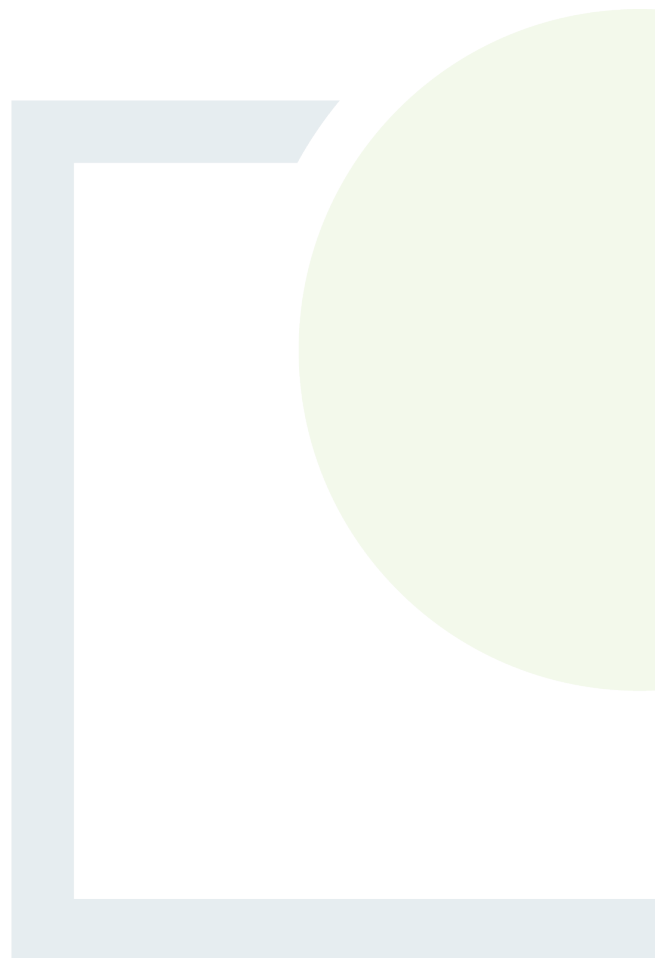




CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

Appendix 9.2

Invasive Species
Management Plan





CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE &
PLANNING

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED COUNNAGAPPUL WIND FARM, CO. WATERFORD

INVASIVE SPECIES MANAGEMENT PLAN

Prepared for:
EMP Energy Limited (EMPower)



