



APPENDIX 7-4

RHODODENDRON MANAGEMENT PLAN

Appendix 7-4 Rhododendron Management Plan

Proposed Cahermurphy
Two Wind Farm





DOCUMENT DETAILS

Client: **Mid-Clare Renewable Energy Windfarm Ltd**

Project Title: **Proposed Cahermurphy Two Wind Farm**

Project Number: **170238**

Document Title: **Rhododendron Management Plan**

Document File Name: **RMP F -- 2020.09.04 - 170238**

Prepared By: **MKO
Tuam Road
Galway
Ireland
H91 VW84**



Rev	Status	Date	Author(s)	Approved By
01	Draft	20/02/2020	SM	PR
02	Draft	21/08/2020	SM/LK	PR
04	Final	04/09/2020	LK	PR

Table of Contents

1.	INTRODUCTION.....	1
	1.1 General Introduction.....	1
	1.2 Legislative Framework.....	1
	1.3 Guidance Documents.....	2
2.	SURVEY METHODS.....	3
3.	INVASIVE SPECIES SURVEY RESULTS.....	4
4.	RHODODENDRON MANAGEMENT PLAN.....	5
	4.1 Management Measures.....	5
	4.1.1 Management Plan.....	5
5.	GENERAL BIOSECURITY.....	8
6.	CONCLUSIONS.....	9
	BIBLIOGRAPHY.....	10

1. INTRODUCTION

1.1 General Introduction

This report provides the findings of an invasive species survey undertaken at the proposed Cahermurphy Two Wind Farm and along the proposed grid connection route options. Management measures to prevent and avoid the spread of invasive species during the construction and operational phases of the proposal are provided in this document. The study area included the proposed infrastructure associated with each of the 10 proposed turbines. This included the 10 turbines and all other site infrastructure including proposed new access roads, existing roads to be upgraded, proposed borrow pit locations, proposed substation locations and the location of the proposed site compound. It also included the lands traversed by the proposed grid connection route options. The grid connection route option is considered within the proposed development as described and mapped in Section 4.3.7 in Chapter 4 of this EIAR:

The proposed wind farm will connect to the grid via one of the following methods:

- Option A: It is proposed to construct a 38 kV substation at the northern end of the site and to connect from here to the existing Booltiagh 110kV substation, located approximately 7 kilometres to the southeast of the site. Option A also includes for an alternative cable route running from the proposed onsite substation south to the access road and north along the local road to the east of the site. The alternative cable route option measures approximately 1.7 km in length. Connection via the Booltiagh route would comprise underground cabling, measuring approximately 12.1 km in total, located on existing forestry and agricultural land and within the public road corridor.

Or

- Option B: It is proposed to construct a 38kV substation at the south eastern end of the site and to connect from here to the existing Booltiagh 110kV substation, located approximately 7 kilometres to the southeast of the site. Connection via the Booltiagh route would comprise underground cabling, measuring approximately 12.1 km in total, located on existing forestry and agricultural land and within the public road corridor.

The infrastructure footprint is provided in Figure 1.1.




