proposed development site during the planting phase, as a result of the use of an excavator for drainage works. These impacts will be short-term in duration and are not considered significant. The noise levels will be similar to the existing agricultural machinery in use in the vicinity of the lands which is a working rural environment. Noise at any given noise sensitive location will be variable throughout the works, depending on the distance from the excavator to the receiving properties.

Mitigation

Best practice measures for noise control will be adhered to onsite during the planting phase of the afforestation in order to mitigate the potentially imperceptible short-term negative impact associated with this phase of the development. The measures include:

- Noise will be controlled by prescribing that all work will be restricted to the specified working hours. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause a nuisance.
- The excavator used on the site shall be well maintained and will comply with E.U. and Irish legislation in relation to noise emissions. The timing of on- and off-site movements of plant near occupied properties will be controlled.

10.3.2.4 Operational Phase

Negative Slight Short-term Impact

There will be an intermittent increase in noise levels in the vicinity of the proposed development site during the operational phase, as a result of the use of machinery for timber harvesting works. These impacts will be short-term in duration. Noise at any given noise sensitive location will be variable throughout the harvesting works, depending on the distance from the machinery to the receiving properties.

Mitigation

Best practice measures for noise control will be adhered to onsite during the timber harvesting at the proposed afforestation site in order to mitigate the slight short-term negative impact associated with this phase of the development. The measures include:

- Harvesting noise will be controlled by prescribing that all construction work will be restricted to the specified working hours. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause a nuisance.
- The machinery used on the site shall be well maintained and will comply with E.U. and Irish legislation in relation to noise emissions. The timing of on- and off-site movements of plant near occupied properties will be controlled.

Residual Impacts

Potential residual impacts will be imperceptible and temporary in nature and not dissimilar to the existing noise sources of a working rural environment.

10.3.3 Replanting Area 3: Claraghatlea North, Co. Cork

10.3.3.1 Receiving Environment

The nearest sensitive location to the afforestation site are the residential dwellings located approximately 150 to 200 meters to the south of the site boundary along the R582 road. There is one small farmstead across the Owennagleo to the North approximately 270 meters from the site boundary. In general, the existing noise climate is typical of a rural agricultural location. There are existing forestry plantations located in the vicinity of the site, along with a number of agricultural yards.

10.3.3.2 Likely and Significant Impacts and Associated Mitigation Measures

10.3.3.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

10.3.3.3 Planting Phase

Negative Imperceptible Short-term Impact

There will potentially be an increase in noise levels in the vicinity of the proposed development site during the planting phase, as a result of the use of an excavator for drainage works. These impacts will be short-term in duration and are not considered potentially significant. The noise levels will be similar to the existing agricultural machinery in use in the vicinity of the lands which is a working rural environment. Noise at any given noise sensitive location will be variable throughout the works, depending on the distance from the excavator to the receiving properties.

Mitigation

Best practice measures for noise control will be adhered to onsite during the planting phase of the afforestation in order to mitigate the potentially imperceptible short-term negative impact associated with this phase. The measures include:

- Noise will be controlled by prescribing that all work will be restricted to the specified working hours. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause a nuisance.
- The excavator used on the site shall be well maintained and will comply with E.U. and Irish legislation in relation to noise emissions. The timing of on- and off-site movements of plant near occupied properties will be controlled.

10.3.3.4 Operational Phase

Negative Slight Short-term Impact

There will be an intermittent increase in noise levels in the vicinity of the proposed development site during the operational phase, as a result of the use of machinery for timber harvesting works. These impacts will be short-term in duration. Noise at any given noise sensitive location will be variable throughout the harvesting works, depending on the distance from the machinery to the receiving properties.

Mitigation

Best practice measures for noise control will be adhered to onsite during the timber harvesting at the proposed afforestation site in order to mitigate the slight short-term negative impact associated with this phase of the development. The measures include:

- Harvesting noise will be controlled by prescribing that all work will be restricted to the specified working hours. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause a nuisance.
- The machinery used on the site shall be well maintained and will comply with E.U. and Irish legislation in relation to noise emissions. The timing of on- and off-site movements of plant near occupied properties will be controlled.

10.3.3.4.1 Residual Impacts

Potential residual impacts will be imperceptible and temporary in nature and not dissimilar to the existing noise sources of a working rural environment.

10.3.3.5 Significance of the Effects

Based on the above, there will be no significant effects, in relation to noise, associated with afforestation the at this site.

10.3.4 Replanting Area 4: Rahalisk, Co. Cork

10.3.4.1 Receiving Environment

There is a farm dwelling located in the middle of the two replanting sites at Rahalisk. Along the local laneway that runs through Rahalisk, there is another farmstead to the south of the road. In general, the existing noise climate is typical of a rural agricultural location. There are existing forestry plantations located in the vicinity of the site, along with a number of agricultural yards.

10.3.4.2 Likely and Significant Impacts and Associated Mitigation Measures

10.3.4.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

10.3.4.3 Planting Phase

10.3.4.3.1 Construction Activities

Negative Imperceptible Short-term Impact

There will potentially be an increase in noise levels in the vicinity of the proposed development site during the planting phase, as a result of the use of an excavator for drainage works. These impacts will be short-term in duration and are not considered potentially significant. The noise levels will be similar to the existing agricultural machinery in use in the vicinity of the lands which is a working rural environment. Noise at any given noise sensitive location will be variable throughout the works, depending on the distance from the excavator to the receiving properties.

Mitigation

Best practice measures for noise control will be adhered to onsite during the planting phase of the afforestation in order to mitigate the potentially imperceptible short-term negative impact associated with this phase. The measures include:

- Noise will be controlled by prescribing that all work will be restricted to the specified working hours. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause a nuisance.
- The excavator used on the site shall be well maintained and will comply with E.U. and Irish legislation in relation to noise emissions. The timing of on- and off-site movements of plant near occupied properties will be controlled.

10.3.4.4 Operational Phase

10.3.4.4.1 Negative Slight Short-term Impact

There will be an intermittent increase in noise levels in the vicinity of the proposed development site during the operational phase, as a result of the use of machinery for timber harvesting works. These impacts will be short-term in duration. Noise at any given noise sensitive location will be variable throughout the harvesting works, depending on the distance from the machinery to the receiving properties.

Mitigation

Best practice measures for noise control will be adhered to onsite during the timber harvesting at the proposed afforestation site in order to mitigate the slight short-term negative impact associated with this phase of the development. The measures include:

- Harvesting noise will be controlled by prescribing that all work will be restricted to the specified working hours. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause a nuisance.
- The machinery used on the site shall be well maintained and will comply with E.U. and Irish legislation in relation to noise emissions. The timing of on- and off-site movements of plant near occupied properties will be controlled.

10.3.4.4.2 Residual Impacts

Potential residual impacts will be imperceptible and temporary in nature and not dissimilar to the existing noise sources of a working rural environment.

10.3.5 Replanting Area 5: Knockavrogeen, Co. Kerry

10.3.5.1 Receiving Environment

The nearest sensitive location to the afforestation site is the residential dwellings located adjacent to the site boundary on the western side and southwestern corner. There are no dwelling houses close to the eastern and southern boundaries of the site. In general, the existing noise climate is typical of a rural agricultural location. There are existing forestry plantations located in the vicinity of the site, along with a small number of agricultural yards.

10.3.5.2 Likely and Significant Impacts and Associated Mitigation Measures

10.3.5.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the proposed Knocknamork Renewable Energy Development proceed or not.

10.3.5.3 Planting Phase

10.3.5.3.1 Construction Activities

Negative Imperceptible Short-term Impact

There will potentially be an increase in noise levels in the vicinity of the proposed development site during the planting phase, as a result of the use of an excavator for drainage works. These impacts will be short-term in duration and are not considered significant. The noise levels will be similar to the existing agricultural machinery in use in the vicinity of the lands which is a working rural environment. Noise at any given noise sensitive location will be variable throughout the works, depending on the distance from the excavator to the receiving properties.

Mitigation

Best practice measures for noise control will be adhered to onsite during the planting phase of the afforestation in order to mitigate the potentially imperceptible short-term negative impact associated with this phase of the development. The measures include:

- Noise will be controlled by prescribing that all work will be restricted to the specified working hours. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause a nuisance.
- The excavator used on the site shall be well maintained and will comply with E.U. and Irish legislation in relation to noise emissions. The timing of on- and off-site movements of plant near occupied properties will be controlled.

10.3.5.4 Operational Phase

10.3.5.4.1 Negative Slight Short-term Impact

There will be an intermittent increase in noise levels in the vicinity of the proposed development site during the operational phase, as a result of the use of machinery for timber harvesting works. These impacts will be short-term in duration. Noise at any given noise sensitive location will be variable throughout the harvesting works, depending on the distance from the machinery to the receiving properties.

Mitigation

Best practice measures for noise control will be adhered to onsite during the timber harvesting at the proposed afforestation site in order to mitigate the slight short-term negative impact associated with this phase of the development. The measures include:

- Harvesting noise will be controlled by prescribing that all construction work will be restricted to the specified working hours. Any work carried out outside of these hours shall be restricted to activities that will not generate noise of a level that may cause a nuisance.
- The machinery used on the site shall be well maintained and will comply with E.U. and Irish legislation in relation to noise emissions. The timing of on- and off-site movements of plant near occupied properties will be controlled.

Residual Impacts

Potential residual impacts will be imperceptible and temporary in nature and not dissimilar to the existing noise sources of a working rural environment.

10.3.5.5 Significance of the Effects

Based on the above, there will be no significant effects, in relation to noise, associated with afforestation the at this site.

11 POPULATION AND HEALTH

This section of the report describes the potential impacts of the proposed afforestation on Population & Human Health, and has been completed in accordance with the guidance set out by the Environmental Protection Agency in *'Draft Guidelines on the Information to be contained in Environmental Impact Statements'* (EPA, 2017).

One of the principle concerns in the development process is that people, as individuals or communities, should experience no diminution in their quality of life from the direct or indirect impacts arising from the construction and operation of a development. Ultimately, all the impacts of a development impinge on human beings, directly and indirectly, positively and negatively. The key issues examined in this section of the Further Information Response document include population, employment, health and safety, land-use, residential amenity, community facilities and services, and tourism.

11.1 Replanting Area 1: Ballyduff Beg, Co. Clare

11.1.1 Baseline Environment

11.1.1.1 Population

The proposed replanting lands at Ballyduff Beg are located at the south-east of Inagh village, Co. Clare. The site is located within the District Electoral Division (DED) of Formoyle. The proposed replanting site is located adjacent to the N85 National Secondary Road. The overall level of residential development within a kilometre of this site is low, with intermittent houses located along the N85. The village of Inagh lies to the north-west of the site but lies in a different DED. This is the largest dwelling location near the site.

11.1.1.2 Employment

Employment in the area is likely to be based primarily on agriculture, with various small commercial activities in the area.

11.1.1.3 Land-use

The current land-use on the proposed replanting area is agriculture. This site is located within a rural, working landscape in which agriculture and forestry form the primary land-uses. The site is bordered to the east by existing coniferous forestry. There is some localised peat extraction in the surrounding lands.

11.1.1.4 Community Facilities and Amenities

The nearest schools and community facilities to the proposed planting site are located in the village of Inagh, located north-east of the site. The local school and GAA pitch are located approximately half a kilometre to the west of the site.

The nearest designated walking route to the proposed replanting site is the Mid-Clare Way, which is a 130 kilometre loop walk, beginning and ending in Newmarket on Fergus. The route touches on the Burren to the north and the broad Shannon Estuary to the south. At its nearest point to the proposed replanting site, the Mid Clare Way walking route is located approximately 2.7 kilometres south-east of the site. The walking route bypasses areas of existing coniferous forestry.

11.1.1.5 Tourism

Ireland is divided into seven tourism regions. The Shannon region, in which the site of the proposed replanting site is located, comprises Counties Clare, Tipperary (North), Limerick and Offaly (West). There are no tourist attractions pertaining specifically to the proposed replanting site. The nearest tourist attraction is the Mid Clare Way, as described in Section 11.1.1.4 above.

11.1.2 Impact Assessment and Proposed Mitigation Measures

11.1.2.1 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

11.1.2.2 Population

Afforestation of the replanting site will have no impact on population trends or population density in the vicinity of the site.

11.1.2.3 Employment

The preparation and planting of the proposed replanting lands will provide short-term employment for three people; one person to operate an excavator for installation of drainage features, and two people to plant the site by hand.

In the longer-term, maintenance and felling of the site will provide part-term employment for two people.

11.1.2.4 Health and Safety

Health and safety in forestry is the concern of all those involved, including forest owners, managers, supervisors, operators, recreational users and trespassers (*‘Code of Best Forest Practice’*; Forest Service, 2000). Forest practice must ensure that operations do not endanger workers and others. In the absence of the correct health and safety measures, forestry-related activities have the potential to have a significant negative effect on the health and safety of workers and members of the public, on and in the vicinity of the site.

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

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

11.1.2.5 Land-use

Afforestation of the proposed replanting site will result in a long-term change in use of the site, from agriculture to forestry. This change in land-use is in keeping with the character of the surrounding landscape, as forestry is already an established land-use

in the area. The impact of the change in land-use is therefore neutral, i.e. a change which does not affect the quality of the environment.

11.1.2.6 Residential Amenity

Planting at the site will have a short-term, slight negative impact on the residential amenity of the dwelling located closest to the proposed replanting site. This impact will be the result of the visual impact of site activity/disturbance. In the longer term, views from this house to the west and south will be restricted by forestry. However, it is a requirement of the Technical Approval for the site that the owners of this house will be consulted in advance of planting in order to resolve any concerns they may have prior to works being carried out.

11.1.2.7 Community Facilities and Amenities

There are no community facilities or amenities located on or in the immediate vicinity of the proposed replanting lands. No walks pass directly through the site, and there will be no impact to this or any other community amenities within the area. All appropriate health and safety measures, including signage, will be adopted at the site to ensure the safety of workers and the general public.

11.1.2.8 Tourism

Afforestation of the proposed replanting lands will have no impact on tourism. There are no tourist facilities or attractions located on or in the immediate vicinity of the proposed replanting lands. Forestry is an established land-use in this area, and a common feature in the landscape.

11.1.3 Significance of the Effects

Based on the above, there will be no significant effects, on human beings, population or health, associated with afforestation the at this site.

11.2 Replanting Area 2: Molougha, Co. Clare

11.2.1 Baseline Environment

11.2.1.1 Population

The Molougha site is located approximately 4.5 east of Kilrush, Co. Clare. The site is located within the District Electoral Division (DED) of Killimer. The Molougha property is traversed by a local road, which splits the site into northern and southern sections. One farmstead is located along the local road as it traverses the site. These dwellings are referred to in the Technical Approval document for the site, which includes as a condition that adjoining house owners will be consulted in advance of planting in order to resolve any concerns they may have prior to works being carried out. The overall level of residential dwellings in the surrounding land of the site is low.

11.2.1.2 Employment

Employment in the area is likely to be based primarily on agriculture, with various small commercial activities in the area. Employment in the area is likely to be

11.2.1.3 Land-use

The current land-use on the proposed replanting lands is agriculture. These sites are located within a rural, working landscape in which agriculture and forestry form the primary land-uses. The Molougha site is not by existing coniferous forestry but there are plantations in the surrounding land.

11.2.1.4 Community Facilities and Amenities

There are no community facilities or amenities located within or in the vicinity of the proposed replanting sites. The nearest retail services, schools and community facilities to the sites are located in the town of Killrush, approximately 5.0 kilometres west of the Molougha site

There are no designated walking or cycling trails located in proximity to the Molougha site.

11.2.1.5 Tourism

Ireland is divided into seven tourism regions. The Shannon region, in which the Molougha site is located, comprises Counties Clare, Tipperary (North), Limerick and Offaly (west). There are no tourist attractions located in the vicinity of the proposed replanting sites. The nearest tourist attractions or facilities are located in the town of Killrush, including hotels and B&B's, Pubs, a visitor centre and the Killrush Golf Club.

11.2.2 Impact Assessment and Proposed Mitigation Measures

11.2.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

11.2.2.2 Population

Afforestation of the replanting land at Molougha will have no impact on population trends or population density in the vicinity of the site.

11.2.2.3 Employment

The preparation and planting of the proposed replanting lands will provide short-term employment for three people; one person to operate an excavator for installation of drainage features, and two people to plant the site by hand.

In the longer-term, maintenance and felling of the site will provide part-term employment for two people.

11.2.2.4 Health and Safety

Health and safety in forestry is the concern of all those involved, including forest owners, managers, supervisors, operators, recreational users and trespassers (*'Code of Best Forest Practice'*; Forest Service, 2000). Forest practice must ensure that operations do not endanger workers and others. In the absence of the correct health and safety measures, forestry-related activities have the potential to have a significant negative effect on the health and safety of workers and members of the public, on and in the vicinity of the site.

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

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

11.2.2.5 Land-use

Afforestation of the proposed replanting site will result in a long-term change in use of the site, from agriculture to forestry. This change in land-use is in keeping with the character of the surrounding landscape, as forestry is already an established land-use in the area. The impact of the change in land-use is therefore neutral, i.e. a change which does not affect the quality of the environment.

11.2.2.6 Residential Amenity

Planting at the site will have a short-term, slight negative impact on the residential amenity of the dwellings located closest to the proposed replanting sites. This impact will be the result of the visual impact of site activity/disturbance. However, it is a requirement of the Technical Approval for the site that the owners of these houses will be consulted in advance of planting in order to resolve any concerns they may have prior to works being carried out.

11.2.2.7 Community Facilities and Amenities

There are no community facilities or amenities located on or in the immediate vicinity of the proposed replanting lands. All appropriate health and safety measures, including signage, will be adopted at the site to ensure the safety of workers and the general public.

11.2.2.8 Tourism

Afforestation of the proposed replanting lands will have no impact on tourism. There are no tourist facilities or attractions located on or in the immediate vicinity of the proposed replanting lands. Forestry is an established land-use in this area, and a common feature in the landscape.

11.2.3 Significance of the Effects

Based on the above, there will be no significant effects, on human beings, population or health, associated with afforestation the at this site.

11.3 Replanting Area 3: Claraghatlea North, Co. Cork

11.3.1 Baseline Environment

11.3.1.1 Population

The proposed replanting site at Claraghatlea North is located approximately 1.4 kilometres north-west of Millstreet town. The site is located within the District Electoral Division (DED) of Coomlogane. The proposed replanting site is located adjacent to the regional road R582. The overall level of residential development within a kilometre of this site is low, with intermittent houses located along the local roads. The nearest major settlement to the proposed replanting site is Millstreet, located approximately 1.5km to the south-east.

11.3.1.2 Employment

Employment in the areas likely to be based primarily on agriculture, with various small commercial activities in the area.

11.3.1.3 Land-use

The current land-use on the proposed replanting site is agriculture. The site is located within a rural, working landscape in which agriculture and forestry form the primary land-uses. The site is bordered to the south, west and north by agricultural grasslands. Conifer plantations border most of the eastern side, with existing coniferous forests further south. Peat extraction is also a common land-use within the wider area.

11.3.1.4 Community Facilities and Amenities

There are no community facilities or amenities located within or close to the proposed replanting site. The nearest schools and community facilities to the proposed planting site are located in the village of Millstreet, located approximately 1.5 kilometres south-east of the site.

The nearest designated walking route to the proposed replanting site is the Duhallow Way, which is a linear track part of the Blackwater Way. The track itself is 168km long and at its nearest point passes within 1.5km of the replanting site.

11.3.1.5 Tourism

Ireland is divided into seven tourism regions. The South-West region, in which the site of the proposed replanting site is located, comprises Counties Cork and Kerry. There are no tourist attractions pertaining specifically to the proposed replanting site. The nearest tourist attraction is the Duhallow Way as stated above.

11.3.2 Impact Assessment and Proposed Mitigation Measures

11.3.2.1 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

11.3.2.2 Population

Afforestation of the replanting lands at Claraghatlea North will have no impact on population trends or population density in the vicinity of the site.

11.3.2.3 Employment

The preparation and planting of the proposed replanting lands will provide short-term employment for three people; one person to operate an excavator for installation of drainage features, and two people to plant the site by hand.

In the longer-term, maintenance and felling of the site will provide part-term employment for two people.

11.3.2.4 Health and Safety

Health and safety in forestry is the concern of all those involved, including forest owners, managers, supervisors, operators, recreational users and trespassers (*‘Code of Best Forest Practice’*; Forest Service, 2000). Forest practice must ensure that operations do not endanger workers and others. In the absence of the correct health and safety measures, forestry-related activities have the potential to have a significant negative effect on the health and safety of workers and members of the public, on and in the vicinity of the site.

The Forest Service’s *‘Code of Best Forest Practice’* states that the Safety, Health and Welfare at Work Act 1989 and the Safety, Health and Welfare at Work (General Application) Regulations 1993 place responsibilities on all involved in work activities,

and set out a basis for managing health and safety in all workplaces. Forest owners have legal responsibilities to ensure that the workplace and all articles and substances situated there are safe and free from health risk. This involves informing contractors of potential hazards, work agreements and monitoring. Employers, self-employed and employees all have clear responsibility to ensure safe working practices for themselves and others.

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

11.3.2.5 Land-use

Afforestation of the proposed replanting site will result in a long-term change in use of the site, from agriculture to forestry. This change in land-use is in keeping with the character of the surrounding landscape, as forestry is already an established land-use in the area. The impact of the change in land-use is therefore neutral, i.e. a change which does not affect the quality of the environment.

11.3.2.6 Residential Amenity

Planting at the site will have a short-term, slight negative impact on the residential amenity of the dwellings located closest to the proposed replanting site. This impact will be the result of the visual impact of site activity/disturbance. However, it is a requirement of the Technical Approval for the site that the owners of these houses will be consulted in advance of planting in order to resolve any concerns they may have prior to works being carried out.

11.3.2.7 Community Facilities and Amenities

There are no community facilities or amenities located on or in the immediate vicinity of the proposed replanting lands. No recreational walks pass directly through the site, and there will be no impact to this or any other community amenities within the area. All appropriate health and safety measures, including signage, will be adopted at the site to ensure the safety of workers and the general public.

11.3.2.8 Tourism

Afforestation of the proposed replanting lands will have no impact on tourism. There are no tourist facilities or attractions located on or in the immediate vicinity of the proposed replanting lands. Forestry is an established land-use in this area, and a common feature in the landscape.

11.3.3 Significance of the Effects

Based on the above, there will be no significant effects, on human beings, population or health, associated with afforestation the at this site.

11.4 Replanting Area 4: Glantane Beg, Co. Cork

11.4.1 Baseline Environment

11.4.1.1 Population

The proposed replanting site at Glantane Beg is located approximately 5.6 kilometres north-east of Rathmore town. The site is located within the District Electoral Division (DED) of Cullen. The proposed replanting site is located adjacent to the local roads around Glantane Beg. The overall level of residential development within a kilometre

of this site is low, with intermittent farms and some houses located along the local roads. The nearest major dwelling to the proposed replanting site is Rathmore, located approximately 5.6km to the south-west.

11.4.1.2 Employment

Employment in the area is likely to be based primarily on agriculture, with various small commercial activities in the area.

11.4.1.3 Land-use

The current land-use on the proposed replanting site is forestry. The site is located within a rural, working landscape in which agriculture and forestry form the primary land-uses. The site is bordered to the west and south by agricultural grasslands but is situated in the corner of an established conifer plantation. Peat extraction is also a common land-use within the wider area.

11.4.1.4 Community Facilities and Amenities

There are no community facilities or amenities located within or close to the proposed replanting site. The nearest schools and community facilities to the proposed planting site are located in the village of Rathmore, located approximately 5.6 kilometres south-west of the site.

11.4.1.5 Tourism

Ireland is divided into seven tourism regions. The South-West region, in which the site of the proposed replanting site is located, comprises Counties Cork and Kerry. There are no tourist attractions pertaining specifically to the proposed replanting site.

11.4.2 Impact Assessment and Proposed Mitigation Measures

11.4.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

11.4.2.2 Population

Afforestation of the replanting lands at Glantane Beg will have no impact on population trends or population density in the vicinity of the site.

11.4.2.3 Employment

The preparation and planting of the proposed replanting lands will provide short-term employment for three people; one person to operate an excavator for installation of drainage features, and two people to plant the site by hand.

In the longer-term, maintenance and felling of the site will provide part-term employment for two people.

11.4.2.4 Health and Safety

Health and safety in forestry is the concern of all those involved, including forest owners, managers, supervisors, operators, recreational users and trespassers (*'Code of Best Forest Practice'*, Forest Service, 2000). Forest practice must ensure that operations do not endanger workers and others. In the absence of the correct health and safety measures, forestry-related activities have the potential to have a significant negative effect on the health and safety of workers and members of the public, on and in the vicinity of the site.

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

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

11.4.2.5 Land-use

Afforestation of the proposed replanting site will not result in any long-term change in use of the site. As the site has been forested before and is surrounded by forestry there will be no noticeable change.

11.4.2.6 Residential Amenity

Planting at the site will have a short-term, slight negative impact on the residential amenity of the dwellings located closest to the proposed replanting site. This impact will be the result of the visual impact of site activity/disturbance. However, it is a requirement of the Technical Approval for the site that the owners of these houses will be consulted in advance of planting in order to resolve any concerns they may have prior to works being carried out.

11.4.2.7 Community Facilities and Amenities

There are no community facilities or amenities located on or in the immediate vicinity of the proposed replanting lands. No recreational walks pass directly through the site, and there will be no impact to this or any other community amenities within the area. All appropriate health and safety measures, including signage, will be adopted at the site to ensure the safety of workers and the general public.

11.4.2.8 Tourism

Afforestation of the proposed replanting lands will have no impact on tourism. There are no tourist facilities or attractions located on or in the immediate vicinity of the proposed replanting lands. Forestry is an established land-use in this area, and a common feature in the landscape.

11.4.3 Significance of the Effects

Based on the above, there will be no significant effects, on human beings, population or health, associated with afforestation at this site.

11.5 Replanting Area 5: Knockavrogeen, Co. Kerry

11.5.1 Baseline Environment

11.5.1.1 Population

The proposed replanting site at Knockavrogeen is located approximately 3km north of Dingle. The site is located within the District Electoral Division (DED) of Na Gleannta. The proposed replanting site is located adjacent to the local roads around Knockavrogeen. The overall level of residential development within a kilometre of this site is low, with intermittent farms and some houses located along the local roads and the R559 Regional Road. The nearest major settlement to the proposed replanting site is Dingle, located approximately 3km to the south.

11.5.1.2 Employment

Employment in the area is likely to be based primarily on agriculture, with various small commercial activities in the area.

11.5.1.3 Land-use

The current land-use on the proposed replanting site is pastoral farming. The site is located within a rural, working landscape in which agriculture and forestry form the primary land-uses. The site is bordered to the west and northwest by agricultural grasslands but is situated otherwise beside some established conifer plantations to the east, south and northeast.

11.5.1.4 Community Facilities and Amenities

There are no community facilities or amenities located within or close to the proposed replanting site. The majority of the nearest schools and community facilities to the proposed planting site are located in the town of Dingle, located approximately 3 kilometres south of the site, though a school is located east of the site in Ballyheabought.

11.5.1.5 Tourism

Ireland is divided into seven tourism regions. The South-West region, in which the site of the proposed replanting site is located, comprises Counties Cork and Kerry. There are no tourist attractions pertaining specifically to the proposed replanting site. Dingle town attracts large numbers of tourists throughout the year.

11.5.2 Impact Assessment and Proposed Mitigation Measures

11.5.2.1 'Do-Nothing' Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

11.5.2.2 Population

Afforestation of the replanting lands at Glantane Beg will have no impact on population trends or population density in the vicinity of the site.

11.5.2.3 Employment

The preparation and planting of the proposed replanting lands will provide short-term employment for three people; one person to operate an excavator for installation of drainage features, and two people to plant the site by hand.

In the longer-term, maintenance and felling of the site will provide part-term employment for two people.

11.5.2.4 Health and Safety

Health and safety in forestry is the concern of all those involved, including forest owners, managers, supervisors, operators, recreational users and trespassers (*'Code of Best Forest Practice'*, Forest Service, 2000). Forest practice must ensure that operations do not endanger workers and others. In the absence of the correct health and safety measures, forestry-related activities have the potential to have a significant negative effect on the health and safety of workers and members of the public, on and in the vicinity of the site.

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

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

11.5.2.5 Land-use

Afforestation of the proposed replanting site will not result in any long-term change in use of the site. As the site has been forested before and is surrounded by forestry there will be no noticeable change.

11.5.2.6 Residential Amenity

Planting at the site will have a short-term, slight negative impact on the residential amenity of the dwellings located closest to the proposed replanting site. This impact will be the result of the visual impact of site activity/disturbance. However, it is a requirement of the Technical Approval for the site that the owners of these houses will be consulted in advance of planting in order to resolve any concerns they may have prior to works being carried out.

11.5.2.7 Community Facilities and Amenities

There are no community facilities or amenities located on or in the immediate vicinity of the proposed replanting lands. No recreational walks pass directly through the site, and there will be no impact to this or any other community amenities within the area. All appropriate health and safety measures, including signage, will be adopted at the site to ensure the safety of workers and the general public.

11.5.2.8 Tourism

Afforestation of the proposed replanting lands will have no impact on tourism. There are no tourist facilities or attractions located on or in the immediate vicinity of the proposed replanting lands. Forestry is an established land-use in this area, and a common feature in the landscape.

11.5.3 Significance of the Effects

Based on the above, there will be no significant effects, on human beings, population or health, associated with afforestation the at this site.

12 MATERIAL ASSETS

Material Assets are resources that are valued and intrinsic to specific places. Economic assets of natural heritage include non-renewable resources such as minerals or soils, and renewable resources such as wind and water. These assets are dealt with in Sections 6, 7 and 8 of this report. Cultural assets are discussed in Section 9. Transportation infrastructure and land-use practices, which are economic assets of human origin, are discussed in this section of the report.

12.1 Replanting Area 1: Ballyduff Beg, Co. Clare

12.1.1 Transportation

Traffic movements associated with the preparation and planting of the site will be minimal. Preparation of the site will require the use of an excavator for drainage, and travel to the site by the driver. Planting of the site will be by hand, and will be carried out by one to two people over a two-week period approximately.

Forestry felling can occur within 0.8-1 km of access points (roads and tracks) to the main forest body. Due to the small size of the proposed replanting area, additional access tracks or roads will not be required. This site is located near the N85 road and is intersected by an unnamed local road.

12.1.2 Land-Use

Land-use on the site will change from pastoral agriculture to coniferous forestry. Forestry, like agriculture, is an extractive industry, i.e. it produces a raw material which is then processed to add value. The use of the proposed replanting lands for coniferous forestry will have a positive effect on the economic assets of the site.

12.1.3 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

12.1.4 Significance of the Effects

Based on the above, there will be no significant effects, on traffic, associated with afforestation the at this site.

12.2 Replanting Area 2: Curraghard, Co. Roscommon

12.2.1 Transportation

Traffic movements associated with the preparation and planting of the site will be minimal. Preparation of the site will require the use of an excavator for drainage, and travel to the site by the driver. Planting of the site will be by hand, and will be carried out by one to two people over a two-week period approximately.

Forestry felling can occur within 0.8-1 km of access points (roads and tracks) to the main forest body. Due to the small size of the proposed replanting area, additional access tracks or roads will not be required. This site is located adjacent to an unnamed local road which is connected to the R293 regional road.

12.2.2 Land-Use

Land-use on the site will change from pastoral agriculture to coniferous forestry. Forestry, like agriculture, is an extractive industry, i.e. it produces a raw material which is then processed to add value. The use of the proposed replanting lands for coniferous forestry will have a positive effect on the economic assets of the site.

12.2.3 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

12.2.4 Significance of the Effects

Based on the above, there will be no significant effects, on traffic, associated with afforestation the at this site.

12.3 Replanting Area 3: Claraghatlea North, Co. Cork

12.3.1 Transportation

Traffic movements associated with the preparation and planting of the site will be minimal. Preparation of the site will require the use of an excavator for drainage, and travel to the site by the driver. Planting of the site will be by hand, and will be carried out by one to two people over a two-week period.

Forestry felling can occur within 0.8-1 km of access points (roads and tracks) to the main forest body. Due to the small size of the proposed replanting area, additional access tracks or roads will not be required. This site is located near and will be accessed by the R852 regional road.

