

Cleanrath Windfarm

Invasive Species Management Plan



Planning & Environmental Consultants

DOCUMENT DETAILS

Client: Cleanrath Windfarm Ltd.

Project title: Cleanrath Windfarm ISMP

Project Number: 180655

Document Title: Cleanrath Windfarm Invasive Species Management Plan

Doc. File Name: ISMP F – 2019.02.19 – 180655

Prepared By: McCarthy Keville O’Sullivan Ltd.

Planning & Environmental Consultants
Block 1, G.F.S.C.
Moneenageisha Road, Galway



Document Issue:

Rev	Status	Issue Date	Document File Name	Author(s)	Approved By:
01	Draft	12.02.2019	ISMP D2 – 2019.02.12	IS	PR
02	Final	19.02.2019	ISMP F – 2019.02.19	IS/DMN	PR

Table of Contents

1	Introduction.....	1
1.1	General Introduction	1
1.2	Statement of Authority	1
1.3	Objectives	1
1.4	Proposed Works	1
1.5	Legislative Framework	2
1.6	Guidance Documents.....	2
1.7	Methods	4
1.8	Field Surveys	4
1.9	GIS Mapping.....	4
2	Invasive Species Recorded	5
3	Management Plan	8
3.1	Himalayan Knotweed (<i>Persicaria wallichii</i>)	8
3.1.1	Management of Himalayan knotweed.....	8
3.1.1.1	Treatment of stand no. 10	8
3.1.1.2	Treatment of stand no. 13	9
3.2	Rhododendron (<i>Rhododendron ponticum</i>)	10
3.2.1	Management of Rhododendron.....	10
4	Conclusions	12
6	References	13

1 INTRODUCTION

1.1 General Introduction

McCarthy Keville O'Sullivan were commissioned to undertake a targeted invasive species survey of Cleanrath Wind Farm and new grid connection route, Co. Cork. The purpose of the survey was to satisfy the pre-construction survey requirements, in relation to invasive species as per commitments made in all the various planning documentation and consolidated in the CEMP of Planning Reference No. 15/06966 (ABP Ref. PL 04.246742).

This survey comprised a pre-construction walkover survey, carried out on behalf of Cleanrath Windfarm Ltd. The site location and survey area (grid connection route and development footprint) is shown in Figure 1.1. This document has been prepared with reference to current legislation and best practice guidelines in the identification and management of invasive alien species listed on the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). The document does not provide advice or guidance with reference to waste legislation.

1.2 Statement of Authority

Field surveys of the grid connection route and the Cleanrath Windfarm were undertaken by Julie O'Sullivan (BSc., MSc.), Irene Sullivan (BSc.) and David McNicholas (BSc., MSc., MCIEEM). This report has been written by Irene Sullivan (BSc.), an appropriately qualified ecologist, and David McNicholas (BSc., MSc., MCIEEM) who has over 8 years' ecological consultancy experience. This report has been reviewed by Pat Roberts (B.Sc., MCIEEM) who has over 14 years' experience in ecological assessment.

1.3 Objectives

The objectives of this report are summarised below:

- Provide general best practice guideline measures for the control and management of invasive species.
- Provide detailed recommendations for the management of invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011).