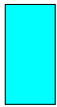








1.2 Legislative Framework

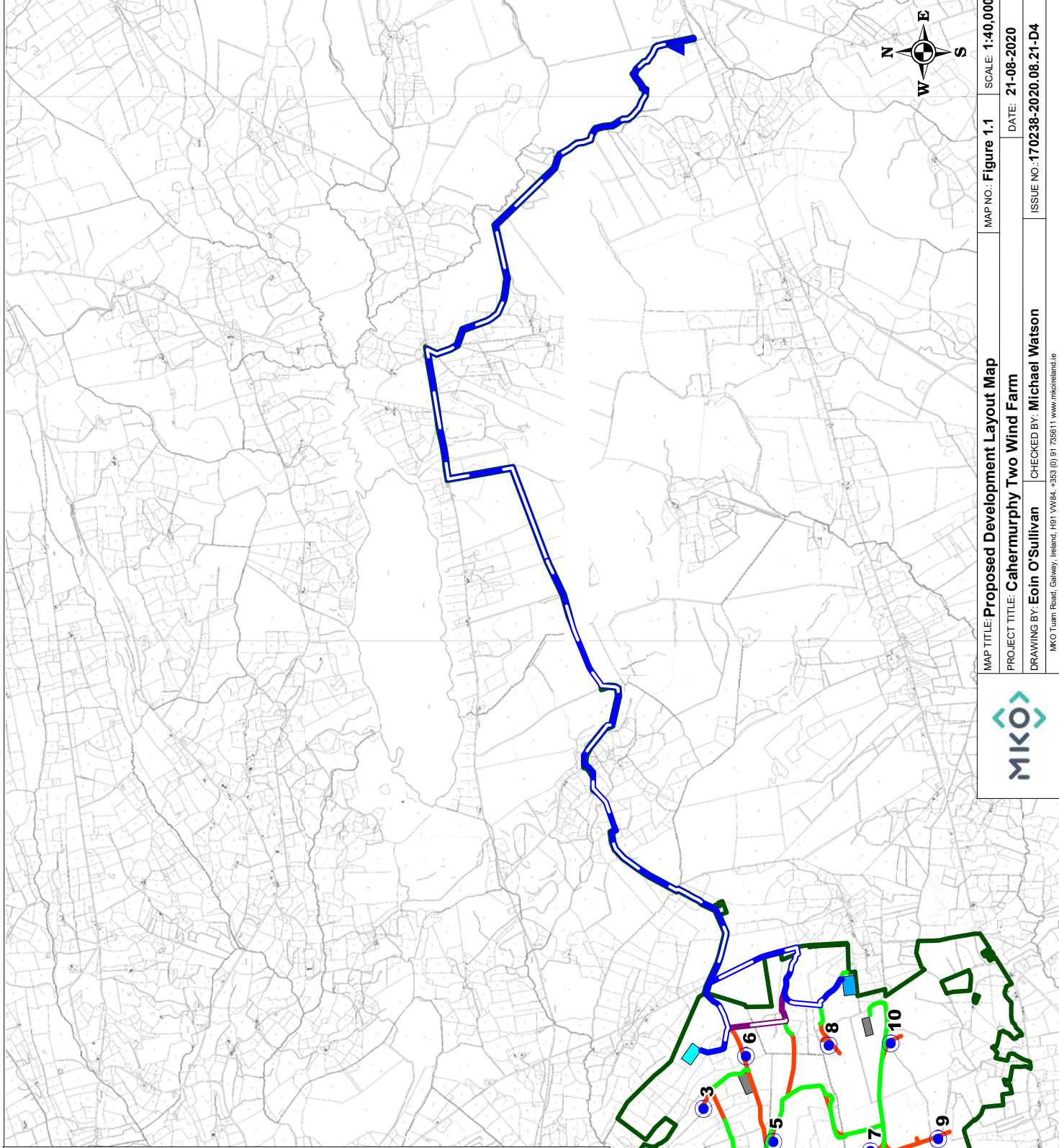
Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) include legislative measures to deal with the dispersal and introduction of invasive alien species.

Non-native species subject to restrictions under Regulations 49 and 50 are included in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). High impact invasive species on this list include, among others, Japanese Knotweed, Giant Hogweed, Giant Knotweed, Giant Rhubarb, Himalayan Balsam, Himalayan Knotweed, Bohemian Knotweed and Rhododendron. Vector materials which aid in the spread of these species include soil or spoil taken from places infested with Japanese Knotweed (*Fallopia japonica*), Giant Knotweed (*Fallopia sachalinensis*) or their hybrid Bohemian Knotweed (*Fallopia x bohemia*). Two vector materials are referred to in the regulations (Third Schedule Part 3), one is blue mussel seed and the second is:

‘Soil or spoil taken from places infested with Japanese knotweed, Giant knotweed or their hybrid Bohemian knotweed’.

Map Legend

-  EIAR Study Boundary
-  Proposed Turbine Location
-  Proposed Met Mast Location
-  Proposed 38kV Substation Location - Option A
-  Proposed 38kV Substation Location - Option B
-  Proposed Construction Compound
-  Proposed Borrow Pit Location
-  Existing Roads - Upgrade Proposed
-  Proposed New Site Roads
-  Proposed Grid Connection
-  Alternative Grid Connection Option
-  Existing Bootliagh 110kV Substation