12.3.2 Land-Use

Land-use on the site will change from pastoral agriculture to coniferous forestry. Forestry, like agriculture, is an extractive industry, i.e. it produces a raw material which is then processed to add value. The use of the proposed replanting lands for coniferous forestry will have a positive effect on the economic assets of the site.

12.3.3 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

12.3.4 Significance of the Effects

Based on the above, there will be no significant effects, on traffic, associated with afforestation the at this site.

12.4 Replanting Area 4: Rahilisk, Co. Cork

12.4.1 Transportation

Traffic movements associated with the preparation and planting of the site will be minimal. Preparation of the site will require the use of an excavator for drainage, and travel to the site by the driver. Planting of the site will be by hand, and will be carried out by one to two people over a two-week period.

Forestry felling can occur within 0.8-1 km of access points (roads and tracks) to the main forest body. Due to the small size of the proposed replanting area, additional

access tracks or roads will not be required. This site is located adjacent to an unnamed local road which is connected to the L1123 local road.

12.4.2 Land-Use

Land-use on the site will change from pastoral agriculture to coniferous forestry. Forestry, like agriculture, is an extractive industry, i.e. it produces a raw material which is then processed to add value. The use of the proposed replanting lands for coniferous forestry will have a positive effect on the economic assets of the site.

12.4.3 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

12.4.4 Significance of the Effects

Based on the above, there will be no significant effects, on traffic, associated with afforestation the at this site.

12.5 Replanting Area 5: Knockavrogeen, Co. Kerry

12.5.1 Transportation

Traffic movements associated with the preparation and planting of the site will be minimal. Preparation of the site will require the use of an excavator for drainage, and travel to the site by the driver. Planting of the site will be by hand, and will be carried out by one to two people over a two-week period.

Forestry felling can occur within 0.8-1 km of access points (roads and tracks) to the main forest body. Due to the small size of the proposed replanting area, additional access tracks or roads will not be required. This site is located adjacent to an unnamed local road which is connected to the R559 regional road.

12.5.2 Land-Use

Land-use on the site will change from pastoral agriculture to coniferous forestry. Forestry, like agriculture, is an extractive industry, i.e. it produces a raw material which is then processed to add value. The use of the proposed replanting lands for coniferous forestry will have a positive effect on the economic assets of the site.

12.5.3 ‘Do-Nothing’ Scenario

The lands have been Technically Approved and will be afforested should the Ardderroo wind farm proceed or not.

12.5.4 Significance of the Effects

Based on the above, there will be no significant effects, on traffic, associated with afforestation the at this site.

Appendix 1

Appropriate Assessment Screening Documents

Appropriate Assessment Screening Report

Proposed Replanting at Ballyduff Beg, Co. Clare



Planning & Environmental Consultants

DOCUMENT DETAILS

Client: Planree Ltd.

Project title: Proposed Replanting at Ballyduff Beg, Co. Clare

Project Number: 160502

Document Title: Appropriate Assessment Screening Report

Doc. File Name: 160502 –AASR – 2017.11.09 – F

Prepared By: McCarthy Keville O’Sullivan Ltd.
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Document Issue:

Rev	Status	Issue Date	Document File Name	Author(s)	Approved By:
01	Draft	09/11/2017	160502 – Replanting AASR Ballyduff Beg- 2017.04.04 – D1	EJ	PR
02	Final	10/11/2017	160502 – Replanting AASR Ballyduff Beg- 2017.11.10 – F	EJ	PR

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1 GENERAL INTRODUCTION

This report has been prepared to provide the information necessary to allow the competent authority to conduct an Article 6(3) Screening for Appropriate Assessment for the proposed construction of a new dwelling house, and wastewater treatment system along with all associated ancillary works **Ballyduff Beg, Co. Clare** (Grid Ref: E 121440 N 181000).

The report provides the information necessary to allow the competent authority to conduct an Article 6(3) Appropriate Assessment Screening of the proposed afforestation.

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

The assessment in this report is based on a desk study and field surveys undertaken during 2017. It specifically assesses the potential for the proposed afforestation to impact on European sites and the ecology of the area.

This report has been prepared in accordance with the European Commission guidance document *Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC* (EC, 2001) and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

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

- (1) DoEHLG (2010) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government,
- (2) European Communities (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,
- (3) 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,
- (4) EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – *Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission.* European Commission
- (4) EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission,

- (5) EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements. Environmental Protection Agency,
- (6) EPA (2003), Advice Notes on current practice in the preparation of Environmental Impact Statements. Environmental Protection Agency, and
- (7) CIEEM (2016) Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment. (9) EC (2001) Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC

1.1 Background to Appropriate Assessment

1.1.1 Screening for Appropriate Assessment

Screening is the process of determining whether or not an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000 as amended, Screening must be carried out by the Competent Authority to assess, in view of best scientific knowledge, if a land use plan or proposed development, individually or in combination with another plan or project, is likely to have a significant effect on a European site. The Competent Authority's determination as to whether or not an Appropriate Assessment is required must be made on the basis of objective information and should be recorded. The competent authority may request information to be supplied to enable it to carry out screening.

1.1.2 Appropriate Assessment (Natura Impact Statement)

The term Natura Impact Statement (NIS), is defined in legislation¹. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to **1)** the implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and **2)** whether there will be adverse effects on the integrity of a European site. The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

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

2 DESCRIPTION OF THE PROPOSED AFFORESTATION

2.1 General Project Description

The land addressed in this document has been granted Technical Approval by the Forest Service for afforestation. Copies of the Technical Approval documents are presented in Appendix 1.

The afforestation and subsequent harvesting will conform to current best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte produced guidance documents, to ensure that newly planted trees remain viable and afforestation provide minimal potential impacts to the receiving environment.

Planting will be carried out by hand, and in accordance with the 'Forestry Schemes Manual' (Forest Service, 2011), which provides guidance in relation to ground cultivation, stocking and spacing, plant handling, planting dates, fertiliser application, fencing, fire, and weed control. Certain specific silvicultural and environmental conditions are also set out in the Forest Service Technical Approvals for the site, which will be adhered to. Drainage and sediment control on site will conform to Forest Service best practice.

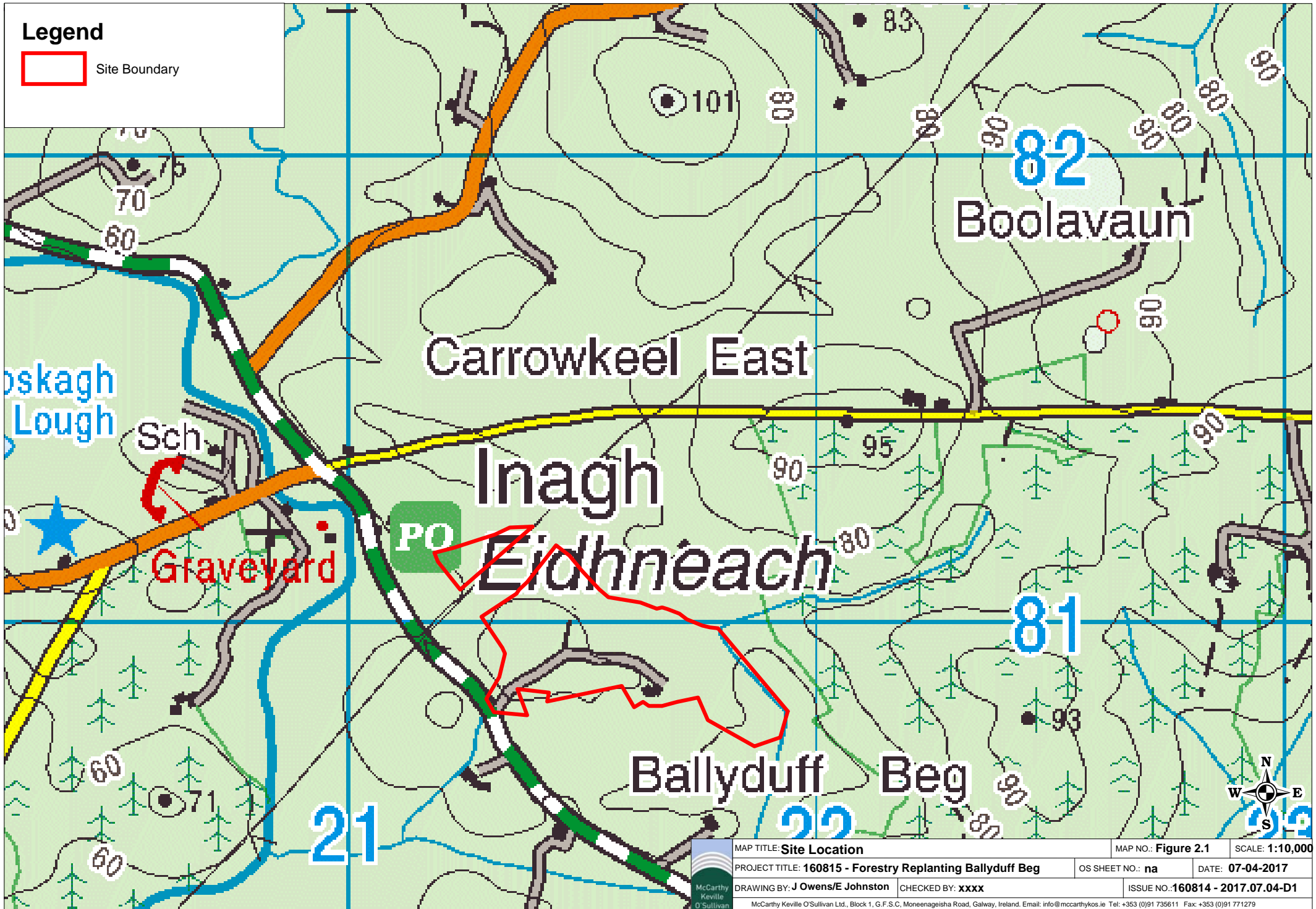
Invasive Species

The following measures address potential impacts associated with the construction phase of the project:

- Good site hygiene will be employed to prevent the spread of invasive species with vehicle thoroughly washed prior to leaving any site which potentially supported invasive species.

Legend

 Site Boundary



MAP TITLE: **Site Location** MAP NO.: **Figure 2.1** SCALE: **1:10,000**

PROJECT TITLE: **160815 - Forestry Replanting Ballyduff Beg** OS SHEET NO.: **na** DATE: **07-04-2017**

DRAWING BY: **J Owens/E Johnston** CHECKED BY: **xxxx** ISSUE NO.: **160814 - 2017.07.04-D1**

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3 METHODOLOGY AND LIMITATIONS

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological Baseline conditions are those existing in the absence of proposed activities (CIEEM 2016).

The following paragraphs outline the methodologies utilised to establish the baseline ecological condition of the proposed afforestation site.

Initially the potential for the site to support protected habitats and species was assessed by means of a desk study. Literature pertinent to the site and surrounding area was reviewed as was information pertaining to legislation/designations and other notable ecological records.

A field survey of the site, including a habitat survey, was carried out by suitably qualified ecologist from McCarthy Keville O'Sullivan, Erin Johnston (BSc., MSc, PhD) in March 2017. The site was assessed and the habitats the site were classified per the guidelines set out in 'A Guide to Habitats in Ireland' (Fossitt, 2000), which classifies habitats based on the vegetation present and management history. In addition, the field survey was designed to detect the presence, or likely presence, of a range of protected species.

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

The nature of the site was such that all habitats and species of interest were readily identifiable based on the site survey. Using the information gained during this site visit, together with published information on the site and its environs, it is considered that a comprehensive ecological assessment was achieved.

4 FIELD SURVEY

4.1 Habitats

The site consisted of agricultural fields subject to ongoing drainage and land management, containing semi-improved Wet Grassland (GS4). Field boundaries consisted of Hedgerows (WL1), narrow strips of Scrub (WS1) and Treelines (WL2).

The southern portion of the site consisted of Wet Grassland (GS4) (Plate 5.1) Species recorded within this section included Knapweed (*Centaurea nigra*), Greater Plantain (*Plantago major*), Self-Heal (*Prunella vulgaris*), Red Clover (*Trifolium pratense*), Creeping Buttercup (*Ranunculus repens*), Meadow Buttercup (*Ranunculus acris*), Mouse-Eared Chickweed (*Cerastium vulgatum*), Glaucous Sedge (*Carex flacca*) and Rushes (*Juncus sp.*).

The remainder of the site is comprised of Wet Grassland (GS4) (Plate 5.2) which is dominated extensively by rushes (*Juncus spp.*). Grass species recorded throughout the site included Creeping Bent (*Agrostis stolonifera*), Yorkshire Fog (*Holcus lanatus*), and Purple Moor grass (*Molinia caerulea*). Other species recorded in this area included Creeping Buttercup (*Ranunculus repens*), Meadow buttercup (*Ranunculus acris*), Meadow Sweet (*Filipendula ulmaria*), Silverweed (*Potentilla anserine*), Marsh Bedstraw (*Galium palustre*), Ragwort (*Senecio jacobaea*), Brambles (*Rubus fruticosus*), and Common Sorrell (*Rumex acetosa*).

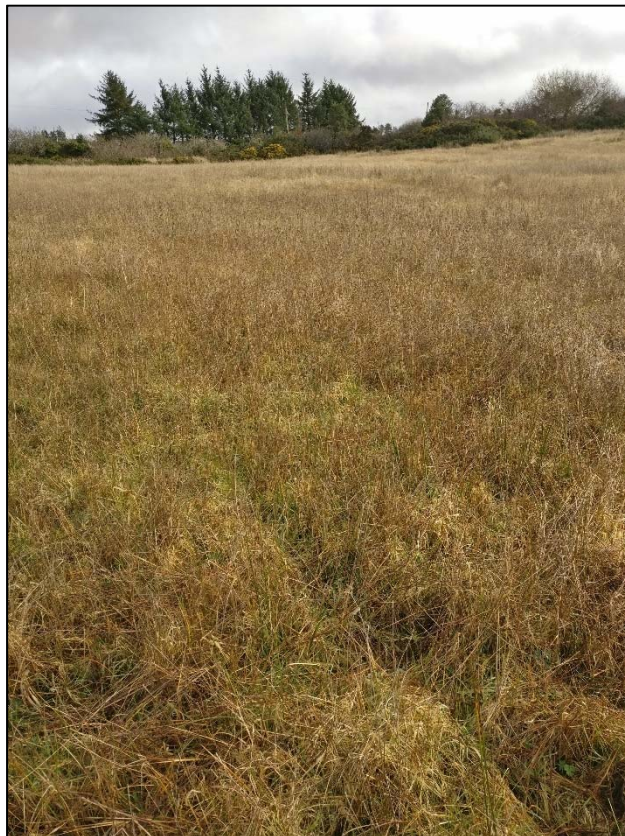


Plate 5.1 Wet Grassland (GS4) on the study site.



Plate 5.2 Wet Grassland (GS4) on the study site.

The field boundaries within the site are composed of Hedgerows (WL1), narrow strips of Scrub (WS1) and Treelines (WL2). Species recorded within these habitats included Gorse (*Ulex europaeus*), Willow (*Salix spp.*), Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Hazel (*Corylus avellana*), Cotoneaster (*Cotoneaster spp.*), Laurel (*Prunus laurocerasus*), and Pine (*Pinus spp.*). Other species included Bramble, Ivy (*Hedera helix*), Bracken (*Pteridium aquilinum*), Hard Fern (*Blechnum spicant*).



Plate 5.2 Line of Scrub (WS1) bordering Wet grassland (GS4) with Treelines (WL1) in the background

No species or habitats which correspond to those that are listed in the EU Habitats Directive were identified during the site visit

5 APPROPRIATE ASSESSMENT SCREENING

5.1 Background to European Sites

The Habitats Directive (together with the Birds Directive) forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: The Natura 2000 network of protected sites and a strict system of species protection. All in all, the directive protects over 1,000 animal and plant species and over 200 "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance.

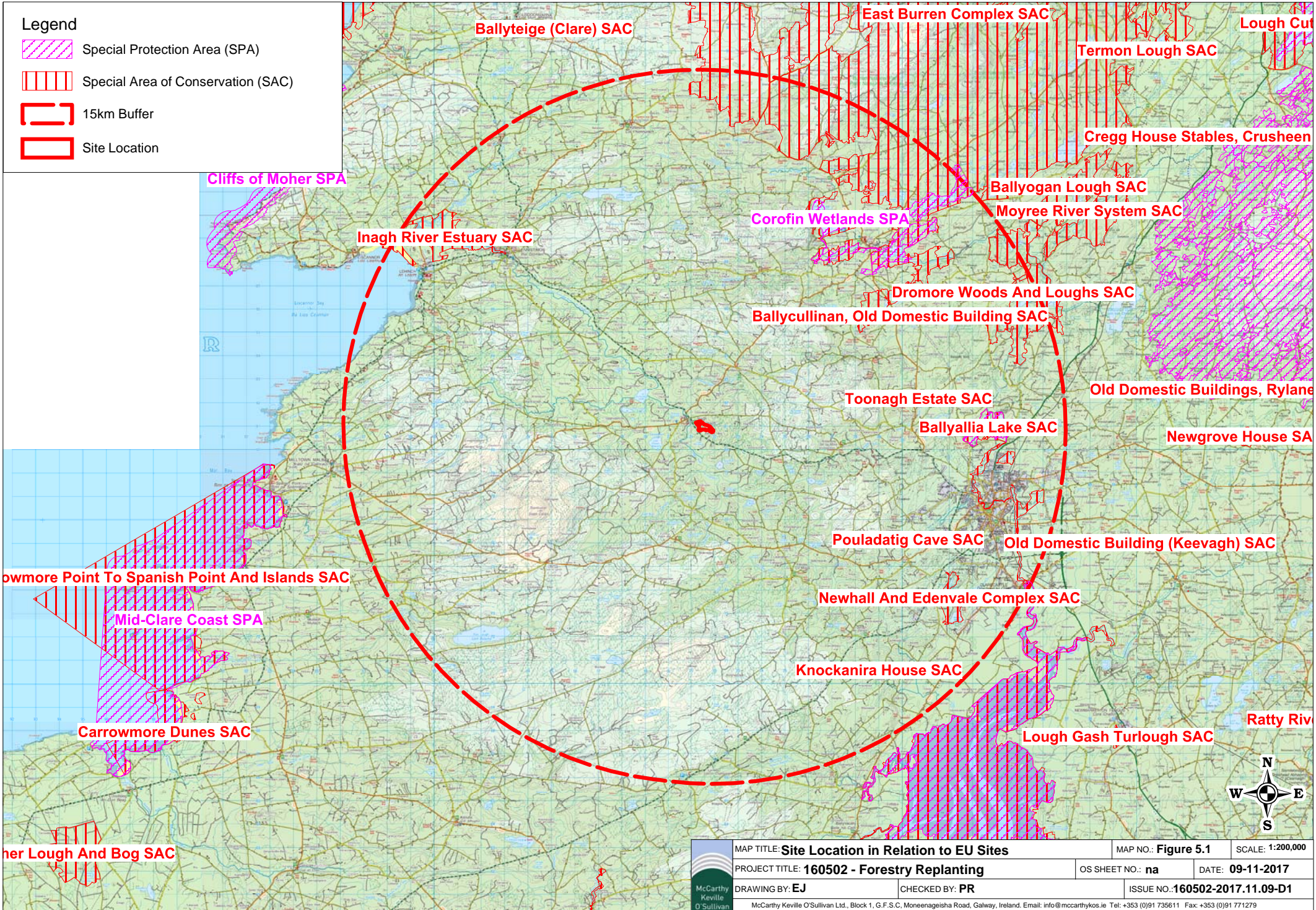
With the introduction of the EU Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC) which were transposed into Irish law as S.I. No. 94/1997 *European Communities (Birds and Natural Habitats) Regulations 1997*, the European Union formally recognised the significance of protecting rare and endangered species of flora and fauna, and also, more importantly, their habitats. The 1997 Regulations and their amendments were subsequently revised and consolidated in S.I. No. 477/2011-*European Communities (Birds and Natural Habitats) Regulations 2011*. This legislation requires the establishment and conservation of a network of sites of particular conservation value that are to be termed 'European Sites'.

5.2 European Sites in the likely Zone of Impact of the Proposed Afforestation

The most up to date GIS spatial datasets for European designated sites were downloaded from the NPWS website (www.npws.ie) on the 10.11.2017. Using the GIS software, MapInfo (Version 10.0), European sites within the likely zone of influence of the project were identified. The following rationale was used to identify the zone of influence. Initially, sites within a 15 kilometer radius of the proposed works were identified as per DoEHLG Guidance (2010). In addition, using the precautionary principle, European Sites located outside the 15km buffer zone were also taken into account and assessed. In this case, no potential for impacts outside the 15km buffer was identified.

Figure 5.1 show the location of the proposed works in relation to all European sites within the Likely Zone of Influence as identified per the criteria described above.

Table 5.1, lists all European Sites that were considered to be within the Likely Zone of Influence. The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were considered at the time of preparation of this report (10/11/2017). Details of these sites, including their distance from the proposed afforestation, are provided in Table 5.1.



- Legend**
- Special Protection Area (SPA)
 - Special Area of Conservation (SAC)
 - 15km Buffer
 - Site Location

	MAP TITLE: Site Location in Relation to EU Sites	MAP NO.: Figure 5.1	SCALE: 1:200,000
	PROJECT TITLE: 160502 - Forestry Replanting	OS SHEET NO.: na	DATE: 09-11-2017
	DRAWING BY: EJ	CHECKED BY: PR	ISSUE NO.: 160502-2017.11.09-D1
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Table 5.1 Designated sites within the Likely Zone of Influence

European Site	Distance from the site of the proposed afforestation (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 03/04/2017)	Conservation Objectives
Special Areas of Conservation (SAC)			
Ballycullinan Lake SAC (000016)	7.5km	<ul style="list-style-type: none"> • Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] 	<p>The generic conservation objectives for this site are</p> <p><i>To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected</i></p>
East Burren Complex SAC (001926)	8.2km	<ul style="list-style-type: none"> • Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] • Turloughs [3180] • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260] • Alpine and Boreal heaths [4060] • Juniperus communis formations on heaths or calcareous grasslands [5130] • Calaminarian grasslands of the Violetalia calaminariae [6130] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] • Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] • Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] • Petrifying springs with tufa formation (Cratoneurion) [7220] • Alkaline fens [7230] 	<p>The generic conservation objectives for this site are</p> <p><i>To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected</i></p>

		<ul style="list-style-type: none"> • Limestone pavements [8240] • Caves not open to the public [8310] • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] • <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065] • <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] • <i>Lutra lutra</i> (Otter) [1355] 	
Toonagh Estate SAC (002247)	8.6km	<ul style="list-style-type: none"> • <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] 	<p>The generic conservation objectives for this site are</p> <p><i>“To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected”</i></p>
Ballycullinan, Old Domestic Building SAC (002246)	9.1km	<ul style="list-style-type: none"> • <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] 	<p>The generic conservation objectives for this site are</p> <p><i>“To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected”</i></p>
Pouladatig Cave SAC (000037)	9.3km	<ul style="list-style-type: none"> • Caves not open to the public [8310] • <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] 	<p>The generic conservation objectives for this site are</p> <p><i>“To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected”</i></p>
Ballyallia Lake SAC (000014)	10.6km	<ul style="list-style-type: none"> • Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] 	<p>The generic conservation objectives for this site are</p> <p><i>“To maintain or restore the favourable conservation condition of the Annex I</i></p>

			habitat(s) and/or the Annex II species for which the SAC has been selected”
Inagh River Estuary SAC (000036)	10.8km	<ul style="list-style-type: none"> • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] • Mediterranean salt meadows (<i>Juncetalia maritim</i>) [1410] • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] 	Detailed conservation objectives for this site are available at www.npws.ie
Lower River Shannon SAC (002165)	11.1km	<ul style="list-style-type: none"> • 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] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] • Mediterranean salt meadows (<i>Juncetalia maritim</i>) [1410] • Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] 	Detailed conservation objectives for this site are available at www.npws.ie

		<ul style="list-style-type: none"> • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] • <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] • <i>Petromyzon marinus</i> (Sea Lamprey) [1095] • <i>Lampetra planeri</i> (Brook Lamprey) [1096] • <i>Lampetra fluviatilis</i> (River Lamprey) [1099] • <i>Salmo salar</i> (Salmon) [1106] • <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] • <i>Lutra lutra</i> (Otter) [1355] 	
Newhall and Edenvale Complex SAC (002091)	11.6km	<ul style="list-style-type: none"> • Caves not open to the public [8310] • <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] 	<p>The generic conservation objectives for this site are</p> <p><i>“To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected”</i></p>
Old Farm Buildings, Ballymacrogan SAC (002245)	12.0km	<ul style="list-style-type: none"> • <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] 	<p>The generic conservation objectives for this site are</p> <p><i>“To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected”</i></p>
Dromore Woods and Loughs SAC (000032)	12.3km	<ul style="list-style-type: none"> • Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] • Limestone pavements [8240] • <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] • <i>Lutra lutra</i> (Otter) [1355] 	<p>The generic conservation objectives for this site are</p> <p><i>“ To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected”</i></p>

Knockanira House SAC (002318)	12.4km	<i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]	The generic conservation objectives for this site are <i>To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected</i>
Moneen Mountain SAC (000054)	12.6km	<ul style="list-style-type: none"> • Turloughs [3180] • Alpine and Boreal heaths [4060] • Juniperus communis formations on heaths or calcareous grasslands [5130] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] • Petrifying springs with tufa formation (Cratoneurion) [7220] • Limestone pavements [8240] • Euphydrias aurinia (Marsh Fritillary) [1065] • <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] 	The generic conservation objectives for this site are <i>To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected</i>
Special Protection Area (SPA)			
Corofin Wetlands SPA (004220)	8.2km	<ul style="list-style-type: none"> • Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] • Whooper Swan (<i>Cygnus cygnus</i>) [A038] • Wigeon (<i>Anas penelope</i>) [A050] • Teal (<i>Anas crecca</i>) [A052] • Black-tailed Godwit (<i>Limosa limosa</i>) [A156] • Wetland and Waterbirds [A999] 	The generic conservation objectives for this site are <i>" To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA"</i> And <i>" To maintain or restore the favourable conservation condition of the wetland habitat at Corofin Wetlands SPA as a</i>

			<i>resource for the regularly-occurring migratory waterbirds that utilise it.”</i>
Ballyallia Lough SPA (004041)	10.6km	<ul style="list-style-type: none"> • Wigeon (<i>Anas penelope</i>) [A050] • Gadwall (<i>Anas strepera</i>) [A051] • Teal (<i>Anas crecca</i>) [A052] • Mallard (<i>Anas platyrhynchos</i>) [A053] • Shoveler (<i>Anas clypeata</i>) [A056] • Coot (<i>Fulica atra</i>) [A125] • Black-tailed Godwit (<i>Limosa limosa</i>) [A156] • Wetland and Waterbirds [A999] 	<p>The generic conservation objectives for this site are</p> <p><i>“ To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA”</i></p> <p>And</p> <p><i>“ To maintain or restore the favourable conservation condition of the wetland habitat at Ballyallia Lough SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.”</i></p>
River Shannon and River Fergus Estuaries SPA (004077)	14.8km	<ul style="list-style-type: none"> • Cormorant (<i>Phalacrocorax carbo</i>) [A017] • Whooper Swan (<i>Cygnus cygnus</i>) [A038] • Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] • Shelduck (<i>Tadorna tadorna</i>) [A048] • Wigeon (<i>Anas penelope</i>) [A050] • Teal (<i>Anas crecca</i>) [A052] • Pintail (<i>Anas acuta</i>) [A054] • Shoveler (<i>Anas clypeata</i>) [A056] • Scaup (<i>Aythya marila</i>) [A062] • Ringed Plover (<i>Charadrius hiaticula</i>) [A137] • Golden Plover (<i>Pluvialis apricaria</i>) [A140] • Grey Plover (<i>Pluvialis squatarola</i>) [A141] • Lapwing (<i>Vanellus vanellus</i>) [A142] • Knot (<i>Calidris canutus</i>) [A143] • Dunlin (<i>Calidris alpina</i>) [A149] • Black-tailed Godwit (<i>Limosa limosa</i>) [A156] • Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] 	Detailed conservation objectives for this site are available at www.npws.ie

		<ul style="list-style-type: none">• Curlew (<i>Numenius arquata</i>) [A160]• Redshank (<i>Tringa totanus</i>) [A162]• Greenshank (<i>Tringa nebularia</i>) [A164]• Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]• Wetland and Waterbirds [A999]	
--	--	--	--

6 ARTICLE 6(3) SCREENING ASSESSMENT

6.1 Article 6(3) Assessment Criteria

The Screening Assessment criteria examined in the impact assessment section of this screening document follow the suggested screening matrix structure detailed in *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive* (EC 2001).

6.1.1 Description of the Individual Elements of the Project with Potential to give Rise to Impacts on the European Site

The project involves the afforestation of land as described in detail previously. Elements of the works in the construction phase with the potential to give rise to impacts on nearby European sites include the following:

- Site preparation works including excavation works for drainage
- Subsequent felling of mature trees

6.1.2 Description of any Likely Direct, Indirect or Secondary Impacts of the Project on the European Site

Any likely direct, indirect or secondary impacts of the proposed afforestation, both alone and in combination with other plans or projects, on the European Sites by virtue of the following criteria: size and scale, land-take, distance from the European Sites or key features of the site, resource requirements (such as water abstraction), emissions (disposal to land, water or air), excavation requirements, transportation requirements and duration of construction, operation, decommissioning are presented in Table 6.1.

Table 6.1 Likely Impacts of the Project on the European Sites

Likely Direct, Indirect or Secondary Impacts of the Project on the European Sites

<p>Size and Scale</p>	<p>No direct or indirect impacts on any European sites are predicted.</p>
<p>Land-take</p>	<p>There will be no land take within any European Site associated with the proposed afforestation and therefore no resultant impacts are likely.</p>

Likely Direct, Indirect or Secondary Impacts of the Project on the European Sites	
Distance from the European Site or Key Features of the Site	<p>The proposed afforestation site does not overlap with the boundaries of any European sites. The nearest European sites 7.5km from the site boundary. There are no pathways for indirect impacts identified.</p> <p>No potential for impacts in regard to distance from the Proposed afforestation was identified in relation to any European Sites within the Zone of likely Impact.</p>
Resource Requirements	<p>The proposed afforestation will not exploit any resources within any European sites.</p>
Emissions	<p>The closest European site, European site, Ballycullian Lake SAC (000016) is located 7.5km from the proposed afforestation site. No hydrological connectivity was identified between the proposed afforestation site and any SAC. Given this distance, the lack of hydrological connectivity, and that all works are to be carried out to best practice guideline specification, no impact on this or any European Site are anticipated.</p>
Excavation Requirements	<p>There will be no works undertaken within any European Site and therefore no direct impacts relating to excavation are predicted.</p> <p>Small scale excavations will be required on the site for the installation of drainage ditches throughout the site. No hydrological connectivity was identified between the proposed afforestation site and the nearest European Site (Ballycullian Lake SAC).</p> <p>Given the scale of the works, the best practice pollution prevention measures, and the distance to the nearest European sites no impact on these European Sites are anticipated due to excavation.</p>

Likely Direct, Indirect or Secondary Impacts of the Project on the European Sites	
Transportation Requirements	As the proposed afforestation is located entirely outside any European Site, there will be no direct impacts on any such site. All transportation requirements to the afforestation will be conducted within the existing public road network No pathway for direct or indirect impacts on any European Site as a result of the transportation requirements associated with this project was identified.
Duration of Construction, Operation, Decommissioning	No potential impacts that relate directly to the duration of each phase of the afforestation were identified. Impacts resulting from Emissions are possible during site preparation and felling, but are considered above with no additional potential for impacts arising specifically as a result of the duration of each phase identified.
Cumulative Impacts with other Projects or Plans	<p>The proposed afforestation was considered in combination with other development and activities in the area that could result in cumulative impacts on the identified European Sites.</p> <p>The proposed development site is situated in the townland of Ballyduff Beg, Co. Clare. This area is characterised by improved agricultural grasslands, and domestic dwellings.</p> <p>There are no large scale developments proposed or existing in close proximity to the project. One planning applications made in the townland in the last five years was identified. This was for the construction of an agricultural building and ancillary works (File Number: 15712).</p> <p>The proposed works will not result in any impacts on any European Site and therefore cannot contribute to any wider cumulative impact.</p>

6.1.3 Description of any Likely Changes to the European Site

Any likely changes to the European Sites are described in Table 6.2 with reference to the following criteria: reduction of habitat area, disturbance to key species, habitat or species fragmentation, reduction in species density, changes in key indicators of conservation value (e.g. water quality etc.) and climate change.