Date: October 2023

Core House, Pouladuff Road, Cork, T12 D773, Ireland

T: +353 21 496 4133 | E: info@ftco.ie

CORK | DUBLIN | CARLOW

www.fehilytimoney.ie

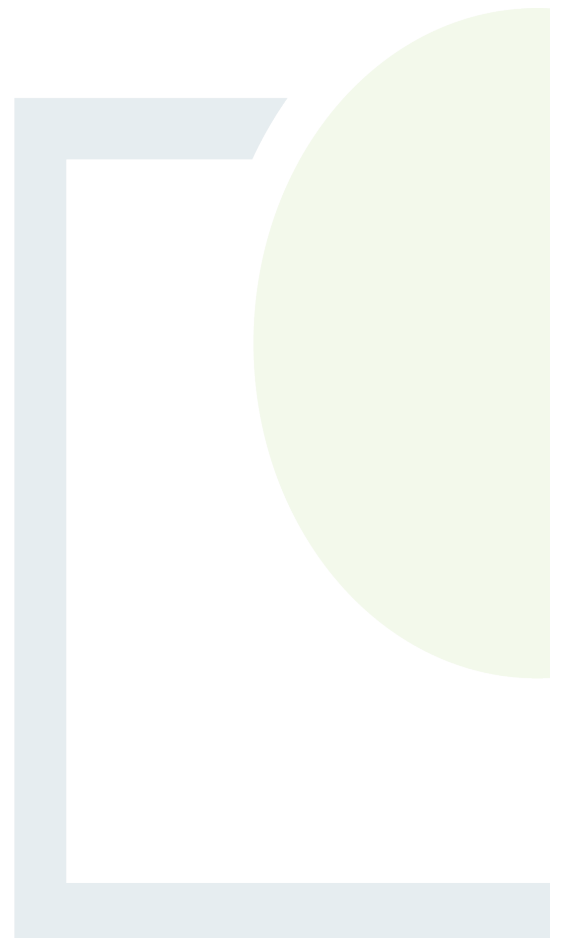


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1. INTRODUCTION

EMPower Ltd. has commissioned Fehily Timoney & Company (FT) to prepare an Invasive Species Management Plan as part of the proposed Coumnaappul Wind Farm (the Proposed Development). Fehily Timoney & Company (FT) has prepared this Invasive Species Management Plan (ISMP) to comply with Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021 (not to cause the spread of non-native invasive plant species listed in the Third Schedule), and to ensure non-native invasive plant species not listed in the Third Schedule are not spread to adjacent land or Natura 2000 (European) sites. The report details a programme for the monitoring and control of invasive species at landholdings of and adjacent to the site at the Proposed Development.

No Schedule III listed invasive species were observed within the site during walkover surveys of the main windfarm site.

Two of Schedule III listed invasive species were recorded along the GCR, Himalayan balsam (one location) and rhododendron (one location). Rhododendron is growing along the R672 roadside at two locations, outside the proposed works area. Multiple stands of Himalayan balsam are growing at the N72 Bridge near Killadangan. These are outside the proposed works area, are within close proximity.

No Third Schedule listed species were recorded within the TDR nodes. Japanese knotweed, a Third Schedule listed species, was recorded outside the TDR footprint, c. 60m from the Node 6 – N26 / N72 Junction.

1.1 Legislative Context

In Ireland, the spread and propagation of species listed in the Third Schedule of S.I. No. 477/2011 European Communities (Birds and Natural Habitats) Regulations 2011 to 2021 is an offence. Under Regulation 49 (2) - save in accordance with a licence granted under paragraph (7), 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. Under Regulation 50 it is an offence to transport a vector material listed in Part 3 of the Third Schedule except under licence.

In October 2017, Ireland's 3rd National Biodiversity Action Plan (NPWS, 2017), for the period 2017-2021 was launched. This Plan sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity' and follows on from the work of the first and second National Biodiversity Action Plans. Target 4.4 states that 'Harmful invasive alien species are controlled and there is reduced risk of introduction and/or spread of new species.' This is supported by seven actions, those relevant to this management plan are:

4.4.3. Continue and enhance measures for eradication, where feasible, control and containment of invasive species.

4.4.4. Encourage horticultural nurseries to produce native species, varieties and landraces from appropriate native sources for public and private sector plantings. Public bodies will endeavour to plant native species in order to reduce importation of non-native species, varieties and landraces.

4.4.6. Publish legislation to address required provisions under the EU Regulation on invasive alien species (No. 1143/2014) and on responsibilities and powers regarding invasive alien species, giving IFI responsibility for aquatic invasive species.



The Waterford City and County Development Plan 2022-2028 (Cork County Council, 2022) includes invasive species objectives. These objectives are as follows:

BD 28: We will support, as appropriate, the National Parks and Wildlife Service's efforts to seek to control and manage the spread of non-native invasive species on land and water. Where the presence of non-native invasive species is identified at the site of any proposed development or where the proposed activity has an elevated risk of resulting in the presence of these species, details of how these species will be managed and controlled will be required. Where development is approved for sites containing known invasive species, we will consider, where appropriate, the use of conditions for control and removal of invasive species.

BD 29: We will promote awareness of invasive species and appropriate management, and work with other agencies to address the issue..

