

East Meath - North Dublin Grid Upgrade Construction Environmental Management Plan – Appendix E

Invasive Species Management Plan

EirGrid

March 2024



Contents

Appendix E – Invasive Species Management Plan	1
1. Introduction	2
1.1 Purpose of this Plan	2
1.2 Structure of this Plan	2
2. Methodology	3
2.1 Relevant Legislation, Policy and Guidelines	3
2.1.1 Legislative Context	3
2.1.2 Guidance	4
2.1.3 Surveys	4
3. Results	5
4. General Measures to Control and Prevent the Spread of Non-Native Invasive Plant Species	7
4.1 Ecological Clerk of Works	7
4.2 Pre-Construction Survey	7
4.2.1 Invasive Species Management Plan (ISMP)	7
4.3 General Measures to Avoid the Spread of Non-Native Invasive Species	8
4.3.1 Site Establishment	8
4.3.2 Biosecurity and Site Hygiene	9
4.3.3 Soil Excavation	10
4.3.4 Disposal of Material	10
4.3.5 Measures to be Implemented During the Application of Herbicides	11
4.3.6 Importation of Soil and Other Material	11
4.4 Post-Construction Monitoring	11
5. Assessment of Management Options for Third Schedule Non-Native Invasive Species	12
5.1 Control Methods	12
5.1.1 Mechanical / Physical Control	12
5.1.2 Chemical Control	13
5.1.3 Biological Control	13
5.2 Three-Cornered Leek (<i>Allium triquetrum</i>)	13
5.2.1 Temporary Storage of Collected Material	14
5.2.2 Reseeding Following Eradication	14
5.3 Spanish Bluebell (<i>Hyacinthoides hispanica</i>)	14
5.3.1 Temporary Storage of Collected Material	15
5.3.2 Reseeding Following Eradication	15
5.4 Giant Hogweed (<i>Heracleum mantegazzianum</i>)	15
5.4.1 Temporary Storage of Collected Material	17
5.4.2 Reseeding Following Eradication	17
5.5 Japanese Knotweed (<i>Reynoutria Japonica</i>)	17

5.5.1	Root Barrier Membrane	18
5.5.2	Reseeding Following Excavation.....	18
5.6	Rhododendron (<i>Rhododendron ponticum</i>).....	19
5.6.1	Temporary Storage of Collected Material.....	19
5.6.2	Reseeding following Eradication.....	19
6.	References	20

Appendix E – Invasive Species Management Plan

1. Introduction

This Non-Native Invasive Species Management Plan (hereafter referred to as the ISMP) has been prepared for the East Meath - North Dublin Grid Upgrade (hereafter referred to as the Proposed Development). This ISMP contains the management recommendations in respect of preventing the spread of and managing a range of non-native invasive plant species along the Proposed Development. Invasive Species (IS), Invasive Alien Species (IAS) or Invasive Alien Plant Species (IAPS) are terms sometimes referenced in legislation and or guidance. They are referred to as non-native invasive species in this ISMP but are interchangeable.

The ISMP describes the options available to manage and prevent the spread of Third Schedule, non-native invasive plant species identified in the vicinity of the Proposed Development. Only non-native invasive plant species listed on the Third Schedule of S.I. No. 477 of 2011 – European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) (hereafter referred to as the Birds and Natural Habitats Regulations) are dealt with in this ISMP.

The ISMP will be developed prior to the commencement of any on-site works for the Proposed Development. Construction works can disturb stands of Third Schedule non-native invasive plants and / or soils contaminated with non-native invasive plant material, as well as potentially leading to a new infestation. Therefore, management measures contained in the ISMP will be implemented to avoid any direct or indirect impacts to habitats and species contained within the locality or as a result of its introduction to the area.

1.1 Purpose of this Plan

The purpose of this ISMP is:

- To provide guidance on the removal of existing non-native invasive species on-site;
- To ensure that non-native invasive plants do not become established on-site;
- To ensure that non-native invasive species do not become dominant in all or parts of the landscape; and
- To implement a monitoring programme to detect the presence of non-native plant species as well as to monitor the success of the ISMP.

The objective is to identify, remove and where possible, prevent establishment of non-native invasive species, as required by legislation. This ISMP is Appendix E of the Construction Environmental Management Plan (CEMP) (included as a standalone document in the planning application pack).

1.2 Structure of this Plan

This ISMP has the following structure:

- Section 2: Methodology;
- Section 3: Results;
- Section 4: General Measures to Control and Prevent the Spread of Non-Native Invasive Species; and
- Section 5: Assessment of Management Options for Third Schedule Non-Native Invasive Species.

2. Methodology

2.1 Relevant Legislation, Policy and Guidelines

2.1.1 Legislative Context

The Birds and Natural Habitats Regulations contain specific provisions that govern control of listed invasive species. It is an offence to release or allow to disperse or escape, to breed, propagate, import, transport, sell or advertise species listed on the Third Schedule of the Birds and Natural Habitats Regulations without a Licence. The two regulations that deal specifically with this scheduled list of species are:

- Regulation 49: Prohibition of introduction and dispersal of certain species; and
- Regulation 50: Prohibition on dealing in and keeping certain species.

The following activities are strictly prohibited:

- Dumping invasive species cuttings anywhere other than in facilities licensed to accept them;
- Planting or otherwise causing invasives to grow in the wild. Hence the landowner (in respect of the Proposed Development this being the Electricity Supply Board (ESB) and the appointed contractor) will be careful not to cause further spread);
- Disposing of invasive species at a landfill site without first informing the landfill site (that is licensed under Number 10 of 1996 - Waste Management Act, 1996 (as amended) (hereafter referred to as the Waste Management Act) to take such Third Schedule material (plant or soil) that the waste contains invasive species material (this action requires an appropriate licence);
- Moving soil which contains Third Schedule-specific non-native invasive species in the Republic of Ireland, unless under licence from the National Parks and Wildlife Service (NPWS) (this licence is a separate from and does not discharge any person being in receipt of other necessary waste permits / licences etc.); and
- Regulation (EU) No. 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 (hereafter referred to as the IAS Regulation) lists specific 'Species of Union Concern', some of which overlap with the Third Schedule species.

The IAS Regulation conveys the rules to prevent, minimise and mitigate the adverse impacts of the introduction and spread (both with and without intention) of IAS on biodiversity and the related ecosystem services, as well as other adverse impacts on human health or the economy. Ireland's 4th National Biodiversity Action Plan 2023-2030 (National Parks and Wildlife Service (NPWS) 2023) requires that:

"by 2023, invasive alien species are controlled, managed and where possible, eradicated".