Table 6.2 Likely Changes to the European Sites

Likely Changes to the European Sites	
Reduction of Habitat Area	There will be no loss of Annex I habitat or loss of supporting habitat for SCI/QI species of European sites.
Disturbance to Key Species	Given that all the works associated with the proposed afforestation are wholly located outside the boundaries of any European site, and the nearest sites are buffered from the afforestation site by existing urban infrastructure, there will be no significant impacts on key species.
Habitat or Species Fragmentation	There will be no habitat or species fragmentation within any European Site associated with the proposed afforestation.
Reduction in Species Density	Given the habitats upon which the proposed afforestation is located and the lack of proposed works within any European Site, no reduction in species density is anticipated as a result of the proposed works.
Changes in Key Indicators of Conservation Value	Given the nature, scale and location of the proposed works, it is considered unlikely that there will be any changes to the key indicators of conservation value of any of European sites.
Climate Change	Given the nature and scale of the proposed afforestation, it is considered unlikely that there will be any significant resultant impact on climate change.

6.1.4 Description of any Likely Impacts on any European Site

Potential pathways for impacts and effects on the European sites in the preceding sections have been examined and none were found to have a significant impact as a result of the proposed afforestation.

Direct Impacts and **Indirect Impacts** on European Sites are not anticipated. Table 6.3 describes the nature of any impacts in terms of the structure and function of the identified European Sites.

Table 6.3. Assessment of Potential Impacts on the Structure and Function of European Sites

Likely Changes to the European Sites	
Interference with the key relationships that define the structure of a European Site	No potential for impact on the key relationships that define the Structure of any European Sites have been identified.
Interference with key relationships that define the function of the European site	No potential for impact on the key relationships that define the Function of any European Sites have been identified.

6.1.5 Indicators of Significance as a Result of the Identification of Effects

Indicators of significance are provided in Table 6.4 for any impacts identified above in terms of loss, fragmentation, disruption, disturbance and changes to key elements of the site, such as water quality.

Table 6.4 Indicators of Significance as a Result of the Identification of Effects

Indicators of Significance as a Result of the Identification of Effects	
Loss	There will be no reduction in Annex I habitat area within any European Sites as a result of the proposed afforestation. There will be no net loss of supporting habitat of QI/SCI species.
Fragmentation	There will be no habitat or species fragmentation within any European Site associated with the proposed afforestation.
Disruption	There will be no disruption to the ecological processes within any European Sites as a result of the proposed afforestation
Disturbance	There will be no disturbance within any European Sites as a result of the proposed afforestation
Changes to Key Elements of the Site	There will be no changes to key elements within any Natura 2000 site as a result of the proposed afforestation.

7 ARTICLE 6(3) SCREENING STATEMENT AND CONCLUSIONS

The findings of this Screening Report are presented below

7.1 Assessment of Significance of Effects

Is the project directly connected with or necessary to the management of the site?

The project is not directly connected with or necessary to the management of any European Site.

Are there any other projects or plans that together with the project being assessed could affect the site?

A search in relation to plans and projects that may have the potential to result in cumulative impacts on European sites was conducted. The proposed afforestation will have no individual or cumulative impacts on any European site in any regard.

Describe how the project is likely to affect the Natura 2000 sites

The project will not significantly affect any European Sites. Complete impact source-pathway receptor chains for direct or indirect impacts were not identified.

Explain why these effects are not considered significant

- There will be no negative direct or indirect impacts or reduction in Annex I habitat area within any European Site.
- There will be no reduction in key habitats supporting populations of Annex I bird species and no reduction in the populations of any Annex I species.
- There will be no reduction in key habitats supporting populations of Annex II species and no reduction in the populations of any Annex II species.
- The works themselves will involve little disturbance or disruption to the ecological processes in the area during either construction or operation.

7.2 Data Collected to Carry Out Assessment

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

- Review of NPWS Site Synopses and Conservation Objectives for European sites and pNHA sites.
- Site Visit
- Desk study of relevant ecological information.
- Report including desk study and appropriate assessment prepared by Erin Johnston (BSc, MSc, PhD), and reviewed by John Hynes (B Sc. M.Sc), McCarthy Keville O'Sullivan Ltd.

7.3 Concluding Statement

The proposed afforestation, by itself or in combination with other plans and projects, in light of best scientific knowledge in the field, will not, in view of the sites' conservation objectives, have significant effects on any European Site.

There is no requirement for Appropriate Assessment.

BIBLIOGRAPHY

BCT (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition), Bat Conservation Trust, available on <http://www.bats.org.uk>

Birds Directive (2009/47/EC) –
http://ec.europa.eu/environment/naturelegislation/birdsdirective/index_en.htm

CIEEM (2016) Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment. (9) EC (2001) Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC

DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin.

DoEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Revision, February, 2010. Department of the Environment, Heritage and Local Government.

DOMNR (1998) Fishery guidelines for Local Authority works. Department of the Marine and Natural Resources, Dublin.

EC (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.

EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

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

EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission, DG Environment.

EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements. Environmental Protection Agency.

EPA (2003) Advice Notes on current practice in the preparation of Environmental Impact Statements. Environmental Protection Agency.

EPA website: <http://www.epa.ie>.

European Communities (Conservation of Wild Birds) Regulations, 1985, SI 291/1985 & amendments – <http://www.irishstatutebook.ie>.

European Communities (Environmental Impact Assessment) Regulations, 1989 to 2006.

European Communities (Natural Habitats) Regulations, SI 94/1997, SI 233/1998 & SI 378/2005 – <http://www.irishstatutebook.ie>.

Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Dublin: The Heritage Council.

Habitats Directive (92/43/EEC).

Murphy, D.F. (2004) Requirements for the Protection of Fisheries Habitat During Construction and Development Works at River Sites. Eastern Regional Fisheries Board, Dublin.

NPWS (2013) The Status of EU Protected Habitats and Species in Ireland. Conservation Status in Ireland of Habitats and Species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC.

NPWS of the DEHLG (2013) The Report on Status of Habitats and Species in Ireland: Technical Reports and Forms.

NPWS Protected Site Synopses available on <http://www.npws.ie/en/ProtectedSites/>.

NRA (2004) Environmental Impact Assessment of National Road Schemes – A Practical Guide, National Roads Authority, Dublin.

NRA (2004) Guidelines for the Treatment of Noise and Vibration in National Road Schemes (1 ed.). Dublin: National Roads Authority.

NRA (2009) Guidelines for the Assessment if Ecological Impacts of National Road Schemes.

NRA (2005) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2006) A Guide to Landscape Treatments for National Road Schemes in Ireland. Dublin: National Roads Authority.

NRA (2006) Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. Dublin: National Roads Authority.

NRA (2006) Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post-Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2006) Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes (1 ed.). Dublin: National Roads Authority.

NRA (2006) Guidelines for the Treatment of Bats during the Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2006) Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2008). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Dublin: National Roads Authority.

NRA (2010). The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads, Revision 1. Dublin: National Roads Authority.

NRA (2008). Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan. Dublin: National Roads Authority.

Preston C.D. et. al. (2002). New Atlas of the British and Irish Flora. Oxford University Press.

Water status data available on <http://www.epa.ie> and <http://www.wfdireland.ie>

Wildlife Act 1976 and Wildlife (Amendment) Act 2000.

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive 79/409/EEC as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011)

Appendix 1

Technical Approval Documents

JOHN O'REILLY
GREEN BELT LTD
MAIN STREET
VIRGINIA
CO CAVAN

RECEIVED
18 DEC 2015

M. Moraney

17/12/2015

Copy
JP + Mike

Technical Approval - Afforestation

Forest Owner	FO127900U
Contract Number	CN73319
Townland	Ballyduff beg
County	Clare
Approved Area (ha)	14.15
Fencing Length (lm)	1,600.00

This is a technical approval only and is not a grant approval. You should note that the project will not be eligible for grant aid unless prior financial approval has been given in writing in advance of commencement of planting. Also, to qualify for Afforestation grant and premiums applicants must own, lease or be in joint management of the lands proposed for planting. You should consult with your registered forester about applying for financial approval under the Scheme.

I refer to your application (Form 1) requesting approval of Afforestation as described above and shown on the enclosed map. Your application has been assessed and technical approval is hereby issued on the basis that the works will be undertaken in accordance with the prescription set out in Appendix A attached herewith.

This scheme is financed by the State and payment of the grant, if financial approval is given, is subject to the following conditions:

1. Availability of funds in each financial year.
2. Submission of a fully completed and signed Form 2 (Application for Payment) and the following documents to support this application.

Proof of Ownership (including removal of any constraints on ownership)

Valid Mandate
Current Tax Clearance Certificate(s)
C2 Certificate
Provenance Certificates
Fencing Map
Biodiversity Map
Certified Species Map

* Conditions pg 2

* letter from Archaeology

3. Satisfactory completion of the work not later than 31/12/2017.
4. Compliance with Operational Proposals and Specifications enclosed.
5. Compliance with Departmental guidelines and requirements for Landscape, Water Quality, Harvesting, Biodiversity and Archaeology.
6. Compliance with Ecological Survey and Management Plan as submitted (if applicable).

7. The work is carried out by the registered company or forester specified on the original application. If it is intended to have a different company or forester undertake the work, it will be necessary to submit a new application (Form 1) to the Forest Service.
8. All applications are subject to the provisions of the penalty schedules as set out in the Afforestation Grant and Premium Scheme document.
9. All applications are subject to Cross Compliance checks with other grant schemes.
10. Grant payment may be subject to the netting policy of the Department of Agriculture, Food and the Marine.
11. This approval is issued subject to the terms and conditions of the Forestry Standards and Procedures Manual.
12. Your acceptance that the responsibility for the ultimate success of the plantation rests with you, the applicant. Plantations which fail to establish successfully will result in grant and premium recoupment.
13. Additional Environmental & Silvicultural Conditions

- Plot 2 is unenclosed and has been changed to GPC1.,
- Plot 4 is excluded because it does not meet the minimum width of 20m from planted tree to planted tree.,
- Adhere to attached archaeological conditions.,
- Adhere to forestry & archaeology guidelines ,
- All guidelines to apply

Specific Archaeological Conditions:

5m unplanted buffers to be established around any remains of the lime kiln on the site.

Otherwise no specific /extra archaeological conditions recommended over and above adherence to normal standards of the Forestry and Archaeology Guidelines.

See archaeological report and illustrative map for further details

You are required to notify the Department of Agriculture, Food and the Marine in writing if any of the details of your application have changed. Changes to your application may invalidate any approval given.

IMPORTANT

As no submissions from third parties were received by the Department concerning this application, development in accordance with this approval may proceed without further notice subject to financial approval.

Please feel free to contact this office, quoting your Contract Number, regarding progress of your application. LoCall 1890-200 509.

Yours sincerely



JOANNE ROBINSON
Approval Section
Forest Service


Operational Proposals for Approval of Afforestation

Forest Owner Number	FO127900U
Contract Number	CN73319
Townland	Ballyduff beg
County	Clare
Area Approved	14.15(ha)
Fencing Length (LM)	1,600.00

All applications must be developed in accordance with detailed standards and procedures as described in the current Forestry Schemes Manual. Certain specific operational proposals particular to this application are described below. No change is permitted to these proposals and species approved unless approved in advance by the Department. The Department may insist that proposed changes constitutes a new application.

Operational Proposal Details

Agro Forestry (GPC 11)		
1.	Tree Shelters	Not Entered
2.	Plant Size and Stocking	Not Entered
Drainage		
1.	Drainage	Required
2.	Drainage Comment	in conjunction with mounding
Fertiliser		
1.	Zero	Not Entered
2.	350 Kg Granulated Rock Phosphate	Not Entered
3.	250 Kg Granulated Rock Phosphate	Yes
4.	Split Application	Not Entered
5.	Other Details	Not Entered
Firebreaks/Res.		
1.	Firebreaks/Res	Not Required
Forestry for Fibre (GPCs: 12a and 12b)		
1.	Is Land Free Drainage arable or pasture soils	Not Entered
2.	Are there surface water gleys without a peat layer	Not Entered
3.	Do you intend to use improved genetic material	Not Entered
4.	Details	Not Entered
Ground Prep.		
1.	Woody Weed Removal	Yes
2.	Ripping	Not Entered
3.	Pit Plant	Not Entered
4.	Mole Drainage	Not Entered
5.	Mounding	Yes
6.	Ploughing	Not Entered
9.	Other Details	Not Entered
Planting Method		
1.	Angle Notch	Not Entered
2.	Pit	Not Entered
3.	Machine	Not Entered

4.	Slit	Yes			
5.	Other Details	Not Entered			
Road Access					
1.	Road Access	Provided			
Standard Stocking					
1.	Standard Stocking	Yes			
2.	Details	Not Entered			
Weed Control					
1.	Herbicide Control yr0	Yes			
2.	Herbicide Control yr1	Yes			
3.	Herbicide Control yr2	Yes			
3.	Herbicide Control yr4	Not Entered			
4.	Manual	Yes			
4.	Herbicide Control yr3	Yes			
Fencing Details (metres)		Stock	1600	Stock-Sheep	0
		Stock-Rabbit	0	Upgrade to Deer	0
		Deer-Rabbit	0	Deer	0
		Upgrade Existing Fence(s)	N		
		Upgrade Details: None Entered			

Species Approved

The species approved in this proposal relate to the digitised certified species map attached.

Species Approved for Afforestation

Plot	Area	GPC	Land Type	Species	Species Area	Yield Class	Mixture Type	Exclusion	Exclusion Type
1	.07	GPC 3	CHF	SS	11.23	20	Groups	.07	ESB
				ADB	1.25	10			
1	.66	GPC 3	CHF	SS	11.23	20	Groups	.66	ESB
				ADB	1.25	10			
1	12.44	GPC 3	CHF	SS	11.23	20	Groups		
				ADB	1.25	10			
2	.67	GPC 1	CHF	SS	.8	20	Groups	.67	ESB
				ADB	.09	10			
2	1.07	GPC 1	CHF	SS	.8	20	Groups		
				ADB	.09	10			
3	.64	GPC 3	Bio				None		

RECEIVED
09 DEC 2015
Wexford
Johnstown Castle Estate
FOREST SERVICE
Department of Agriculture, Food and the Marine,
Agriculture House,
Kildare Street,
Dublin D02 WK12.

Assistant
Professional Officer
01 854 6111
1000000000

8th December 2015

Felling Section,
Forest Service,
Department of Agriculture, Food and the Marine,
Johnstown Castle Estate,
Co. Wexford.

Re: CN73319 Ballyduff Beg, Co. Clare

Dear Sir / Madam,

I am writing to you with regard to the application for approval for the afforestation in respect of certain lands at Ballyduff Beg, Co. Clare.

The area proposed for afforestation does not contain any Recorded Monuments *per se* but there are several in the surrounding area. The closest monument is a graveyard known as Templeduff burial ground (CL032-002002) c.220m to the northwest and an earthwork (CL032-057) lies c.270m to the southeast. In addition to these monuments a lime kiln is shown on the site on the late 19th century OS map.

It is recommended that the conditions outlined below be attached to this application.

For the purposes of the requirements of the EIA screening form (as per the European Communities (Forest Consent and Assessment) Regulations 2010, as amended) this constitutes:

	Yes	No	N/A
- Adherence to the normal standards of the Forestry and Archaeology Guidelines	X		
- Specific conditions regarding buffer zones etc	X		
- Archaeological Monitoring during ground preparation or drainage works		X	
- Archaeological Assessment		X	
- Refusal in part		X	
- Refusal		X	

For the purposes of the IFORIS summary notes this constitutes:

Archaeological Conditions: Extra

Yours sincerely,

Melanie McQuade

Melanie McQuade
Archaeologist

CN73319

Ballyduff Beg, Co. Clare

Archaeological conditions

The area proposed for afforestation does not contain any Recorded Monuments *per se* but there are several in the surrounding area. The closest monument is a graveyard known as Templeduff burial ground (CL032-002002) c.220m to the northwest and an earthwork (CL032-057) lies c.270m to the southeast. In addition to these monuments a lime kiln is shown on the site on the late 19th century OS map.

It is of concern that every effort is made to protect this monument and that there would be an appropriate response should any previously unrecorded archaeology be discovered during the course of the works.

Consequently, the following conditions should be adhered to during the proposed works:

1. As always, at all times during the proposed operations the terms of the 'Forestry and Archaeology Guidelines' and 'Forest Harvesting and the Environment Guidelines' should be adhered to.
2. A 5m unplanted buffer should be established around any remains of the historic lime kiln (see accompanying map for illustration).
3. Any unrecorded archaeological site or artefact discovered during the course of the works must be left undisturbed and the relevant authorities notified immediately.
4. A minimum exclusion zone of 20m, preferably 100m or more, must be created until any such site has been properly investigated, with the applicant and/or his consultant forester bearing any associated costs.
5. Otherwise, no known archaeological objections.

Melanie McQuade
 Melanie McQuade
 Forest Service Inspectorate
 Department of Agriculture, Food and the Marine
 Agriculture House
 Kildare Street
 Dublin D02 WK12
 Ph.:01-6072231

CN73319 - Ballyduff Beg, Co. Clare - affor



EXISTING CEMENT
CL032-002002

Inagh



Inagh



5M UNPLANTED BUFFER TO BE
ESTABLISHED AROUND ANY
REMAINS

EXISTING
LINE
TO KILN

BALLYDUFF
BEG

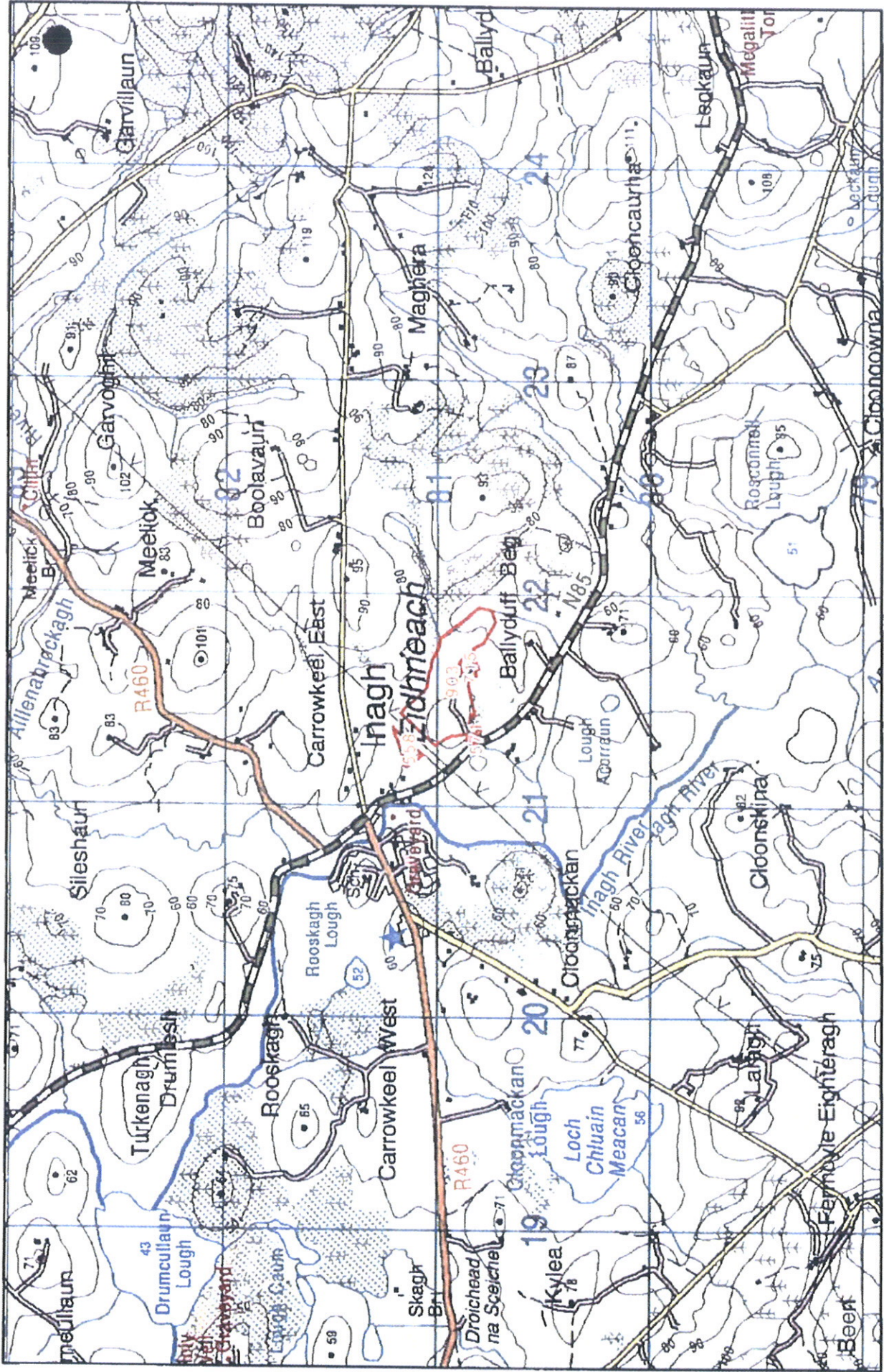
EARTHWORK
CL 032-057
AVOID





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Contract: CN73319



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Certified Species Information

Contract No: CN73319

Townland: BALLYDUFF BEG

County: CE

6 " OS No: CE32

Plot No	GPC	Parcel No	GPC Area(h)	Land Use Type	Species Area	Species	Mixture Type	Excl. Area(h)	Excl. Type
1	GPC 3	39898832	0.0	CHF	12.48	SS, ADB	G	0.66	ESB
1	GPC 3	39898800	12.44	CHF	0.0	SS, ADB	G	0.0	
1	GPC 3	39898806	0.0	CHF	0.0	SS, ADB	G	0.07	ESB
2	GPC 1	39898769	1.07	CHF	0.89	SS, ADB	G	0.0	
2	GPC 1	39898822	0.0	CHF	0.0	SS, ADB	G	0.67	ESB
3	GPC 3	39492715	0.64	Bio	0.0		N	0.0	
Totals			14.15		13.37			1.4	

Remarks :

Area Surveyed By :
Species Certified By :

Date:
Date:



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Scale 1: 7000.0
Contract: CN73319

Appropriate Assessment Screening Report

Proposed Replanting at Curraghard, Co. Roscommon



Planning & Environmental Consultants

DOCUMENT DETAILS

Client: Ardderroo Windfarm Ltd.
Project title: Proposed Replanting at Curraghard, Co. Roscommon

Project Number: 160815

Document Title: Appropriate Assessment Screening Report

Doc. File Name: 160815 – Replanting AASR – 2018.11.20 - F

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Document Issue:

Rev	Status	Issue Date	Document File Name	Author(s)	Approved By:
01	Final	20.11.2018	160815 - Replanting AASR – 2018.11.20 - F	LK/CS	PR

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1 INTRODUCTION

1.1 Background

This report has been prepared to provide the information necessary to allow the competent authority to conduct an Article 6(3) Screening for Appropriate Assessment for a proposed afforestation site at **Curraghard, Co. Roscommon**.

The current project is not directly connected with, or necessary for, the management of any European Site, consequently the project has been subject to the Appropriate Assessment Screening process.

The assessment in this report is based on a desk study and field surveys undertaken in March 2017. It specifically assesses the potential for the proposed development to impact on European Sites.

This report has been prepared in accordance with the European Commission guidance document 'Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC' (EC, 2001) and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

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

1. *DoEHLG (2010) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government,*
2. *European Communities (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
3. *Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
4. *EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission,*
5. *EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission,*

1.2 Appropriate Assessment

1.2.1 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be carried out by the Competent Authority to assess, in view of best scientific knowledge, if a land-use plan or proposed development, individually or in combination with another plan or project, is likely to have a significant effect on a European site. The Competent Authority's determination as to whether an Appropriate Assessment is required must be made on the basis of

objective information and should be recorded. The competent authority may request information to be supplied to enable it to carry out screening.

Consultants or project proponents may undertake a form of screening to establish if an Appropriate Assessment is required and provide advice, or may submit the information necessary to allow the Competent Authority to conduct a screening with an application for consent. Where it cannot be excluded beyond reasonable scientific doubt, that a proposed plan or project, individually or in combination with other plans and projects, would have a significant effect on the conservation objectives of a European site, an Appropriate Assessment (Natura Impact Statement (NIS)) of the plan or project is required.

1.2.2 Appropriate Assessment (Natura Impact Statement)

The term Natura Impact Statement (NIS) is defined in legislation¹. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to 1) the implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and 2) whether there will be adverse effects on the integrity of a European site. The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

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

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT AND BASELINE ENVIRONMENT

2.1 Characteristics of the Proposed Development

The subject site is in the townland of Curragherd, Co. Roscommon, located approximately 9.0km south west of the town of Ballaghaderreen.

The afforestation site is located on approximately 9.39 hectares which is currently dominated by improved agricultural grassland/wet grassland (Grid ref: E 158186 N 288426) (Figure 2.1). The afforestation site is in an area that is dominated by agricultural land-use.

This land has been assessed as part of the Afforestation Approval – Form 1 process and obtained Technical Approval for Afforestation from the Forest Service. The total approved area for afforestation at the site is 9.22 hectares, which is available to the applicant and would meet the total development replanting requirement. Copies of the Technical Approval documents are presented in **Appendix 1**.

2.1.1 Proposed Afforestation Techniques

Afforestation and subsequent harvesting will conform to Forest Service regulations, policies and strategic guidance documents as well as Coillte produced guidance documents, including the specific guidelines listed below, to ensure that newly planted trees remain viable and afforestation provide minimal potential impacts to the receiving environment.

- *Forestry and Water Quality Guidelines* (2000)
- *Forestry and the Landscape Guidelines* (2000)
- *Forestry and Archeology Guidelines* (2000)
- *Forestry Biodiversity Guidelines* (2000)
- *Forestry Protection Guidelines* (2002)
- *Forestry Harvesting and Environmental Guidelines* (2000)
- *Forest Operations & Water Protection Guidelines* (2009)
- *Methodology for Clear Felling Harvesting Operations* (2009)
- *Land Types for Afforestation* [2016]
- *Environmental Requirements for Afforestation* [2016]

Planting will be carried out in accordance with the *Forestry Schemes Manual* (Forest Service, 2011), which provides guidance in relation to ground cultivation, stocking and spacing, plant handling, planting dates, fertiliser application, fencing, fire, and weed control. Certain specific silvicultural and environmental conditions are also set out in the Forest Service Technical Approval which will be adhered to.

2.1.2 Planting

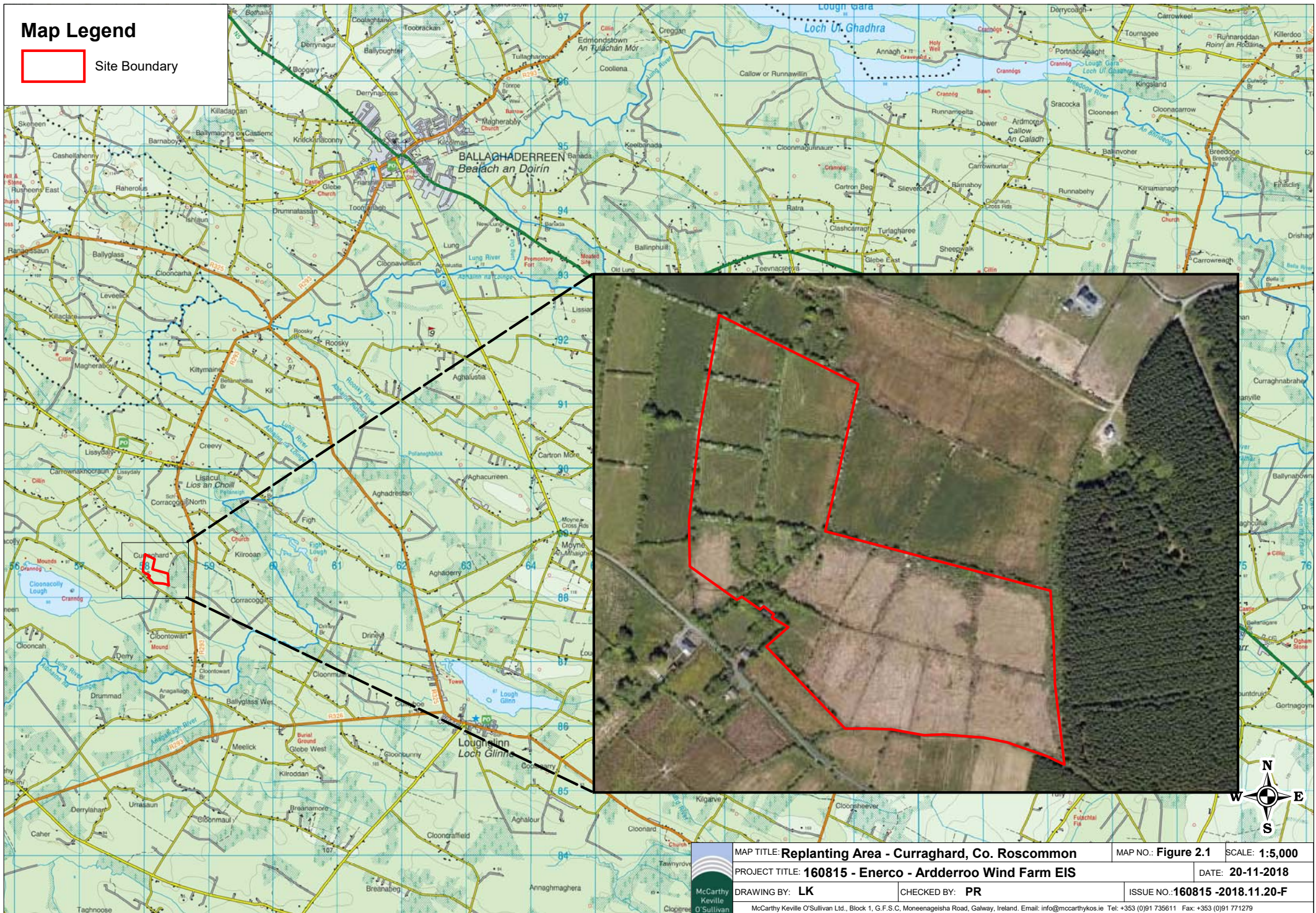
Planting will be by hand. The main forms of planting, as described in the *Forestry Schemes Manual*, are set out as follows.

Slit Planting

A spade is used to make a vertical slit in the ground. The trees roots are carefully positioned in the slit to ensure that roots are equally spaced in the vertical slit created. The slit is closed and firmed up ensuring the tree is vertical and upright. It is important

Map Legend

 Site Boundary



	MAP TITLE: Replanting Area - Curragher, Co. Roscommon	MAP NO.: Figure 2.1	SCALE: 1:5,000
	PROJECT TITLE: 160815 - Enerco - Ardderroo Wind Farm EIS	DATE: 20-11-2018	
	DRAWING BY: LK	CHECKED BY: PR	ISSUE NO.: 160815 -2018.11.20-F
	McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthykos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279		

to ensure that roots are not bent over which can lead to poor development, e.g. J root. This form of planting can be suitable for ribbons, mounds and ripped ground.

Angle Notch

A spade is used to cut a T or L-shaped slit in the ground. The spade is used to lift the slit and the trees roots placed underneath to ensure good root distribution without causing damage. The slit is closed and firmed up to ensure that stem is left vertical and upright.

Pit Planting

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

The Technical Approval for the proposed replanting land include the species approved for afforestation.

2.1.3 Drainage

Appropriate drainage designs will include collector drains, interceptor drains and cut-off drains. A description of each drain type, as per the Forestry Schemes Manual, is set out below.

Collector Drains

Collector drains collect water from mound drains, plough furrows, mole drains, etc., and discharge via sediment traps and/or an interceptor drain. Collector drains are excavated to a depth not greater than 10-15 cm below the depth of mound drains. Where collector drains must be extended into erodible material, 'mini' silt traps are placed appropriately by deepening the drains in places.