1.2 Site Description

The wind farm site habitat survey study area encompasses a mixture of habitat types, with Wet heath HH3 habitats, composed of predominantly grasses and sedges, forming a large portion. Dense Bracken HD1 and Dry siliceous heath HH1 are also present on the slopes. Agricultural land, comprising Improved agricultural grassland GA1, Scrub WS1 and Wet grassland GS4, dominates the lowlands. Conifer plantation WD4 dominates the western side of the site, where the access tracks enter. An Eroding/ Upland River FW1 flows through the study area. There are few examples of hedgerows WL1, Treelines WL2 and Drainage ditches FW4 onsite, with the slopes being open and field boundaries largely restricted to the lowland fields.

The AGCR originates within the proposed wind farm site and traverses plantation forestry before exiting the site to join an unnamed local road. Upon exiting the main wind farm site, the grid connection traverses unnamed local roads, the R672, the L1041, and the N72 until it reaches Dungarvan 110 kV substation. The dominant habitat along this section is Buildings and artificial surfaces BL3 represented by road surfaces, however the road verges which contain Dry meadows and grassy verges GS2 would also be traversed by the grid connection. The roads are bounded by Hedgerows WL1 and Treelines WL2. Other habitats abutting the grid connection include Improved agricultural grassland GA1, Amenity Grassland GA2, Wet grassland GS4, Conifer plantation WD4, Scrub WS1, Arable lands BC1, Tilled lands BC3, Earth banks BL2 and Buildings and artificial surfaces BL3. There will be three watercourse crossings required for the AGCR, to along existing road structures, and one new (via horizontal directional drilling).

The TDR also follows the existing roads, with similar habitats to the AGCR.



2. METHODOLOGY

2.1 Relevant Guidance

The methodology and guidance for this management plan has been devised in consideration of the following relevant guidance:

- NRA, (2010) Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads. Revision 1, December 2010. National Roads Authority.
- Property Care Association, (2018). Practical Management of Invasive Non-Native Weeds in Britain and Ireland. Packard Publishing Ltd.
- Kelly et al., (2008). Best Practice Management Guidelines Japanese Knotweed *Fallopia japonica*. Prepared for NIEA and NPWS as part of Invasive Species Ireland.
- Tu, (2009) Assessing and Managing Species within Protected Areas. Protected Area Quick Guide Series. Editor J., Ervin, Arlington, VA. The Nature Conservancy, 40 pp.
- Stokes et al., (2004). Invasive Species in Ireland. Unpublished report to Environment and Heritage Service and National Parks and Wildlife Service. Quercus, Queens University Belfast, Belfast.
- AM-SOP-009 Information and Guidance Document on Japanese Knotweed
- RAPID, 2018. Good Practice Management- Japanese Knotweed (*Fallopia japonica*).
- INNSA, 2017. Code of Practice – Managing Japanese Knotweed

A desktop study was carried out to identify existing records of invasive flora species both within and adjacent to the Proposed Development, as well as habitat suitability of the footprint of the development for the invasive species. This study allows the surveyor to narrow down the source of the species introduction and its likelihood of spreading. The following open sources of information were consulted:

- Invasive Species Ireland website (Invasive Species Ireland, 2022);
- Invasive Alien Species in Ireland website (Invasives.ie, 2022);
- OSI Aerial photography and 1:50000 mapping;
- National Parks and Wildlife Service (NPWS) web mapping (NPWS, 2022);
- National Biodiversity Data Centre (NBDC) web mapping (National Biodiversity Data Centre, 2022);
- Environmental Protection Agency (EPA) web mapping (EPA, 2022).

2.2 Mapping

An invasive species survey was undertaken as part of the site walkover survey of the Proposed Development site on 27th and 28th July 2020 and re-surveyed on 07th and 08th September 2021. A habitat survey along the GCR and TDR were undertaken on the 09th September 2021 and revisited on 07th and 08th June 2022. A visual inspection of the extent of the species was undertaken by an experienced ecologist at all sites. The location and extent of the invasive species of principle concern and one-off records were documented using a handheld GPS to allow for mapping.