A target of Ireland's 4th National Biodiversity Action Plan 2023-2030 is to *"reduce alien species by at least 50%"*.

2.1.1.1 Limitations

It should be noted that any decision on efficacy of chemical treatments will only be provided by a registered pesticides advisor. A suitably qualified specialist will be appointed by the appointed contractor to monitor the treatment of non-native invasive species. This ISMP will be updated as necessary by the specialist.

2.1.2 Guidance

The ISMP and the mitigation strategies that are discussed relating to invasive plant species have been prepared with regard to the following guidance documents, where relevant:

- Transport Infrastructure Ireland's (TII) The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII 2020a);
- The Management of Invasive Alien Plant Species on National Roads – Standard (TII 2020b);
- Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (TII 2010);
- National Road Authority's (NRA) Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (NRA 2010);
- Ireland's 4th National Biodiversity Action Plan 2023-2030 (NPWS 2023);
- The Environment Agency (EA) Managing Japanese knotweed on development sites - the Knotweed Code of Practice (Version 3, amended in 2013, withdrawn from online publication in 2016) (EA 2013). (This document, although no longer supported by the EA, is nonetheless a practical document in determining the approach and control mechanisms for Japanese knotweed);
- Managing Invasive Non-Native Plants in or near Freshwater (EA 2010);
- Invasive Species Ireland (ISI) Best Practice Management Guidelines for Japanese knotweed (ISI 2008a);
- Best Practice Management Guidelines for Himalayan balsam (ISI 2008b);
- Best Practice Management Guidelines for Giant hogweed (ISI 2008c);
- Non-Native Species Secretariat (NNSS) *Allium triquetrum* (Three-cornered leek) Great Britain Non-Native Organism Risk Assessment Scheme (NNSS 2011); and
- Countryside Management Publications, Giant hogweed (Department of Agriculture and Rural Development (Northern Ireland) (2016).

2.1.3 Surveys

Following on from a desk-based study review of the National Biodiversity Data Centre (NBDC) records, non-native invasive species surveys were undertaken for the Proposed Development from January 2023 to August 2023, within the appropriate botanical season (April to September) when species are readily observable and identifiable.

Non-native invasive species listed on the Third Schedule of the Birds and Natural Habitats Regulations were searched for within and adjacent to the Proposed Development. Surveys were carried out by the EIAR ecologists, and all Third Schedule non-native invasive species recorded were mapped (See Figure 10.9 in Volume 4 of the EIAR). This data fed into the EIAR. Full details of the surveys are included in Chapter 10 (Biodiversity) in Volume 2 of the EIAR.

3. Results

There were five non-native invasive plant species listed on the Third Schedule of the Birds and Natural Habitats Regulations identified as occurring at various locations within the Proposed Development Planning Application Boundary during the habitat surveys, namely three-cornered leek *Allium triquetrum*, Spanish bluebell *Hyacinthoides hispanica*, Giant hogweed *Heracleum mantegazzianum*, Japanese knotweed *Reynoutria japonica* and rhododendron *Rhododendron ponticum*. In total there were 10 locations where these non-native invasive plant species were located, some of which occur in proximity to each other.

A further five non-native invasive species not listed on the Third Schedule were also recorded during the survey. However, populations of these are not known to pose risk of impact to protected, notable or rare species of conservation concern. These included:

- Winter heliotrope *Petasites pyrenaicus*;
- Buddleia *Buddleja* spp.;
- Snowberry *Symphoricarpos albus*;
- Sycamore *Acer pseudoplatanus*; and
- Cherry laurel *Prunus laurocerasus*.

Table 3.1 summarises the locations of non-native invasive plant species confirmed adjacent to the boundary of the Proposed Development.

Table 3.1: Summary of Third Schedule Species Recorded Adjacent to the Proposed Development

Invasive Species	Location	Description
Three-cornered Leek <i>Allium triquetrum</i>	In road verge on cable route	Three-cornered leek (<i>Allium triquetrum</i>) was present along the route of the Proposed Development at Chainage 5,400 (coordinate reference N 95657 44458). The stand was located on the road verge and is located just outside of the Proposed Development's Planning Application Boundary.
Spanish Bluebell <i>Hyacinthoides hispanica</i>	c. 260m from cable route along road c. 38m from cable route along road	Spanish bluebell (<i>Hyacinthoides hispanica</i>) was present in two locations along the Proposed Development. One stand was located approximately 38m from the proposed cable route on a road verge between Chainage 28,650 and 28,700 (coordinate reference O 13454 44629) and is outside the Planning Application Boundary. Another stand was located approximately 260m from the proposed cable route at Chainage 13,400 on a road verge (coordinate O 01451 44549).
Giant Hogweed <i>Heracleum mantegazzianum</i>	c. 1m from the cable route c. 86m from the cable route	Giant hogweed (<i>Heracleum mantegazzianum</i>) was present in two locations along the Proposed Development. One stand of possible Giant hogweed was present less than 1m away from the Proposed Development between Chainage 12,550 and 12,600 (coordinate reference O 01639 44009). The second stand was approximately 86m from the Proposed Development and outside of the Planning Application Boundary at Chainage 15,900 (coordinate reference O 03724 45107).
Japanese Knotweed <i>Reynoutria japonica</i>	c. 90m from the cable route along the road c. 114m from the cable route along the road c. 488m from the cable route along the road c. 92m from the cable route	Japanese knotweed (<i>Reynoutria japonica</i>) was present in four locations along the Proposed Development. One stand was recorded approximately 90m from the proposed cable route between Chainage 35,500 and 35,550 and was located outside of the Planning Application

Invasive Species	Location	Description
		Boundary along a road verge (coordinate reference O 18925 43146). A second stand was located nearby, approximately 114m from the proposed cable route between Chainage 35,500 and 35,550 and was located outside of the Planning Application Boundary along a road verge (coordinate reference O 18894 43144, County Dublin). A third stand was located approximately 488m from the proposed cable route, south-east of Chainage 12,600 (coordinate reference O 02051 43691) along a road verge. This stand had been signposted by the County Meath. A fourth stand was located approximately 92m from the proposed cable route outside of the Planning Application Boundary within an area of scrub north of Chainage 31,600 (coordinate reference O 16230 44547).
Rhododendron <i>Rhododendron ponticum</i>	c. 6m from cable route on the banks of a watercourse near the cable crossing point	Rhododendron (<i>Rhododendron ponticum</i>) was present in one location along the Proposed Development. The stand was located approximately 6m from the proposed cable route at Chainage 18,200 and was located within the Planning Application Boundary (coordinate reference O 05654 45437).