Interceptor Drains

Interceptor drains are constructed along the edges of aquatic buffer zones, i.e. areas where forest operations are curtailed, and which are managed for environmental protection and enhancement. Interceptor drains collect the discharge from the drainage sub-catchment and allow it to overflow into the buffer zone. In most cases, slope will allow for drainage channels to taper out or be connected to an interceptor drain rather than enter a buffer zone. However, on flat sites, or those with low slopes, it will be necessary to connect drains into the aquatic zone. This may be done only where it will not result in sediment or any pollutants entering the aquatic zone.

Cut off Drains

Cut off drains are constructed immediately up slope of a site and are designed to direct water away from the site.

2.1.4 Invasive Species

Good site hygiene will be employed to prevent the spread of invasive species with vehicles thoroughly washed prior to leaving any site which potentially supported invasive species.

2.2 Characteristics of the Existing Environment

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological baseline conditions are those existing in the absence of proposed activities (CIEEM 2016).

An ecological walkover survey of afforestation site and surrounding area was conducted on the 9th November 2018 in line with NRA (2009) guidelines (*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*) by Laoise Kelly (B. Sc. (Env.)).

The walkover survey was designed to detect the presence, or likely presence, of a range of protected habitats and species. Seasonal factors that affect distribution patterns and habits of species were considered when conducting the surveys. It is concluded that the habitats and species that could potentially be impacted by the proposed afforestation were readily identified and assessed during the field surveys conducted in March and a thorough and comprehensive ecological assessment was achieved.

2.2.1 Habitats

The northern fields within the site boundary comprised an improved agricultural grassland/wet grassland (GS4) mosaic with field boundaries demarcated by Treeline (WL2) (plate 5.6). The grassland is extensively dominated by rushes (*Juncus* spp.). Other grassland species recorded include Cock's-foot (*Dactylus glomerata*), Perennial Rye-grass (*Lolium perenne*), Creeping Buttercup (*Ranunculus repens*) and Sorrel (*Rumex acetosa*). The treelined comprised species such as Ash (*Fraxinus excelsior*), Hawthorn (*Crataegus monogyna*) and Sycamore (*Acer pseudoplatanus*). The fields to the eastern extent of the site were categorised as wet grassland (GS4). Occasional areas of Gorse (*Ulex europaeus*) Scrub (WS1) are growing within the site and fields are bordered by a Drainage ditch (FW4) in places (plate 5.7). Species within the wet grassland included Angelica (*Angelica sylvestris*), Purple Moor-grass (*Molinia caerulea*), Knapweed (*Centaurea nigra*), Meadow Buttercup (*Ranunculus acris*), Tormentil (*Potentilla erecta*), Devil's-bit Scabious (*Succisa pratensis*), Red Fescue (*Festuca rubra*), Meadowsweet (*Filipendula ulmaria*) and Compact Rush (*Juncus conglomeratus*).



Plate 5.6 Field towards the north of the site categorised as improved agricultural grassland (GA1)/wet grassland (GS4) bordered by Treeline (WL2).



Plate 5.7 Drainage ditch (FW4) and field of Wet grassland (GS4) in eastern section of the site

2.2.2 Invasive Species

No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were identified within the site boundaries during field survey.

2.2.3 Fauna in the existing environment

Birds

Records of birds seen and heard on the site of the proposed development were taken. More detailed and extensive bird surveys were not considered necessary due to the limited ecological value of the habitat which is widespread in the locality.

Bird species recorded during field survey included Jackdaw (*Corvus monedula*) and Woodpigeon (*Columba palumbus*). No birds listed on Annex I of the EU Birds Directive were recorded during the field survey.

Terrestrial Mammals

No evidence of any protected faunal species was recorded within the site boundaries. Other common mammals including Pygmy Shrew (*Sorex minutus*) may make use of the site, however evidence of these species was not recorded during the field survey.

Bats

While an open landscape structure dominates the site generally, the treelines and linear features within the site may provide suitable habitat for commuting or foraging bat species. A dedicated bat survey was not completed as the overall site is dominated by open habitat which has poor suitability for bat species.

2.2.4 Character of Habitats

The site at Curraghard has the character of an agricultural farmland that has been modified from its natural state through grazing and drainage of the site.

2.2.4.1 Significance of Habitats

The eastern fields were dominated by species poor wet grasslands. There were very small, isolated patches of a more species rich grassland in this area with some Devils Bit Scabious (*Succisa pratensis*), Angelica (*Angelica sylvestris*), Purple Moor-grass (*Molinia caerulea*), Knapweed (*Centaurea nigra*), Meadow Buttercup (*Ranunculus acris*) and Tormentil (*Potentilla erecta*) present. These were very limited in extent and number and were insignificant in the context of the habitat as a whole. The wet grassland, scrub and drainage ditches that are present within the site are of Local Importance (Lower Value) as they are typical of habitats found in the immediate wider area. The treelines are of Local Importance (Higher Value) as these habitats have a higher level of biodiversity within the context of the local environment and provide links between habitats of higher ecological value.

2.2.4.2 Significance of Fauna

Whilst there were some small isolated patches of Devils Bit Scabious (the foodplant of Marsh Fritillary larvae) within the eastern fields, these were insignificant and did not provide significant habitat for Marsh Fritillary (*Euphydryas aurinia*).

Bird species recorded within the site boundaries are common and typical of agricultural farmland habitats. The site of the proposed afforestation provides some

foraging, commuting and nesting habitats for these and other common bird species. Similar habitat is widespread in the locality.

Overall, it is considered that the site of the proposed afforestation site is of relatively low value to faunal species due to the existing levels of disturbance from agricultural activity and the low sensitivity of habitats present on the site.

3 IDENTIFICATION OF RELEVANT EUROPEAN SITES

3.1 Background to European Sites

The Habitats Directive (92/43/EEC) (together with the Birds Directive (2009/147/EC)) forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. All in all, the Directive protects over 1,000 animal and plant species and over 200 "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance.

With the introduction of the EU Habitats Directive and Birds Directive which were transposed into Irish law as S.I. No. 94/1997 *European Communities (Birds and Natural Habitats) Regulations 1997*, the European Union formally recognised the significance of protecting rare and endangered species of flora and fauna, and also, more importantly, their habitats. The 1997 Regulations and their amendments were subsequently revised and consolidated in S.I. No. 477/2011- *European Communities (Birds and Natural Habitats) Regulations 2011*. This legislation requires the establishment and conservation of a network of sites of particular conservation value that are to be termed 'European Sites'.

Habitats Directive/Special Areas of Conservation

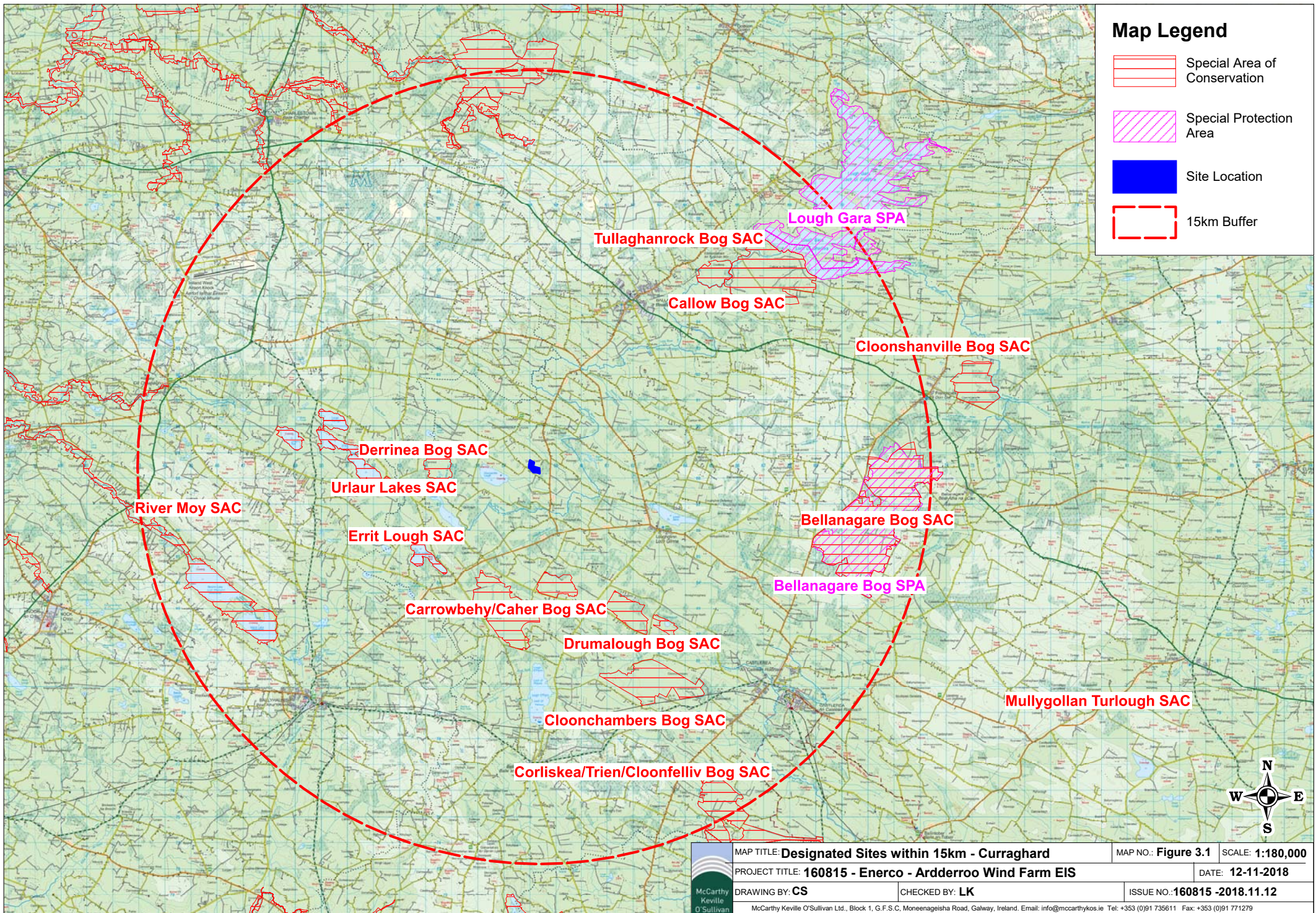
Articles 3 – 9 of the EU Habitats Directive (92/43/EEC) provide the EU legislative framework of protecting rare and endangered species of flora and fauna, and habitats. **Annex I** of the Directive lists habitat types whose conservation requires the designation of **Special Areas of Conservation (SAC)**. Priority habitats, such as turloughs, which are in danger of disappearing within the EU territory are also listed in Annex I. **Annex II** of the Directive lists animal and plant species (e.g. Atlantic salmon and Killarney fern) whose conservation also requires the designation of **SAC**. **Annex IV** lists animal and plant species in need of strict protection such as lesser horseshoe bat and otter, and **Annex V** lists animal and plant species whose taking in the wild and exploitation may be subject to management measures. In Ireland, species listed under Annex V include Irish hare, common frog and pine marten.

Species can be listed in more than one Annex, as is the case with otter and lesser horseshoe bat which are listed on both **Annex II** and **Annex IV**.

Birds Directive/Special Protection Areas

Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (Birds Directive) has been substantially amended several times. In the interests of clarity and rationality the said Directive was codified in 2009 and is now cited as Directive 2009/147/EC. The Directive instructs Member States to take measures to maintain populations of all bird species naturally occurring in the wild state in the EU (**Article 2**). Such measures may include the maintenance and/or re-establishment of habitats to sustain these bird populations (**Article 3**).

A subset of bird species has been identified in the Directive and are listed in **Annex I** as requiring special conservation measures in relation to their habitats. These species have been listed on account of inter alia: their risk of extinction; vulnerability to specific changes in their habitat; and/or due to their relatively small population size or restricted distribution. **Special Protection Areas (SPAs)** are to be identified and



classified for these Annex I listed species and for regularly occurring migratory species, paying particular attention to the protection of wetlands (**Article 4**).

3.2 Identification of the Designated Sites within the Likely Zone of Impact

The most up to date GIS spatial datasets for Surface Water Catchments and European designated sites were downloaded from the EPA website (www.epa.ie) and NPWS website (www.npws.ie), respectively, on the 20/11/2018. The following rationale was used to identify the Likely Zone of Impact. Initially, sites within a 15 km radius of the proposed development were identified (as per the DoEHLG Guidance (2010)) as shown on Figure 3.1. In addition, using the precautionary principle, European Sites located outside the 15 km buffer zone were also taken into account and assessed. In this case, no pathway for effects on any site that is further than 15 km from the site was identified. These European Sites were then individually assessed to determine whether impacts as a result of the proposed afforestation were likely.

Figure 3.1 shows the location of the proposed afforestation site in relation to all European sites located within 15km of the site.

Table 3.1 below, lists all European Sites within 15 km of the proposed development and assesses which, are within the Likely Zone of Impact. The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie) were considered at the time of preparation of this report (20/11/2018). Details of these sites, including their distance from the proposed development, their Qualifying Interests/Special Conservation Interests and a rationale as to whether they are within the Likely Zone of Impact of the proposed works are provided in Table 3.1.

Table 3.1. Determination of European Sites within Likely Zone of Impact of the proposed afforestation site

European Site	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (www.npws.ie , 20/11/2018)	Conservation Objectives	Zone of Likely Impact Determination
Special Area of Conservation (SAC)			
Derrinea Bog SAC [000604] Distance: 3.0km	<ul style="list-style-type: none"> ▪ Active raised bogs [7110] ▪ Degraded raised bogs still capable of natural regeneration [7120] ▪ Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] 	Detailed conservation objectives for this site (Version 1, November 2015) were reviewed as part of the assessment and are available at www.npws.ie	This European site is designated for terrestrial habitats and is located upgradient of the proposed afforestation works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.
Drumalough Bog SAC [002338] Distance: 3.8km	<ul style="list-style-type: none"> ▪ Active raised bogs [7110] ▪ Degraded raised bogs still capable of natural regeneration [7120] ▪ Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] 	Detailed conservation objectives for this site (Version 1, August 2016) were reviewed as part of the assessment and are available at www.npws.ie	This European site is designated for terrestrial habitats and is located upgradient of the proposed afforestation works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.
Carrowbehy/Caher Bog SAC [000597] Distance: 4.2km	<ul style="list-style-type: none"> ▪ Active raised bogs [7110] ▪ Degraded raised bogs still capable of natural regeneration [7120] ▪ Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] 	Detailed conservation objectives for this site (Version 1, November 2015) were reviewed as part of the assessment and are available at www.npws.ie	This European Site is designated for terrestrial habitats and is located in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.
Errit Lough SAC [000607] Distance: 4.8km	<ul style="list-style-type: none"> ▪ Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara spp.</i> [3140] 	Detailed conservation objectives for this site (Version 1, December 2017) were reviewed as part of the assessment and are available at www.npws.ie	This European site is located upgradient and there is no hydrological connectivity with the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.
Urlaur Lakes SAC [001571] Distance: 5.0km	<ul style="list-style-type: none"> ▪ Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara spp.</i> [3140] 	Detailed conservation objectives for this site (Version 1, December 2017) were reviewed as part of the	This European site is located upgradient and there is no hydrological connectivity with the proposed works. No pathway for effect was

European Site	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (www.npws.ie , 20/11/2018)	Conservation Objectives	Zone of Likely Impact Determination
		assessment and are available at www.npws.ie	identified and the site is not within the Likely Zone of Impact.
Cloonchambers Bog SAC [000600] Distance: 8.0km	<ul style="list-style-type: none"> ▪ Active raised bogs [7110] ▪ Degraded raised bogs still capable of natural regeneration [7120] ▪ Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] 	Detailed conservation objectives for this site (Version 1, January 2016) were reviewed as part of the assessment and are available at www.npws.ie	This European Site is designated for terrestrial habitats and is located in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.
Tullaghanrock Bog SAC [002354] Distance: 9.4km	<ul style="list-style-type: none"> ▪ Active raised bogs [7110] ▪ Degraded raised bogs still capable of natural regeneration [7120] ▪ Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] 	Detailed conservation objectives for this site (Version 1, December 2015) were reviewed as part of the assessment and are available at www.npws.ie	This European Site is located downgradient of the proposed works and is designated for terrestrial habitats. The site is located in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.
Callow Bog SAC [000595] Distance: 9.9km	<ul style="list-style-type: none"> ▪ Active raised bogs [7110] ▪ Degraded raised bogs still capable of natural regeneration [7120] ▪ Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] 	Detailed conservation objectives for this site (Version 1, January 2016) were reviewed as part of the assessment and are available at www.npws.ie	This European Site is located downgradient of the proposed works and is designated for terrestrial habitats. The site is located in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.
Bellanagare Bog SAC [000592] Distance: 10.8km	<ul style="list-style-type: none"> ▪ Active raised bogs [7110] ▪ Degraded raised bogs still capable of natural regeneration [7120] ▪ Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] 	Detailed conservation objectives for this site (Version 1, November 2015) were reviewed as part of the assessment and are available at www.npws.ie	This European Site is designated for terrestrial habitats and is located in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.
River Moy SAC [002298]	<ul style="list-style-type: none"> ▪ Active raised bogs [7110] ▪ Degraded raised bogs still capable of natural regeneration [7120] 	Detailed conservation objectives for this site (Version 1, August 2016) were reviewed as part of the	This European Site is located upgradient and in a separate hydrological sub-catchment to the proposed works. No pathway for effect

European Site	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (www.npws.ie , 20/11/2018)	Conservation Objectives	Zone of Likely Impact Determination
<p>Distance: 11.2km</p>	<ul style="list-style-type: none"> ▪ Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] ▪ Alkaline fens [7230] ▪ Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] ▪ Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] ▪ Austropotamobius pallipes (White-clawed Crayfish) [1092] ▪ <i>Petromyzon marinus</i> (Sea Lamprey) [1095] ▪ <i>Lampetra planeri</i> (Brook Lamprey) [1096] ▪ <i>Salmo salar</i> (Salmon) [1106] ▪ <i>Lutra lutra</i> (Otter) [1355] 	<p>assessment and are available at www.npws.ie</p>	<p>was identified and the site is not within the Likely Zone of Impact.</p>
<p>Corliskea/Trien/Cloonfellov Bog SAC [002110]</p> <p>Distance: 13.3km</p>	<ul style="list-style-type: none"> ▪ Active raised bogs [7110] ▪ Degraded raised bogs still capable of natural regeneration [7120] ▪ Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] ▪ Bog woodland [91D0] 	<p>Detailed conservation objectives for this site (Version 1, February 2016) were reviewed as part of the assessment and are available at www.npws.ie</p>	<p>This European Site is located upgradient and in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>
Special Protected Areas (SPA)			
<p>Bellanagare Bog SPA [004105]</p> <p>Distance: 10.8km</p>	<ul style="list-style-type: none"> ▪ Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] 	<p>This site has the generic conservation objective:</p> <p><i>'To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.'</i> (NPWS Generic version 6.0, 2018)</p>	<p>This European Site is located upgradient and in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>

European Site	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (www.npws.ie, 20/11/2018)	Conservation Objectives	Zone of Likely Impact Determination
<p>Lough Gara SPA [004048]</p> <p>Distance: 12.2km</p>	<ul style="list-style-type: none"> ▪ Whooper Swan (<i>Cygnus cygnus</i>) [A038] ▪ Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] 	<p>This site has the generic conservation objective:</p> <p><i>'To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.'</i> (NPWS Generic version 6.0, 2018)</p>	<p>This European Site is located upgradient and in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>

4 ASSESSMENT OF LIKELY EFFECTS ON EUROPEAN SITES

Any likely direct or indirect impacts of the proposed development, both alone and in combination with other plans and projects, on European Sites by virtue of the following criteria: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning have been considered in this Screening Assessment.

As shown in Table 3.1, no European Sites were identified within the Likely Zone of Impact. Therefore, there is no potential for significant effects on any European Site as a result of the proposed afforestation works.

5 ARTICLE 6(3) SCREENING STATEMENT AND CONCLUSIONS

The findings of this Screening Assessment are presented following the European Commission guidance document '*Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC*' (EC, 2001) and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

5.1 Assessment of Significance of Effects

Is the project directly connected with or necessary to the management of the site?

The project is not directly connected with or necessary to the management of any European Site.

Cumulative Impact Assessment - Are there any other projects or plans that together with the project being assessed could affect the site?

The potential for the proposed development to contribute to a cumulative impact on European Sites was considered. The online planning system for Roscommon County Council was consulted on the 20/11/2018 for applications in the last five years in Curraghard.

One planning application was found to (1) to construct a septic tank system ancillary to an existing dwelling house at Curraghard Townland, Lisacul, Co Roscommon (Pl Ref: 13135). No projects or plans were identified that would be incompatible with the proposed replanting or give rise to significant cumulative impacts.

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

The proposed works are located in the townland of Curraghard, Co. Roscommon. The works as proposed have been assessed in Table 3.1 and it has been concluded that there are no European sites within the likely zone of impact of the proposed works. Due to the nature, scale and location of the proposed works as described in Section 2.1 and assessed in Table 3.1 it has been concluded that there will be no cumulative impact on any European sites as a result of the proposed works.

Describe how the project is likely to affect the European Site

- No potential for the proposed works to result in significant direct or indirect effects on any European Site were identified.

5.2 Data Collected to Carry Out Assessment

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

- Review of NPWS site synopses, mapping and conservation objectives for European Sites.
- Review of 2013 EU Habitats Directive (Article 17) Report.

- Review of OS maps and aerial photographs of the site of the proposed development.
- Review of relevant databases including National Biodiversity Ireland Database, etc.
- Review of other plans and projects within the area.
- Liaison with the project team in relation to the design of the development.
- Site visit conducted by Laoise Kelly (B. Sc. (Env.)) on 9/11/2018.

5.3 Overall Conclusions

The proposed works, by themselves or in combination with other plans and projects, in light of best scientific knowledge, do not, in view of the sites' qualifying interests and conservation objectives, have the potential to result in significant effects on any European Site.

There is no requirement for Appropriate Assessment.

BIBLIOGRAPHY

Birds Directive (2009/47/EC) – http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive 79/409/EEC as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011).

DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin.

DoEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Revision, February, 2010. Department of the Environment, Heritage and Local Government.

EC (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.

EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2006) Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.

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

EC (2007b) Interpretation Manual of European Union Habitats. Version EUR 27. European Commission, DG Environment.

Ecofact (2017). Screening for Appropriate Assessment on the Demolition of industrial building and construction of private dwelling house and-garage, entrance from the road, connection to the public services and ancillary site development works at Marine Village, Cullenagh, Ballina.

European Communities (Conservation of Wild Birds) Regulations, 1985, SI 291/1985 & amendments – <http://www.irishstatutebook.ie>.

European Communities (Natural Habitats) Regulations, SI 94/1997, SI 233/1998 & SI 378/2005 – <http://www.irishstatutebook.ie>.

Habitats Directive (92/43/EEC).

NPWS (2008) The Status of EU Protected Habitats and Species in Ireland. Conservation Status in Ireland of Habitats and Species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC.

NPWS of the DEHLG (2008) The Report on Status of Habitats and Species in Ireland: Technical Reports and Forms.

NPWS Protected Site Synopses and maps available on <http://www.npws.ie/en/ProtectedSites/>.

Scottish Natural Heritage (SNH) (July 2013) Assessing Connectivity with Special Protection Areas (SPA)

Appendix I

Technical Approval Documents

RECEIVED
31 AUG 2017

JOHN O'REILLY
GREEN BELT LTD
MAIN STREET
VIRGINIA
CO CAVAN

JP Fahy
18053455

29/08/2017

Application for Technical Approval for an Afforestation Licence

Forest Owner	FO123291B
Contract Number	CN78964
Townland	Curraghard
County	Roscommon
Approved Area (ha)	9.39
Fencing Length (lm)	1,000.00

Copy
JP/Mike

This is technical approval for an afforestation licence only and is not grant approval. You should note that the project will not be eligible for grant aid unless prior financial approval has been given in writing in advance of commencement of planting. Also, to qualify for Afforestation grant and premiums applicants must own, lease or be in joint management of the lands proposed for planting. You should consult with your registered forester about applying for financial approval under the Scheme.

I refer to your application for an afforestation licence as described above and shown on the enclosed map. Your application has been assessed and a licence is hereby issued on the basis that the works will be undertaken in accordance with the prescription set out in Appendix A, attached herewith. You are now required to remove your site notice immediately.

This scheme is financed by the State and payment of the grant, if financial approval is given, is subject to the following conditions:

1. Availability of funds in each financial year.
2. Submission of a fully completed and signed Form 2 (Application for Payment) and the following documents to support this application.

Proof of Ownership (including removal of any constraints on ownership)

Valid Mandate

Current Tax Clearance Certificate(s)

C2 Certificate

Provenance Certificates

Fencing Map

Biodiversity Map

Certified Species Map

28 days up 26/9/17
Note conditions on page 4

3. Satisfactory completion of the work not later than 31/12/2018.
4. Compliance with Operational Proposals and Specifications enclosed.
5. Compliance with Departmental guidelines and requirements for Landscape, Water Quality, Harvesting, Biodiversity and Archaeology.

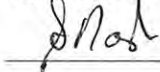
6. Compliance with Ecological Survey and Management Plan as submitted (if applicable).
7. The work is carried out by the registered company or forester specified on the original application. If it is intended to have a different company or forester undertake the work, it will be necessary to submit a new application (Form 1) to the Forest Service.
8. All applications are subject to the provisions of the penalty schedules as set out in the Afforestation Grant and Premium Scheme document.
9. All applications are subject to Cross Compliance checks with other grant schemes.
10. Grant payment may be subject to the netting policy of the Department of Agriculture, Food and the Marine.
11. This licence is issued subject to the terms and conditions of the Forestry Standards and Procedures Manual.
12. Your acceptance that the responsibility for the ultimate success of the plantation rests with you, the applicant. Plantations which fail to establish successfully will result in grant and premium recoupment.
13. Additional Environmental & Silvicultural Conditions
 - Adhere to forestry & landscape guidelines.,
 - Adhere to forestry & water quality guidelines,
 - All guidelines to apply

You are required to notify the Department of Agriculture, Food and the Marine in writing if any of the details of your application have changed. Changes to your application may invalidate this licence.

In order to allow for the possibility of appeals, you must not commence any works until 28 days from the date of this letter have elapsed. If an appeal is lodged, this licence will be suspended and no work may commence until the appeal process has concluded.

If you wish to appeal any condition attached to this licence, where applicable, you should do so in writing within 28 days of the date of this letter to the Forestry Appeals Committee. You must set out the grounds of your appeal and include a statement of the facts and contentions upon which you intend to rely along with any documentary evidence you wish to submit in support of your appeal. The appeal must be sent to the Forestry Appeals Committee, Kilminchy Court, Portlaoise, Co. Laois, Lo-Call 076 1064418 or 057 8631900.

Yours sincerely



SUSAN NASH
Approval Section
Forest Service


Operational Proposals for Technical Approval for an Afforestation Licence

Forest Owner Number	FO123291B
Contract Number	CN78964
Townland	Curragherd
County	Roscommon
Area Approved	9.39(ha)
Fencing Length (LM)	1,000.00

All applications must be developed in accordance with detailed standards and procedures as described in the current Forestry Schemes Manual. Certain specific operational proposals particular to this application are described below. No change is permitted to these proposals and species approved unless approved in advance by the Department. The Department may insist that proposed changes constitutes a new application.

Operational Proposal Details

Agro Forestry (GPC 11)		
1.	Tree Shelters	Not Entered
2.	Plant Size and Stocking	Not Entered
Drainage		
1.	Drainage	Required
2.	Drainage Comment	In conjunction with mounding
Fertiliser		
1.	Zero	Not Entered
2.	350 Kg Granulated Rock Phosphate	Not Entered
3.	250 Kg Granulated Rock Phosphate	Yes
4.	Split Application	Not Entered
5.	Other Details	Not Entered
Firebreaks/Res.		
1.	Firebreaks/Res	Not Required
Forestry for Fibre (GPCs: 12a and 12b)		
1.	Is Land Free Drainage arable or pasture soils	Not Entered
2.	Are there surface water gleys without a peat layer	Not Entered
3.	Do you intend to use improved genetic material	Not Entered
4.	Details	Not Entered
Ground Prep.		
1.	Woody Weed Removal	Yes
2.	Ripping	Not Entered
3.	Pit Plant	Not Entered
4.	Mole Drainage	Not Entered
5.	Mounding	Yes
6.	Ploughing	Not Entered
9.	Other Details	Not Entered
Planting Method		
1.	Angle Notch	Not Entered
2.	Pit	Not Entered
3.	Machine	Not Entered

4.	Slit	Yes		
5.	Other Details	Not Entered		
Road Access				
1.	Road Access	Provided		
Standard Stocking				
1.	Standard Stocking	Yes		
2.	Details	Not Entered		
Weed Control				
1.	Herbicide Control yr0	Yes		
2.	Herbicide Control yr1	Yes		
3.	Herbicide Control yr2	Yes		
3.	Herbicide Control yr4	Not Entered		
4.	Manual	Yes		
4.	Herbicide Control yr3	Yes		
Fencing Details				
(metres)	Stock	1000	Stock-Sheep	0
	Stock-Rabbit	0	Upgrade to Deer	0
	Deer-Rabbit	0	Deer	0
	Upgrade Existing Fence(s)	N		
	Upgrade Details: None Entered			

Species Approved

The species approved in this proposal relate to the digitised certified species map attached.

Species Approved for Afforestation

Plot	Area	GPC	Land Type	Species	Species Area	Yield Class	Mixture Type	Exclusion	Exclusion Type
1	9.22	GPC 3	CHF	SS	8.3	20	Groups		
				ADB	.92	10			
2	.17	GPC 3	Bio				None		

Additional Silvicultural and Environmental Conditions

In addition to the Department's environmental and silvicultural guidelines the following specific conditions apply to this proposal:

Silvicultural and Environmental Conditions

Adhere to forestry & landscape guidelines.,
Adhere to forestry & water quality guidelines,
All guidelines to apply



Certified Species Information

Contract Number	CN78964
Townland	Curragherd
County	Roscommon
6" OS No:	RN13

Plot No	GPC	Parcel No	GPC Area(H)	Land Use Type	Species Area	Species	Mixture Type	Excl Area(h)	Excl Type
1	3	44309217	9.22	CHF	9.22	ADB,SS	Groups	0	
2	3	44308812	.17	Bio	0		None	0	
TOTALS			9.39		9.22			0	

Remarks:

Area Surveyed By:

Date:

Species Certified By:

Date:

Appropriate Assessment Screening Report

Proposed Replanting at Claraghtlea North, Co.
Cork



Planning & Environmental Consultants

DOCUMENT DETAILS

Client: Planree Ltd.

Project title: Proposed Replanting at Claraghtlea North, Co Cork

Project Number: 160502

Document Title: Appropriate Assessment Screening Report

Doc. File Name: 160502 –AASR – 2017.11.10 – F

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Document Issue:

Rev	Status	Issue Date	Document File Name	Author(s)	Approved By:
01	Draft	10/11/2017	160502 – Replanting AASR Claraghtlea North– 2017.04.04 – D1	EJ	DMN
02	Final	10/11/2017	160502 – Replanting AASR Claraghtlea North– 2017.11.10 – F	EJ	PR

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1 GENERAL INTRODUCTION

This report has been prepared to provide the information necessary to allow the competent authority to conduct an Article 6(3) Screening for Appropriate Assessment for the proposed construction of a new dwelling house, and wastewater treatment system along with all associated ancillary works **Claraghlea North, Co. Cork.**

The report provides the information necessary to allow the competent authority to conduct an Article 6(3) Appropriate Assessment Screening of the proposed afforestation.

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

The assessment in this report is based on a desk study and field surveys undertaken during March 2017. It specifically assesses the potential for the proposed afforestation to impact on European sites and the ecology of the area.