MAP NO.: **Figure 1.1** SCALE: **1:40,000**

PROJECT TITLE: **Cahermurphy Two Wind Farm** DATE: **21-08-2020**

DRAWING BY: **Eoin O'Sullivan** CHECKED BY: **Michael Watson**

MKO Tuam Road, Galway, Ireland, H91 VV64, +353 (0) 91 75611 www.mkoireland.ie

MAP NO.: **Figure 1.1** SCALE: **1:40,000**

PROJECT TITLE: **Cahermurphy Two Wind Farm** DATE: **21-08-2020**

DRAWING BY: **Eoin O'Sullivan** CHECKED BY: **Michael Watson**

MKO Tuam Road, Galway, Ireland, H91 VV64, +353 (0) 91 75611 www.mkoireland.ie

Regulation 49

“any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to such plant in the third column of Part 1 of the Third Schedule, any plant which is included in Part 1 of the Third Schedule, shall be guilty of an offence.”

Regulation 50

“a person shall be guilty of an offence if he or she has in his or her possession for sale, or for the purposes of breeding, reproduction or propagation, or offers or exposes for sale, transportation, distribution, introduction or release

(a) an animal or plant listed in Part 1 or Part 2 of the Third Schedule

(b) anything from which an animal or plant referred to in subparagraph (a), can be reproduced or propagated, or

(c) a vector material listed in Part 3 of the Third Schedule,”

1.3

Guidance Documents

The following guidance documents and literature sources were consulted during the preparation of this report:

- Edwards, C. (2006). *Managing and controlling invasive rhododendron. Forestry Commission Practice Guide*. Forestry Commission, Edinburgh, i-iv + 1-36pp.
- NRA (2010). *Guidelines on management of noxious weeds and non-native invasive plant species on national roads*. National Roads Authority.
- Crushell, P., Foss, P., Hurley, C. & O’Loughlin, B. (2011). *County Kerry Invasive Species Survey 2011 - Pilot Mapping Study of the River Lee Catchment, Tralee*. Report prepared for Kerry County Council and The Heritage Council.
- Stokes et al. (2004). Stokes, K., O’Neill, K. & McDonald, R.A. (2004) *Invasive species in Ireland*. Unpublished report.
- NPWS (2011) *Actions for Biodiversity 2011-2016, Ireland’s 2nd National Biodiversity Plan*.
- Department of Environment (2013). *An Invasive Alien Species Strategy for Northern Ireland*. www.doeni.gov.uk
- Irish Water (2016) *Information and Guidance Document on Japanese Knotweed*

2. SURVEY METHODS

Field surveys were undertaken by ecologists, Sarah Mullen (B.Sc., Ph.D.), Olivia O’Gorman (B.Sc., M. Sc.) , Laoise Kelly (B.Sc.) and Pat Roberts (B.Sc., MCIEEM) on a number of survey dates between May 2019 and May 2020. Field survey methods are broadly based on survey methodology developed by Crushell et al. (2011). With the exception of the survey undertaken in October 2019, all surveys were undertaken within the optimum period for vegetation surveys, i.e. April to September (Smith et al. 2011), however, all species were readily identifiable during all site surveys. The proposed infrastructure footprint and proposed grid connection route options, as shown on Figure 1.1, were surveyed and all invasive species listed on the Third Schedule were recorded.

Following the site visit, maps were produced using the GIS Software application package MapInfo (Version 10.0) detailing the locations of invasive plant species within the site. Species were mapped as points and lines. For the purpose of this report, a point represents a stand or individual plant less than 5m x 5m. A line represents a stand greater than 10m long and less than 3m wide. No larger areas of rhododendron were identified.

3. INVASIVE SPECIES SURVEY RESULTS

The 'Third Schedule' non-native species *Rhododendron ponticum* was recorded during the survey. No other invasive species listed on the 'Third Schedule' of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) were recorded within the proposed infrastructure route.

Rhododendron is a native species of Asia and south-west Europe. Rhododendron was brought to Ireland in the early 18th century and has been extensively used both as an ornamental plant and as game cover. Rhododendron is a hardy plant that has thrived in the moist Irish climate and grows on habitats of peaty, sandy and acidic soils. It is a highly invasive plant that spreads both via seed and through suckering of roots and branches. As Rhododendron is extremely tolerant of shade it has become a particularly problematic plant of forest floors where it outcompetes native tree seedlings and prevents forest regeneration. Its leaves are unpalatable and likely toxic to mammals. Consequently, accumulations of toxic leaf litter and the shade cast by this plant produces a dark, sterile environment for wildlife. Rhododendron does not produce flowers until the plant reaches 10-12 years of maturity, therefore it is ideal to remove the plant before it reaches this stage in order to prevent seed dispersal.