Records were returned for one further non-native invasive species, Giant rhubarb *Gunnera tinctoria*, during the desk-based study which is listed on the Birds and Habitats Regulations. However, this is considered likely absent from the study area and outside of the zone of influence based on the collective desk study and field survey results. For full details of the desk-based study, refer to Chapter 10 (Biodiversity) in Volume 2 of the EIAR (included in the planning application pack).

Giant hogweed, Japanese knotweed, and rhododendron are considered highly invasive in accordance with the risk assessments undertaken for Invasive Species Ireland (Invasive Species Ireland 2024), whereas three-cornered leak and Spanish bluebell are considered a medium impact species, which can be more readily managed. Further details on the ecology of these species are provided in Section 5.

Based on these findings, Section 5 of this ISMP provides a high-level analysis of these five species and outlines the practical control / eradication measures that can be used to ensure no spread of non-native invasive plant species into the wider area. Particularly sensitive habitats may include European designated sites comprising Qualifying Interest (QI) habitats and species and Special Conservation Interest (SCI) species.

Species such as Japanese knotweed can quickly become established and spread in suitable urban areas, including gaps in the built environment such as the sides of old buildings, pavements, and on derelict ground. Where large populations occur, it may be a requirement of the local authorities that they be managed to ensure no excessive spread (e.g. Meath County Council (MCC) and Fingal County Council (FCC)), as well as those responsible for new linear infrastructure projects. The implementation of the general measures provided in Section 4 will minimise the risk of any spread of these species as a result of the construction of the Proposed Development.

It is recognised that other non-native invasive species not listed in the Third Schedule, such as noxious weeds, occur within the Planning Application Boundary and within the zone of influence. These are not ordinarily dealt with in non-native invasive species management plans, and there is separate legislation and guidance for the control of noxious weeds (e.g. Number 38 of 1936 Noxious Weeds Act, 1936 and S.I. No. 103 of 1937 Noxious Weeds (Thistle, Ragwort, and Dock) Order, 1937).

4. General Measures to Control and Prevent the Spread of Non-Native Invasive Plant Species

4.1 Ecological Clerk of Works

An on-site Ecological Clerk of Works (ECoW) will be appointed by the appointed contractor to carry out pre-construction surveys to ensure that the ecological baseline remains current and, where required, will implement the appropriate mitigation measures needed. Where sensitive habitats or species have the potential to be impacted, the ECoW will be on-site to implement all mitigation measures, as described below. The ECoW will have sufficient experience to carry out the task(s) at hand and will be a member of a professional body such as the Chartered Institute of Ecology and Environmental management (CIEEM) / the Institute of Environmental Management and Assessment (IEMA), or similar.

An ECoW must be present during any excavation (as outlined in Section 5) and will ensure that the specific ISMP measures are followed. A toolbox talk will be provided prior to the commencement of works to ensure the role and authority of the ECoW is understood by everyone working on the construction site.

4.2 Pre-Construction Survey

During the time elapsed between the completion of initial non-native species surveys and the commencement of works, it is possible that the existing stands of Third Schedule non-native invasive species may have changed. Non-native invasive species may have expanded (if unmanaged) or decreased (if there is an active management regime in place), or newly established Third Schedule non-native species may have become established within the footprint of the Proposed Development.

Pre-construction surveys will be undertaken by a suitably qualified specialist, to confirm the absence, presence and / or extent of all Third Schedule non-native invasive species within Planning Application Boundary. Where the presence of invasive species is confirmed within the Planning Application Boundary, this will require the implementation of the ISMP.

Data collected as part of the pre-construction invasive species survey will include a detailed description of the population(s) including the approximate coverage of respective colonies (recorded in m² (metres squared)). Where feasible, records will include the total number of stems, pattern of growth and information on other vegetation present. This information will enable calculations of volumes of infested soils to be excavated, where necessary, as part of the measures outlined below.

Following on from the pre-construction invasive species survey, the ISMP will be updated, as advised by a suitably qualified specialist, with regard to the Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII 2020a) and Standard (TII 2020b) and other species-specific guidance documents including those listed in the ISMP, as necessary. The updated ISMP will detail the strategy that will be adopted during the Construction (and Operational) Phase in order to manage and prevent the spread of invasive non-native plant species, and where Third Schedule non-native invasive species are encountered directly in the works area, the method of treatment / eradication.

4.2.1 Invasive Species Management Plan (ISMP)

Following on from the pre-construction invasive species survey, the ISMP will be updated to detail the exact measures for any non-native invasive species population present within the Planning Application Boundary. Depending on the extent and nature of the works, a number of approaches / treatments may be approved, all following on from the measures in the ISMP.

The appointed contractor will ensure that all control measures specified in the ISMP will be implemented by a suitably qualified and licensed specialist, prior to the Construction Phase of the Proposed Development, to control the spread of newly established non-native invasive species within the Planning Application Boundary. Furthermore, the appointed contractor will adhere to control measures specified within the ISMP throughout the Construction Phase of the Proposed Development. The site will be monitored by the appointed contractor after control measures have been implemented. Any regrowth of invasive non-native species will be subsequently treated.

All measures that are prescribed in the ISMP will be equally applicable to advance works as to construction works. In the Operational Phase, relevant landowners will be responsible for the continued control and management of invasive species as per their plans and procedures, and responsibilities under the Birds and Natural Habitats Regulations.

4.3 General Measures to Avoid the Spread of Non-Native Invasive Species

The unintentional spread of non-native invasive species during construction works (within a construction site or unwittingly from outside of a site, such as through the importation of materials or poor biosecurity practices regarding plant and machinery) can be a significant issue, and if not managed properly, can result in the spread of non-native invasive species to other areas (within or adjacent to works areas). This would increase the future cost and effort required to control the species and could pose further public health and safety risks (Japanese knotweed can cause damage to weaknesses in the built environment, whilst Giant hogweed is an environmental public health hazard).