This report has been prepared in accordance with the European Commission guidance document *Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC* (EC, 2001) and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

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

- (1) DoEHLG (2010) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government,
- (2) European Communities (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,
- (3) 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,
- (4) EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – *Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission.* European Commission
- (4) EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission,
- (5) EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements. Environmental Protection Agency,

(6) EPA (2003), Advice Notes on current practice in the preparation of Environmental Impact Statements. Environmental Protection Agency, and
(7) CIEEM (2016) Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment. (9) EC (2001) Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC

1.1 Background to Appropriate Assessment

1.1.1 Screening for Appropriate Assessment

Screening is the process of determining whether or not an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000 as amended, Screening must be carried out by the Competent Authority to assess, in view of best scientific knowledge, if a land use plan or proposed development, individually or in combination with another plan or project, is likely to have a significant effect on a European site. The Competent Authority's determination as to whether or not an Appropriate Assessment is required must be made on the basis of objective information and should be recorded. The competent authority may request information to be supplied to enable it to carry out screening.

1.1.2 Appropriate Assessment (Natura Impact Statement)

The term Natura Impact Statement (NIS), is defined in legislation¹. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to **1)** the implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and **2)** whether there will be adverse effects on the integrity of a European site. The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

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

2 DESCRIPTION OF THE PROPOSED AFFORESTATION

2.1 General Project Description

The land addressed in this document has been granted Technical Approval by the Forest Service for afforestation. Copies of the Technical Approval documents are presented in Appendix 1.

The afforestation and subsequent harvesting will conform to current best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte produced guidance documents, to ensure that newly planted trees remain viable and afforestation provide minimal potential impacts to the receiving environment.

Planting will be carried out by hand, and in accordance with the 'Forestry Schemes Manual' (Forest Service, 2011), which provides guidance in relation to ground cultivation, stocking and spacing, plant handling, planting dates, fertiliser application, fencing, fire, and weed control. Certain specific silvicultural and environmental conditions are also set out in the Forest Service Technical Approvals for the site, which will be adhered to. Drainage and sediment control on site will conform to Forest Service best practice.

Invasive Species

The following measures address potential impacts associated with the construction phase of the project:

- Good site hygiene will be employed to prevent the spread of invasive species with vehicle thoroughly washed prior to leaving any site which potentially supported invasive species.



Legend
 Site Boundary

Claraghatlea North

R582



MAP TITLE: Claraghtlea North Site Location		MAP NO.: Figure 2.1	SCALE: 1:8,000
PROJECT TITLE: 160502 - Forestry Replanting		OS SHEET NO.: na	DATE: 15-06-2017
DRAWING BY: EJ	CHECKED BY: PR	ISSUE NO.: 160502-2017.06.15-D1	

3 METHODOLOGY AND LIMITATIONS

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological Baseline conditions are those existing in the absence of proposed activities (CIEEM 2016).

The following paragraphs outline the methodologies utilised to establish the baseline ecological condition of the proposed afforestation site.

Initially the potential for the site to support protected habitats and species was assessed by means of a desk study. Literature pertinent to the site and surrounding area was reviewed as was information pertaining to legislation/designations and other notable ecological records.

A field survey of the site, including a habitat survey, was carried out by suitably qualified ecologist from McCarthy Keville O'Sullivan, Erin Johnston (BSc., MSc, PhD) in March 2017. The site was assessed and the habitats the site were classified per the guidelines set out in 'A Guide to Habitats in Ireland' (Fossitt, 2000), which classifies habitats based on the vegetation present and management history. In addition, the field survey was designed to detect the presence, or likely presence, of a range of protected species.

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

The nature of the site was such that all habitats and species of interest were readily identifiable based on the site survey. Using the information gained during this site visit, together with published information on the site and its environs, it is considered that a comprehensive ecological assessment was achieved.

4 FIELD SURVEY

4.1 Habitats

The site is comprised primarily of Wet Grassland (GS4). At the time of the visit the grassland was overgrown and dominated in places almost entirely by rushes (*Juncus* spp.). Grass species recorded include Perennial Ryegrass (*Lolium perenne*), Creeping Bent (*Agrostis stolonifera*), and Yorkshire Fog (*Holcus lanatus*). Other species recorded in this habitat include Creeping Buttercup (*Ranunculus repens*), Meadow buttercup (*Ranunculus acris*), Ragwort (*Senecio jacobaea*), Common Sorrell (*Rumex acetosa*). The boundaries of the site were comprised of treelines (WL2) and hedgerows (WL1). Species recorded within these habitats include Willow (*Salix* spp.), Ash (*Fraxinus excelsior*), Gorse (*Ulex europaeus*) Hawthorn (*Crataegus monogyna*), and Brambles (*Rubus fruticosus*).

A stream (FW1) and an extensive network of drainage ditches (FW4) were found running through the site. Vegetation bordering the stream again contained rushes but included Lesser Celandine (*Ficaria verna*), Primrose (*Primula vulgaris*), Dandelion (*Taraxacum vulgaria*), Ragwort (*Senecio jacobaea*), Broadleaved Dock, and Common Sorrel. Drainage ditches were typically overgrown with rushes, and contained standing water.



Plate 5.1 Overgrown Wet Grassland (GS4) with drainage ditch (FW4) on the study site.



Plate 5.3 Wet Grassland (GA4) adjacent to stream (FW1) and SAC border with treeline (WL2) in the distance

4.1.1 Invasive Species

No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were identified within the site boundaries during field survey.

4.1.2 Significance of Habitats

Ecological evaluation within this section follows a methodology that is set out in Chapter 3 of the *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (NRA, 2009).

No habitats which correspond to those that are listed in the EU Habitats Directive were identified during the site visit. The wet grassland, and drainage ditches that are present within the site, given their highly modified nature, are considered to be of Local Importance (Lower Value). The hedgerows are considered to be of Local Importance (Higher Value) as it has a higher level of biodiversity within the context of the local environment.

5 APPROPRIATE ASSESSMENT SCREENING

5.1 Background to European Sites

The Habitats Directive (together with the Birds Directive) forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: The Natura 2000 network of protected sites and a strict system of species protection. All in all, the directive protects over 1,000 animal and plant species and over 200 "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance.

With the introduction of the EU Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC) which were transposed into Irish law as S.I. No. 94/1997 *European Communities (Birds and Natural Habitats) Regulations 1997*, the European Union formally recognised the significance of protecting rare and endangered species of flora and fauna, and also, more importantly, their habitats. The 1997 Regulations and their amendments were subsequently revised and consolidated in S.I. No. 477/2011-*European Communities (Birds and Natural Habitats) Regulations 2011*. This legislation requires the establishment and conservation of a network of sites of particular conservation value that are to be termed 'European Sites'.





5.2 European Sites in the likely Zone of Impact of the Proposed Afforestation

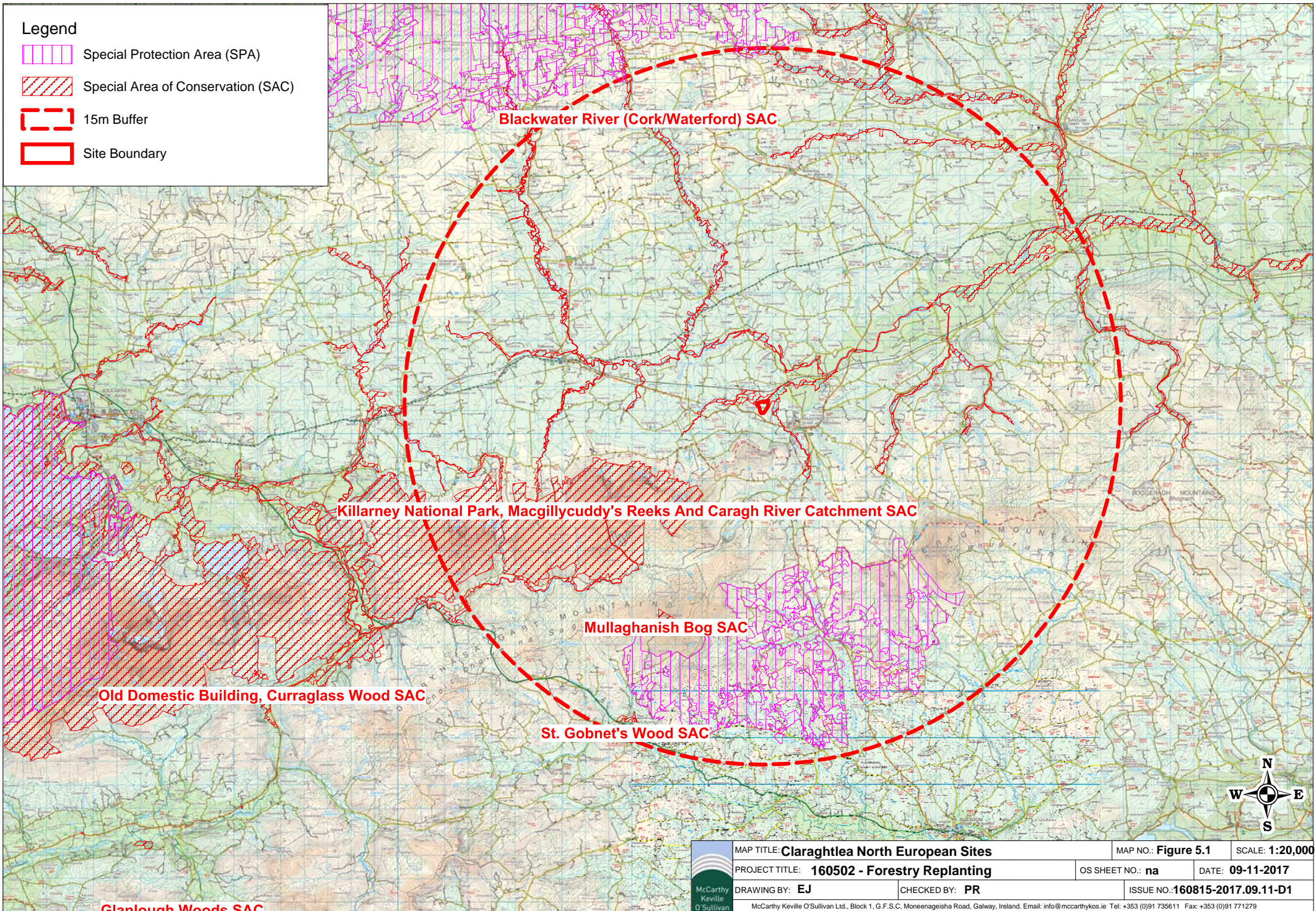
The most up to date GIS spatial datasets for European designated sites were downloaded from the NPWS website (www.npws.ie) on the 10.11.2017. Using the GIS software, MapInfo (Version 10.0), European sites within the likely zone of influence of the project were identified. The following rationale was used to identify the zone of influence. Initially, sites within a 15 kilometer radius of the proposed works were identified as per DoEHLG Guidance (2010). In addition, using the precautionary principle, European Sites located outside the 15km buffer zone were also taken into account and assessed. In this case, no potential for impacts outside the 15km buffer was identified.

Figure 5.1 show the location of the proposed works in relation to all European sites within the Likely Zone of Influence as identified per the criteria described above.

Table 5.1, lists all European Sites that were considered to be within the Likely Zone of Influence. The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were considered at the time of preparation of this report (10/11/2017). Details of these sites, including their distance from the proposed afforestation, are provided in Table 5.1.

Legend

-  Special Protection Area (SPA)
-  Special Area of Conservation (SAC)
-  15m Buffer
-  Site Boundary




	MAP TITLE: Claraghtlea North European Sites	MAP NO.: Figure 5.1	SCALE: 1:20,000
	PROJECT TITLE: 160502 - Forestry Replanting	OS SHEET NO.: na	DATE: 09-11-2017
	DRAWING BY: EJ	CHECKED BY: PR	ISSUE NO.: 160815-2017.09.11-D1
<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthykos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279</small>			

Table 5.1 Designated sites within the Likely Zone of Influence

European Site	Distance from the site of the proposed development (km)	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 05/04/2017)	Conservation Objectives
Special Protection Areas (SPA)			
Mullaghanish to Musheramore Mountains SPA (004162)	6.6km	<ul style="list-style-type: none"> Hen Harrier (Circus cyaneus) [A082] 	<p>The generic conservation objective for this site is:</p> <p><i>“To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA”</i></p>
Stack’s to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	14.6km	<ul style="list-style-type: none"> Hen Harrier (Circus cyaneus) [A082] 	<p>The generic conservation objective for this site is:</p> <p><i>“To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA”</i></p>
Special Areas of Conservation (SAC)			
Blackwater River (Cork/Waterford) SAC (002170)	0km – The site shares a northern and eastern boundary with the protected area.	<ul style="list-style-type: none"> Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] 	<p>Detailed conservation objectives for this site are available online at www.npws.ie</p>

		<ul style="list-style-type: none"> ▪ Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] ▪ 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] ▪ Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] ▪ Austropotamobius pallipes (White-clawed Crayfish) [1092] ▪ Petromyzon marinus (Sea Lamprey) [1095] ▪ Lampetra planeri (Brook Lamprey) [1096] ▪ Lampetra fluviatilis (River Lamprey) [1099] ▪ Alosa fallax fallax (Twaiite Shad) [1103] ▪ Salmo salar (Salmon) [1106] ▪ Lutra lutra (Otter) [1355] ▪ Trichomans speciosum (Killarney Fern) [1421] 	
<p>Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC (000365)</p>	<p>4.1km</p>	<ul style="list-style-type: none"> ▪ 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] ▪ Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] ▪ Northern Atlantic wet heaths with Erica tetralix [4010] 	<p>The generic conservation objective for this site is:</p> <p><i>“ To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected”</i></p>

		<ul style="list-style-type: none"> ▪ European dry heaths [4030] ▪ Alpine and Boreal heaths [4060] ▪ Juniperus communis formations on heaths or calcareous grasslands [5130] ▪ Calaminarian grasslands of the Violetalia calaminariae [6130] ▪ Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] ▪ Blanket bogs (* if active bog) [7130] ▪ Depressions on peat substrates of the Rhynchosporion [7150] ▪ 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] ▪ Taxus baccata woods of the British Isles [91J0] ▪ Geomalacus maculosus (Kerry Slug) [1024] ▪ Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] ▪ Euphydrias aurinia (Marsh Fritillary) [1065] ▪ Petromyzon marinus (Sea Lamprey) [1095] ▪ Lampetra planeri (Brook Lamprey) [1096] ▪ Lampetra fluviatilis (River Lamprey) [1099] ▪ Salmo salar (Salmon) [1106] ▪ Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303] ▪ Lutra lutra (Otter) [1355] 	
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		<ul style="list-style-type: none"> ▪ Trichomanes speciosum (Killarney Fern) [1421] ▪ Najas flexilis (Slender Naiad) [1833] ▪ Alosa fallax killarnensis (Killarney Shad) [5046] 	
Mullaghanish Bog SAC (001890)	9.4km	<ul style="list-style-type: none"> • Blanket bogs (* if active bog) [7130] 	<p>The generic conservation objective for this site is:</p> <p><i>“ To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected”</i></p>
St. Gobnet’s Wood SAC (000106)	13.8km	<ul style="list-style-type: none"> • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] 	<p>The generic conservation objective for this site is:</p> <p><i>“ To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.”</i></p>

6 ARTICLE 6(3) SCREENING ASSESSMENT

6.1 Article 6(3) Assessment Criteria

The Screening Assessment criteria examined in the impact assessment section of this screening document follow the suggested screening matrix structure detailed in *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive* (EC 2001).

6.1.1 Description of the Individual Elements of the Project with Potential to give Rise to Impacts on the European Site

The project involves the afforestation of land as described in detail previously. Elements of the works in the construction phase with the potential to give rise to impacts on nearby European sites include the following:

- Site preparation works including excavation works for drainage
- Subsequent felling of mature trees

6.1.2 Description of any Likely Direct, Indirect or Secondary Impacts of the Project on the European Site

Any likely direct, indirect or secondary impacts of the proposed afforestation, both alone and in combination with other plans or projects, on the European Sites by virtue of the following criteria: size and scale, land-take, distance from the European Sites or key features of the site, resource requirements (such as water abstraction), emissions (disposal to land, water or air), excavation requirements, transportation requirements and duration of construction, operation, decommissioning are presented in Table 6.1.

Table 6.1 Likely Impacts of the Project on the European Sites

Likely Direct, Indirect or Secondary Impacts of the Project on the European Sites

<p>Size and Scale</p>	<p>The project consists of the afforestation of 16.1ha of modified wet grassland, and includes the creation of drainage ditches on site.</p> <p>It is not considered that the size and scale of the project will contribute to any significant impacts on any European sites.</p>
<p>Land-take</p>	<p>The proposed afforestation site is entirely outside of any European sites. Therefore, there will be no land-take within any European Sites.</p>
<p>Distance from the European Sites or Key Features of the Site</p>	<p>The Blackwater River (Cork/Waterford) SAC (002170) borders the site. Given the best practice measures incorporated in the proposed afforestation there will be no impact on any European Sites as a result of distance.</p>

Likely Direct, Indirect or Secondary Impacts of the Project on the European Sites	
Resource Requirements	There will be no exploitation of any resources within any European Site as part of the proposed development and therefore impacts in this regard on any of the sites within the Likely Zone of Impact can be discounted.
Emissions	<p>Small scale excavations will be required throughout the site for the installation of drainage ditches throughout the site. The Blackwater River (Cork/Waterford) SAC (002170) borders the site. Given the suite of best practice measures incorporated into the project, emissions from the proposed afforestation will not cause a significant negative effect to European Sites in the zone of influence.</p> <p>In view of best scientific knowledge and based on objective information, the proposed development will not have significant effects on any European sites as a result of surface water emissions.</p>
Excavation Requirements	<p>There will be no works undertaken within any European Site and therefore no direct impacts relating to excavation are predicted.</p> <p>Small scale excavations will be required on the site for the installation of drainage ditches throughout the site. Given the best practice pollution prevention measures incorporated, no impact on these European Sites are anticipated due to excavation.</p>
Transportation Requirements	Transport to and within the proposed afforestation site will be by existing roads. Therefore, no indirect effects on any European Sites are predicted as a result of transportation requirements.
Duration of Construction, Operation, Decommissioning	No potential impacts that relate directly to the duration of each phase of the afforestation were identified. Impacts resulting from Emissions are possible during site preparation and felling, but are considered above with no additional potential for impacts arising specifically as a result of the duration of each phase identified.
Cumulative Impacts with other Projects or Plans	A search of the Cork County Council Planning Enquiry System for the townland of Claraghtlea North for applications made in the last 5 years revealed just one completed application. This was for the construction of an extension to a dwelling. Significant cumulative impacts are not predicted as there are no large-scale developments existing or proposed in the vicinity of the proposed development.

6.1.3 Description of any Likely Changes to the European Site

Any likely changes to the European Sites are described in Table 6.2 with reference to the following criteria: reduction of habitat area, disturbance to key species, habitat or species fragmentation, reduction in species density, changes in key indicators of conservation value (e.g. water quality etc.) and climate change.

Table 6.2 Likely Changes to the European Sites

Likely Changes to the European Sites	
Reduction of Habitat Area	<p>The closest European sites, River Shannon and River Fergus Estuaries SPA (004077), and the Lower River Shannon SAC (002165), located 2.7km from the proposed development site. Therefore, there will be no loss of habitat within any European sites.</p> <p>No potential for disturbance to any habitats, for which any European Sites considered in the screening assessment are designated, have been identified.</p>
Disturbance to Key Species	<p>Based on the desk study, and field surveys, no significant disturbance of key species is anticipated.</p> <p>No potential for disturbance to any key species, for which any European Sites considered in the screening assessment are designated, have been identified.</p>
Habitat or Species Fragmentation	<p>There will be no habitat or species fragmentation within any European Site associated with the proposed afforestation or in combination with other developments in the surrounding area.</p>
Reduction in Species Density	<p>European Sites are not considered to be at any risk of a reduction of species density given the nature of the QI's or SCI's, scale and the nature of the proposed works, and the distance to the afforestation site.</p>
Changes in Key Indicators of Conservation Value	<p>European Sites are not considered to be at any risk from changes in key indicators of conservation value given the nature of the QI's or SCI's, scale and the nature of the proposed works, and the distance to the afforestation site.</p>
Climate Change	<p>Given the scale and nature of the proposed works, it is unlikely that these works will contribute significantly to climate change.</p>

6.1.4 Description of any Likely Impacts on any European Site

Potential pathways for impacts and effects on the European sites in the preceding sections have been examined and none were found to have a significant impact as a result of the proposed afforestation.

Direct Impacts and **Indirect Impacts** on European Sites are not anticipated. Table 6.3 describes the nature of any impacts in terms of the structure and function of the identified European Sites.

Table 6.3. Assessment of Potential Impacts on the Structure and Function of European Sites

Likely Changes to the European Sites	
Interference with the key relationships that define the structure of a European Site	<p>No potential for impact on the key relationships that define the Structure of any European Sites have been identified.</p>
Interference with key relationships that define the function of the European site	<p>No potential for impact on the key relationships that define the Function of any European Sites have been identified.</p>

6.1.5 Indicators of Significance as a Result of the Identification of Effects

Indicators of significance are provided in Table 6.4 for any impacts identified above in terms of loss, fragmentation, disruption, disturbance and changes to key elements of the site, such as water quality.

Table 6.4 Indicators of Significance as a Result of the Identification of Effects

Indicators of Significance as a Result of the Identification of Effects	
Loss	There will be no reduction in Annex I habitat area within any European Sites as a result of the proposed afforestation. There will be no net loss of supporting habitat of QI/SCI species.
Fragmentation	There will be no habitat or species fragmentation within any European Site associated with the proposed afforestation.
Disruption	There will be no disruption to the ecological processes within any European Sites as a result of the proposed afforestation
Disturbance	There will be no disturbance within any European Sites as a result of the proposed afforestation
Changes to Key Elements of the Site	There will be no changes to key elements within any Natura 2000 site as a result of the proposed afforestation.

7 ARTICLE 6(3) SCREENING STATEMENT AND CONCLUSIONS

The findings of this Screening Report are presented below

7.1 Assessment of Significance of Effects

Is the project directly connected with or necessary to the management of the site?

The project is not directly connected with or necessary to the management of any European Site.

Are there any other projects or plans that together with the project being assessed could affect the site?

A search in relation to plans and projects that may have the potential to result in cumulative impacts on European sites was conducted. The proposed afforestation will have no individual or cumulative impacts on any European site in any regard.

Describe how the project is likely to affect the Natura 2000 sites

The project will not significantly affect any European Sites. Complete impact source-pathway receptor chains for direct or indirect impacts were not identified.

Explain why these effects are not considered significant

- There will be no negative direct or indirect impacts or reduction in Annex I habitat area within any European Site.
- There will be no reduction in key habitats supporting populations of Annex I bird species and no reduction in the populations of any Annex I species.
- There will be no reduction in key habitats supporting populations of Annex II species and no reduction in the populations of any Annex II species.
- The works themselves will involve little disturbance or disruption to the ecological processes in the area during either construction or operation.

7.2 Data Collected to Carry Out Assessment

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

- Review of NPWS Site Synopses and Conservation Objectives for European sites and pNHA sites.
- Site Visit
- Desk study of relevant ecological information.
- Report including desk study and appropriate assessment prepared by Erin Johnston (BSc, MSc, PhD), and reviewed by John Hynes (B Sc. M.Sc), McCarthy Keville O'Sullivan Ltd.

7.3 Concluding Statement

The proposed afforestation, by itself or in combination with other plans and projects, in light of best scientific knowledge in the field, will not, in view of the sites' conservation objectives, have significant effects on any European Site.

There is no requirement for Appropriate Assessment.

BIBLIOGRAPHY

BCT (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition), Bat Conservation Trust, available on <http://www.bats.org.uk>

Birds Directive (2009/47/EC) –
http://ec.europa.eu/environment/naturelegislation/birdsdirective/index_en.htm

CIEEM (2016) Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment. (9) EC (2001) Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC

DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin.

DoEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Revision, February, 2010. Department of the Environment, Heritage and Local Government.

DOMNR (1998) Fishery guidelines for Local Authority works. Department of the Marine and Natural Resources, Dublin.

EC (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.

EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

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

EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission, DG Environment.

EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements. Environmental Protection Agency.

EPA (2003) Advice Notes on current practice in the preparation of Environmental Impact Statements. Environmental Protection Agency.

EPA website: <http://www.epa.ie>.

European Communities (Conservation of Wild Birds) Regulations, 1985, SI 291/1985 & amendments – <http://www.irishstatutebook.ie>.

European Communities (Environmental Impact Assessment) Regulations, 1989 to 2006.

European Communities (Natural Habitats) Regulations, SI 94/1997, SI 233/1998 & SI 378/2005 – <http://www.irishstatutebook.ie>.

Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Dublin: The Heritage Council.

Habitats Directive (92/43/EEC).

Murphy, D.F. (2004) Requirements for the Protection of Fisheries Habitat During Construction and Development Works at River Sites. Eastern Regional Fisheries Board, Dublin.

NPWS (2013) The Status of EU Protected Habitats and Species in Ireland. Conservation Status in Ireland of Habitats and Species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC.

NPWS of the DEHLG (2013) The Report on Status of Habitats and Species in Ireland: Technical Reports and Forms.

NPWS Protected Site Synopses available on <http://www.npws.ie/en/ProtectedSites/>.

NRA (2004) Environmental Impact Assessment of National Road Schemes – A Practical Guide, National Roads Authority, Dublin.

NRA (2004) Guidelines for the Treatment of Noise and Vibration in National Road Schemes (1 ed.). Dublin: National Roads Authority.

NRA (2009) Guidelines for the Assessment if Ecological Impacts of National Road Schemes.

NRA (2005) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2006) A Guide to Landscape Treatments for National Road Schemes in Ireland. Dublin: National Roads Authority.

NRA (2006) Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. Dublin: National Roads Authority.

NRA (2006) Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post-Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2006) Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes (1 ed.). Dublin: National Roads Authority.

NRA (2006) Guidelines for the Treatment of Bats during the Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2006) Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2008). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Dublin: National Roads Authority.

NRA (2010). The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads, Revision 1. Dublin: National Roads Authority.

NRA (2008). Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan. Dublin: National Roads Authority.

Preston C.D. et. al. (2002). New Atlas of the British and Irish Flora. Oxford University Press.

Water status data available on <http://www.epa.ie> and <http://www.wfdireland.ie>

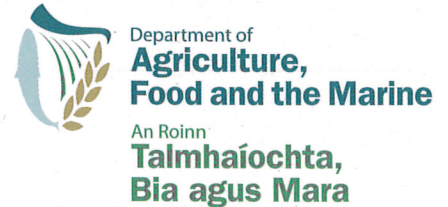
Wildlife Act 1976 and Wildlife (Amendment) Act 2000.

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive 79/409/EEC as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011)

Appendix 1

Technical Approval Documents

ENERCO ENERGY LTD



ENERCO ENERGY LTD
LISSARDA BUSINESS PARK
LISSARDA
CO CORK

01/10/2015

Approval for Non Grant Aided Afforestation

Forest Owner	FO128320H
Contract Number	CN72236
Townland	Claraghatlea north
County	Cork
Approved Area (Ha)	18.77
Fencing Length (LM)	1,200.00

I refer to your application (Form 1) requesting approval for Afforestation. Your application has been assessed and approval is hereby issued on the basis that the works will be undertaken in accordance with the prescription set out in Appendix A attached herewith.

You should note that the project will NOT be eligible for grant aid.

The following conditions apply to this application:
Satisfactory completion of the work not later than 30-JUN-17

Environmental & Silvicultural Considerations

Plot 1 is too wet and poorly drained for scots pine. Plant plot 1 with GPC 6 (oak/birch),
In plot 2 plant 2-3 rows of alder/birch along the hedges, ditches and boundaries and 5 rows along all streams. Keep back 15m from streams.,
Adequately drain. Ensure adequate silt traps and compliance with water quality guidelines.,
Adhere to forestry & water quality guidelines,
All guidelines to apply

You are required to notify the Department of Agriculture, Food and Marine in writing if any of the details of your application have changed.

IMPORTANT

As no submissions from third parties were received by the Department concerning this application, development in accordance with this may proceed without further notice.

Please feel free to contact this office, quoting your Contract Number, regarding progress of your application. LoCall 1890-200-509.

Yours sincerely



JOANNE ROBINSON
Approval Section
Forest Service

Operational Proposals for Approval of Afforestation

Forest Owner Number	FO128320H
Contract Number	CN72236
Townland	Claraghatlea north
County	Cork
Area Approved	18.77(ha)
Fencing Length (LM)	1,200.00

All applications must be developed in accordance with detailed standards and procedures as described in the current Forestry Schemes Manual. Certain specific operational proposals particular to this application are described below. No change is permitted to these proposals and species approved unless approved in advance by the Department. The Department may insist that proposed changes constitutes a new application.

Operational Proposal Details

Agro Forestry (GPC 11)		
1.	Tree Shelters	Not Entered
2.	Plant Size and Stocking	Not Entered
Drainage		
1.	Drainage	Required
2.	Drainage Comment	Full compliance with Forestry and Water Quality Guidelines
Fertiliser		
1.	Zero	Yes
2.	350 Kg Granulated Rock Phosphate	Not Entered
3.	250 Kg Granulated Rock Phosphate	Not Entered
4.	Split Application	Not Entered
5.	Other Details	Not Entered
Firebreaks/Res.		
1.	Firebreaks/Res	Not Required
Forestry for Fibre (GPCs: 12a and 12b)		
1.	Is Land Free Drainage arable or pasture soils	Not Entered
2.	Are there surface water gleys without a peat layer	Not Entered
3.	Do you intend to use improved genetic material	Not Entered
4.	Details	Not Entered
Ground Prep.		
1.	Woody Weed Removal	Not Entered
2.	Ripping	Not Entered
3.	Pit Plant	Not Entered
4.	Mole Drainage	Not Entered
5.	Mounding	Yes
6.	Ploughing	Not Entered
9.	Other Details	Not Entered
Planting Method		
1.	Angle Notch	Yes
2.	Pit	Not Entered
3.	Machine	Not Entered



4.	Slit	Not Entered		
5.	Other Details	Not Entered		
Road Access				
1.	Road Access	Provided		
Standard Stocking				
1.	Standard Stocking	Yes		
2.	Details	Not Entered		
Weed Control				
1.	Herbicide Control yr0	Yes		
2.	Herbicide Control yr1	Yes		
3.	Herbicide Control yr2	Yes		
3.	Herbicide Control yr4	Not Entered		
4.	Manual	Yes		
4.	Herbicide Control yr3	Yes		
Fencing Details (metres)				
	Stock	1200	Stock-Sheep	0
	Stock-Rabbit	0	Upgrade to Deer	0
	Deer-Rabbit	0	Deer	0
	Upgrade Existing Fence(s)	0		
	Upgrade Details: None Entered			

Species Approved

The species approved in this proposal relate to the digitised certified species map attached.

Species Approved for Afforestation

Plot	Area	GPC	Land Type	Species	Species Area	Yield Class	Mixture Type	Exclusion	Exclusion Type
1	2.59	GPC 6	BHF	PO	2.33	6	Integrated Mix		
				BI	.26	4			
2	16.18	GPC 3	CHF	SS	14.56	22	Integrated Mix		
				ADB	1.62	4			

Additional Silvicultural and Environmental Conditions

In addition to the Department's environmental and silvicultural guidelines the following specific conditions apply to this proposal:

Silvicultural and Environmental Conditions

Plot 1 is too wet and poorly drained for scots pine. Plant plot 1 with GPC 6 (oak/birch),
In plot 2 plant 2-3 rows of alder/birch along the hedges, ditches and boundaries and 5 rows along all streams. Keep back 15m from streams.,
Adequately drain. Ensure adequate silt traps and compliance with water quality guidelines.,
Adhere to forestry & water quality guidelines,
All guidelines to apply



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Scale 1: 10500.0

Contract: CN72236

Certified Species Information

Contract No: CN72236

Townland: CLARAGHATLEA NORTH

County: C

6 " OS No: CK39

Plot No	GPC	Parcel No	GPC Area(h)	Land Use Type	Species Area	Species	Mixture Type	Excl. Area(h)	Excl. Type
1	GPC 6	37848703	2.59	BHF	2.59	PO, BI	I	0.0	
2	GPC 3	37848755	16.18	CHF	16.18	SS, ADB	I	0.0	
Totals			18.77		18.77			0.0	

Remarks :

Area Surveyed By :
Species Certified By :

Date:
Date:

Appropriate Assessment Screening Report

Proposed Replanting at
Rahalisk, Co. Cork



Planning & Environmental Consultants

DOCUMENT DETAILS

Client: Ardderroo Windfarm Ltd.
Project title: Proposed Replanting at Rahalisk, Co. Cork

Project Number: 160815

Document Title: Article 6 (3) Appropriate Assessment Screening

Doc. File Name: 160815 – Replanting AASR Rahalisk– 2017.11.20 - F

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Document Issue:

Rev	Status	Issue Date	Document File Name	Author(s)	Approved By:
01	Draft	04/04/2017	160815 – Replanting AASR Rahalisk– 2017.04.04 – D1	EJ	PR
02	Final	20/11/2018	160815 – Replanting AASR Rahalisk– 2018.11.20 - F	LK	PR

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1 INTRODUCTION

1.1 Background

This report has been prepared to provide the information necessary to allow the competent authority to conduct an Article 6(3) Screening for Appropriate Assessment for a proposed afforestation site at **Rahalisk, Co. Cork**.