1.4 Overview of Site Works

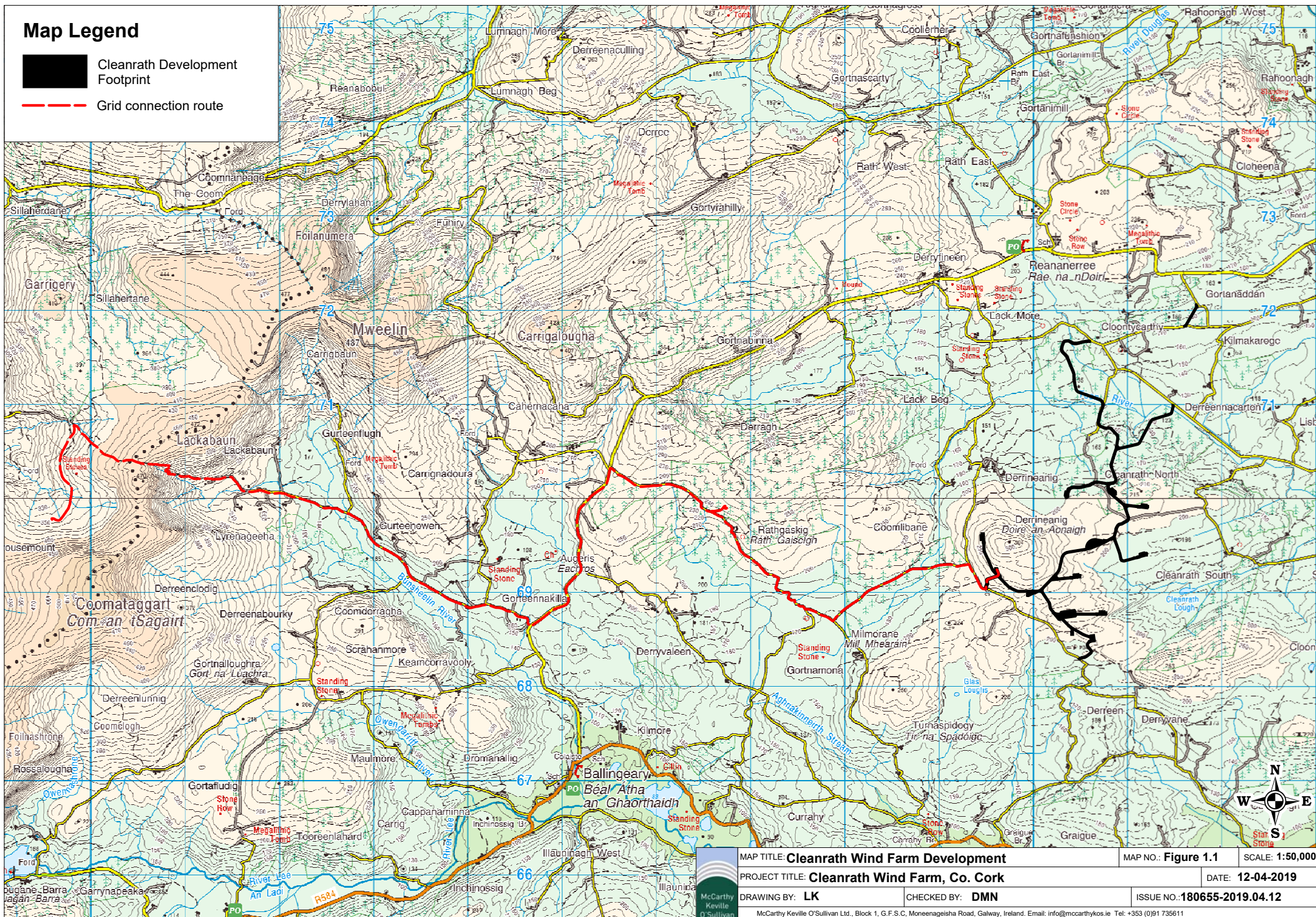
In summary the project consists of the following:

- Erection of wind turbines;
- Construction of foundations and hardstanding areas in respect of each turbine;
- Upgrade of existing site entrance from public road;
- Excavation of borrow pits;
- Construction of 1 no. electricity substation (which will operate at a voltage up to 38 kV);
- The inclusion for a 38 KV cable from Cleanrath Wind Farm which will require an additional cable trench within the wind farm site;
- Installation of approximately 3.5 km of up to 33 kV underground cabling and associated underground communication cables between the turbines and the on-site 38 kV substation;

Map Legend

Cleanrath Development Footprint

Grid connection route



- Installation of 38 kV underground cabling and associated underground communication cables between the on-site 38 kV substation and the permitted Coomataggart 110 kV Substation at Grousemount, Kilgarvan, Co. Kerry;
- Installation of joint bays along the cable route;
- Temporary alternations to the public road at identified locations to accommodate the delivery of turbines;
- Temporary site compound;
- Associated site works including landscaping;
- Tree felling.