The most common ways that invasive species can be spread is:

- Site and vegetation clearance, mowing, hedge-cutting or other landscaping activities;
- Spread of seeds or plant fragments during the movement or transport of soil;
- Spread of seeds or plant fragments through the local surface water and drainage network;
- Contamination of vehicles or equipment with seeds or plant fragments which are then transported to other areas;
- Importation of soil from off site sources contaminated with invasive species plant material; and
- Leaving riparian corridors bare of vegetation thus allowing establishment of seed material from outside the site.

4.3.1 Site Establishment

During advance works and prior to the commencement of construction, any areas where Third Schedule non-native invasive species have been recorded by the pre-construction surveys must be clearly fenced off prior to and during construction (in order to avoid spreading seeds or plant fragments around or off the construction site) until such time that the mitigation measures are implemented and treatment has been completed, or that works in these areas are monitored in accordance with the requirements of the ISMP.

This includes the Temporary Construction Compounds, Horizontal Directional Drilling (HDD) Compounds and the entirety of the works within the Proposed Development Planning Application Boundary. Earthworks or machinery movement must be avoided in any areas where non-native invasive species have been identified during the pre-construction surveys, until the relevant stands have been eradicated.

4.3.2 Biosecurity and Site Hygiene

It is important to ensure that the spread of non-native invasive species, where present, is curtailed. It is also necessary to ensure that in areas where non-native invasive species are not present, that they are not unintentionally spread (e.g. through the importation of contaminated material being brought onto the site).

Unwashed construction equipment, plant, vehicles, and footwear can provide a vector for the spread of non-native invasive species within the Proposed Development Planning Application Boundary and from areas outside of the Proposed Development Planning Application Boundary, where infestation is present or where vector material potentially containing seed / root material is attached to plant. The following hygiene measures will be implemented for the Proposed Development:

- Known stands of invasive non-native species or potentially affected areas within the working area of the Proposed Development will be clearly fenced off in advance of works. Access in these areas will be restricted until such time that treatment has commenced and / or construction works are monitored in accordance with the ISMP in the area. In relation to Japanese knotweed, the guidance recommends an exclusion buffer of 7m (metres) in all directions (within the works area and 3m vertically underground);
- Erection of clear signage at the Temporary Construction Compounds / HDD Compounds etc. and inclusion of details during toolbox talks or similar (environmental induction) for construction staff in respect of the management of Third Schedule non-native invasive species. The signage and notification will be easily understood so that users are aware of the measures to be taken for known non-native invasive species, or what they should do in the case of suspected non-native invasive species identified. In particular, the potential health risks posed by Giant hogweed and its location within or adjacent to the Proposed Development will be clearly notified to personnel;
- Identify dedicated access points into and out of fenced off areas. These will not be breached until such time that eradication / removal of non-native invasive species is confirmed or monitoring of the treatment / eradication process is commenced;
- Where possible, the locations of dedicated footwear and wheel wash facilities will be identified in the ISMP. Where a dedicated / bespoke wheel wash cannot be installed owing to space limitations, the appointed contractor will ensure that no excavated loose material is allowed offsite from within an exclusion zone. Similarly, where plant is used to excavate soils, it will be visually checked for loose soil before movement to another part of the site (as far as practicable, the movements of tracked machinery will be restricted within the non-native invasive species exclusion zone). Loose soil will be scraped off and disposed of, and a solution of Virkon® (or similar approved disinfectant) will be applied to machinery to ensure that no obscured seed / root material remains viable;
- Vehicular movements within the exclusion area will be minimised as far as is practical;
- Machinery which has been used for the transport and / or excavation of contaminated vector material (or material suspected to be contaminated) will be thoroughly washed down, and the washings captured for disposal. All such machinery / plant will not be permitted to commence work elsewhere on-site or offsite until written confirmation of the above measures has been documented;
- Dedicated wash down and solution capture will be set up in the Temporary Construction Compounds / HDD Compounds. All washings will be stored in a quarantined bunded container that is rated for such storage until such time that they are removed offsite for disposal and transferred to a facility that is authorised to accept such waste;
- Except in very particular circumstances, under the guidance of the specialist, there will be no temporary storage of contaminated soils (or soils suspected to be contaminated) on-site. These must be removed from site as per the guidance in Section 2.1.2; and

- Where small volumes (e.g. volumes capable of being double bagged in quarantine bags such as cut plants, bulbs or loose soil) occur, it may be practical to bag the material and bring it to a clearly demarcated and dedicated quarantine area within the Temporary Construction Compounds / HDD Compounds until such time that the material is disposed of to an authorised facility, similar to the process of disposing of bulk excavated infected soil.

4.3.3 Soil Excavation

No excavations within a clearly demarcated and fenced off buffer zone will be permitted. For Japanese knotweed, guidance recommends a horizontal distance of up to 7m from the outside of the stand. This can include land underneath built ground, should suitable areas of weakness or uncompacted ground be encountered by the plants' rhizomes. For other species there will be different buffer zones as guided by the specialist.

Where the excavation of soil containing Third Schedule non-native invasive species (vector material) is the preferred option, the operation will be monitored for its entirety by the appointed ECoW until the risk of spread of Third Schedule non-native invasive species is negated.

There will be no temporary storage on-site of bulk excavated infected material. Where the ISMP calls for shallow / deep burial, this material will be removed from the excavated area and transported immediately to an approved receptor area on-site. Furthermore, the temporary storage of uninfected material will not occur within a European or national designated site, nor within 10m of any watercourse and any land within an identified flood zone. Where temporary stockpiles of infected material cannot for practical limitations be situated away from a potential flood risk area, the appointed contractor will be required to include a flood response plan within the Environmental Incident Response Plan (EIRP) (see Appendix A (EIRP) of the CEMP) to ensure that any inundation of Temporary Construction Compounds / HDD Compounds does not result in a pollution event to nearby water bodies.

Plant and machinery used in the control, excavation and transport of invasive materials will also be subject to the recommendations described in Section 4.3.2.

The installation of industry-rated non-native invasive species-proof membrane before infilling construction of road / paths surface may be required. All waste arising out of this process which has been in contact with the excavated ground will be treated as infected waste and disposed of at a facility that is authorised to accept such waste (see Section 4.3.4). Where the movement of any Third Schedule non-native invasive species is required offsite, a licence will be required from the NPWS in advance of any movement to a site / facility licensed to accept such waste, as per the Birds and Natural Habitats Regulation. This licence is separate to and does not negate the need for licences / permits / authorisations required under waste legislation.