3. EXISTING ENVIRONMENT

3.1 Desktop Survey

Historical records of invasive species plants from the relevant national datasets were assessed through the National Biodiversity Data Centre (26/04/2023). Ten invasive plant species have been recorded in these 10km grid squares, three of which (Indian/Himalayan Balsam, Japanese Knotweed and Rhododendron) are listed in Schedule III under Regulations 49 and 50 of the EC (Birds and Natural Habitats) Regulations 2011, which makes it an offence to cause the spread of plant species listed on the Schedule. None of these species were within the 2km grid squares which overlapping the proposed wind farm. Douglas fir is widely planted as a forestry crop species with a ‘Medium Risk’. Sycamore, butterfly-bush, three-cornered garlic, travellers joy and turkey oak are widely spread species of ‘Medium Risk’. Cherry laurel is still widely planted and is associated with a ‘risk of High Impact’ however it is noted this risk refers specifically to semi-natural woodland habitats.

Invasive species recorded within 1km grid squares which overlap the grid connection route are also detailed within Table 3-1:

Table 3-1 Invasive Species within 10km and 2km grid squares overlapping Coumnaappul Wind Farm and 1km squares overlapping grid connection route

Species	1km (Grid Cable Route)	2 km	10km	Invasive Impact	Legal Status	Recorded in study area
Douglas Fir <i>Pseudotsuga menziesii</i>	-	-	S21	Medium	None	Planted in forestry in western section of the proposed windfarm.
Black Currant <i>Ribes nigrum</i>	X2098	-	-	Medium	None	No
Butterfly-bush <i>Buddleja davidii</i>	X2197	-	S20, S21	Medium	None	No
Cherry Laurel <i>Prunus laurocerasus</i>	X2197, 2198, S2209	S20J, S20N	S20, S21	High Risk	None	No
Indian Balsam <i>Impatiens glandulifera</i>	X2295, X2197	-	S20	High Risk	Schedule III	Along GCR and TDR
Japanese Knotweed <i>Fallopia japonica</i>	X2395, X2295, X2196, X2197	-	S20, S21	High Risk	Schedule III	Along TDR
Field Penny-cress <i>Thlaspi arvense</i>	X2395	-	-	Medium	None	No



Species	1km (Grid Cable Route)	2 km	10km	Invasive Impact	Legal Status	Recorded in study area
Rhododendron ponticum	X2197	-	S20, S21	High Risk	Schedule III	Along GCR and TDR
Sycamore Acer pseudoplatanus	X2395, X2098, S2106	S20N	S20, S21	Medium Risk	None	Along GCR and TDR
Three-cornered Garlic Allium triquetrum	S2106	-	S20	Medium Risk	None	No
Traveller's-joy Clematis vitalba	X2395	S21K	S21	Medium Risk	None	No
Turkey Oak Quercus cerris	-	-	S21	Medium Risk	None	No
Wall Cotoneaster Cotoneaster horizontalis	X2196	-	-	Medium	None	No

3.2 Field Survey and Mapping

3.2.1 Site

No Schedule III listed invasive species were observed within the site during walkover surveys.

3.2.2 GCR

Two of Schedule III listed invasive species were recorded along the GCR, Himalayan balsam (one location) and rhododendron (one location). The locations of the invasive species along the grid connection are shown on Figure 9.4, Volume IV of the EIAR. Rhododendron is growing along the R672 roadside at two locations. The rhododendron is outside the proposed works area and is not considered below.

Multiple stands of Himalayan balsam are growing at the N72 Bridge near Killadangan. These are within close proximity, but outside the proposed works area.

3.2.3 TDR

No Third Schedule listed species were recorded within the TDR nodes. Japanese knotweed, a Third Schedule listed species, was recorded outside the TDR footprint, c. 60m from the Node 6 – N26 / N72 Junction, and is not considered further.