1.5 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 bohemica*). 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”.

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,”

1.6 Guidance Documents

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

- Regulation (EU) 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species (IAS Regulation)
- 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

1.7 Methods

1.7.1 Field Surveys

GPS locations of each stand/individual invasive plant was recorded. Field survey methods are based on survey methodology developed by Crushell *et al.* (2011) and guidelines set out by the National Roads Authority (2010). Special attention was paid to those habitats likely to support invasive plant species including areas of disturbed ground, watercourses and roadside verges.

Field surveys of the Cleanrath site were undertaken on the 13th, 14th and 15th of November 2018 by Julie O'Sullivan (BSc., MSc., ecologist with MKO) and on the 10th of January 2019 by David McNicholas (BSc., MSc., MICEEM) and Irene Sullivan (BSc.) (ecologists with MKO). The development footprint and grid connection route was walked and all Third Schedule invasive plant species recorded. All results were recorded using a Garmin Montana 650 hand-held GPS to mark grid reference locations. Surveys were carried out during a sub-optimal time of year. However, invasive plant species were readily identifiable due to their respective characteristic features (e.g. dead flower heads, zig-zagged stems). Field surveys of the western side of the windfarm site were carried out by suitably qualified staff of Fehily Timoney and Company on 25/10/2018.

1.7.2 GIS Mapping

Following on from the site visit, maps were produced using GIS Software application packages (MapInfo (Version 10.0)) detailing the location of invasive plant species within the site. Invasive species records were mapped as points, in line with best practice guidelines for habitat mapping published by Smith *et al.* (2010).

2 INVASIVE SPECIES RECORDED

Three stands of Himalayan knotweed and ten stands of Rhododendron were recorded during the invasive species surveys. These were the only Third Schedule invasive species recorded. The results of these invasive species surveys are presented in Table 2.1 -2.3 and displayed in Figure 2.1 – 2.3. Photographic records of Himalayan knotweed recorded are shown in Plate2 2.1 – 2.3.

Table 2.1 shows records of invasive species recorded during surveys carried out by MKO. Table 2.2 shows records of invasive species recorded during surveys carried out by Fehily Timoney and Company.

Table 2.1 Invasive Species Records recorded during surveys carried out on the 13th, 14th and 15th of November 2018.

Species	Location (Irish Grid)	Comment
Rhododendron	E 12528, N69944	Growing along Bunsheelin River bank.
Rhododendron	E11596, N70074	Growing along Bunsheelin River bank.
Rhododendron	E11606, N70066	Growing along Bunsheelin River bank.
Rhododendron	E11690, N70104	Growing along Bunsheelin River bank.
Rhododendron	E11710, N70109	Growing along Bunsheelin River bank.
Rhododendron	E11740, N70119	Growing along Bunsheelin River bank.
Rhododendron	E11750, N70133	Growing along Bunsheelin River bank.
Himalayan Knotweed	E120699, N071675	Growing in road verge at junction adjacent to stream
Himalayan Knotweed	E121805, N071955	Growing adjacent to lay-by and along roadside
Himalayan Knotweed	E121731, N072078	Growing near lay-by at proposed junction with new access road
Rhododendron	E121680.28, N71987.79	Plant growing adjacent to a length of proposed road at the eastern side of the site.