4.3.4 Disposal of Material

Where any non-native invasive plant material is collected (e.g. by hand-pulling or mowing), it is important that its disposal does not result in a risk of further spread. The movement of invasive plant material offsite requires a licence from the NPWS, as per the Birds and Natural Habitats Regulations. Invasive species (particularly roots, flower heads or seeds) must be disposed of at licensed waste facilities or composting sites, appropriately buried, or incinerated having regard to relevant legislation (e.g. Waste Management Act, Section 4 of Number 6 of 1987 – Air Pollution Act, 1987, relevant local authority byelaws and any other relevant legislation). All disposals must be carried out in accordance with the relevant waste management legislation, as per the guidance in the Guidelines for the Management of Waste from National Road Construction Projects (TII 2017).

It should be noted that some invasive species plant material or soil (vector material) containing residual herbicides may be classified as either 'hazardous waste' or 'non-hazardous waste' under the terms of the

Waste Management Act, and both categories may require special disposal procedures or permissions. Advice will be sought from a suitably qualified waste expert regarding the classification of waste and the suitability of different disposal measures.

4.3.5 Measures to be Implemented During the Application of Herbicides

Some of the control options may require the use of herbicides, which can pose a risk to human health, to non-target plants or to wildlife. In order to ensure the safety of herbicide applicators and of other public users of the site, a suitably qualified pesticides advisor, registered with the Department of Agriculture, Food and the Marine (DAFM) must be employed.

The appointed contractor will be required to refer to the appropriate guidance documents, including but not limited to those listed in Section 2.1.2, which provide detailed recommendations for the control of invasive species and noxious weeds.

These documents include measures to aid the identification of relevant species, with details for the timing, chemicals and methodology for chemical control (if applicable), and for measures to avoid environmental damage during the use of herbicides. The appointed contractor (or the specialist as appropriate) will update the ISMP in accordance with the relevant guidelines before commencing works.

It should be noted that where a chemical treatment is to be used, there is a risk of contaminating a watercourse. The choice of herbicide is typically limited to formulations of Glyphosate or 2,4-D amine that are approved for use near water. Full details of any chemical used, where required and as advised by a registered pesticides advisor, will be included in the ISMP prepared in advance of the Construction Phase of the Proposed Development.

4.3.6 Importation of Soil and Other Material

The bulk importation of material from offsite has the potential to result in the accidental spread of Third Schedule non-native invasive species, as it is uncertain if these site(s) are free from non-native invasive species. This is likely less of an issue for road building material. However, in terms of landscaping, if soil is imported to the site for landscaping, infilling or embankments, the appointed contractor will seek documentation from suppliers confirming that the material is free from invasive species.

4.4 Post-Construction Monitoring

Following the construction of the Proposed Development, there may be ongoing treatment programmes which extend for a number of years into the Operational Phase. In the Operational Phase, relevant landowners will be responsible for the continued control and management of as per their plans and procedures, and responsibilities under the Birds and Natural Habitats Regulations.

The above measures are important for all Third Schedule non-native invasive species, and in particular Japanese knotweed, where it occurs, as maintenance works associated with landscaping, such as mowing and hedge cutting have the potential to spread this plant via the dispersal of very small amounts of shredded plant material. If invasive plants are found, they will be treated as per the measures outlined in the ISMP and any species-specific guidelines.

5. Assessment of Management Options for Third Schedule Non-Native Invasive Species

The general measures included in Section 4 are required to ensure good on-site practices in respect of known or potential Third Schedule non-native invasive species.

Section 5.1 to Section 5.6 further identify practical management controls. The colour scheme shown is a qualitative tool intended to assist the reader to focus on the most likely practical solutions. It is acknowledged that more than one potential control measure exists and that a single or combination of measures may be required. The recommendations presented in this ISMP provide the minimum requirements for the likely control measures, and these measures will be developed (with further detail on methodology used at each location, timing, practical management, etc.) by the appointed contractor (or the specialist as appropriate).

The use of chemical treatments is recognised as a potential treatment option. However, the services of a registered pesticide advisor must be employed in the specifying of named chemicals including those rated for use adjacent to aquatic environments (where required), treatment type, dosage, and timing, etc., and / or use of pesticides in the management of potential Third Schedule non-native invasive species within the Planning Application Boundary. The selected management control to be defined for each non-native invasive species stand within the Planning Application Boundary will depend on:

- Results of the pre-construction survey; and
- Construction requirements – timing of works at specific locations, level of infestation and practical considerations such as reducing disturbance to road users / homeowners.

The ISMP, which will be updated following on from the pre-construction surveys, may require the utilisation of a number of controls that are described in Section 5.1.

5.1 Control Methods

There are three main types of invasive species control methods, including:

- Mechanical / Physical Control;
- Chemical Control; and
- Biological Control.

Selecting the correct form of control will depend on the target species. Often, invasive species are managed using a combination of different control and treatment types. Integrating multiple forms of control can offer a more effective, economic and sustainable way of managing invasive species.

5.1.1 Mechanical / Physical Control

Mechanical or physical control entails damaging or removing the plant by physical action. Different techniques could be used (e.g. uprooting, felling, slashing, mowing, ringbarking or bark stripping). This control option is only feasible in sparse infestations or on a small scale, and for controlling species that do not coppice after cutting. Species that tend to coppice, need to have the cut stumps or coppice growth treated with herbicides following the mechanical treatment. Mechanical control is labour intensive and therefore expensive and could cause severe soil disturbance and erosion. For sites with no existing dense stands of non-native invasive plant species, hand-pulling or manual removal using hand tools will be the most appropriate methods.

5.1.2 Chemical Control

Chemical control should only be used as a last resort, since it is hazardous for natural vegetation. It should not be necessary if regular monitoring is undertaken, which should be effective for controlling invasive non-native plants. Chemical control involves the use of registered herbicides to kill the target weed. Managers and herbicide operators must have a basic understanding of how herbicides function. The use of inappropriate herbicides and the incorrect use of the appropriate herbicides are wasteful and expensive practices and often do more harm than good, especially when working close to watercourses. Some herbicides can quickly contaminate fresh water and / or be transported downstream where they may remain active in the ecosystem.

Herbicides are either classified as selective or non-selective. Selective herbicides are usually specific to a particular group of plants (e.g. those specified for use on broadleaved plants but should not kill other plants such as grasses). Non-selective herbicides can kill any plant that they come into contact with and are therefore not suitable for use in areas where native vegetation is present.

Chemical application techniques can include foliar (leaf) application, stem applications (basal stem, total frill, stem injections) and stump applications (cut stump, total stump, scrape and paint).