3.2.4 Invasive Species Accounts

The International Union for Conservation of Nature (IUCN) in their 'IUCN Guidelines for the Prevention of Biodiversity Loss Caused by Alien Invasive Species' 2000 report describes non-native invasive species (referred to as an invasive species) as:

“an alien species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity”.

One Third Schedule invasive species, Himalayan Balsam, within the potential zone of influence of the proposed works was recorded along the AGCR and TDR and management is required.

3.3 Himalayan Balsam *Impatiens grandulifera*

3.3.1 Species Ecology

It can form dense monospecific stands where individual plants can reach 2 – 3 m in height (one of the tallest annual plants in Ireland). The stem of the plant is smooth, hairless and hollow. They grow upright, easily broken and are usually purple in colour with many large oval-shaped pointed leaves bearing teeth around the edges. The flowers of this plant can vary in colour but are usually shades of white, pink or purple. Flowering usually takes place from June to October. Seed capsules arise when the flowers are mature and when ripe the slightest touch causes these fruits to split open explosively dispersing seeds up to 20 feet from the parent plant.

This plant thrives in damp habitats and each plant can produce approximately 2,500 seeds which are produced within many 25mm long seed pods). The light seeds also float allowing them to be spread even further afield and seeds are capable of further dispersal by water and animal and human aid.

The seeds can begin to germinate while in water meaning that they are ready to establish when they reach new land. Optimum Himalayan balsam plant density can produce 5000-6000 seeds per m² (Kelly et al, 2008). Germination of seeds begins in February and flowering occurs between June till October. Himalayan balsam seeds can remain viable for up to 18 months (NRA, 2010).



Plate 3-1: Himalayan Balsam flowers¹

¹ Source: wildlifetrusts.org (Apr 2023)



3.3.2 Timeframe

Pulling should be carried out before the formation of seed pots which will explode at the slightest disturbance. Herbicide treatment should be carried out during periods of active growth before flowering but late enough to ensure that germinating seedlings are high enough. Initial application should be carried out in May/ June with further treatments in July/ August and September October.



4. PROPOSED MANAGEMENT MEASURES FOR INVASIVE SPECIES

4.1 Recommended Measures

While it is important and more efficient to contain invasive species at the point of infestation, care shall also be taken to ensure the management plan (Section 5.) shall also be adhered to ensure that the species is not spread outside the works area. Furthermore, none of these invasive species will be planted as part of landscaping the Proposed Development.

Invasive Species Ireland (ISI) notes that invasive non-native species are the second greatest threat (after habitat destruction) to worldwide biodiversity. Invasive species negatively impact Ireland’s native species; changing habitats and ultimately threatening ecosystems which impacts on biodiversity as well as economics as they are costly to eradicate.

Through prevention, early detection, rapid response, eradication, and control measures, we can reduce the risk of their introduction, establishment, spread, and impact (Invasives.ie, 2022).

Specific consideration will be given to particular locations, due to their potential for disturbance during works. As a general rule, where invasive species are within the footprint of proposed works, they must be contained and disposed of correctly. Where they are outside the proposed footprint, avoidance can be relied on where feasible to prevent their spread. As such, options for avoidance, control and removal are detailed below.

4.1.1 Prevention of spread within the works footprint

Prevention of the spread of invasive species will be achieved by:

- The full implementation of the invasive species management plan in conjunction with a competent and experienced Invasive Species Specialist Contractor.
- Supervision of control measures and treatment works by an appropriately qualified ecologist or invasive species specialist.
- Raising awareness of site workers via toolbox talks given by a suitably qualified person as part of site introduction; informing workers what to look out for and the what procedure to follow if they observe an invasive species.
- Only planting or sowing of native species within the proposed Coumna­gappul Wind Farm site will be allowed.
- Where invasive species have been physically removed and disturbed soil, this soil will be seeded or replanted (including 5cm deep mulch) with native plant species. This will prevent the easy colonisation of bare soil by invasive species in the area.
- Unwanted material originating from the site (including soil, rhizomes and other material) will immediately be transported off site by an appropriately licensed waste contractor and disposed of properly at a suitably licenced facility, in accordance with the (NRA, 2010) guidelines, i.e., where cut, pulled or mown non-native invasive plant material arises, its disposal will not lead to a risk of further spread of the plants. Care will be taken near watercourses as water is a fast medium for the dispersal of plant fragments and seeds. Material that contains rhizomes, flower heads or seeds will be disposed to licensed landfill. All disposals will be carried out in accordance with the Waste Management Acts.
- Signs will warn people working there that there is invasive species contamination.



- Ensure appropriate biosecurity measures are in place, these will include the Check Clean Dry method, along with those outlined below:
 - Remove the build-up of soil on equipment;
 - Keep equipment clean;
 - Do not move fouled equipment from one site to another;
 - Footwear and clothing of operatives working near invasive species should be checked for seeds, fruits, knotweed rhizomes or other viable material before exiting the site;
 - All vehicles exiting the site will be examined to prevent the transport of rhizomes, seeds and other plant material;
 - Follow instructions provided for containment of invasive species (Section 5.1).

4.1.2 Containment

The three most common ways a site can become infected are:

1. Importation of infected soil.
2. Contamination on vehicles and equipment.
3. Illegal dumping.

Containment of invasive species will be achieved by:

- A pre-construction survey to reconfirm the findings of the EIAR shall be undertaken during the growing season immediately prior to the construction phase to mark out the extent of invasive plant species. This survey shall inform the finalised draft of the invasive species management plan prior to the commencement of works. Prior to the construction phase, invasive species are to be treated (Section 5 for treatment methods).
- Cordoning off the area for other invasive species shall include a buffer of up to 1m surrounding the area of infection. This will prevent plants with underground rhizomes being transported to other sections of the site and it will also prevent contact with plants which could result in the transport of seed, fruit or vegetation to other parts of the site. No construction works will occur within exclusion zones prior to the eradication of invasive species.
- No machinery or personnel shall be allowed within exclusion zones. Similarly, there shall be no storage of materials within or adjacent exclusion zones.
- No soil or vegetation shall be removed from this area unless it is contained and is transported via an appropriately licensed waste contractor to a suitably licenced facility for treatment.
- Informing all site staff through toolbox talks as part of site inductions.
- Any new sightings of invasive plant species shall be relayed to construction staff and the developer. These areas shall follow the same protocol as the current infected area.



4.2 Himalayan Balsam

4.2.1 Option 1

Manual pulling/cutting; commonly known as ‘balsam bashing’:

It is vital to remember that pulling should be performed prior to the formation of the seed pods which explode at the slightest disturbance when ripe:

- Himalayan balsam has a very shallow root making uprooting by hand easy.
- The pulling technique must be undertaken so that whole plant is uprooted and normally best done if pulled from low down the plant - If snapping occurs at a node the pulling must be completed to include the roots.
- Uprooted plants can be left to air dry and decompose on a non-permeable membrane. This method is highly suited to dealing with initial outbreaks of the species and in areas where balsam plants are mixed in with sensitive native species.
- Mechanical control, by repeated cutting or mowing, is effective for large stands, but plants can regrow if the lower parts are left intact. The plant must be cut below the lowest node to stop regeneration.
- Strimming and mowing of Himalayan balsam may also be effective but only prior to the seed pods developing.
- Any attempt to cut this plant once the seeds have developed will cause the seed pods to burst, spreading the plant. The seeds of this plant are not very robust and only survive for up to 18 months, therefore a two-year control programme can be successful in eradicating this plant provided there is no further infestation from upstream or adjacent sites.
- Grazing by cattle and sheep is effective from April throughout the growing season in some situations. It should be continued until no new growth occurs. Grazing on riverbank habitats can however have negative impacts such as poaching of riverbanks and the removal of other native vegetation which may act as a buffer zone.

4.2.2 Option 2

Treatment with Herbicide:

- Where in situ physical removal is not feasible, potentially due to stand density/size or location/inaccessibility, the species can be successfully treated with herbicide.
- Several herbicides have been shown to be effective at killing Himalayan Balsam and often just one application is sufficient. Nevertheless, re-application in the same season should be planned for, as new growth from seed is likely.
- As glyphosate is a systemic herbicide, application should be carried out during periods of active growth, before flowering but late enough to ensure that germinating seedlings have grown up sufficiently to be adequately covered by the herbicide (50+ cm would be suitable).
- The initial application should ideally be carried out in May/June with subsequent treatments/monitoring likely being required in July/August and September/October.
- Herbicide application could be used as a follow up to hand pulling, e.g. later in the year to deal with any missed plants or regrowth from seed bank.



- Due to Himalayan Balsam's preference for habitats near water, this limits herbicide selection to products approved for use near water and the operatives applying it must be trained to PA6Aw level.
- The herbicide can be applied as a spot treatment to individual plants, using hand-held equipment, or as an overall spray using machine-mounted spray booms. In the latter instance, total weed control of all vegetation will occur, increasing the requirement for revegetation.
- Where accessibility is problematic, e.g. riverbanks, a long lance sprayer may be useful.
- Herbicide application will not kill seeds in the seed bank and monitoring with follow-up control must be repeated annually over 2-3 years to eradicate new plants growing in subsequent years, though the numbers decrease significantly from one year to the next.
- Removal, or herbicide treatment, of plants that have already shed their seeds is pointless, as the plants will die at the end of the growing season regardless. It is likely, particularly in the first year of control, that new plants will sprout following the initial removal/treatment, either because shade suppression will be reduced or due to soil disturbance. As such, several additional visits will likely be required. Three visits, May/June, July/August and September/October should be sufficient to catch all regrowth, although, a cautionary approach is advisable.
- Plants that germinate after September/October are very unlikely to have sufficient time to complete their life cycle and produce seeds.

Prevent Spread:

- Import only clean soil from known source.
- Ensure all vehicles and equipment are cleaned to avoid cross contamination.
- Be aware of the threat of colonisation from upstream areas washing Himalayan balsam material downstream.
- Promote native species and biodiversity - use alternative, native plants.
- Know what you are buying/growing and source native Irish seed and plants.
- Do not swap plants and cuttings.
- Clean plants before adding to ponds (dispose of water away from water courses).
- Never collect plants from the wild.
- Safe disposal of plant material and growing media.
- Report all sightings.



5. MANAGEMENT PLAN

The management of any invasive species is achieved by the assessment and mapping of the invasive species, containment once found, continual monitoring and record keeping as well as the safe disposal of invasive species material. It is recommended that surveys be carried out periodically at the site to monitor the extent of invasive flora and the success of the control and management measures. These can be carried out by FT, or a contractor specialised in invasive flora treatment. Monitoring should continue during the construction works and as part of the post construction monitoring to make sure successful control has been achieved. All invasive species which occur within the area utilised by people and machinery during the proposed construction works will be controlled/removed from the works area before commencement of works.

5.1 Containment

For the efficient use of resources namely, financial, and physical effort, it is important to prevent the further spread of invasive species. Containment will be achieved using measure outlined in Section 4 and those presented below:

- Landholder to be informed of location of the invasive species and the management plan.
- Ensure anyone treating the infestation is a suitably qualified trained professional who follows the management plan.

The site will be re-surveyed prior to treatment/construction works to confirm the findings of the original survey.

5.2 Schedule

Periodic re-surveying for all invasive species will be required, to ensure that treatment measures were effective, and to trigger further treatment if necessary. Refer to Table 5-1.

Please note that the schedule may require amendment following any given site visit.

Table 5-1: Schedule for Management of Invasive Species

Time	Details of Measures
Pre-construction (isolation of invasive)	<ul style="list-style-type: none"> • A pre-construction survey (to reconfirm the findings of the EIAR) will be undertaken during the growing season to mark out the extent of invasive species within the footprint of the project prior to any works commencing on-site. • All invasive species observed shall include a suitable buffer surrounding the area of infestation. This will prevent plants with underground rhizomes being transported to other sections of the site and it will also prevent contact with plants, which could result in the transport of seed, fruit or vegetation. • Treatment of invasive species using one or more of the treatment options proposed in Section 4.3 • Only once treatment has been completed and invasive species have been removed from within the area of works will works commence. • Toolbox talk shall be given to all personnel accessing the site.



Time	Details of Measures
	<ul style="list-style-type: none"> Site to be monitored continually for signs of regrowth of all invasive species during operation. Disposal of all cut and excavated plant matter, if chosen to be processed off-site, must be done so through a licenced waste processor. Adequate licences may also need to be obtained for the transportation of such matter.
During Construction	<ul style="list-style-type: none"> Following treatment, site to be monitored for signs of regrowth/spread to new areas. Toolbox talks shall be given to all personnel accessing the site, informing them of the locations of the invasive species and instructing them not to enter these areas (unless they are licensed invasive species contractors or ecologists). Designated curtailment areas will be demarcated for the transport of invasive species offsite. Machinery to be used in the control of invasive species will be itemised, and only those machinery will be used for excavation. The build-up of soil on equipment will be removed and fouled equipment will not be moved between sites, or between the curtailment area (demarcated areas with invasive species and for transport of invasives)/clean down area and the rest of the site. Footwear and clothing of operatives working near invasive species should be checked for rhizomes, seeds, fruits, or other viable material before exiting the site. Boot brushes will also be utilised. All vehicles exiting the site will be examined to prevent the transport of seeds/rhizomes/plant material. If re-growth of invasive species is discovered, further treatment/control will be completed using the treatment methods in Section 4. Site to be monitored during remediation works for signs of regrowth of all invasive species.
Post Construction	For 5 years following construction, site to be monitored annually for signs of regrowth of invasive species.

5.3 Mapping, Evaluating and Record Keeping

During the pre-remediation and remediation phase the following will take place before control measures:

- Check that the area of infestation is still cordoned off and a warning/information sign is still in place;
- Photographs of the area(s) of invasive species infestation;
- Map the extent via recording GPS coordinates and measure the length and width of infestation (including above and below ground rhizome growth) and plot on map;
- Evaluate the status/condition of the infestation;
- Make sure the above steps are recorded.

At the end of each site visit the recorded data should be compared with the findings of this report. Preparation of a short report on the progress of treatment following treatment works, and any subsequent monitoring.



5.4 Appropriate Disposal

5.4.1 Storage

As described, all cut and excavated plant matter will be stored securely in line with the relevant treatment methodology.

5.4.2 Disposal

Disposal of plant matter and soil off-site will be complete through an appropriately licenced haulier and waste facility.



6. DISCUSSION AND CONCLUSION

There is a legal obligation not to spread plants listed on the Third Schedule of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021; the relevant species at the Proposed Development site and therefore those of principal concern, is Himalayan knotweed. Additionally, of concern for the invasive species management plan are a number of invasive species present within the works area, within the site. Liaison with landholders of adjacent lands may be necessary to effectively control invasive species in the area and to prevent re-infestation.

It is required that a competent and experienced invasive species management contractor is appointed to treat and control invasive species. A dedicated invasive species survey is recommended to be undertaken by the appointed contractor prior to commencement of construction to re-confirm the findings of the previous survey and to identify any new areas/species of infestation.

It is recommended that infested and cleared areas will be appropriately demarcated and signed to prevent access to unauthorised personnel. Additionally, appropriate biosecurity to prevent spread of invasive species is recommended.

6.1 Conclusion

The report details a programme for the mapping and control of invasive species at the Proposed Development site.

The plan will prevent the spread of identified non-native invasive species within and from any works areas and reduce the potential risk for the introduction and/or spread of new invasive species within the site pre, during and post construction.



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