Table 2.2 Invasive Species Records (Fehilly Timoney & Company)

Species	Location (Irish Grid)	Comment
Rhododendron	E116935.4430, N70073.9486	Near point where access track leading to T5 will leave existing forestry track
Rhododendron	115744.8498, 70842.5926 to 115740.2866, 70851.0c501	2m wide mature Rhododendron along property boundary of derelict house at windfarm entrance



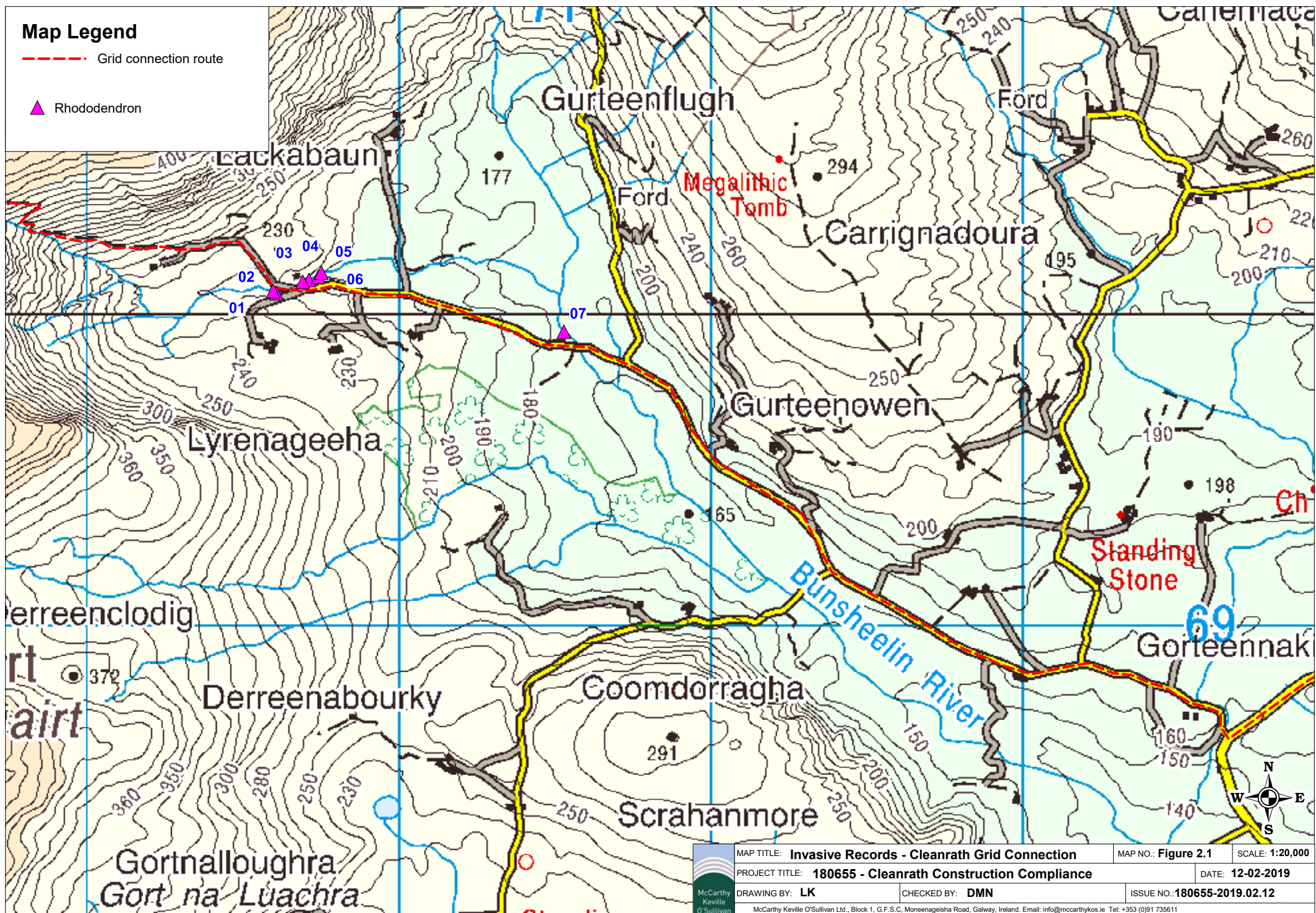
**Plate 2.1 Himalayan Knotweed (approx.6m long – shown in red), adjacent to road junction and stream
Grid ref: E120699; N071675 (Record 10, Figure 2.3). This stand will not be excavated although it occurs adjacent to the haul road shown within the image.**



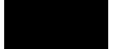



Plate 2.2 Himalayan Knotweed growing adjacent to a lay-by and along the roadside (Record 12, Figure 2.3). However, this record does not occur along the proposed haul road and will be completely avoided.