The current project is not directly connected with, or necessary for, the management of any European Site, consequently the project has been subject to the Appropriate Assessment Screening process.

The assessment in this report is based on a desk study and field surveys undertaken in March 2017. It specifically assesses the potential for the proposed development to impact on European Sites.

This report has been prepared in accordance with the European Commission guidance document 'Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC' (EC, 2001) and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

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

1. *DoEHLG (2010) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government,*
2. *European Communities (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
3. *Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
4. *EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission,*
5. *EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission,*

1.2 Appropriate Assessment

1.2.1 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be carried out by the Competent Authority to assess, in view of best scientific knowledge, if a land-use plan or proposed development, individually or in combination with another plan or project, is likely to have a significant effect on a European site. The Competent Authority's determination as to whether an Appropriate Assessment is required must be made on the basis of

objective information and should be recorded. The competent authority may request information to be supplied to enable it to carry out screening.

Consultants or project proponents may undertake a form of screening to establish if an Appropriate Assessment is required and provide advice, or may submit the information necessary to allow the Competent Authority to conduct a screening with an application for consent. Where it cannot be excluded beyond reasonable scientific doubt, that a proposed plan or project, individually or in combination with other plans and projects, would have a significant effect on the conservation objectives of a European site, an Appropriate Assessment (Natura Impact Statement (NIS)) of the plan or project is required.

1.2.2 Appropriate Assessment (Natura Impact Statement)

The term Natura Impact Statement (NIS) is defined in legislation¹. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to 1) the implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and 2) whether there will be adverse effects on the integrity of a European site. The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

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

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT AND BASELINE ENVIRONMENT

2.1 Characteristics of the Proposed Development

The subject site is located in the townland of Rahalisk, Co. Cork, west of Ballinagree town.

The afforestation site is located on approximately 17.31 hectares which is currently dominated by wet grassland (Grid ref: E 134350 N 81203) (Figure 2.1). The afforestation site is located in an area that is dominated by agricultural land-uses and existing forestry.

The land addressed in this document have been granted Technical Approval by the Forest Service for afforestation. Copies of the Technical Approval documents are presented in Appendix 1.

2.1.1 Proposed Afforestation Techniques

Afforestation and subsequent harvesting will conform to Forest Service regulations, policies and strategic guidance documents as well as Coillte produced guidance documents, including the specific guidelines listed below, to ensure that newly planted trees remain viable and afforestation provide minimal potential impacts to the receiving environment.

- *Forestry and Water Quality Guidelines*' (2000)
- *'Forestry and the Landscape Guidelines*' (2000)
- *'Forestry and Archeology Guidelines*' (2000)
- *'Forestry Biodiversity Guidelines*' (2000)
- *'Forestry Protection Guidelines*' (2002)
- *'Forestry Harvesting and Environmental Guidelines*' (2000)
- *'Forest Operations & Water Protection Guidelines*' (2009)
- *'Methodology for Clear Felling Harvesting Operations*' (2009)
- *Land Types for Afforestation*' [2016]
- *'Environmental Requirements for Afforestation*' [2016]

Planting will be carried out in accordance with the *'Forestry Schemes Manual*' (Forest Service, 2011), which provides guidance in relation to ground cultivation, stocking and spacing, plant handling, planting dates, fertiliser application, fencing, fire, and weed control. Certain specific silvicultural and environmental conditions are also set out in the Forest Service Technical Approval which will be adhered to.

2.1.2 Planting

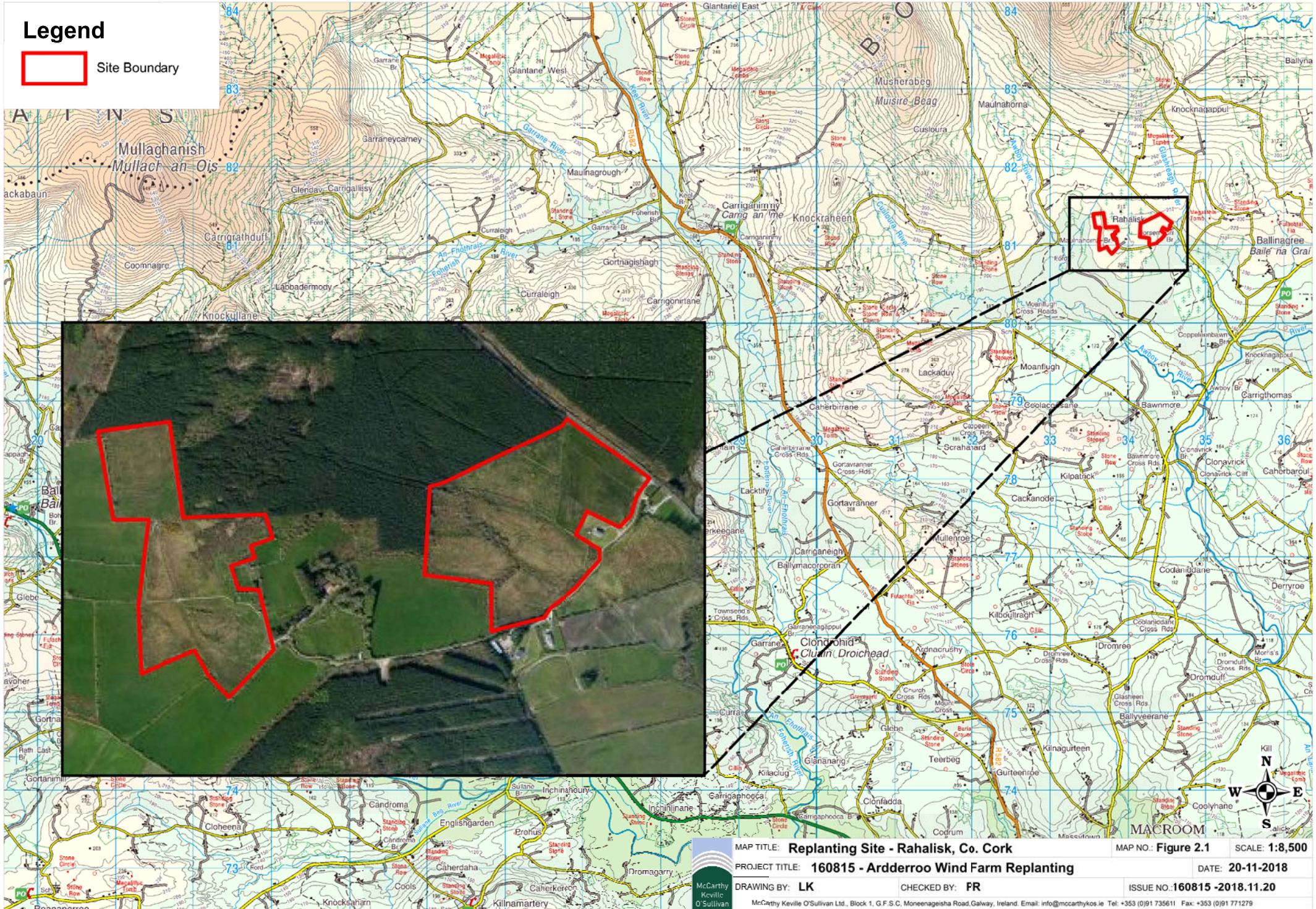
Planting will be by hand. The main forms of planting, as described in the Forestry Schemes Manual, are set out as follows.

Slit Planting

A spade is used to make a vertical slit in the ground. The trees roots are carefully positioned in the slit to ensure that roots are equally spaced in the vertical slit created. The slit is closed and firmed up ensuring the tree is vertical and upright. It is important to ensure that roots are not bent over which can lead to poor development, e.g. J root. This form of planting can be suitable for ribbons, mounds and ripped ground.

Legend

 Site Boundary



MAP TITLE: **Replanting Site - Rahalisk, Co. Cork**

MAP NO.: **Figure 2.1**

SCALE: **1:8,500**

PROJECT TITLE: **160815 - Ardderroe Wind Farm Replanting**

DATE: **20-11-2018**

DRAWING BY: **LK**

CHECKED BY: **FR**

ISSUE NO. **160815 -2018.11.20**



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Angle Notch

A spade is used to cut a T or L-shaped slit in the ground. The spade is used to lift the slit and the trees roots placed underneath to ensure good root distribution without causing damage. The slit is closed and firmed up to ensure that stem is left vertical and upright.

Pit Planting

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

The Technical Approval for the proposed replanting land include the species approved for afforestation.

2.1.3 Drainage

Appropriate drainage designs will include collector drains, interceptor drains and cut-off drains. A description of each drain type, as per the Forestry Schemes Manual, is set out below.

Collector Drains

Collector drains collect water from mound drains, plough furrows, mole drains, etc., and discharge via sediment traps and/or an interceptor drain. Collector drains are excavated to a depth not greater than 10-15 cm below the depth of mound drains. Where collector drains must be extended into erodible material, 'mini' silt traps are placed appropriately by deepening the drains in places.

Interceptor Drains

Interceptor drains are constructed along the edges of aquatic buffer zones, i.e. areas where forest operations are curtailed, and which are managed for environmental protection and enhancement. Interceptor drains collect the discharge from the drainage sub-catchment and allow it to overflow into the buffer zone. In most cases, slope will allow for drainage channels to taper out or be connected to an interceptor drain rather than enter a buffer zone. However, on flat sites, or those with low slopes, it will be necessary to connect drains into the aquatic zone. This may be done only where it will not result in sediment or any pollutants entering the aquatic zone.

Cut off Drains

Cut off drains are constructed immediately up slope of a site and are designed to direct water away from the site.

2.1.4 Invasive Species

Good site hygiene will be employed to prevent the spread of invasive species with vehicles thoroughly washed prior to leaving any site which potentially supported invasive species.

2.2 Characteristics of the Existing Environment

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological baseline conditions are those existing in the absence of proposed activities (CIEEM 2016).

An ecological walkover survey of afforestation site and surrounding area was conducted in March 2017 in line with NRA (2009) guidelines (*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*) by Dr. Erin Johnston (BSc. MSc. PhD).

The walkover survey was designed to detect the presence, or likely presence, of a range of protected habitats and species. Seasonal factors that affect distribution patterns and habits of species were considered when conducting the surveys. It is concluded that the habitats and species that could potentially be impacted by the proposed afforestation were readily identified and assessed during the field surveys conducted in March and a thorough and comprehensive ecological assessment was achieved.

2.3 Habitats

The site is split into two parcels of land. Both sections were largely dominated by Wet Grassland (GS4). The western section of the site contained a small area of degraded, poor quality Lowland Blanket Bog (PB3) (Plate 4.1). Species recorded in this habitat included typical species associated with peatlands: Heather (*Calluna vulgaris*), Purple Moor-grass (*Molinia caerulea*), and Sphagnum mosses (*Sphagnum spp.*). However, Bramble (*Rubus fruticosus*) and gorse (*Ulex europaeus*) was encroaching from the field boundaries and was growing throughout this area (Plate 4.2). Creeping Buttercup (*Ranunculus repens*) was occasionally found throughout. Small rocky outcrops were also present. This small area of bog habitat was surrounded by Wet Grassland (GS4), Conifer Plantation (WD4), and Drainage ditches (FW4).



Plate 4.1 Lowland Blanket Bog (PB3)



Plate 4.2 Lowland Blanket Bog (PB3) with rocky outcrops showing Scrub (WS1) encroachment and existing conifer plantation (WD4)

The wet grassland was extensively dominated by rushes (*Juncus* spp.) (Plate 4.3). Grass species recorded included Creeping Bent (*Agrostis stolonifera*), and Yorkshire Fog (*Holcus lanatus*). Pockets of Gorse Scrub (WS1) were also recorded throughout. Very few broadleaf species were observed within the wet grassland. Those recorded within the habitat included Creeping Buttercup (*Ranunculus repens*), and Common Sorrell (*Rumex acetosa*). At the time of the visit, the wet grassland had been grazed and heavily poached in places (Plate 4.4).



Plate 4.3 Wet Grassland (GS4) with pockets of Scrub (WS1)



Plate 4.4 Poached and grazed Wet Grassland (GS4)

The eastern land parcel again contained wet grassland (GS4), however in this section it did not appear to have been grazed and had become considerably overgrown with rushes (*Juncus spp.*) (Plate 4.5). The remains of drainage ditches (FW4) were recorded throughout, which for the most part had become filled with vegetation and standing water. Species recorded within this section included (*Juncus spp.*), Creeping Buttercup (*Ranunculus repens*), Creeping Bent (*Agrostis stolonifera*), Yorkshire Fog (*Holcus lanatus*) (Plate 4.6). Towards the northern section of this land parcel, Purple Moor-grass (*Molinia caerulea*), Heather (*Calluna vulgaris*) and Sphagnum mosses (*Sphagnum spp.*) became present in the less well drained areas. Lines of scrub containing Gorse, and Willow (*Sallix spp.*) were present towards the centre.



Plate 4.5 Less well drained section of the eastern land parcel.



Plate 4.6 Wet Grassland (GS4) in the eastern land parcel

2.3.1 Invasive Species

No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were identified within the site boundaries during field survey.

2.3.2 Fauna in the existing environment

Birds

Records of birds seen and heard on the site of the proposed development were taken. More detailed and extensive bird surveys were not considered necessary due to the limited ecological value of the habitat which is widespread in the locality.

Bird species recorded during field survey included Snipe (*Gallinago gallinago*), and Meadow Pipit (*Anthus pratensis*). No birds listed on Annex I of the EU Birds Directive were recorded during the field survey.

Terrestrial Mammals

No evidence of any protected faunal species were recorded within the site boundaries. Other common mammals including Pygmy Shrew (*Sorex minutus*) may make use of the site, however evidence of these species was not recorded during the field survey.

Bats

There are no structures within the site which may provide suitable roosting habitat for bats. While an open landscape structure dominates the site generally, the hedgerows and linear scrub lines within the site may provide suitable habitat for commuting or foraging bat species. A dedicated bat survey was not completed as the overall site is dominated by open habitat which has poor suitability for bat species.

Other Taxa

Areas within the site boundary that contained rocky outcrops were checked for the presence of Kerry Slug (*Geomalacus maculosus*), however, no evidence of the species was recorded within this area.

2.3.3 Significance of habitats

The habitat Lowland Blanket Bog (PB3) can correspond to the annexed habitat Blanket Bog (*if active bog) (7130). However, the examples found within the study site were of very poor quality. The pockets identified of this habitat were isolated within the landscape. Grazing livestock appear to be encroaching on the edges of the habitat in the western land parcel. Both sections of the habitat contained fewer than the seven required indicator species, and contained the negative indicator species Yorkshire fog (*Holcus lanatus*) and Creeping Buttercup (*Ranunculus repens*). In both parcels gorse and bramble were beginning to grow throughout. Given the degraded nature of this habitat, it is assigned a significance of Local Importance (Higher Value). Hedgerows and scrub habitats were also assigned a significance of Local Importance (Higher Value) as these habitats have a higher level of biodiversity within the context of the local environment, and in the case of the hedgerows provide links between habitats of higher ecological value.

The wet grassland and drainage ditches that are present within the site, given their highly modified nature, are of Local Importance (Lower Value) as they contain areas which are of some local importance for wildlife.

2.3.4 Significance of Fauna

No evidence of Annex II faunal species or other species of conservation concern were recorded within the site boundaries. In addition, no suitable habitat for species of conservation concern including Marsh Fritillary was identified within the proposed afforestation site.

Bird species recorded within the site boundaries are common generally. The site of the proposed development provides some limited foraging, commuting and nesting habitats for these and other common bird species in general. Similar habitat is widespread in the locality and so a significant impact because of a loss of suitable habitat is not anticipated.

Overall, it is considered that the site of the proposed afforestation is of relatively low value to faunal species due to the existing levels of disturbance from agricultural activity and the low sensitivity of habitats present on the site.

3 IDENTIFICATION OF RELEVANT EUROPEAN SITES

3.1 Background to European Sites

The Habitats Directive (92/43/EEC) (together with the Birds Directive (2009/147/EC)) forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. All in all, the Directive protects over 1,000 animal and plant species and over 200 "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance.

With the introduction of the EU Habitats Directive and Birds Directive which were transposed into Irish law as S.I. No. 94/1997 *European Communities (Birds and Natural Habitats) Regulations 1997*, the European Union formally recognised the significance of protecting rare and endangered species of flora and fauna, and also, more importantly, their habitats. The 1997 Regulations and their amendments were subsequently revised and consolidated in S.I. No. 477/2011- *European Communities (Birds and Natural Habitats) Regulations 2011*. This legislation requires the establishment and conservation of a network of sites of particular conservation value that are to be termed 'European Sites'.

Habitats Directive/Special Areas of Conservation

Articles 3 – 9 of the EU Habitats Directive (92/43/EEC) provide the EU legislative framework of protecting rare and endangered species of flora and fauna, and habitats. **Annex I** of the Directive lists habitat types whose conservation requires the designation of **Special Areas of Conservation (SAC)**. Priority habitats, such as turloughs, which are in danger of disappearing within the EU territory are also listed in Annex I. **Annex II** of the Directive lists animal and plant species (e.g. Atlantic salmon and Killarney fern) whose conservation also requires the designation of **SAC**. **Annex IV** lists animal and plant species in need of strict protection such as lesser horseshoe bat and otter, and **Annex V** lists animal and plant species whose taking in the wild and exploitation may be subject to management measures. In Ireland, species listed under Annex V include Irish hare, common frog and pine marten.

Species can be listed in more than one Annex, as is the case with otter and lesser horseshoe bat which are listed on both **Annex II** and **Annex IV**.

Birds Directive/Special Protection Areas

Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (Birds Directive) has been substantially amended several times. In the interests of clarity and rationality the said Directive was codified in 2009 and is now cited as Directive 2009/147/EC. The Directive instructs Member States to take measures to maintain populations of all bird species naturally occurring in the wild state in the EU (**Article 2**). Such measures may include the maintenance and/or re-establishment of habitats to sustain these bird populations (**Article 3**).

A subset of bird species has been identified in the Directive and are listed in **Annex I** as requiring special conservation measures in relation to their habitats. These species have been listed on account of inter alia: their risk of extinction; vulnerability to specific changes in their habitat; and/or due to their relatively small population size or restricted distribution. **Special Protection Areas (SPAs)** are to be identified and

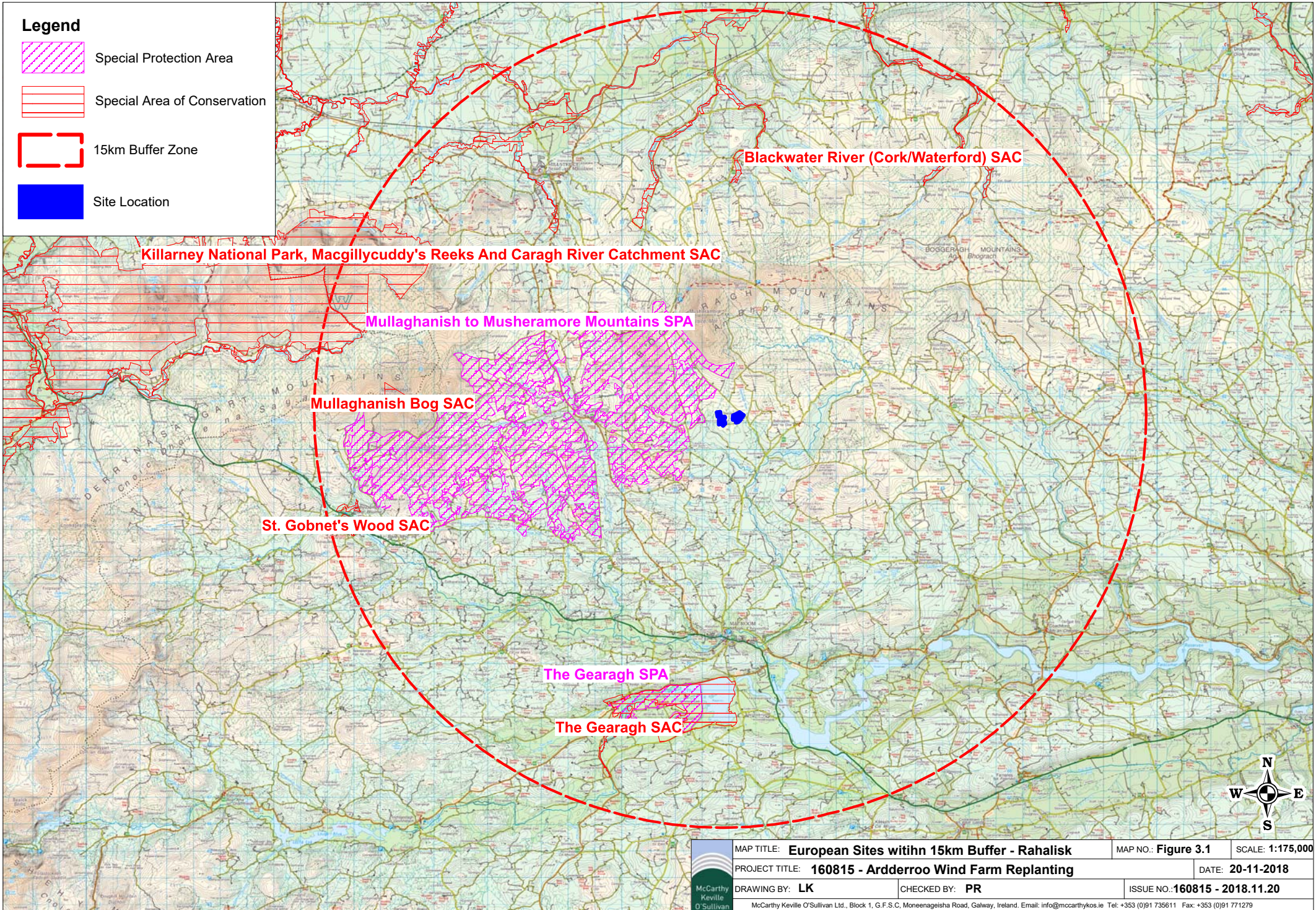
classified for these Annex I listed species and for regularly occurring migratory species, paying particular attention to the protection of wetlands (**Article 4**).

3.2 Identification of the Designated Sites within the Likely Zone of Impact

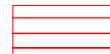


The most up to date GIS spatial datasets for Surface Water Catchments and European designated sites were downloaded from the EPA website (www.eps.ie) and NPWS website (www.npws.ie), respectively, on the 20/11/2018. The following rationale was used to identify the Likely Zone of Impact. Initially, sites within a 15 km radius of the proposed development were identified (as per the DoEHLG Guidance (2010)) as shown on Figure 3.1. In addition, using the precautionary principle, European Sites located outside the 15 km buffer zone were also taken into account and assessed. In this case, no pathway for effects on any site that is further than 15 km from the site was identified. These European Sites were then individually assessed to determine whether impacts as a result of the proposed afforestation were likely.

Figure 3.1 shows the location of the proposed afforestation site in relation to all European sites located within 15km of the site.

Table 3.1 below, lists all European Sites within 15 km of the proposed development and assesses which, are within the Likely Zone of Impact. The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie) were considered at the time of preparation of this report (20/11/2018). Details of these sites, including their distance from the proposed development, their Qualifying Interests/Special Conservation Interests and a rationale as to whether they are within the Likely Zone of Impact of the proposed works are provided in Table 3.1.



Legend

-  Special Protection Area
-  Special Area of Conservation
-  15km Buffer Zone
-  Site Location

	MAP TITLE: European Sites within 15km Buffer - Ralalisk	MAP NO.: Figure 3.1	SCALE: 1:175,000
	PROJECT TITLE: 160815 - Arderroo Wind Farm Replanting	DATE: 20-11-2018	
	DRAWING BY: LK	CHECKED BY: PR	ISSUE NO.: 160815 - 2018.11.20
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Table 3.1. European Sites within the Likely Zone of Impact of the proposed afforestation site

European Site	Qualify Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 20/11/2018)	Conservation Objectives	Zone of Likely Impact Determination
Special Area of Conservation			
Blackwater River (Cork/Waterford) SAC (002170) Distance: 7.4km	<ul style="list-style-type: none"> ▪ Estuaries [1130] ▪ Mudflats and sandflats not covered by seawater at low tide [1140] ▪ Perennial vegetation of stony banks [1220] ▪ Salicornia and other annuals colonising mud and sand [1310] ▪ Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] ▪ Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] ▪ Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] ▪ Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] ▪ Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] ▪ <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] ▪ <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] ▪ <i>Petromyzon marinus</i> (Sea Lamprey) [1095] ▪ <i>Lampetra planeri</i> (Brook Lamprey) [1096] ▪ <i>Lampetra fluviatilis</i> (River Lamprey) [1099] ▪ <i>Alosa fallax fallax</i> (Twaite Shad) [1103] 	Detailed conservation objectives for this site (Version 1, July 2012) were reviewed as part of the assessment and are available at www.npws.ie	This site is located upgradient and in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.

	<ul style="list-style-type: none"> ▪ <i>Salmo salar</i> (Salmon) [1106] ▪ <i>Lutra lutra</i> (Otter) [1355] ▪ <i>Trichomans speciosum</i> (Killarney Fern) [1421] 		
<p>The Gearagh SAC (000108)</p> <p>Distance: 9.4km</p>	<ul style="list-style-type: none"> ▪ Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] ▪ Rivers with muddy banks with <i>Chenopodion rubri</i> p.p. and <i>Bidention</i> p.p. vegetation [3270] ▪ Old sessile oak woods with Ilex and <i>Blechnum</i> in the British Isles [91A0] ▪ Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] ▪ <i>Lutra lutra</i> (Otter) [1355] 	Detailed conservation objectives for this site (Version 1, September 2016) were reviewed as part of the assessment and are available at www.npws.ie	This site is located upgradient and in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.
<p>Mullaghanish Bog SAC (001890)</p> <p>Distance: 11.3km</p>	<ul style="list-style-type: none"> • Blanket bogs (* if active bog) [7130] 	Detailed conservation objectives for this site (Version 1, May 2017) were reviewed as part of the assessment and are available at www.npws.ie	This site is located upgradient and in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.
<p>Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)</p> <p>Distance: 12.1km</p>	<ul style="list-style-type: none"> • Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] • Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] • Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] • Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] • European dry heaths [4030] • Alpine and Boreal heaths [4060] • <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] 	Detailed conservation objectives for this site (Version 1, May 2017) were reviewed as part of the assessment and are available at www.npws.ie	This site is located upgradient and in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.

	<ul style="list-style-type: none"> • Calaminarian grasslands of the <i>Violetalia calaminariae</i> [6130] • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] • Blanket bogs (* if active bog) [7130] • Depressions on peat substrates of the Rhynchosporion [7150] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] • <i>Taxus baccata</i> woods of the British Isles [91J0] • <i>Geomalacus maculosus</i> (Kerry Slug) [1024] • <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] • <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065] • <i>Petromyzon marinus</i> (Sea Lamprey) [1095] • <i>Lampetra planeri</i> (Brook Lamprey) [1096] • <i>Lampetra fluviatilis</i> (River Lamprey) [1099] • <i>Salmo salar</i> (Salmon) [1106] • <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] • <i>Lutra lutra</i> (Otter) [1355] • <i>Trichomanes speciosum</i> (Killarney Fern) [1421] • <i>Najas flexilis</i> (Slender Naiad) [1833] • <i>Alosa fallax killarnensis</i> (Killarney Shad) [5046] 		
<p>St. Gobnet's Wood SAC (000106)</p> <p>Distance: 13.7km</p>	<ul style="list-style-type: none"> • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] 	<p>The generic conservation objectives for this site are:</p> <p><i>"To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC</i></p>	<p>This site is located upgradient and in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>

Special Protection Area		<i>has been selected:</i> " (NPWS Generic version 6.0, 2018)	
<p>Mullaghanish to Musheramore Mountains SPA (004162)</p> <p>Distance: 0.5km</p>	<ul style="list-style-type: none"> • Hen Harrier (<i>Circus cyaneus</i>) [A082] 	<p>This site has the generic conservation objective:</p> <p><i>'To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.'</i> (NPWS Generic version 6.0, 2018)</p>	<p>This site is located upgradient and in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>
<p>The Gearagh SPA (004109)</p> <p>Distance: 9.6km</p>	<ul style="list-style-type: none"> • Wigeon (<i>Anas penelope</i>) [A050] • Teal (<i>Anas crecca</i>) [A052] • Mallard (<i>Anas platyrhynchos</i>) [A053] • Coot (<i>Fulica atra</i>) [A125] • Wetland and Waterbirds [A999] 	<p>This site has the generic conservation objective:</p> <p><i>'To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.'</i></p> <p>A second conservation objective for this site is:</p> <p><i>'To maintain or restore the favourable conservation condition of the wetland habitat at the The Gearagh SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.'</i> (NPWS Generic version 6.0, 2018)</p>	<p>This site is located upgradient and in a separate hydrological sub-catchment to the proposed works. No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>

4 ASSESSMENT OF LIKELY EFFECTS ON EUROPEAN SITES

Any likely direct or indirect impacts of the proposed development, both alone and in combination with other plans and projects, on European Sites by virtue of the following criteria: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning have been considered in this Screening Assessment.

As shown in Table 3.1, no European Sites were identified within the Likely Zone of Impact. Therefore, there is no potential for significant effects on any European Site as a result of the proposed afforestation works.

5 ARTICLE 6(3) SCREENING STATEMENT AND CONCLUSIONS

The findings of this Screening Assessment are presented following the European Commission guidance document '*Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC*' (EC, 2001) and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

5.1 Assessment of Significance of Effects

Is the project directly connected with or necessary to the management of the site?

The project is not directly connected with or necessary to the management of any European Site.

Cumulative Impact Assessment - Are there any other projects or plans that together with the project being assessed could affect the site?

The potential for the proposed development to contribute to a cumulative impact on European Sites was considered. The online planning system for Cork County Council was consulted on the 20/11/2018 for applications in the last five years in Rahalisk.

There are no large-scale developments proposed or existing in close proximity to the project. One completed planning application that has been made in the townland in the past five years was identified. This was related to construction of access roads in to forestry.

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

The proposed works are located in the townland of Rahalisk, Co. Cork. The works as proposed have been assessed in Table 3.1 and it has been concluded that there are no European sites within the likely zone of impact of the proposed works. Due to the nature, scale and location of the proposed works as described in Section 2.1 and assessed in Table 3.1 it has been concluded that there will be no cumulative impact on any European sites as a result of the proposed works.

Describe how the project is likely to affect the European Site

- No potential for the proposed works to result in significant direct or indirect effects on any European Site were identified.

5.2 Data Collected to Carry Out Assessment

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

- Review of NPWS site synopses, mapping and conservation objectives for European Sites.
- Review of 2013 EU Habitats Directive (Article 17) Report.
- Review of OS maps and aerial photographs of the site of the proposed development.

- Review of relevant databases including National Biodiversity Ireland Database, etc.
- Review of other plans and projects within the area.
- Liaison with the project team in relation to the design of the development.
- Site visit conducted by Dr. Erin Johnston (BSc. MSc. PhD) March 2017.

5.3 Overall Conclusions

The proposed works, by themselves or in combination with other plans and projects, in light of best scientific knowledge, do not, in view of the sites' qualifying interests and conservation objectives, have the potential to result in significant effects on any European Site.

There is no requirement for Appropriate Assessment.

BIBLIOGRAPHY

Bailey, M. and Rochford J. (2006) Otter Survey of Ireland 2004/2005. Irish Wildlife Manuals, No. 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Balmer, D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. and Fuller, R.J. (2013). Bird Atlas 2007-11: the breeding and wintering birds of Britain and Ireland. BTO Books, Thetford, UK.