Rhododendron was not recorded within the proposed wind farm site boundary. However it was recorded at a number of locations along the proposed cable route in the townland of Drummin (Figure 3.1). Rhododendron was recorded along the proposed cable route within lands classified as wet grassland and conifer plantation and comprised either individual plants or a line of plants, often located along the edge of conifer plantation.

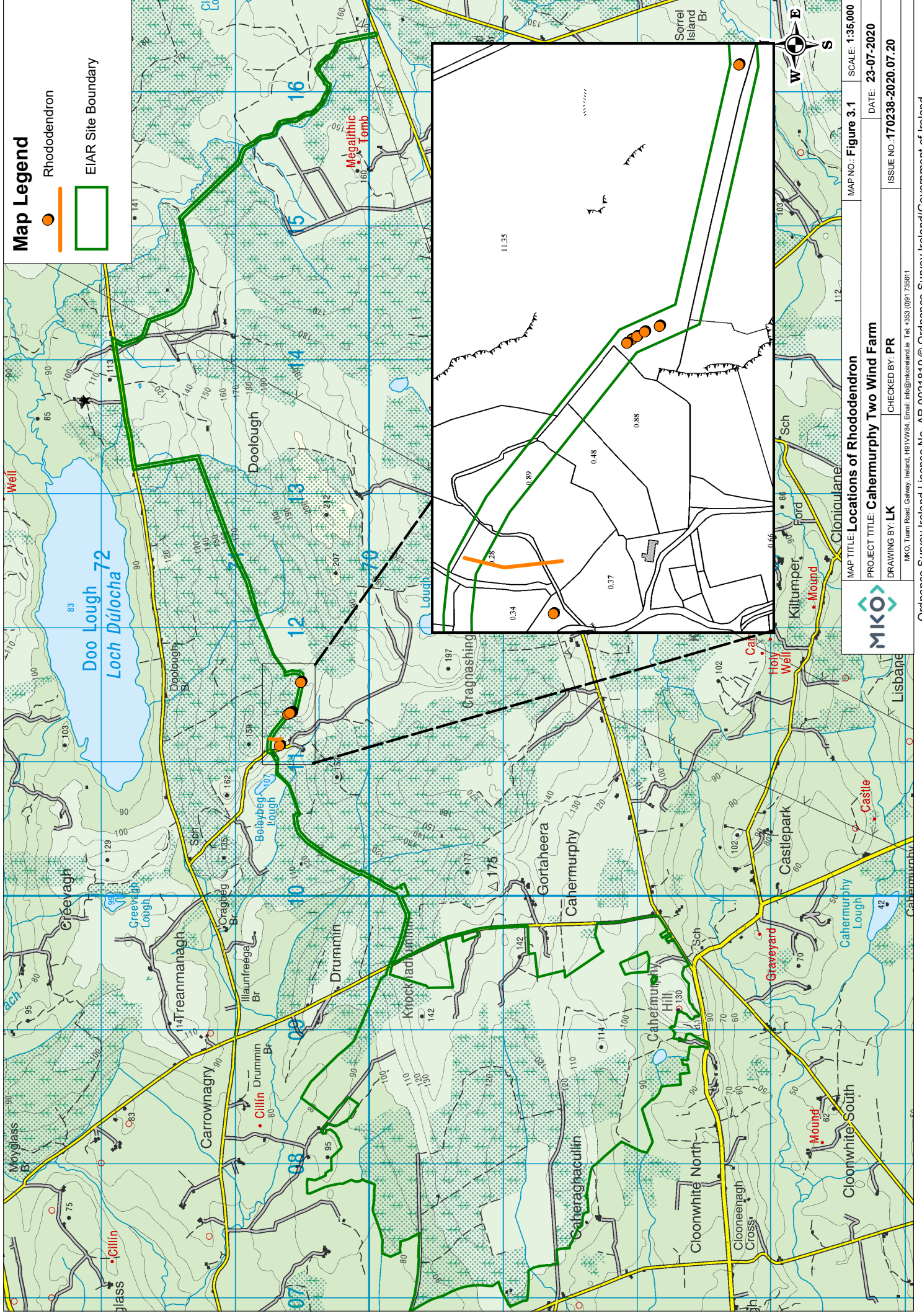
Stands of Rhododendron recorded during the survey are shown in Figure 3.1. An example of Rhododendron recorded along the proposed grid connection route is shown in Plate 3.1.



Plate 3.1 Example of Rhododendron along proposed grid connection route

Map Legend

-  Rhododendron
-  EIAR Site Boundary



MAP NO.:	Figure 3.1	SCALE:	1:35,000
PROJECT TITLE:	Locations of Rhododendron	DATE:	23-07-2020
DRAWING BY:	LK	CHECKED BY:	PR
<small>MKO, Tuam Road, Galway, Ireland, H91VW64. Email: info@mkofireland.ie Tel: +353 (0)91 735611</small>		<small>Ordnance Survey Ireland Licence No. AR 0021819 © Ordnance Survey Ireland/Government of Ireland</small>	

4. RHODODENDRON MANAGEMENT PLAN

The following management measures will be undertaken for the eradication of Rhododendron along the proposed grid connection route options.

Prior to commencement of works within the site, subject to grant of planning permission, a pre-commencement invasive species survey will be undertaken by a supervising and qualified ecologist to determine the current status of the species along the proposed grid connection route options and any likely spread in the intervening time period between the original survey work and construction.

All works in proximity to identified stands of rhododendron will be supervised by a qualified ecologist. Where stands of rhododendron can be avoided, but occur adjacent to the works area, they will be clearly marked off by the supervising ecologist to ensure that no ingress occurs.

All site users will be given a toolbox talk by the ecologist on the characteristics of rhododendron and made aware of the locations of the invasive species and adhere to site hygiene during the proposed works.

4.1 Management Measures

It is anticipated that rhododendron infestations in proximity to the proposed grid connection will be avoided, however where rhododendron is located within the direct footprint of the grid connection route management will be required.

Given the nature of works and the infestations along the proposed cable route it was considered that removal of the rhododendron root ball and mulching of dried rhododendron material is the most appropriate management option. Studies have shown that rhododendron plants can be very effectively killed by the extraction of the root ball from the soil (Higgins 2008). Treatment can be divided into three main stages: initial removal, drying out of the root balls and chipping/composting/burning on site.

4.1.1 Management Plan

Details of the management methods considered most appropriate for the site of the proposed development are provided in Table 4.1. Only those areas within the direct development footprint will be treated and other stands outside of these will be avoided.

Table 4.1 Management Measures for Rhododendron

Management Objectives	
Objective 1	Prevention of further spread of Rhododendron to uncontaminated areas
Objective 2	Eradication of Rhododendron from the proposed works footprint
Management Options	
Where works are proposed along the proposed grid connection route which will directly impact on a particular stand of Rhododendron the following methods will be employed:	
Digging	
Where the stand is small enough removal will be carried out manually by hand. Where stands are too large to be completely removed the stand will need to be removed by digging. Removal will take place outside of the optimal seed dispersal period (Feb/March) and flowering season (Spring/Summer). The	

Management Objectives
<p>effectiveness of digging the stumps and root ball out is increased by removing all viable roots. This will be done manually or with an excavator. To avoid regrowth, stumps and root balls will be turned upside down and the soil should be brushed off the roots.</p>
<p>Excavated Plant Material</p> <p>Soil will be removed from excavated material and the material will be placed inverted on a root barrier membrane within the works area. This will be located >30m from any watercourse. The plant material will be stored here and allowed to completely dry out. Once dry, the rhododendron material shall be mulched on site and composted or burned.</p> <p>An Environmental Clerk of Works (ECoW) or suitably qualified Ecologist will be required to monitor rhododendron management works. The ECoW shall confirm that the risk of contamination beyond the already contaminated area is avoided prior to the commencement of any works. Biosecurity measures on the site will stay in place until all works are completed.</p>
Actions planned (treatment and monitoring)
<p>A site-specific risk assessment and method statement shall be prepared by the Contractor in consultation with an Ecologist/ ECoW prior to the commencement of works.</p> <p>Initial steps</p> <ul style="list-style-type: none"> ▪ All staff working on the site will be made aware of the presence and location of Rhododendron within the site boundaries. ▪ Signage will be erected to indicate the presence of invasive species. ▪ General best practice control measures will be adhered to by all staff working in the vicinity of the infestation. <p>Summary of Required Works</p> <ul style="list-style-type: none"> ▪ Consider surrounding properties and potential for reintroduction. Identify potential contamination routes to your site and mitigate against these. ▪ Consider if you can successfully and safely carry out the work or if professional practitioners ▪ Develop and produce a site specific control/management plan. ▪ Monitor any regrowth and/or reintroduction and treat as necessary. <p>Schedule of control actions</p> <ul style="list-style-type: none"> ▪ Biosecurity measures will be approved by ECoW or Ecologist prior to commencement of works. ▪ On completion of works and decontamination of point locations, biosecurity measures will be removed under the supervision of ECoW or Ecologist. <p>Monitoring schedule</p> <ul style="list-style-type: none"> ▪ ECoW or Ecologist and Contractor will produce a detailed Method Statement prior to the commencement of works. ▪ All biosecurity measures will be monitored.
How actions will be evaluated
<p>The programme of works will be considered successful if it fulfils the following criteria:</p> <ul style="list-style-type: none"> ▪ No dispersal of Rhododendron plant material occurs during the construction phase of the works. ▪ Excavated Rhododendron plant material is successfully disposed of and regrowth of Rhododendron no longer occurs following the recommended treatment plan.

The following will be adhered to in order to prevent the further spread of the invasive species:

- All staff working on site will be made aware of the location of Rhododendron within the proposed development site.
- The recommendations during construction shall be rigidly adhered to in order to avoid the spread of Rhododendron to uncontaminated areas.
- New specimens identified within the zone of proposed works will be treated in the same manner as outlined above.

5. GENERAL BIOSECURITY

With the following measures in place, potential spread of this species is avoided.

- Good construction site hygiene will be employed to prevent the spread of problematic invasive alien plant species (e.g. Himalayan balsam, Japanese knotweed etc.) by thoroughly washing vehicles prior to leaving the site.
- All plant and equipment employed on the construction site (e.g. excavator, footwear, etc.) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of invasive plant species
- Wheel washing facilities will be provided at the site entrance. All washing must be undertaken in areas with no potential to result in the spread of invasive species. This process will be detailed in the contractor's method statement.
- Any soil, topsoil or stone material required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.

Temporary stock-piling of topsoil and subsoil in heaps during construction will take place along the infrastructure corridor and will be required along the grid connection route. Where temporary excavations are required along the grid connection route for example, turves, topsoil and subsoil will all be stored separately for immediate reinstatement following the installation of each section of route. Such measures will also avoid the spread of invasive species along the construction corridor.

Along the grid connection route, all excavated topsoil will be used as backfill, with the original turves placed on top to facilitate immediate revegetation. During the excavation of other components of the proposed infrastructure, i.e. turbine hardstands and the site compound, there will be a requirement for excavated spoil to be stored in a permanent storage area. However, turves will be stored separately and intact where stripped during the initial works and will be used for reinstatement of areas of bare soil.

6. **CONCLUSIONS**

The bespoke management plan for the treatment of Rhododendron outlined in this document has been designed to follow the guidance outlined in Section 1.3. Careful implementation of the prescribed management measures will ensure that the works are conducted within the confines of legislation as outlined in Section 1.2.

It should be noted that this management plan provides for the treatment of invasive species only within and directly adjacent to the footprint of the proposed works. Any invasive species which are located outside the construction footprint will be left undisturbed and will not be the subject of any treatment as part of the current proposal.

BIBLIOGRAPHY

- CIEEM, 2018, Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine.
- 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.
- 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>
- Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Dublin: The Heritage Council.
- Habitats Directive (92/43/EEC).
- Higgins, G.T. (2008) Rhododendron ponticum: A guide to management on nature conservation sites. Irish Wildlife Manuals, No.33. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- 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/>

NRA (2004) Environmental Impact Assessment of National Road Schemes – A Practical Guide, National Roads Authority, Dublin.

NRA (2008). The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads. Dublin: National Roads Authority.

Scottish Natural Heritage (SNH) (July 2013) Assessing Connectivity with Special Protection Areas (SPA)

Stace, C. A. (1997). New Flora of the British Isles. Cambridge: Cambridge University Press.

Therivel R. (2009) Workshop Material on the Habitats Directive Assessment of Plans Levett-Therivel Sustainability Consultants on behalf of the Heritage Council, Kilkenny.

Therivel, R. (2009) 'Appropriate assessment of plans in England', Environmental Impact Assessment Review 29(4), pp. 261-272