5.1.3 Biological Control

Biological weed control consists of the use of natural enemies to reduce the vigour or reproductive potential of a non-native invasive plant. Biological control agents include insects, mites, and micro-organisms such as fungi or bacteria. They usually attack specific parts of the plant, either the reproductive organs directly (flower buds, flowers or fruit) or the seeds after they have dropped. The stress caused by the biological control agent may kill a plant outright or it might impact on the plant's reproductive capacity. In certain instances, the reproductive capacity is reduced to zero and the population is effectively sterilised. All of these outcomes will help to reduce the spread of the species.

5.2 Three-Cornered Leek (*Allium triquetrum*)

Three-cornered leek is a perennial that grows from small white bulbs resembling cloves of garlic. It is a member of the onion family and the whole plant has a faint smell of garlic. It is for this reason that it is often referred to as three-cornered garlic. Its leaves emerge in mid-winter, and it flowers in April and May.

A medium impact, rhizomatous species, three-cornered leek is often planted and can become established in natural and semi-natural habitats, where it is reported to spread by ant-dispersed seed and division of clumps. It can readily establish in suitable ground resulting in it posing a threat to biodiversity where the plant forms early season dense monocultural masses, particularly at protected sites.

Management of this species is relatively straightforward, although there is a requirement that it be visible above ground so as to delineate its likely extent and ensure efficacy of management. Infestations can be managed through chemical or physical-based options or a combination of both. However, given the possibility of some underground bulbs / seedbank remaining within the ground post-treatment, eradication may require a number of repeat treatments over a number of years to ensure effective treatment of all bulbs.

Three-cornered leek is considered an invasive species because it spreads very rapidly and forms dense infestations that exclude native flora.

Table 5.1 presents an assessment of potential treatment options available for the treatment of three-cornered leek. The various methods are analysed and described in further detail, as necessary.

Table 5.1: Assessment of Management Method for Three-Cornered Leek

Approach	Treatment Options	Comment	Potential for Implementation on the Proposed Development
Physical	Hand dig	Hand-dig when small population present, ensuring that all biomass including bulbs collected. May also require a number of years of mechanical cutting to exhaust seed / bulb bank in wider subsurface environment. In addition to waste permits / authorisations, a wildlife licence issued by NPWS is required for the transport of Third Schedule non-native invasive species off site.	Likely.
	Mechanical Excavation	For larger areas of infestation only, soil can be screened, and bulbs removed. In addition to waste permits / authorisations, a wildlife licence issued by NPWS is required for the transport of Third Schedule non-native invasive species off site.	Unlikely given the nature and size of the identified populations.
Chemical	Spray	Chemical treatment can be made in the spring (when above ground vegetation visible) but before flowering. Multiple applications may be required due to persistence of bulbs and soil seed bank.	Possible – Where ground is to be excavated, may require physical control also.

Physical and / or chemical control must be implemented in March or April when plants have fully formed leaves. Control may be ineffective and is not recommended if plants have finished flowering.

5.2.1 Temporary Storage of Collected Material

Given the nature and relative sizes of infestations of three-cornered leek, bulbs and vegetative material, where not disposed of immediately to authorised facilities, will be double bagged and placed in dedicated quarantine areas to decompose before disposal with similar non-native invasive species waste at authorised facilities.

5.2.2 Reseeding Following Eradication

For any area of ground that is cleared of three-cornered leek, and is not constructed upon, a follow-on mechanical hand-pulling / cutting regime and / or chemical treatment may be required post construction to ensure full exhaustion of the bulb / seed bank.

5.3 Spanish Bluebell (*Hyacinthoides hispanica*)

Spanish bluebell is a spring-flowering bulbous perennial native to the Iberian Peninsula. Most of its life cycle occurs in winter and spring, with leaves first appearing in December, and flowers emerging in April and May. Leaves die back in later summer, but dry fruiting stems remain for most of the year. It spreads primarily by seeds, although bulbs can also regrow if moved elsewhere.

Spanish bluebell is considered an invasive species because it readily hybridises with the Irish native bluebell (*Hyacinthoides non-scripta*). This poses a threat to the long-term genetic health of the native species.

Table 5.2 presents an assessment of potential treatment options available for the treatment of Spanish bluebell. The various methods are analysed and described in further detail, as necessary.

Table 5.2: Assessment of Management Methods for Spanish Bluebell

Approach	Treatment Options	Comment	Potential for Implementation on the Proposed Development
Physical	Hand dig	Hand-dig when small population present, ensuring that all biomass including bulbs collected. May also require a number of years of mechanical cutting to exhaust seed / bulb bank in wider subsurface environment. In addition to waste permits / authorisations, a wildlife licence issued by NPWS is required for the transport of Third Schedule non-native invasive species offsite.	Likely.
	Mechanical excavation	For larger areas of infestation only, soil can be screened, and bulbs removed. In addition to waste permits / authorisations, a wildlife licence issued by NPWS is required for the transport of Third Schedule non-native invasive species offsite.	Unlikely given the nature and size of the identified populations.
Chemical	Spray	Chemical treatment can be made in the spring (when above ground vegetation visible) but before flowering. Multiple applications may be required due to persistence of bulbs and soil seed bank. The use of herbicide is not considered an effective measure of Spanish Bluebell.	Possible -where ground is to be excavated, may require physical control also.

Physical and / or chemical control must be implemented in March or April when plants have fully formed leaves. Control may be ineffective and is not recommended if plants have finished flowering.

5.3.1 Temporary Storage of Collected Material

Given the nature and relative sizes of infestations of Spanish bluebell, bulbs and vegetative material, where not disposed of immediately to authorised facilities, should be double bagged and placed in dedicated quarantine areas to decompose before disposal with similar non-native invasive species waste at authorised facilities.

5.3.2 Reseeding Following Eradication

For any area of ground that is cleared of Spanish bluebell, and is not constructed upon, a follow-on mechanical hand-pulling / cutting regime and / or chemical treatment may be required post construction to ensure full exhaustion of the bulb / seed bank.

5.4 Giant Hogweed (*Heracleum mantegazzianum*)

Giant hogweed is a high-risk invasive species, that is also a biohazard, in that it can pose a threat to humans. The chemistry of its sap is such that skin contact exposure can result in prolonged photosensitising reactions with blistering. Thus, a clearly demarcated exclusion buffer, in excess of 4m, is recommend for any individual / populations of this species before commencing works.

Giant hogweed can form dense colonies which suppress the growth of native plants including grasses, displacing species and negatively impacting ecologically sensitive and vulnerable habitats.

It spreads via seeds which can easily be transported by water. Hence, it is often found along river corridors. While the plant favours riverbanks, it is known to be found on waste / derelict ground as well as railway lines for instance. Its presence can impact local biodiversity and undermine bankside integrity. The seedling stage is the most vulnerable. Mortality of seedlings is comparable to many other plants and its seed bank is

considered to be persistent for a short number of years only. Since Giant hogweed can only reproduce via seed, control measures applied before flowering and fruit set will limit subsequent generations (and even then, only with favourable conditions). The ideal time to control Giant hogweed via chemical treatment is April, with follow on monthly applications targeting regrowth, although for this treatment option, it can require up to five years before successful eradication.

Table 5.3 presents an assessment of potential treatment options available for the treatment of Giant hogweed. The various methods are analysed and described in further detail as necessary.

Table 5.3: Assessment of Management Methods for Giant Hogweed

Approach	Treatment Options	Comment	Potential for Implementation on the Proposed Development
Physical	Hand Pulling	Hand pulling is only suitable for small / immature plants (and with suitable Personal Protective Equipment (PPE) to protect exposure of bare skin by the sap) and is limited small areas / infestations. Potential remains for tap root to remain underground and regenerate.	Unlikely for mature plants. Requires specialist equipment to enable working alongside the biohazardous small / immature plants.
	Root Cutting	Individual plants may be killed by cutting at a 45- degree angle 15cm below ground level with a spade in April or May. Can be laborious unless small / isolated stands. Can be effective if combined with chemical treatment over four to five years repeat treatment.	Given the nature of the project, could be used to remove biohazard plant and thereafter allow for chemical control against any regrowth. Requires specialist equipment to enable working alongside the biohazardous plant.
	Mowing	Repeated mowing depletes the energy reserves in the taproot and it eventually dies. This approach will take several years and should only be used where long-term treatment is acceptable. Trimmers, strimmers or weed whackers, should never be used on Giant Hogweed as they can result in the airborne spray of pulverised plant material.	This is long-term solution would require commitment from relevant bodies to undertake.
	Grazing	Grazing should begin when early foliage appears in April and should continue until early autumn when re-sprouting stops. Eradication can take between 5-10 years so that seed bank and root stock is fully depleted of resources. Avoids herbicide use.	Possible, but unlikely given this would require a change in land management and commitment from relevant bodies to undertake.
	Ploughing	Can provide total control where seedlings and young plants encroach onto agricultural land. Chemical treatment required over 3-5 years.	Unlikely given the locations that Giant hogweed is often found in.
	Dig and dispose offsite, under licence	This option requires that all plant material (above and below ground) is excavated along with soil and disposed of to a facility authorized to accept it. Given the phytotoxic nature of the plant, it should not be buried onsite nor disposed of with general C&D waste. In addition to waste permits / authorisations, a wildlife licence issued by NPWS is required for the transport of Third Schedule non-native invasive species offsite.	Possible – location dependent.
Chemical	Spot treatment/ Spray	Effective method. Applications must be repeated annually over 3-5 years to eradicate new plants growing. Chemical treatments for infestations near water should be rated for use near aquatic locations.	Most widely used method. Long-term commitment of treatment. Possible but unlikely owing to nature and size of population recorded on the Proposed Development.

Approach	Treatment Options	Comment	Potential for Implementation on the Proposed Development
	Stem Injection	Can only be carried out on young stems. Due to difficulties with the timing of application and the potential safety risk of contact with the large leaves this method requires specialist safety equipment.	Possible, requires specialist equipment to enable working alongside the biohazardous plant

5.4.1 Temporary Storage of Collected Material

Given the phytotoxic nature of Giant hogweed, cut material will not be discarded. Ideally, it will be disposed of immediately with similar non-native invasive species waste to a facility authorised to accept such waste.

However, given the nature and relative sizes of Giant hogweed infestations, it may be suitable to collect cut biomass (where not disposed of immediately to a facility authorised to accept such waste), and to double bag it for transport to a dedicated quarantine area (location to be approved as part of the ISMP) to decompose before disposal with similar non-native invasive species waste in a facility authorised to accept such waste.

The locations where Giant hogweed has been eradicated will be notified to the local authority or relevant landowner, so that any future public health issue involving similar symptoms can be tracked.

5.4.2 Reseeding Following Eradication

This is not strictly a control method. However, where treated ground is not being built upon, planting or resowing mixtures of native grass species helps to restore the original vegetation and aids post-control management of affected sites. A grass sward established in autumn will compete with germinating Giant hogweed seedlings in the following spring and retard its establishment.

5.5 Japanese Knotweed (*Reynoutria Japonica*)

Japanese knotweed is classified as a high impact non-native invasive species that is particularly effective at colonising disturbed ground (e.g. construction sites) and can spread by the regrowth of cut fragments or root material, so if it is not appropriately controlled during site clearance or other earthworks, it can readily regrow in new areas to which soil is moved. Japanese knotweed readily reproduces asexually (in Ireland, at least, as only female plants have been recorded) and regrowth can occur from plant material weighing as little as 0.7g (grams) of viable material. It is acknowledged to be very difficult to effectively control and an even more difficult weed to fully eradicate.

Given the nature of Japanese knotweed, chemical treatments are often preferred over physical methods as they can, if implemented properly, reduce the disturbance of the plant / population, thus reducing the chances of its spread. If herbicide is applied as the treatment option, it will need to be reapplied for up to five years after the first application to ensure the plant control measures have been effective, or monitored for a minimum of two years during which no regrowth is recorded.

Table 5.4 presents an assessment of potential treatment options available for the treatment of Japanese knotweed. The various methods are analysed and described in further detail as necessary. It should be noted that where it might occur within the Proposed Development, that a number of the measures described below may be applicable, depending on the nature of works, the timing etc. These will be fully detailed in the ISMP after the recommended pre-construction survey of the Proposed Development.

Table 5.4: Assessment of Management Methods for Japanese Knotweed

Approach	Treatment Options	Comment	Potential for Implementation on the Proposed Development
Physical	Dig and dispose offsite, under licence	This option requires that all plant material (above and below ground) is excavated along with soil and disposed of to a facility authorized to accept it. In addition to waste permits / authorizations, a wildlife licence issued by NPWS is required for the transport of Third Schedule non-native invasive species off site.	Likely – given the nature of the Proposed Development, there may be a need to excavate soil and plant material to enable construction works to go ahead in timely manner.
	Below ground removal	Japanese knotweed can extend over 7m below ground, although there are reports of certain types of soil, such as heavy clays, that it does not penetrate. Excavations should also be to 3m below the surface if removing Japanese knotweed from a site. Wherever possible, the amount of Japanese knotweed excavated should be kept to a minimum and focus should be directed to treating the Japanese knotweed in its original location.	Possible – location dependent. Large amount of space required to accommodate extensive removal.
	Cutting and / or strimming	Not recommended and does not apparently diminish vigour of plants over time. Largely cosmetic and can result in considerable spread of viable vegetative material that can readily regenerate on suitable conditions.	Not Recommended.
Chemical	Spot /Spray	Spot and Spray methods are used for isolated plants or large populations using knapsack or weep sprayers. In accessible areas including along riverbanks, lance sprayers can be used. Chemical treatments for infestations near water should be rated for use at or near aquatic locations.	Chemical treatments are often a preferred option for treating Japanese knotweed, but the process can take between 3 to 5 years before eradication can be guaranteed and requires at least 2-year post implementation monitoring. However, given the nature of the Proposed Development, the use of chemical treatment alone is unlikely to be adequate unless treatment regime begins a number of years before construction commencement.
	Stem Injection	Stem Injection is very effective, if the injection is timed appropriately for growth phase. However, it is labour-intensive (sometimes) requiring some cutting) and is usually only carried out on small/isolated populations.	Possible requires specialist equipment to enable working alongside the biohazardous plant. – Despite some advantages over other conventional chemical treatments e.g. reduces drift, not weather dependent.

5.5.1 Root Barrier Membrane

Following on from the excavation of Japanese knotweed, there may be a need to install a root barrier membrane. These are specialised products that can provide protection to structures / services etc. from regrowth from within or outside a site, if suitably rated and properly installed. Thereafter, any small adjacent infestation can be more readily treated with chemical treatment for example.

5.5.2 Reseeding Following Excavation

This is not strictly a control method. However, where treated ground is not being built upon, planting or resowing mixtures of native grass species helps to restore the original vegetation and aids post-control management of affected sites. A grass sward established in autumn will compete with germinating Japanese knotweed seedlings in the following spring.

5.6 Rhododendron (*Rhododendron ponticum*)

Rhododendron is classified as a high impact invasive species. This is an evergreen plant that can grow to 8m in height forming very dense thickets and out-compete native species for space and light. It is spread by seed dispersal and from small plant fragments.

Rhododendron can also regenerate from small rhizome fragments and stem layering. Seeds are produced when the plant reaches maturity (approximately 10 to 12 years).

Table 5.5 presents an assessment of potential treatment options available for the treatment of rhododendron. The various methods are analysed and described in further detail, as necessary.

Table 5.5: Assessment of Management Methods for Rhododendron

Approach	Treatment Options	Comment	Potential for Implementation on the Proposed Development
Physical	Hand dig/ Mechanical	Physical removal of Rhododendron can be achieved by uprooting the plant by hand or chainsaw if the stand is small or recent, or uprooting larger plants/stands by winching (either hand operated or tractor mounted). The plant should be cut as close to the ground as possible. For small shrubs or seedlings hand-pulling is effective however for larger stands the removal of above ground growth will not prevent re-growth, as plants can regenerate from cut stems and stumps. Total eradication by targeting the underground Rhizome is the most effective method.	Likely.
	Cutting	The plant may be cut down to the stump, as low to the ground as possible and the stump treated with herbicide.	This is long-term solution would require commitment from relevant bodies to undertake.
Chemical	Spray	This can be undertaken throughout the year during suitable weather conditions i.e. dry weather. The direct treatment of stumps means that there is no standing dead re-growth to deal with. This treatment also results in a lower volume of herbicide being applied, compared with foliar treatments.	Possible -where ground is to be excavated, may require physical control also.

5.6.1 Temporary Storage of Collected Material

If these non-native invasive species are encountered, all material, where not disposed of immediately to authorised facilities, will be double bagged and placed in dedicated quarantine areas (away from watercourses) to decompose before disposal with similar non-native invasive species waste at authorised facilities.

5.6.2 Reseeding following Eradication

For any area of ground that is cleared of rhododendron, and is not constructed upon, a follow-on mechanical hand-pulling / cutting regime and / or chemical treatment may be required post construction to ensure full exhaustion of the bulb / seed bank.

6. References

Department of Agriculture and Rural Development (2016) Countryside Management Publications, Giant hogweed (Northern Ireland)

EA (2013) Managing Japanese knotweed on development sites – the Knotweed Code of Practice (Version 3, amended in 2013, withdrawn from online publication in 2016)

EA (2010) Managing Invasive Non-Native Plants in or near Freshwater

IFI (2010). Biosecurity Protocol for Field Survey Work

ISI (2008a). Best Practice Management Guidelines for Japanese knotweed.

ISI (2008b). Best Practice Management Guidelines for Himalayan balsam.

ISI (2008c). Best Practice Management Guidelines for Giant hogweed.

Invasive alien species in Ireland (2024). Invasive alien species in Ireland [online]. Available from Ireland's invasive species - Invasives.ie. [Accessed January 2024]

NNSS (2011). Allium triquetrum (Three-cornered garlic) Great Britain Non-Native Organism Risk Assessment Scheme.

NPWS (2023). Ireland's 4th National Biodiversity Action Plan 2023-2030

NRA (2010) Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads

TII (2020a). The Management of Invasive Alien Plant Species on National Roads – Technical Guidance.

TII (2020b). The Management of Invasive Alien Plant Species on National Roads – Standard.

TII (2017). The Management of Waste from National Road Construction Projects.

TII (2010). Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads

Directives and Legislation

No. 38 of 1936 - Noxious Weeds Act, 1936

No. 6 of 1987 - Air Pollution Act, 1987

Number 10 of 1996 - Waste Management Act, 1996 (as amended)

Regulation (EU) No. 1143 of 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

S.I. No. 103 of 1937 Noxious Weeds (Thistle, Ragwort, and Dock) Order, 1937

S.I. No. 477 of 2011 – European Communities (Birds and Natural Habitats) Regulations 2011

S.I. No. 293 / 2021 – European Communities (Birds and Natural Habitats) (Amendment) Regulations 2021