Birds Directive (2009/47/EC) – http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

CIEEM (2016) Institute of Ecology and Environmental Management Draft Guidelines for Ecological Impact Assessment.

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive 79/409/EEC as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011).

Crowe, O. (2005) Ireland's Wetlands and their Waterbirds: Status and Distribution. BirdWatch Ireland, Rockingham, Co. Wicklow.

DoEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Revision, February, 2010. Department of the Environment, Heritage and Local Government.

EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

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

EC (2007b) Interpretation Manual of European Union Habitats. Version EUR 27. European Commission, DG Environment.

European Communities (Conservation of Wild Birds) Regulations, 1985, SI 291/1985 & amendments – <http://www.irishstatutebook.ie>.

European Communities (Environmental Impact Assessment) Regulations, 1989 to 2001.

European Communities (Natural Habitats) Regulations, SI 94/1997, SI 233/1998 & SI 378/2005 – <http://www.irishstatutebook.ie>.

Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Dublin: The Heritage Council.

Gibbons, D.W., Reid, J.B., Chapman, R.A. (1993) *The New Atlas of Breeding Birds in Britain and Ireland: 1988-1991*. T&AD Poyser, London, UK.

Kerry County Council. Kerry County Development Plan 2015-2021

King, J., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J., Fitzpatrick, U., Gargan, P., Kelly, F., O'Grady, M., Poole, R., Roche, W., Cassidy, D. (2011) *Ireland Red List No. 5.: Amphibians, reptiles & Freshwater Fish*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Masters-Williams, H., Heap, A., Kitts, H., Greenshaw, L., Davis, S., Fisher, P., Hendrie, M., Owens, D. (2001) *Control of water pollution from construction sites. Guidance for consultants and contractors*. CIRIA, London, UK.

Murnane, E., Heap, A., Grimes, J., Rawlinson, J., Williams, J., Forrester, L. (2002) *Control of water pollution from construction sites – guide to good practice SP156*. CIRCA, London, UK.

Murphy, D.F. (2004) *Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites*. Eastern Regional Fisheries Board, Dublin.

NPWS (2013) *The Status of EU Protected Habitats and Species in Ireland 2013*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS Protected Site Synopses and maps available on
<http://www.npws.ie/en/ProtectedSites/>.

NRA (2005) *Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes*. Dublin: National Roads Authority.

NRA (2006) *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes*. Dublin: National Roads Authority.

NRA (2006) *Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes (1 ed.)*. Dublin: National Roads Authority.

NRA (2006) *Guidelines for the Treatment of Bats during the Construction of National Road Schemes*. Dublin: National Roads Authority.

NRA (2006) *Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes*. National Roads Authority, Dublin.

NRA (2009). *Guidelines for Assessment of Ecological Impacts of National Road Schemes*. National Roads Authority, Dublin.

NRA (2008). *The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads*. Dublin: National Roads Authority.

Preston, C.D., Pearman, D.A., Dines, T.D. (Eds.) (2002). *New Atlas of the British and Irish Flora*. Department for Environment, Food and Rural Affairs. Oxford, UK.

Scott Wilson, Levett-Therivel Sustainability Consultants, Treweek Environmental Consultants and Land Use Consultants (2006). *Appropriate Assessment of Plans*. Scott Wilson, Basingstoke.

Stace, C. A. (1997). *New Flora of the British Isles*. Cambridge: Cambridge University Press.

Water status data available on <http://www.epa.ie> and <http://www.wfdireland.ie>

Wildlife Act 1976 and Wildlife (Amendment) Act 2000.

Appendix I

Technical Approval Documents

THE FORESTRY COMPANY

THE FORESTRY COMPANY
EAST PARK HOUSE
MARINA COMMERCIAL PARK
CENTRE PARK ROAD, CORK
CO CORK

RECEIVED
03 MAR 2015

02/03/2015

Approval for Non Grant Aided Afforestation

J.R

Forest Owner	FO128320H
Contract Number	CN70567
Townland	Rahalisk
County	Cork
Approved Area (Ha)	17.31
Fencing Length (LM)	1,550.00

Enerco
Energy.

I refer to your application (Form 1) requesting approval for Afforestation. Your application has been assessed and approval is hereby issued on the basis that the works will be undertaken in accordance with the prescription set out in Appendix A attached herewith.

You should note that the project will NOT be eligible for grant aid.

The following conditions apply to this application:
Satisfactory completion of the work not later than 31-DEC-16

Environmental & Silvicultural Considerations

Adequately drain the site. Connect mound drains to field drains via collector drains and silt traps.,
Keep back appropriate distance from houses and 10m from stream in the eastern plot.,
Plant 10 rows of alder/birch/rowan/scots pine facing house, 5 rows along stream and roads and 2 rows along all hedges, ditches and boundaries.,
All guidelines to apply

You are required to notify the Department of Agriculture, Food and Marine in writing if any of the details of your application have changed.

IMPORTANT

As no submissions from third parties were received by the Department concerning this application, development in accordance with this may proceed without further notice.

Please feel free to contact this office, quoting your Contract Number, regarding progress of your application. LoCall 1890-200-509.

Yours sincerely



JOANNE ROBINSON
Approval Section
Forest Service


Operational Proposals for Approval of Afforestation

Forest Owner Number	FO128320H
Contract Number	CN70567
Townland	Rahalisk
County	Cork
Area Approved	17.31(ha)
Fencing Length (LM)	1,550.00

All applications must be developed in accordance with detailed standards and procedures as described in the current Forestry Schemes Manual. Certain specific operational proposals particular to this application are described below. No change is permitted to these proposals and species approved unless approved in advance by the Department. The Department may insist that proposed changes constitutes a new application.

Operational Proposal Details

Agro Forestry (GPC 11)		
1.	Tree Shelters	Not Entered
2.	Plant Size and Stocking	Not Entered
Drainage		
1.	Drainage	Required
2.	Drainage Comment	Full compliance with the Forestry and Water Quality Guidelines.
Fertiliser		
1.	Zero	Not Entered
2.	350 Kg Granulated Rock Phosphate	Not Entered
3.	250 Kg Granulated Rock Phosphate	Yes
4.	Split Application	Not Entered
5.	Other Details	Not Entered
Firebreaks/Res.		
1.	Firebreaks/Res	Not Required
Forestry for Fibre (GPCs: 12a and 12b)		
1.	Is Land Free Drainage arable or pasture soils	Not Entered
2.	Are there surface water gleys without a peat layer	Not Entered
3.	Do you intend to use improved genetic material	Not Entered
4.	Details	Not Entered
Ground Prep.		
1.	Woody Weed Removal	Not Entered
2.	Ripping	Not Entered
3.	Pit Plant	Not Entered
4.	Mole Drainage	Not Entered
5.	Mounding	Yes
6.	Ploughing	Not Entered
9.	Other Details	Not Entered
Planting Method		
1.	Angle Notch	Yes
2.	Pit	Not Entered
3.	Machine	Not Entered

4.	Slit	Not Entered			
5.	Other Details	Not Entered			
Road Access					
1.	Road Access	Provided			
Standard Stocking					
1.	Standard Stocking	Yes			
2.	Details	Not Entered			
Weed Control					
1.	Herbicide Control yr0	Yes			
2.	Herbicide Control yr1	Yes			
3.	Herbicide Control yr2	Yes			
3.	Herbicide Control yr4	Not Entered			
4.	Manual	Yes			
4.	Herbicide Control yr3	Yes			
Fencing Details (metres)		Stock	1550	Stock-Sheep	0
		Stock-Rabbit	0	Upgrade to Deer	0
		Deer-Rabbit	0	Deer	0
		Upgrade Existing Fence(s)	0		
		Upgrade Details: None Entered			

Species Approved

The species approved in this proposal relate to the digitised certified species map attached.

Species Approved for Afforestation

Plot	Area	GPC	Land Type	Species	Species Area	Yield Class	Mixture Type	Exclusion	Exclusion Type
1	8.25	GPC 3	CHF	SS	7.43	24	Integrated Mix		
				ADB	.83	4			
2	9.06	GPC 3	CHF	SS	8.15	24	Integrated Mix		
				ADB	.91	4			

Additional Silvicultural and Environmental Conditions

In addition to the Department's environmental and silvicultural guidelines the following specific conditions apply to this proposal:

Silvicultural and Environmental Conditions

Adequately drain the site. Connect mound drains to field drains via collector drains and silt traps.,
Keep back appropriate distance from houses and 10m from stream in the eastern plot.,
Plant 10 rows of alder/birch/rowan/scots pine facing house, 5 rows along stream and roads and 2 rows along all hedges, ditches and boundaries.,
All guidelines to apply

Cómhairle Contae Chorcaí Cork County Council

An Rannóg Pleanála,
Halla an Chontae,
Bóthar Charraig Ruacháin, Corcaigh.
Fón: (021) 4276891 • Faics: (021) 4867007
R-phost: planninginfo@corkcoco.ie
Suíomh Gréasáin: www.corkcoco.ie
Planning Department,
County Hall,
Carrigrohane Road, Cork.
Tel (021) 4276891 • Fax (021) 4867007
Email: planninginfo@corkcoco.ie
Web: www.corkcoco.ie



Department of Agriculture, Food and the Marine,
Johnstown Castle Estate,
Co. Wexford.

copy

18th February 2015

F.A.O. Caroline O Connell

Contract No: CN70567

At: Rahalisk

A Chara,

With reference to the above application for approval to plant, please note comments of James Dwyer, Senior Executive Engineer for this area.

"My comments in relation to the above are as follows:

- *The applicant or his agents must ensure that the proposed works do not result in mud or debris being deposited on the public road.*
- *The applicant or his agents may be held responsible should any damage be caused to the public road as a result of the works concerned."*

Kind regards,

SHARON CULLEN ASO
Oifigeach Foirme
PLANNING DEPARTMENT



to/usp 23/2/15





Ordnance Survey Ireland Licence No. EN 0076413. Copyright Ordnance Survey Ireland/Government of Ireland
Unauthorized reproduction is not permitted. This map is for Forest Service related use only.

Scale 1: 5000.0

Contract: CN70567

Certified Species Information

Contract No: CN70567

Townland: RAHALISK

County: C

6 " OS No: CK60

Plot No	GPC	Parcel No	GPC Area(h)	Land Use Type	Species Area	Species	Mixture Type	Excl. Area(h)	Excl. Type
1	GPC 3	36853851	8.25	CHF	8.26	SS, ADB	I	0.0	
2	GPC 3	36853874	9.06	CHF	9.06	SS, ADB	I	0.0	
Totals			17.31		17.32			0.0	

Remarks :

Area Surveyed By :
Species Certified By :

Date:
Date:

Appropriate Assessment Screening Report

Proposed Replanting at Knockavrogeen East, Co. Kerry



Planning & Environmental Consultants

DOCUMENT DETAILS

Client: Knocknamork Ltd.
Project title: Proposed Replanting at Knockavrogeen,
Co. Kerry

Project Number: 170132

Document Title: Appropriate Assessment Screening
Report

Doc. File Name: Replanting AASR – F - 170132 –
2018.07.27

Prepared By: McCarthy Keville O’Sullivan Ltd.
Planning & Environmental Consultants
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Document Issue:

Rev	Status	Issue Date	Document File Name	Author(s)	Approved By:
01	Draft	26.07.2018	Replanting AASR – D1 – 170132 – 2018.07.26	ÚN	PR
02	Final	27.07.2018	Replanting AASR – F – 170132 – 2018.07.27	ÚN	PR

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1 INTRODUCTION

1.1 Background

This report has been prepared to provide the information necessary to allow the competent authority to conduct an Article 6(3) Screening for Appropriate Assessment for a proposed afforestation site at **Knockavrogeen East, Co. Kerry**,

The current project is not directly connected with, or necessary for, the management of any European Site, consequently the project has been subject to the Appropriate Assessment Screening process.

The assessment in this report is based on a desk study and field surveys undertaken in March 2018. It specifically assesses the potential for the proposed development to impact on European Sites.

This report has been prepared in accordance with the European Commission guidance document '*Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC*' (EC, 2001) and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

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

1. *DoEHLG (2010) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government,*
2. *European Communities (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
3. *Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
4. *EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission,*
5. *EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission,*

1.2 Appropriate Assessment

1.2.1 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be carried out by the Competent Authority to assess, in view of best scientific knowledge, if a land-use plan or proposed development, individually or in combination with another plan or project, is likely to have a significant effect on a European site. The Competent Authority's determination as to whether an Appropriate Assessment is required must be made on the basis of

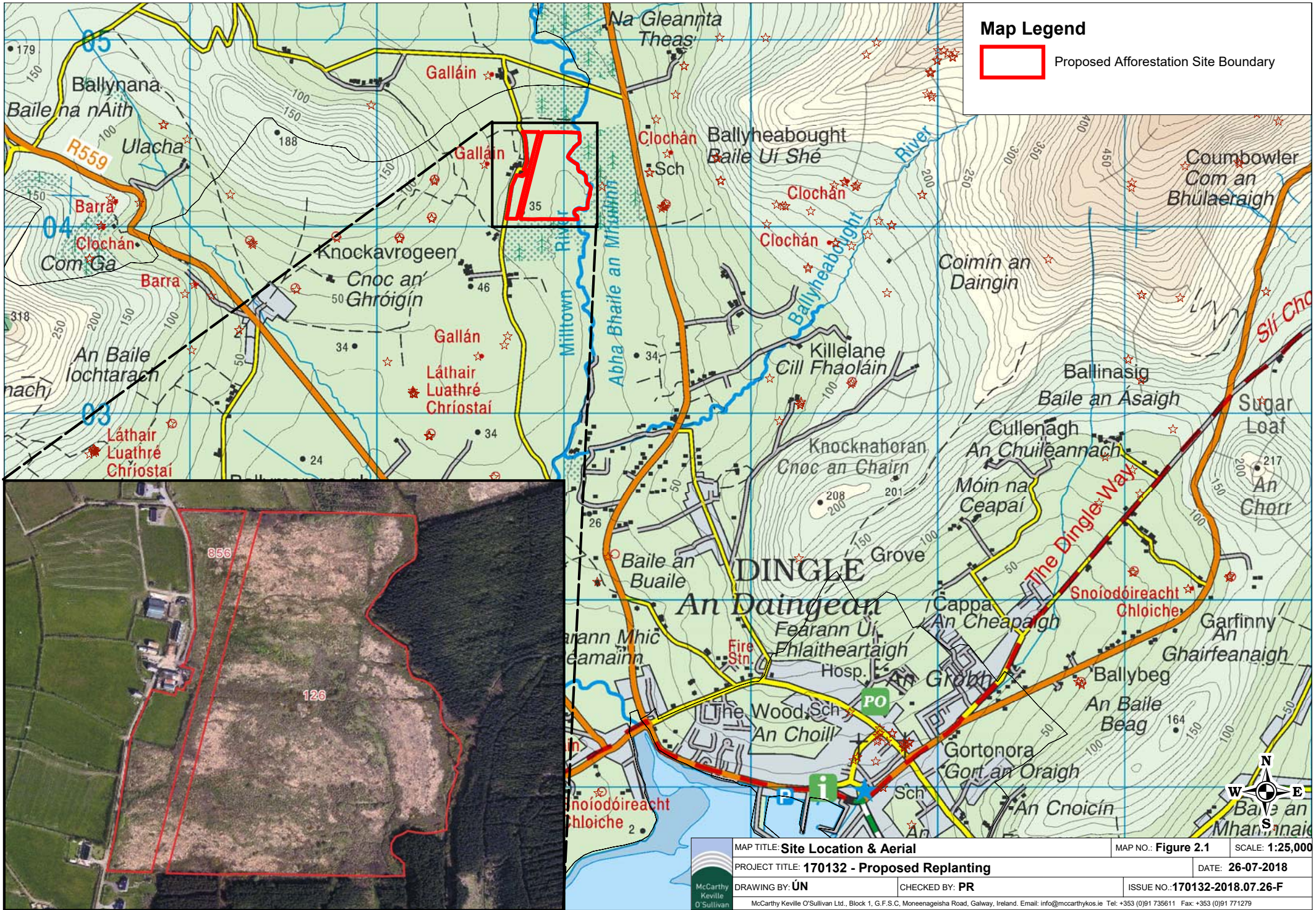
objective information and should be recorded. The competent authority may request information to be supplied to enable it to carry out screening.

Consultants or project proponents may undertake a form of screening to establish if an Appropriate Assessment is required and provide advice, or may submit the information necessary to allow the Competent Authority to conduct a screening with an application for consent. Where it cannot be excluded beyond reasonable scientific doubt, that a proposed plan or project, individually or in combination with other plans and projects, would have a significant effect on the conservation objectives of a European site, an Appropriate Assessment (Natura Impact Statement (NIS)) of the plan or project is required.

1.2.2 Appropriate Assessment (Natura Impact Statement)

The term Natura Impact Statement (NIS) is defined in legislation¹. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to 1) the implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and 2) whether there will be adverse effects on the integrity of a European site. The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

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



2 DESCRIPTION OF THE PROPOSED DEVELOPMENT AND BASELINE ENVIRONMENT

2.1 Characteristics of the Proposed Development

Knocknamork Ltd. have applied to Cork County Council and Kerry County Council for permission to construct a renewable energy development in the townlands of Slieveraigh and Coomanclóhy in Co. Cork, and Cummeenavrick, Glashcormick Clydaghróe and Cummeennabuddoge in Co. Kerry. The total replanting requirement for the proposed development is 9.87 hectares.

A replanting area has been identified in Knockavrogeen East, Co. Kerry. The proposed afforestation site is situated approximately 3.0 km north of Dingle and accessed via a local road off the R559 Regional Road (Figure 2.1).

This land has been assessed as part of the Afforestation Approval – Form 1 process and obtained Technical Approval for Afforestation from the Forest Service. The total approved area for replanting afforestation at the site is 14.66 hectares, which is available to the applicant and would meet the total development replanting requirement. Copies of the Technical Approval documents are presented in Appendix 1.

2.1.1 Proposed Afforestation Techniques

Afforestation and subsequent harvesting will conform to Forest Service regulations, policies and strategic guidance documents as well as Coillte produced guidance documents, including the specific guidelines listed below, to ensure that newly planted trees remain viable and afforestation provide minimal potential impacts to the receiving environment.

- *Forestry and Water Quality Guidelines* (2000)
- *Forestry and the Landscape Guidelines* (2000)
- *Forestry and Archeology Guidelines* (2000)
- *Forestry Biodiversity Guidelines* (2000)
- *Forestry Protection Guidelines* (2002)
- *Forestry Harvesting and Environmental Guidelines* (2000)
- *Forest Operations & Water Protection Guidelines* (2009)
- *Methodology for Clear Felling Harvesting Operations* (2009)
- *Land Types for Afforestation* (2016)
- *Environmental Requirements for Afforestation* (2016)

Planting will be carried out in accordance with the *Forestry Schemes Manual* (Forest Service, 2011), which provides guidance in relation to ground cultivation, stocking and spacing, plant handling, planting dates, fertiliser application, fencing, fire, and weed control. Certain specific silvicultural and environmental conditions are also set out in the Forest Service Technical Approval which will be adhered to.

2.1.2 Planting

Planting will be by hand. The main forms of planting, as described in the *Forestry Schemes Manual*, are set out as follows.

Slit Planting

A spade is used to make a vertical slit in the ground. The trees roots are carefully positioned in the slit to ensure that roots are equally spaced in the vertical slit created. The slit is closed and firmed up ensuring the tree is vertical and upright. It is important to ensure that roots are not bent over which can lead to poor development, e.g. J root. This form of planting can be suitable for ribbons, mounds and ripped ground.

Angle Notch

A spade is used to cut a T or L-shaped slit in the ground. The spade is used to lift the slit and the trees roots placed underneath to ensure good root distribution without causing damage. The slit is closed and firmed up to ensure that stem is left vertical and upright.

Pit Planting

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

The Technical Approval for the proposed replanting land include the species approved for afforestation.

2.1.3 Drainage

Appropriate drainage designs will include collector drains, interceptor drains and cut-off drains. A description of each drain type, as per the Forestry Schemes Manual, is set out below.

Collector Drains

Collector drains collect water from mound drains, plough furrows, mole drains, etc., and discharge via sediment traps and/or an interceptor drain. Collector drains are excavated to a depth not greater than 10-15 cm below the depth of mound drains. Where collector drains must be extended into erodible material, 'mini' silt traps are placed appropriately by deepening the drains in places.

Interceptor Drains

Interceptor drains are constructed along the edges of aquatic buffer zones, i.e. areas where forest operations are curtailed, and which are managed for environmental protection and enhancement. Interceptor drains collect the discharge from the drainage sub-catchment and allow it to overflow into the buffer zone. In most cases, slope will allow for drainage channels to taper out or be connected to an interceptor drain rather than enter a buffer zone. However, on flat sites, or those with low slopes, it will be necessary to connect drains into the aquatic zone. This may be done only where it will not result in sediment or any pollutants entering the aquatic zone.

Cut off Drains

Cut off drains are constructed immediately up slope of a site and are designed to direct water away from the site.

2.1.4 Invasive Species

Good site hygiene will be employed to prevent the spread of invasive species with vehicles thoroughly washed prior to leaving any site which potentially supported invasive species.

2.2 Characteristics of the Existing Environment

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological baseline conditions are those existing in the absence of proposed activities (CIEEM 2016).

An ecological walkover survey of afforestation site and surrounding area was conducted on the 12th March 2018 in line with NRA (2009) guidelines (*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*) by Úna Nealon (BSc, PhD).

The walkover survey was designed to detect the presence, or likely presence, of a range of protected habitats and species. Seasonal factors that affect distribution patterns and habits of species were considered when conducting the surveys. It is concluded that the habitats and species that could potentially be impacted by the proposed afforestation were readily identified and assessed during the field surveys conducted in March and a thorough and comprehensive ecological assessment was achieved.

2.2.1 Habitats

The proposed afforestation site was dominated by **Wet Grassland (GS4)** (Plate 2.1). The larger eastern section of the site has been subject to substantial disturbance. Earth has been banked in rows and wet grassland formed a mosaic with **Recolonising Bare Ground (ED3)** (Plate 2.2). Species included soft rush (*Juncus effuses*), European gorse (*Ulex europaeus*), creeping buttercup (*Ranunculus repens*), dock (*Rumex* sp.), sheep's fescue (*Festuca ovina*), creeping bent-grass (*Agrostis stolonifera*), Yorkshire fog (*Holcus lanatus*), daisy (*Bellis perennis*), clover (*Trifolium* sp.), primrose (*Primula vulgaris*) and purple moor grass (*Molinia caerulea*).

In the narrow section to the west, grazing was more evident and **Wet Grassland (GS4)** formed a mosaic with **Improved Agricultural Grassland (GA1)** (Plate 2.3). Soft rush (*J. effuses*) was less frequent and species such as creeping buttercup (*Ranunculus repens*), dock (*Rumex* sp.), sheep's' fescue (*Festuca ovina*), creeping bent-grass (*Agrostis stolonifera*) and Yorkshire fog (*Holcus lanatus*), were more abundant.

The Milltown River borders the eastern side of the site and a **Drain (FW4)** bisects the eastern section of the site, running north-south (Plate 2.4). Coniferous forestry also borders the site to the east and south. Boundaries to the north and west are composed of **Hedgerows (WL1)**, comprising willow shrub (*Salix* sp.), blackthorn (*Prunus spinosa*), European gorse (*Ulex europaeus*), Cotoneaster, ivy (*Hedera helix*), bramble (*Rubus fruticosus*), creeping buttercup (*Ranunculus repens*), dock (*Rumex* sp.), creeping bent-grass (*Agrostis stolonifera*), soft rush (*Juncus effuses*), nettle (*Urtica dioica*) and Montbretia.



Plate 2.1: Wet Grassland (GS4) within eastern section of site



Plate 2.2: Recolonising Bare Ground (ED3) within eastern section of site



Plate 2.3: Agricultural Grassland (GA1)/Wet Grassland (GS4) mosaic within western section of site



Plate 2.4: Drain (FW4) running north – south through eastern section of site

2.2.1.1 Invasive Species

No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were identified within the site boundaries during field survey.

2.2.1.2 Significance of Habitats

Ecological evaluation within this section follows a methodology that is set out in Chapter 3 of the *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (NRA, 2009).

No habitats which correspond to those that are listed in the EU Habitats Directive were identified during the site visit. Grassland habitats within the site, given their highly modified and very disturbed state, are of ***Local Importance (Lower Value)***.

2.2.2 Fauna

Birds

Snipe (*Gallinago gallinago*), pheasant (*Phasianus colchicus*) and blackbird (*Turdus merula*) were recorded incidentally within the site. No birds listed on Annex I of the EU Birds Directive were recorded during the field survey.

Terrestrial Mammals

No evidence of protected mammal species was recorded within the site boundary. There is no suitable habitat for otter present within the site. In addition, there were no structures or trees which may provide suitable roosting habitat for bats. Overall, the site was considered to have low suitability for bat species.

No evidence of marsh fritillary or Kerry slug, or their habitats, was recorded during the site visit.

2.2.2.1 Significance of Fauna

No evidence of Annex listed species, or other species of conservation concern were recorded within the site boundary. In addition, no suitable habitat for species of conservation concern including otter, marsh fritillary or Kerry slug was identified within the proposed afforestation site.

Bird species recorded within the site boundaries are common generally and assigned a value of **Local Importance (Lower Value)**. The site of the proposed afforestation provides some limited foraging, commuting and nesting habitats for these and other common bird species in general. Similar habitat is widespread in the locality.

3 IDENTIFICATION OF RELEVANT EUROPEAN SITES

3.1 Background to European Sites

The Habitats Directive (92/43/EEC) (together with the Birds Directive (2009/147/EC)) forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. All in all, the Directive protects over 1,000 animal and plant species and over 200 "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance.

With the introduction of the EU Habitats Directive and Birds Directive which were transposed into Irish law as S.I. No. 94/1997 *European Communities (Birds and Natural Habitats) Regulations 1997*, the European Union formally recognised the significance of protecting rare and endangered species of flora and fauna, and also, more importantly, their habitats. The 1997 Regulations and their amendments were subsequently revised and consolidated in S.I. No. 477/2011- *European Communities (Birds and Natural Habitats) Regulations 2011*. This legislation requires the establishment and conservation of a network of sites of particular conservation value that are to be termed 'European Sites'.

Habitats Directive/Special Areas of Conservation

Articles 3 – 9 of the EU Habitats Directive (92/43/EEC) provide the EU legislative framework of protecting rare and endangered species of flora and fauna, and habitats. **Annex I** of the Directive lists habitat types whose conservation requires the designation of **Special Areas of Conservation (SAC)**. Priority habitats, such as turloughs, which are in danger of disappearing within the EU territory are also listed in Annex I. **Annex II** of the Directive lists animal and plant species (e.g. Atlantic salmon and Killarney fern) whose conservation also requires the designation of **SAC**. **Annex IV** lists animal and plant species in need of strict protection such as lesser horseshoe bat and otter, and **Annex V** lists animal and plant species whose taking in the wild and exploitation may be subject to management measures. In Ireland, species listed under Annex V include Irish hare, common frog and pine marten.

Species can be listed in more than one Annex, as is the case with otter and lesser horseshoe bat which are listed on both **Annex II** and **Annex IV**.

Birds Directive/Special Protection Areas

Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (Birds Directive) has been substantially amended several times. In the interests of clarity and rationality the said Directive was codified in 2009 and is now cited as Directive 2009/147/EC. The Directive instructs Member States to take measures to maintain populations of all bird species naturally occurring in the wild state in the EU (**Article 2**). Such measures may include the maintenance and/or re-establishment of habitats to sustain these bird populations (**Article 3**).

A subset of bird species has been identified in the Directive and are listed in **Annex I** as requiring special conservation measures in relation to their habitats. These species have been listed on account of inter alia: their risk of extinction; vulnerability to specific changes in their habitat; and/or due to their relatively small population size or restricted distribution. **Special Protection Areas (SPAs)** are to be identified and

classified for these Annex I listed species and for regularly occurring migratory species, paying particular attention to the protection of wetlands (**Article 4**).

3.2 Identification of the Designated Sites within the Likely Zone of Impact

The most up to date GIS spatial datasets for Surface Water Catchments and European designated sites were downloaded from the EPA website (www.eps.ie) and NPWS website (www.npws.ie), respectively, on the 25/06/2018. The following rationale was used to identify the Likely Zone of Impact. Initially, sites within a 15 km radius of the proposed development were identified (as per the DoEHLG Guidance (2010)). In addition, using the precautionary principle, European Sites located outside the 15 km buffer zone were also taken into account and assessed. In this case, no pathway for effects on any site that is further than 15 km from the site was identified. These European Sites were then individually assessed to determine whether impacts as a result of the proposed afforestation were likely.

Figure 3.1 shows the location of the proposed afforestation site in relation to all European sites assessed as identified according to the criteria described above.

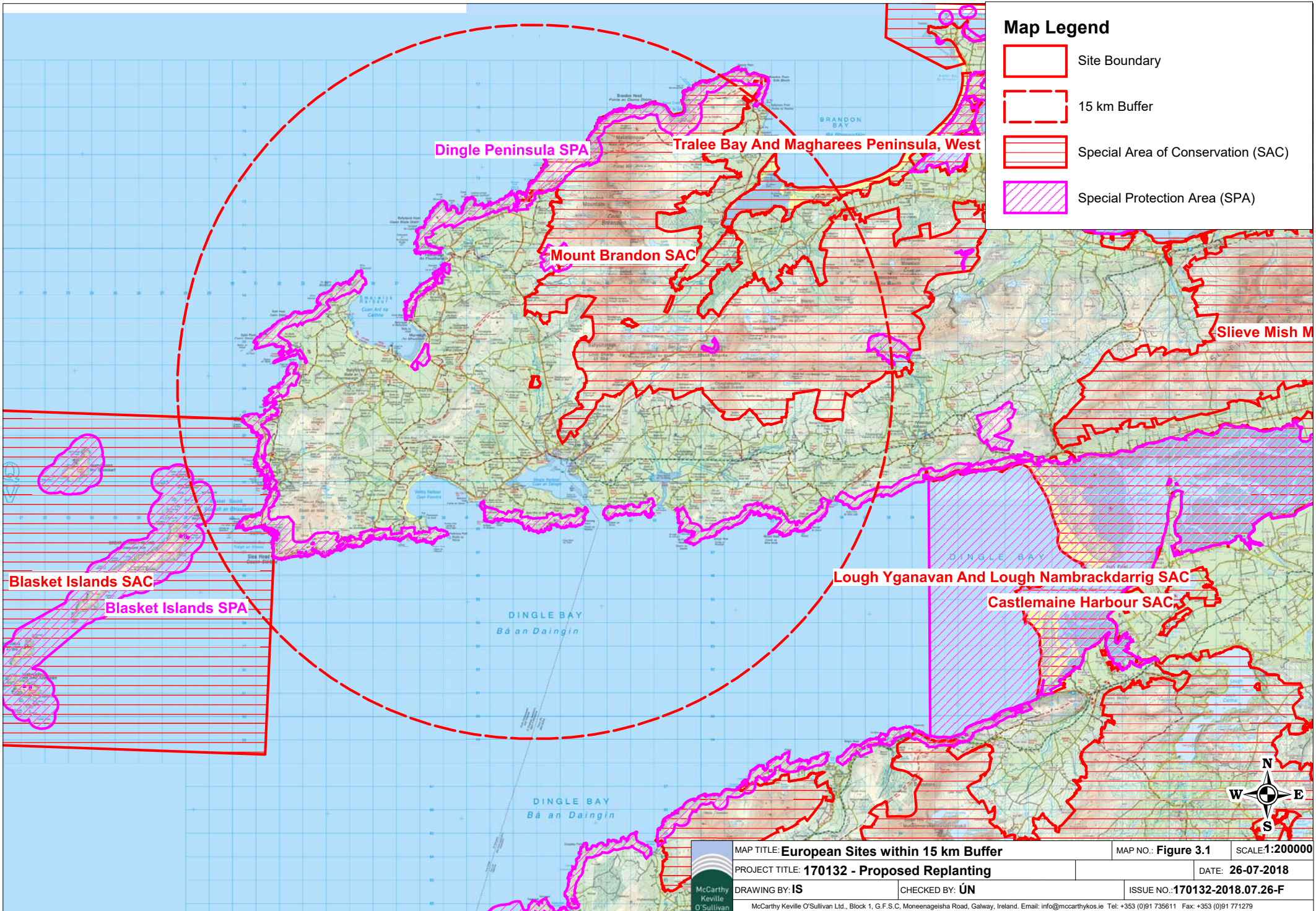
Table 3.1 below, lists all European Sites within 15 km of the proposed development and assesses which, are within the Likely Zone of Impact. The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie) were considered at the time of preparation of this report (25/06/2018). Details of these sites, including their distance from the proposed development, their Qualifying Interests/Special Conservation Interests and a rationale as to whether they are within the Likely Zone of Impact of the proposed works are provided in Table 3.1.