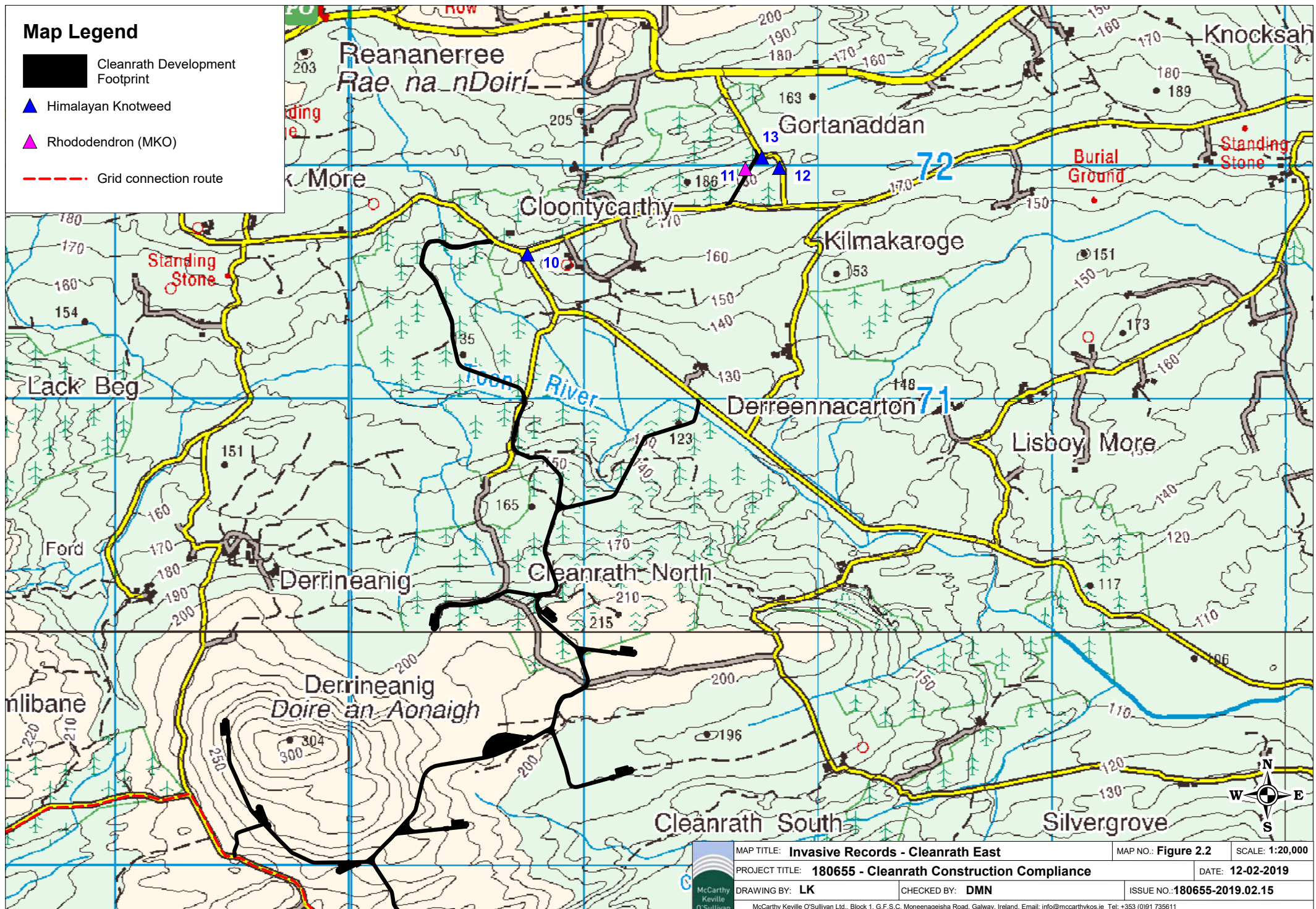


Plate 2.3 Himalayan Knotweed (approx.5m long) (Record 13, Figure 2.3)



Map Legend

-  Cleanrath Development Footprint
-  Himalayan Knotweed
-  Rhododendron (MKO)
-  Grid connection route



3 MANAGEMENT PLAN

Himalayan knotweed (*Persicaria wallichii*) and Rhododendron (*Rhododendron ponticum*) were the only species recorded on-site which are subject to restrictions under Regulations 49 and 50 and is included in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011).

As Himalayan knotweed and Rhododendron are listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011), these species will be subject to the following treatment to prevent their spread.

3.1 Himalayan Knotweed (*Persicaria wallichii*)

Himalayan Knotweed originates from the Himalayan region spanning from Afghanistan to south-west China. The plant can grow to 2m tall forming dense stands and flowers from August to September. The plant has a green/red stem with long lanceolate leaves and small white flowers. Himalayan knotweed reproduces vegetatively from stem and root (rhizome) fragments. Himalayan knotweed is one of the highest risk non-native invasive species in Ireland. This species negative impacts include disruption to sight lines on roads and railways, out-competing native flora and die-back in winter leaving areas vulnerable to erosion.

3.1.1 Management of Himalayan knotweed

Himalayan knotweed has potential to be impacted upon by the proposed works in relation to road widening for transportation of turbine blades during construction of the wind farm and the provision of a new access road. The only stand likely to be impacted upon is Record 13 as shown on Figure 2.3. Record 10 is located along the haul route (the existing public road), but there are no requirements for excavation of this material. However, from a precautionary perspective, the ecologist will mark out this stand in advance of works to ensure that no accidental spread of the species occurs. All other stands identified are outside the construction footprint of the proposed development. Stand number 12 is located outside the development area and no works are proposed in the vicinity. It will not be impacted by these works. The below management is proposed to avoid the spread of Himalayan knotweed during the proposed works. The methods for treating the stands identified to have the potential to be affected by the proposed works are described below.

3.1.1.1 Treatment of stand no. 10

- Prior to commencement all staff will be given a toolbox talk on the characteristics of Himalayan Knotweed and adherence to site hygiene during the proposed works.
- Before any site works commence, the project ecologist will physically mark out the extent of recorded Knotweed stands, including a 7m buffer from the plant. This will be done using wooden posts and tape and/or spray paint where the buffer extends into hard surface areas. All fencing will be monitored and maintained for the duration of the works.
- Where excavation works are required within 7m of a stand of Knotweed these will be supervised by a suitably qualified ecologist.
- No excavations are anticipated within the identified stand and all excavations will be located on the opposite side of the road.
- The excavated spoil from the opposite side of the road will be examined for the presence of rhizomes.
- If rhizomes are identified within the spoil, that spoil will be considered to be contaminated and will be removed to a containment bund as described in relation to stand number 13.

- Should the spoil be deemed to be free of rhizomes, it will be considered to be uncontaminated with no further measures required.

3.1.1.2 Treatment of stand no. 13

Where excavation works are required within 7m of a stand of Knotweed these will be supervised by a suitably qualified ecologist.

Site Set-up

- Prior to commencement all staff will be given a toolbox talk on the characteristics of Himalayan Knotweed and adherence to site hygiene during the proposed works.
- A pre-commencement survey will be carried out by the ecologist and the extents of Knotweed including a 7m buffer from the plant will be physically marked out. This will be done using wooden posts and tape and/or spray paint where the buffer extends into hard surface areas. All fencing will be monitored and maintained for the duration of the works.
- Prior to works within the 7m knotweed buffer zone of any stand, a designated bio-secure area will be set-up to facilitate brushing down of boots and machinery prior to leaving the contaminated area to prevent material being spread off site.
- A clearly defined area within the wind farm site will be designated for the creation of the cell/deep burial. The cell will also have a clearly designated bio-secure area to facilitate clean down of boots and machinery prior to leaving the cell exclusion zone.
- The exclusion zone will be signed with warning signs in order to prevent access of machinery or personnel prior to and during the proposed works other than those designated for works in relation to Knotweed.

Deep Burial

- One option for the management of knotweed is deep burial. This method involves the covering of the contaminated material within a designated burial pit within the wind farm site with a layer of root barrier membrane before infilling with inert material to a minimum depth of 5m. Steps to be adhered to in this method are described in the 'Knotweed Excavation and Burial' section below.
- Should deep burial to a depth of 5m not be possible a cell will be created as described below.

Creation of Cell

- Trial hole excavations at the Knotweed stands will inform the potential volume of material requiring burial prior to the creation of the cell.
- The cell will be large enough to facilitate the burial of Knotweed contaminated material to allow for a clean capping of soil a minimum of 2m deep.
- The bottom of the cell will be surfaced with a thin layer of sand to protect the root barrier membrane. The sides of the cell will be supported using sheets of plywood.
- Root barrier membrane will be laid allowing enough overlap on the edges of the cell to later cover the top of the cell and create a seal.
- Another layer of sand will be placed over the newly laid membrane on the bottom of the cell to protect it from damage during infilling.
- Once filled to capacity with contaminated material, the root barrier membrane will be folded over to cover the top of the cell and sealed using double sided radon barrier tape or equivalent.

- A fresh capping of 2m of inert material will be placed over the cell to protect it from potential future disturbance. The location of the cell will be clearly marked and details of same made available to all relevant parties going forward.

Knotweed Excavation and Burial

- Excavation will be carried out by a designated suitably sized excavator (preferably a non-tracked machine) under the supervision of a suitably qualified ecologist.
- The excavator will work from the centre of the knotweed stand out towards its lateral extent. Contaminated material will be placed in a waiting dumper that is positioned on an impermeable membrane (radon barrier or equivalent).
- The dumper will only be three quarters filled. Before moving away from the membrane, the dumper wheels and machine body will be brushed down to remove any potentially contaminated material that was lost during filling and this material placed in the dumper bucket along with the other contaminated spoil.
- The dumper will drive slowly to the designated cell location and deposit the material.
- The dumper will again be cleaned down prior to moving away from the exclusion zone and any loose material collected on a membrane and disposed of with the other contaminated material within the exclusion zone.
- The excavator will be cleaned down on location using brushes and shovels and all material disposed of by the methods previously described.
- The excavator will only move away from the Knotweed excavation area once completely cleaned down and signed off by the ecologist.
- This will be carried out at each of the locations where Knotweed is impacting on the development footprint, i.e works are within 7m of a Knotweed stand.

3.2 Rhododendron (*Rhododendron ponticum*)

Rhododendron is a native of the Iberian Peninsula and was introduced to Ireland in the 18th century as an ornamental plant for gardens as well as to provide game cover. This plant reduces the biodiversity of a site by creating dense stands that prevent woodland regeneration and outcompete native plant species. Rhododendron is an evergreen shrub that reproduces by means of stem layering as well as being a prolific seed producer. The leaves of Rhododendron are toxic, and it has no natural predators. Rhododendron is also host to a pathogen which can cause 'Sudden Oak Death', a fungus which has the potential to attack a variety of native woody plants.

3.2.1 Management of Rhododendron

- **Rhododendron** will be clearly marked using posts and tape **prior** to any machinery/personnel entering the site (this includes site investigation, clearance, fencing or set up works). All fencing will be monitored and maintained for the duration of the works.
- Where works cannot avoid areas of Rhododendron, the proposed method of removal is by means of cutting and digging. This will be carried out by a suitably qualified individual familiar with Rhododendron and the potential risks associated with the plant. Firstly, all overgrowth will be removed by means of cutting. This will take place outside of the optimal seed dispersal period (Feb-May) (Edwards, 2006).
- Any stumps and roots which require removal during the cable installation/windfarm development will be removed either manually or by using a digger.

- To avoid regrowth, Rhododendron material removed will be mulched and spread within the site. If stumps cannot be mulched these will be buried upside down at a depth of 2m in a designated location within the site.
- All Rhododendron material will be stockpiled in a clearly defined fenced off area within the site. All fencing will be monitored and maintained for the duration of the works.
- On completion of the proposed development, the site will be monitored for Rhododendron encroachment. Any encroachment will be sprayed and/or removed via the above treatment methods. Any spraying will be carried out with a suitable herbicide following the manufactures instructions.
- All machinery working in association with the Rhododendron will be thoroughly brushed down and deemed clean before leaving the site.

4 CONCLUSIONS

The bespoke outline management plan for the treatment of invasive species outlined in this document have 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 management of Third Schedule invasive species only within the footprint of the current proposal. The invasive species that are located outside the construction footprint will be left undisturbed and will not be the subject of any management as part of the current proposal. All such areas will be avoided during construction activities to avoid potential spread of any invasive plant species.

6 REFERENCES

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.

Department of Environment (2013). *An Invasive Alien Species Strategy for Northern Ireland*. www.doeni.gov.uk

Edwards C. (2006) *Managing and controlling invasive Rhododendron*. Practice Guide. Forestry Commission, Edinburgh, Scotland.

Environment Agency (2013) *Department for Environment Food and Rural Affairs Guidance*, Environment Agency, Bristol, UK

European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). <http://www.irishstatutebook.ie>

European Parliament (2014) Regulation (EU) 1143/2014 on the prevention and management of the introduction and spread of invasive alien species (IAS Regulation)

Fossitt, J. A. (2000). *A Guide to Habitats in Ireland*. Dublin: The Heritage Council.

IFI (2013) *Best Practice for Control of Japanese Knotweed* (*Fallopia japonica*). National Parks and Wildlife Service.

IFI (2013) *Best Practice for Control of Himalayan Balsam* (*Impatiens glandulifera*). Inland Fisheries Ireland.

Invasive Species Ireland (2015) <http://invasivespeciesireland.com/most-unwanted-species/established/terrestrial/?pg=3>

Irish Water (2016) *Information and Guidance Document on Japanese Knotweed Asset Strategy and Sustainability*

Kelly, J., O'Flynn, C., and Maguire, C. (2013) Risk analysis and prioritisation for invasive and non-native species in Ireland and Northern Ireland. A report prepared for the Northern Ireland Environment Agency and National Parks and Wildlife Service as part of Invasive Species Ireland.

Kelly, J., Maguire, C.M. & Cosgrove, P.J. (2008). *Best Practice Management Guidelines Himalayan balsam* (*Impatiens glandulifera*). Prepared for NIEA and NPWS as part of Invasive Species Ireland.

National Biodiversity Data Centre (2015). <http://maps.biodiversityireland.ie/#/Home>. Last Viewed: 12/11/2015.

National Biodiversity Data Centre, Ireland, Cherry Laurel (*Prunus laurocerasus*), accessed 22 January 2019, <<https://maps.biodiversityireland.ie/Species/28940>>

NPWS (2011) *Ireland's National Biodiversity Plan 2011-2016, Ireland's National Biodiversity Plan*. National Parks and Wildlife Service

NRA (2010). *Guidelines on management of noxious weeds and non-native invasive plant species on national roads*. National Roads Authority.

O'Flynn, C. (2010) *Report on the Dirty Dozen Non-Native Invasive Species, Co. Donegal*. National Biodiversity Data Centre (NBDC).

Smith, G., O'Donoghue, P., O'Hara, K., Delaney, E. (2011) *Best Practice Guidance for Habitat Survey and Mapping*, The Heritage Council, Church lane, Kilkenny, Ireland

Stokes, K., O'Neill, K. & McDonald, R.A. (2004) *Invasive species in Ireland*. Unpublished report.

Property Care Association (2015) *Guidance Note - Management of Himalayan Balsam*
<http://www.property-care.org>