The following detailed conservation objectives were reviewed in the course of carrying out this Article 6(3) Screening Assessment:

- Mount Brandon SAC (000375) (Version 1, 2016)
- Tralee Bay and Magharees Peninsula, West to Cloghane SAC (002070) (Version 1, 2014)
- Blasket Islands SAC (002172) (Version 1, 2014)
- Blasket Islands SPA (004008) (Version 1, 2014)

The Dingle Peninsula SPA (004153) (Generic Version 6, 2018) had the generic conservation objective:

'To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA'



Map Legend

- Site Boundary
- 15 km Buffer
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

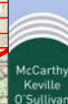
	MAP TITLE: European Sites within 15 km Buffer		MAP NO.: Figure 3.1	SCALE: 1:200000	
	PROJECT TITLE: 170132 - Proposed Replanting			DATE: 26-07-2018	
	DRAWING BY: IS		CHECKED BY: ÚN		ISSUE NO.: 170132-2018.07.26-F
	<small>McCarthy Keville O'Sullivan Ltd., Block 1, G.F.S.C. Moneenageisha Road, Galway, Ireland. Email: info@mccarthykos.ie Tel: +353 (0)91 735611 Fax: +353 (0)91 771279</small>				

Table 3.1. Determination of European Sites within Likely Zone of Impact of the proposed afforestation site

European Sites	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 25/07/2018)	Likely Zone of Impact determination
Special Areas of Conservation (SAC)		
Mount Brandon SAC (000375) 1.63 km	<ul style="list-style-type: none"> ▪ Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] ▪ 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] ▪ Northern Atlantic wet heaths with Erica tetralix [4010] ▪ European dry heaths [4030] ▪ Alpine and Boreal heaths [4060] ▪ Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] ▪ Blanket bogs (* if active bog) [7130] ▪ Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] ▪ Calcareous rocky slopes with chasmophytic vegetation [8210] ▪ Siliceous rocky slopes with chasmophytic vegetation [8220] ▪ <i>Margaritifera</i> (Freshwater Pearl Mussel) [1029] ▪ <i>Trichomanes speciosum</i> (Killarney Fern) [1421] 	<p>This European Site is located primarily in a separate hydrological catchment from the proposed works. The section that is located within the same catchment is an upland area that is located hydrologically upgradient from the proposed afforestation works.</p> <p>The proposed site is not located in a pearl mussel sensitive area. The site has no connectivity to any pearl mussel sensitive areas.</p> <p>No Annex I habitats or supporting habitat for Killarney fern was identified within the proposed site and there is no habitat connectivity between the proposed site and this European Site.</p> <p>No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>
Tralee Bay and Magharees Peninsula, West to Cloghane SAC (002070) 10.14 km	<ul style="list-style-type: none"> ▪ Estuaries [1130] ▪ Mudflats and sandflats not covered by seawater at low tide [1140] ▪ Coastal lagoons [1150] ▪ Large shallow inlets and bays [1160] ▪ Reefs [1170] ▪ Annual vegetation of drift lines [1210] ▪ Perennial vegetation of stony banks [1220] ▪ <i>Salicornia</i> and other annuals colonising mud and sand [1310] ▪ Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] ▪ Mediterranean salt meadows (Juncetalia maritimi) [1410] 	<p>This European Site is located in a separate hydrological catchment from the proposed afforestation site and is designated for the protection of wetland, marine, coastal and other aquatic habitats and species. No pathway for effect was identified and the site is not within the Likely Zone of Impact.</p>

European Sites	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 25/07/2018)	Likely Zone of Impact determination
	<ul style="list-style-type: none"> ▪ Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] ▪ Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] ▪ Dunes with <i>Salix repens ssp. argentea</i> (Salicion arenariae) [2170] ▪ Humid dune slacks [2190] ▪ <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] ▪ Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] ▪ <i>Lutra lutra</i> (Otter) [1355] ▪ <i>Petalophyllum ralfsii</i> (Petalwort) [1395] 	
Basket Islands SAC (002172) 11.59 km	<ul style="list-style-type: none"> ▪ Reefs [1170] ▪ Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] ▪ European dry heaths [4030] ▪ Submerged or partially submerged sea caves [8330] ▪ <i>Phocoena phocoena</i> (Harbour Porpoise) [1351] ▪ <i>Halichoerus grypus</i> (Grey Seal) [1364] 	This European Site is separated by sea from the Dingle Peninsula. The site is designated for island habitats and marine species. No pathway for effect was identified and the site is not within the Likely Zone of Impact.
Special Protected Areas (SPA)		
Dingle Peninsula SPA (004153) 4.42 km	<ul style="list-style-type: none"> • Fulmar (<i>Fulmarus glacialis</i>) [A009] • Peregrine (<i>Falco peregrinus</i>) [A103] • Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346] 	This European Site is located primarily within coastal and upland habitats along the Dingle Peninsula. The proposed afforestation site does not provide supporting habitat for associated SCI species. Therefore, no pathway for effect was identified and the site is not within the Likely Zone of Impact.
Basket Islands SPA (004008) 14.25 km	<ul style="list-style-type: none"> • Fulmar (<i>Fulmarus glacialis</i>) [A009] • Manx Shearwater (<i>Puffinus puffinus</i>) [A013] • Storm Petrel (<i>Hydrobates pelagicus</i>) [A014] • Shag (<i>Phalacrocorax aristotelis</i>) [A018] • Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] • Herring Gull (<i>Larus argentatus</i>) [A184] 	This European Site is designated for island and cliff nesting species. The proposed afforestation site does not provide supporting habitat for associated SCI species. Therefore, no pathway for effect was identified and the site is not within the Likely Zone of Impact.

European Sites	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 25/07/2018)	Likely Zone of Impact determination
	<ul style="list-style-type: none"> • Kittiwake (<i>Rissa tridactyla</i>) [A188] • Arctic Tern (<i>Sterna paradisaea</i>) [A194] • Razorbill (<i>Alca torda</i>) [A200] • Puffin (<i>Fratercula arctica</i>) [A204] • Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346] 	

4 ASSESSMENT OF LIKELY EFFECTS ON EUROPEAN SITES

Any likely direct or indirect impacts of the proposed development, both alone and in combination with other plans and projects, on European Sites by virtue of the following criteria: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning have been considered in this Screening Assessment.

As shown in Table 3.1, no European Sites were identified within the Likely Zone of Impact. Therefore, there is no potential for significant effects on any European Site as a result of the proposed afforestation works.

5 ARTICLE 6(3) SCREENING STATEMENT AND CONCLUSIONS

The findings of this Screening Assessment are presented following the European Commission guidance document *'Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC'* (EC, 2001) and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

5.1 Assessment of Significance of Effects

Is the project directly connected with or necessary to the management of the site?

The project is not directly connected with or necessary to the management of any European Site.

Cumulative Impact Assessment - Are there any other projects or plans that together with the project being assessed could affect the site?

The potential for the proposed development to contribute to a cumulative impact on European Sites was considered. The online planning system for Kerry County Council was consulted on the 25/07/2018 for applications in the last five years in Knockavrogeen.

One planning application was found to (1) construct cubicle accommodation for dairy cows, with two underground slurry tanks and ancillary concrete farmyard and (2) construct a milking complex (Pl Ref: 1891). No projects or plans were identified that would be incompatible with the proposed replanting or give rise to significant cumulative impacts.

The Kerry County Development Plan 2015-2021 was also reviewed and considered as part of this assessment.

The proposed works, by themselves, do not have the potential to result in any significant direct or indirect effect on any European Site. As a result, they cannot contribute to any potential cumulative effect on any European Site.

Describe how the project is likely to affect the European Site

- No potential for the proposed works to result in significant direct or indirect effects on any European Site were identified.

5.2 Data Collected to Carry Out Assessment

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

- Review of NPWS site synopses, mapping and conservation objectives for European Sites.
- Review of 2013 EU Habitats Directive (Article 17) Report.
- Review of OS maps and aerial photographs of the site of the proposed development.
- Review of relevant databases including National Biodiversity Ireland Database, etc.

- Review of other plans and projects within the area.
- Liaison with the project team in relation to the design of the development.
- Site visits conducted by Úna Nealon (BSc, PhD) on 13/03/2018.

5.3 Overall Conclusions

The proposed works, by themselves or in combination with other plans and projects, in light of best scientific knowledge, do not, in view of the sites' qualifying interests and conservation objectives, have the potential to result in significant effects on any European Site.

There is no requirement for Appropriate Assessment.

BIBLIOGRAPHY

Birds Directive (2009/47/EC) – http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive 79/409/EEC as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011).

DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin.

DoEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Revision, February, 2010. Department of the Environment, Heritage and Local Government.

EC (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.

EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2006) Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.

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

EC (2007b) Interpretation Manual of European Union Habitats. Version EUR 27. European Commission, DG Environment.

Ecofact (2017). Screening for Appropriate Assessment on the Demolition of industrial building and construction of private dwelling house and-garage, entrance from the road, connection to the public services and ancillary site development works at Marine Village, Cullenagh, Ballina.

European Communities (Conservation of Wild Birds) Regulations, 1985, SI 291/1985 & amendments – <http://www.irishstatutebook.ie>.

European Communities (Natural Habitats) Regulations, SI 94/1997, SI 233/1998 & SI 378/2005 – <http://www.irishstatutebook.ie>.

Habitats Directive (92/43/EEC).

NPWS (2008) The Status of EU Protected Habitats and Species in Ireland. Conservation Status in Ireland of Habitats and Species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC.

NPWS of the DEHLG (2008) The Report on Status of Habitats and Species in Ireland: Technical Reports and Forms.

NPWS Protected Site Synopses and maps available on <http://www.npws.ie/en/ProtectedSites/>.

Scottish Natural Heritage (SNH) (July 2013) Assessing Connectivity with Special Protection Areas (SPA)

Appendix 1

Technical Approval Documents

RECEIVED
28 FEB 2017

JOHN O'REILLY
GREEN BELT LTD
MAIN STREET
VIRGINIA
CO CAVAN

17211134
Timothy Lenders

27/02/2017

Technical Approval - Afforestation

Forest Owner	FO134950D
Contract Number	CN72796
Townland	Knockavrogeen east
County	Kerry
Approved Area (ha)	14.66
Fencing Length (lm)	1,500.00

Copy Gerard
+
Alan

This is a technical approval only and is not a grant approval. You should note that the project will not be eligible for grant aid unless prior financial approval has been given in writing in advance of commencement of planting. Also, to qualify for Afforestation grant and premiums applicants must own, lease or be in joint management of the lands proposed for planting. You should consult with your registered forester about applying for financial approval under the Scheme.

I refer to your application (Form 1) requesting approval of Afforestation as described above and shown on the enclosed map. Your application has been assessed and technical approval is hereby issued on the basis that the works will be undertaken in accordance with the prescription set out in Appendix A attached herewith.

This scheme is financed by the State and payment of the grant, if financial approval is given, is subject to the following conditions:

1. Availability of funds in each financial year.
2. Submission of a fully completed and signed Form 2 (Application for Payment) and the following documents to support this application.

Proof of Ownership (including removal of any constraints on ownership)

Valid Mandate

Current Tax Clearance Certificate(s)

C2 Certificate

Provenance Certificates

Fencing Map

Biodiversity Map

Certified Species Map

* Conditions pg 4

* letter from Archaeology pg 5

3. Satisfactory completion of the work not later than 30/06/2018.
4. Compliance with Operational Proposals and Specifications enclosed.
5. Compliance with Departmental guidelines and requirements for Landscape, Water Quality, Harvesting, Biodiversity and Archaeology.
6. Compliance with Ecological Survey and Management Plan as submitted (if applicable).

7. The work is carried out by the registered company or forester specified on the original application. If it is intended to have a different company or forester undertake the work, it will be necessary to submit a new application (Form 1) to the Forest Service.

8. All applications are subject to the provisions of the penalty schedules as set out in the Afforestation Grant and Premium Scheme document.

9. All applications are subject to Cross Compliance checks with other grant schemes.

10. Grant payment may be subject to the netting policy of the Department of Agriculture, Food and the Marine.

11. This approval is issued subject to the terms and conditions of the Forestry Standards and Procedures Manual.

12. Your acceptance that the responsibility for the ultimate success of the plantation rests with you, the applicant. Plantations which fail to establish successfully will result in grant and premium recoupment.

13. Additional Environmental & Silvicultural Conditions

- Full compliance with all archaeological guidelines to be observed,
- Every effort is to be made to enhance biodiversity and landscape elements along the watercourse setback at this location,
- Adhere to forestry & archaeology guidelines ,
- Adhere to forestry & water quality guidelines

Specific Archaeological Conditions:

The application area should be refused pending an archaeological impact assessment.

See archaeological report and illustrative map for further details, including specifics of the assessment required.

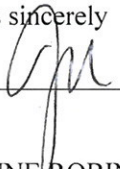
You are required to notify the Department of Agriculture, Food and the Marine in writing if any of the details of your application have changed. Changes to your application may invalidate any approval given.

IMPORTANT

As no submissions from third parties were received by the Department concerning this application, development in accordance with this approval may proceed without further notice subject to financial approval.

Please feel free to contact this office, quoting your Contract Number, regarding progress of your application. LoCall 0761 064 415.

Yours sincerely



JOANNE ROBINSON
Approval Section
Forest Service


Operational Proposals for Approval of Afforestation

Forest Owner Number	FO134950D
Contract Number	CN72796
Townland	Knockavrogeen east
County	Kerry
Area Approved	14.66(ha)
Fencing Length (LM)	1,500.00

All applications must be developed in accordance with detailed standards and procedures as described in the current Forestry Schemes Manual. Certain specific operational proposals particular to this application are described below. No change is permitted to these proposals and species approved unless approved in advance by the Department. The Department may insist that proposed changes constitutes a new application.

Operational Proposal Details

Agro Forestry (GPC 11)		
1.	Tree Shelters	Not Entered
2.	Plant Size and Stocking	Not Entered
Drainage		
1.	Drainage	Required
2.	Drainage Comment	In conjunction with mounding
Fertiliser		
1.	Zero	Not Entered
2.	350 Kg Granulated Rock Phosphate	Yes
3.	250 Kg Granulated Rock Phosphate	Not Entered
4.	Split Application	Not Entered
5.	Other Details	Not Entered
Firebreaks/Res.		
1.	Firebreaks/Res	Not Required
Forestry for Fibre (GPCs: 12a and 12b)		
1.	Is Land Free Drainage arable or pasture soils	Not Entered
2.	Are there surface water gleys without a peat layer	Not Entered
3.	Do you intend to use improved genetic material	Not Entered
4.	Details	Not Entered
Ground Prep.		
1.	Woody Weed Removal	Not Entered
2.	Ripping	Not Entered
3.	Pit Plant	Not Entered
4.	Mole Drainage	Not Entered
5.	Mounding	Yes
6.	Ploughing	Not Entered
9.	Other Details	Not Entered
Planting Method		
1.	Angle Notch	Yes
2.	Pit	Not Entered
3.	Machine	Not Entered

4.	Slit	Yes			
5.	Other Details	Not Entered			
Road Access					
1.	Road Access	Provided			
Standard Stocking					
1.	Standard Stocking	Yes			
2.	Details	Not Entered			
Weed Control					
1.	Herbicide Control yr0	Yes			
2.	Herbicide Control yr1	Yes			
3.	Herbicide Control yr2	Yes			
3.	Herbicide Control yr4	Not Entered			
4.	Manual	Yes			
4.	Herbicide Control yr3	Yes			
Fencing Details (metres)		Stock	0	Stock-Sheep	1500
		Stock-Rabbit	0	Upgrade to Deer	0
		Deer-Rabbit	0	Deer	0
		Upgrade Existing Fence(s)	N		
		Upgrade Details: None Entered			

Species Approved

The species approved in this proposal relate to the digitised certified species map attached.

Species Approved for Afforestation

Plot	Area	GPC	Land Type	Species	Species Area	Yield Class	Mixture Type	Exclusion	Exclusion Type
1	2.41	GPC 3	CHF	SS	2.17	18	Integrated Mix		
				ALD	.24	6			
2	12.25	GPC 3	CHF	SS	11.03	18	Integrated Mix		
				ALD	1.23	6			

Additional Silvicultural and Environmental Conditions

In addition to the Department's environmental and silvicultural guidelines the following specific conditions apply to this proposal:

Silvicultural and Environmental Conditions

Full compliance with all archaeological guidelines to be observed,
Every effort is to be made to enhance biodiversity and landscape elements along the watercourse setback at this location,
Adhere to forestry & archaeology guidelines ,
Adhere to forestry & water quality guidelines



An Roinn
Ealaíon, Oidhreacht agus Gaeltachta
 Department of
Arts, Heritage and the Gaeltacht

Custom House,
 Flood Street,
 Galway,
 H91 XV2C.

hugh.carey@ahg.gov.ie
 Tel.: 076 1002612

3 November 2015.

Approvals Section,
 Forest Service,
 Department of Agriculture, Food and the Marine,
 Johnstown Castle Estate,
 Co. Wexford.

CN 72796 Affor., Knockavrogeen East, Co. Kerry.

A chara,

The area proposed for afforestation is in an area with a particularly high density of archaeological monuments.

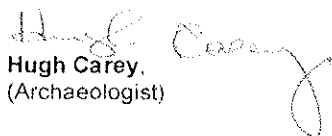
Due to the unusually high density of monuments in the area, an archaeological assessment of the site will be required to establish whether it will be possible to agree to afforestation occurring there and if so, what degree of archaeological mitigation (e.g. exclusion zones, test excavations, archaeological monitoring etc), will be required.

I recommend that the archaeological conditions detailed on the accompanying page should also be attached to any letter of approval for this application.

For the purposes of the requirements of the EIA screening form (as per the European Communities (Forest Consent and Assessment) Regulations 2010, as amended) this constitutes:

	Yes	No	N/A
- Adherence to the normal standards of the Forestry and Archaeology Guidelines	X		
- Specific conditions regarding buffer zones etc		X	
- Archaeological Monitoring during ground preparation or drainage works		X	
- Archaeological Assessment	X		
- Refusal in part		X	
- Refusal	X		

Mise le meas,


Hugh Carey.
 (Archaeologist)

3 November 2015

Approvals Section,
Forest Service,
Department of Agriculture, Food and the Marine,
Johnstown Castle Estate,
Co. Wexford.

CN 72796 Affor., Knockavrogeen East, Co. Kerry.

A chara.

Archaeological conditions

The area proposed for afforestation is in an area with a particularly high density of archaeological monuments.

Due to the unusually high density of monuments in the area, an archaeological assessment of the site will be required to establish whether it will be possible to agree to afforestation occurring there and if so, what degree of archaeological mitigation (e.g. exclusion zones, test excavations, archaeological monitoring etc), will be required.

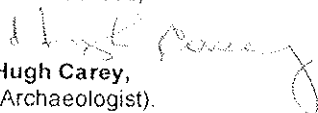
It is recommended that:

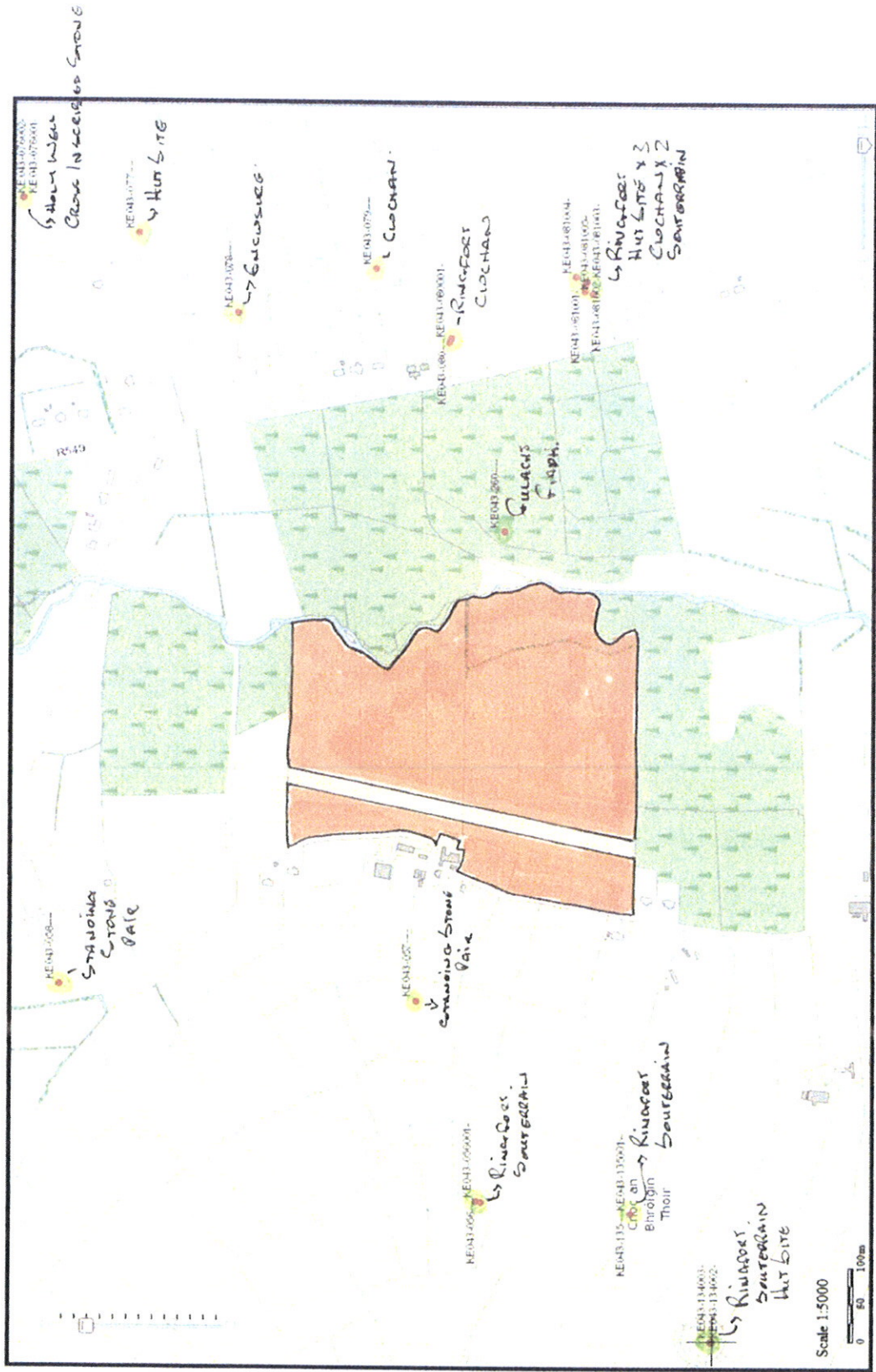
The area highlighted in ORANGE on the accompanying map, should be REFUSED pending the submission of a complete 'Archaeological Assessment', as per the terms of the Framework and Principles for the Protection of the Archaeological Heritage, for the consideration of the Forest Service and the National Monuments Section, DAHG.

The 'Archaeological Impact Assessment' should concentrate on a comprehensive walkover survey of the area in question. It should also contain:

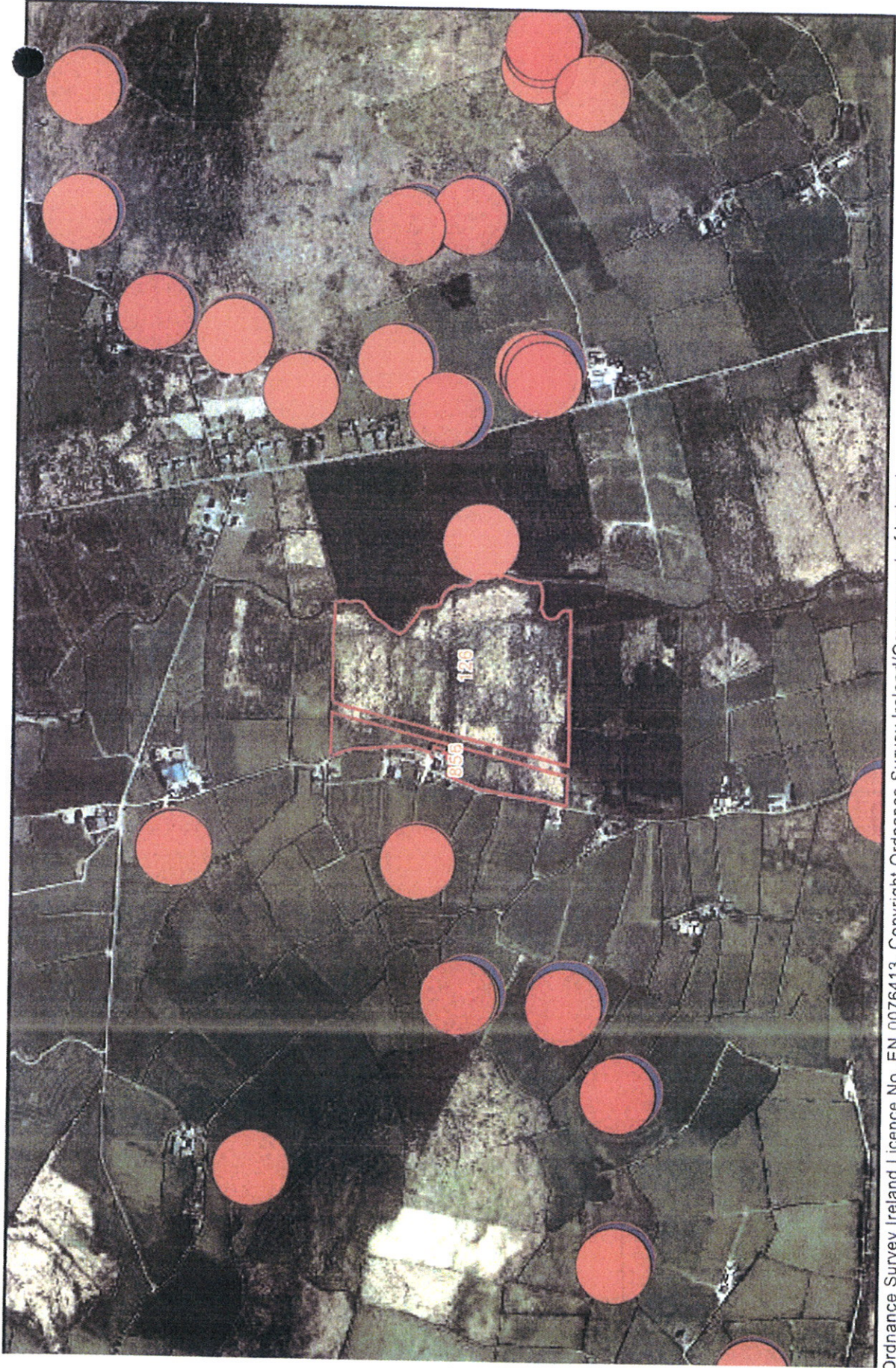
1. A written evaluation (with measurements and photographs) of any newly identified archaeological sites, monuments or features; and.
2. A scaled and measured drawing or drawings of the development site, with the extent of any newly identified archaeological sites, monuments or features referred to in the AIA report accurately depicted.

Mise le meas,


Hugh Carey,
(Archaeologist).

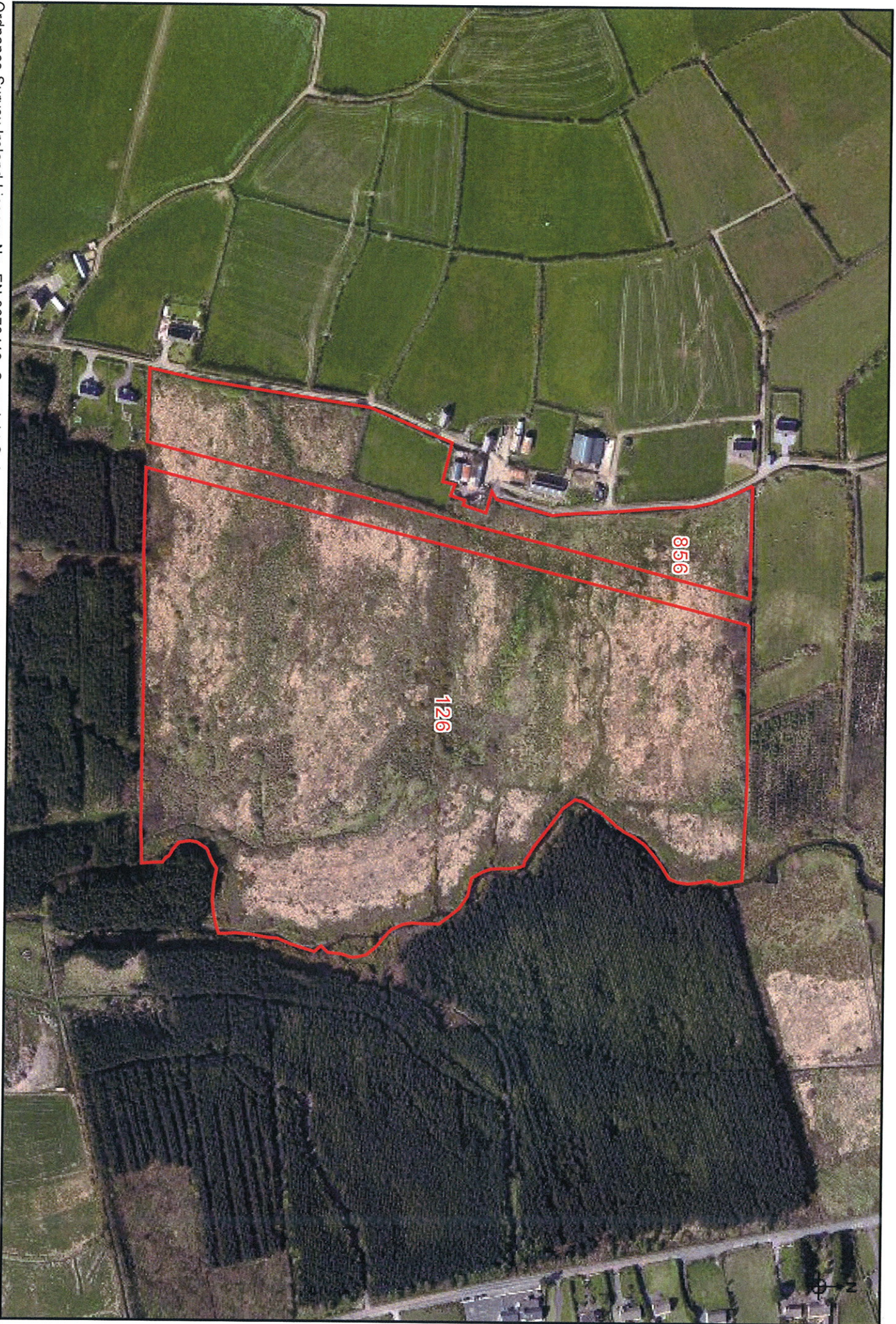


CN 72796 Affor., Knockavrogeen East, Co. Kerry.



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Scale 1: 7500.0
Contract: CN72796



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Contract: **CN72796**

Scale 1: 3597

Certified Species Information

Contract Number	CN72796
Townland	Knockavrogeen east
County	Kerry
6" OS No:	KY43

Plot No	GPC	Parcel No	GPC Area(H)	Land Use Type	Species Area	Species	Mixture Type	Excl Area(h)	Excl Type
1	3	38868856	2.41	CHF	2.41	ALD,SS	Integrated Mix	0	
2	3	38869126	12.25	CHF	12.26	ALD,SS	Integrated Mix	0	
TOTALS			14.66		14.67			0	

Remarks:

Area Surveyed By:

Date:

Species Certified By:

Date: