

Coastguard Site Crosshaven

Invasive Species Report

Cork County Council

01/11/2021



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This document has 33 pages including the cover.

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1. Introduction

Atkins have been commissioned by Cork County Council to carry out a non-native invasive plant species survey for the proposed project at the Coastguard site in Crosshaven, Co. Cork.

Atkins Ecology were engaged to undertake a non-native invasive plant species survey based upon the species listed in Part 1 of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) and Amendment 2015 (S.I. No. 355/2015). The full list of species published in the legislation is presented in Appendix A.

The European Union Regulation (No. 1143/2014) on Invasive Alien Species (IAS) list 37 species (23 animals and 14 plants) whose potential adverse impacts are such that concerted action across Member States is required. Member States are required to provide for early detection and eradication of these species and must manage those species already widespread within their jurisdiction. The EU recently updated its list of invasive alien species of Union concern. Relevant species added to the list include Chilean rhubarb (*Gunnera tinctoria*), Indian/Himalayan balsam (*Impatiens glandulifera*) and Giant hogweed (*Heracleum mantegazzianum*).

1.1. Invasive Alien Species

The Convention on Biological Diversity defines invasive alien species (IAS) as “a species that is established outside of its natural past or present distribution, whose introduction and/or spread threaten biological diversity”.

Japanese knotweed (*Fallopia japonica*) is not included on the EU ‘list’ of invasive species nor are the other hybrid knotweed species which have been recorded in Ireland. These species are, however, covered by legislation in Ireland, Part 1 of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) and Amendment 2015 (S.I. No. 355/2015).

Section 49 and 50 of Part 6 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) outlines the legal context for the prohibition of the introduction and dispersal of certain plant and animal species. Specifically, Section 49, paragraph 2 states that any person without the required licence “who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow” any plant species listed in Part 1 of the Third Schedule within the State shall be guilty of an offence.

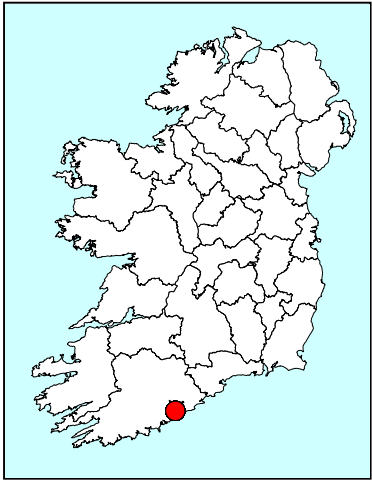
Furthermore, under Section 50 paragraph 1, a person without the required licence “shall be guilty of an offence if he or she has in his or her possession for sale, or for the purposes of breeding, reproduction or propagation, or offers or exposes for sale, transportation, distribution, introduction or release” of any plant species listed in Part 1 of the Third Schedule (See Appendix A) or anything from which “a plant referred to in Part 1 of the Third Schedule can be reproduced or propagated or “a vector material listed in Part 3 of the Third Schedule”. This vector material is defined as “soil or spoil taken from places infested with Japanese knotweed (*Fallopia japonica*), Giant knotweed (*Fallopia sachalinensis*) or their hybrid Bohemian knotweed (*Fallopia x bohemica*)”.

1.2. Proposed Project

The proposed project includes 29 social housing units and associated site works in Crosshaven, Co. Cork. Seven units are part of an existing terrace of houses facing onto Crosshaven Road (R612). The remaining 22 units will be new social housing units within the site. Figure 1-1 shows the location of the proposed project.



 Site Location



Client: Cork County Council

Project: Coastguard Site, Crosshaven

Title: Location of the proposed project.

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2. Methodology

2.1. Desktop Review

A desktop review was carried out in order to determine if any existing records were available for non-native invasive plant species that had been recorded in the vicinity of the proposed works area. The review consisted of gathering records held by the National Biodiversity Data Centre (NBDC) online database (last accessed 19/10/2021).

2.2. Site Visit

The non-native invasive plant species survey were undertaken on the 29th April and 28th September 2021 by Atkins ecologists Niamh Sweeney. The survey area included the lands within the red line boundary and lands within a 20m buffer of the project's red line boundary. Presence of non-native invasive plant species were recorded using a handheld Garmin GPS map 62 device as were details of the extent of the non-native invasive plant species. Photographs were taken of the site and any non-native invasive plant species recorded. The site visit was conducted within the recommended survey period for habitat surveys; April – September (Smith *et al.*, 2011).

The grounds of the primary school adjacent to the south of the site were not accessed. Private residential properties and gardens were not accessible. Access was not possible to the back or front gardens of the terraced houses as they were either overgrown or the entrances boarded-up. The unoccupied houses were also not accessed. A large portion of the site was covered in dense vegetation. The vegetation edges of areas of dense vegetation were accessed, but access in general was limited within the areas of dense vegetation.

3. Results

3.1. Desktop Review

The proposed project is located within the 2km grid square W76V. The NBDC online database contains records of the following non-native plant species within grid square W76V, which are detailed in Table 3-1; cherry laurel (*Prunus laurocerasus*), evergreen oak (*Quercus ilex*), Japanese knotweed and rhododendron (*Rhododendron ponticum*). These records are not present within or adjacent to the lands of the proposed project.

One of the above listed plant species, Japanese knotweed, is listed on the 3rd Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011, (S.I. No. 477 of 2011) and amendment, as detailed in Table 3-1, however this record is not within the lands of the proposed project.

Table 3-1 - NBDC non-native invasive plant species records.

Species Name	Impact Level ¹	Regulation S.I. 477/2011	Comment
Cherry laurel	High impact	No	This record is present to the north of the proposed project at Curraghbinny.
Evergreen oak	Medium impact	No	This record is present to the north of the proposed project at Curraghbinny.
Japanese knotweed	High impact	Yes – Third Schedule Part 1	This record is present to the east of the proposed project at Crosshaven House.
Rhododendron ponticum	High impact	Yes – Third Schedule Part 1	Records are present to the north of the proposed project at Curraghbinny.

3.2. Site Visit

The south-east portion of the site is characterised by a mosaic habitat of ‘recolonising bare ground’ (ED3) and ‘dry meadows and grassy verges’ (GS2). Along the fringes of this habitat, winter heliotrope (*Petasites fragrans*) was present at the base of the hedgerow and treelines. Himalayan honeysuckle (*Leycesteria formosa*) and butterfly bush (*Buddleja davidii*) plants were also present along the treeline of the site’s southern boundary.



Plate 3-1 – Winter heliotrope and butterfly bush in the southern area of the site.

The remnants of a building were present within the ED3/GS2 area, along with an area in the centre of the site of bark or wood-chip, concrete blocks and items of plastic pipe and other plastics. Winter heliotrope was abundant in the northern portion of the ED3/GS2 area. Butterfly bush was present adjacent to the building remnants. Traveller’s joy (*Clematis vitalba*) was present along the eastern boundary of the site.

¹ O’Flynn *et al.* (2014) Ireland’s invasive and non-native species – trends in introductions.



Plate 3-2 –Butterfly bush and traveller’s joy in the mid and eastern area of the site.

An earth embankment runs along the western side of the ED3/GS2 area and is approximately 30m in length. A treeline was present on the embankment. Cherry laurel was present in the treeline. Winter heliotrope was present along the eastern face of the embankment.

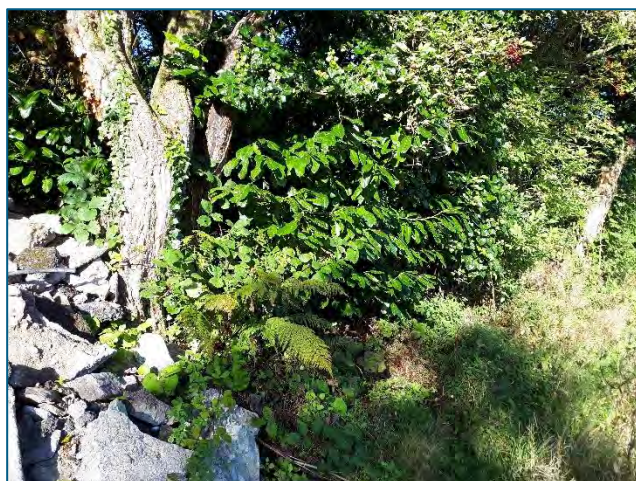


Plate 3-3 –Winter heliotrope and cherry laurel along the earth embankment within the site.

To the west of the embankment lies an area of mature scrub that merges into a mature and established treeline. Himalayan honeysuckle, butterfly bush and winter heliotrope were present along the track that runs through the scrub area and in the grassy verges that adjoin the area of scrub. Three-cornered garlic (*Allium triquetrum*) was present within the established treeline at the base of the beech trees. Traveller’s joy was also present within the established treeline. Winter heliotrope was present along the south facing bank that adjoins the amenity grassland area of the neighbouring primary school.



Plate 3-4 –Three-cornered garlic and winter heliotrope within the established treeline along the southern boundary of the site with the amenity lands of the adjacent school.

Scrub habitat dominated the western area of the site. Adjacent to the boundary wall along the west of the site, a narrow strip of GS2 was present. Winter heliotrope was present in the GS2 areas. At the northern and north-eastern end of the site, the areas of scrub contained a larger proportion of woody vegetation and trees. Himalayan honeysuckle, butterfly bush, traveller’s joy and winter heliotrope were numerous within these areas.



Plate 3-5 –Himalayan honeysuckle and traveller’s joy within scrub area in the north-east of the site.

Given the frequency of winter heliotrope across the site, and its occurrence within the scrub areas, it should be presumed present across the entirety of the site.

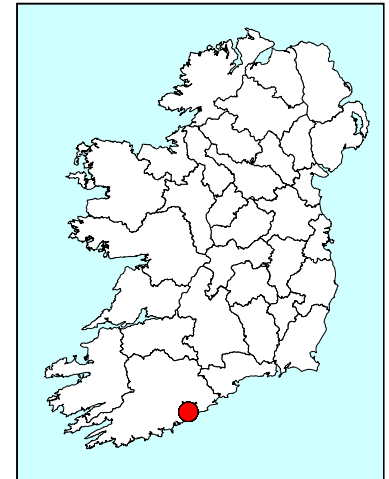
Three-cornered garlic was the only species recorded that is listed on the 3rd Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011, as amended.

Figure 3-1 illustrates the point locations of non-native invasive species within the site, however as stated above, winter heliotrope should be presumed present across the entirety of the site. Table 3-2 and Table 3-3 lists the grid references of invasive species recorded within the site.



Invasive Species

- Butterfly bush
- Himalayan honeysuckle
- Three-cornered garlic
- Traveller's joy
- Winter heliotrope



Client: Cork County Council

Project: Coastguard Site, Crosshaven

Title: Locations of Invasive Species

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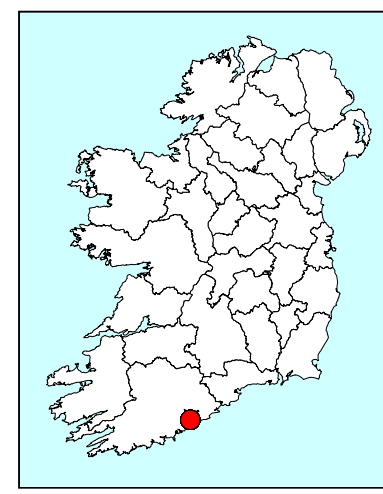
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- Invasive Species**
- Butterfly bush
 - Himalayan honeysuckle
 - Three-cornered garlic
 - Traveller's joy
 - Winter heliotrope



Client: Cork County Council		
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Table 3-2 - 3rd Schedule invasive species recorded within the site.

Pol	X (ITM)	Y (ITM)	Species	Comment
47	579064	561252	Three-cornered garlic	Three-cornered garlic present in the wooded linear area adjacent to the track to the amenity grassland area of the school. Recorded during April 2021.

Table 3-3 – Other non-native invasive species recorded within the site.

Pol	X (ITM)	Y (ITM)	Species	Comment
1	579106	561255	Winter heliotrope	Winter heliotrope present along the southern boundary and along the east boundary at the base of the wall. The extent of winter heliotrope in this area is within the south east corner of the site.
2	579100	561246	Himalayan honeysuckle	Himalayan honeysuckle present in the southern boundary treeline adjacent to the existing entrance.
3	579090	561252	Butterfly bush	Butterfly bush present in the southern boundary treeline.
4	579089	561254	Winter heliotrope	Winter heliotrope present in the southern boundary and northwards along the earth embankment. Cherry laurel was also present along the earth embankment.
5	579081	561284	Winter heliotrope	Winter heliotrope should be presumed widespread throughout the site north of where the earth embankment ends. Minor amounts of colt's-foot (<i>Tussilago farfara</i>) was also present, but winter heliotrope is significantly the dominant of the two species.
6	579093	561277	Butterfly bush	Butterfly bush within small concrete plinth/ foundation area.
7	579093	561293	Winter heliotrope	Winter heliotrope along the eastern boundary of the site.
8	579093	561293	Traveller's joy	Traveller's joy along the eastern boundary of the site and northwards along the eastern boundary.
9	579081	561310	Himalayan honeysuckle	At boundary between recolonising bare ground and scrub areas.
10	579081	561310	Traveller's joy	At boundary between recolonising bare ground and scrub areas.
11	579069	561307	Butterfly bush	Large butterfly bush adjacent to informal path to cottages.
12	579069	561307	Traveller's joy	Traveller's joy growing on butterfly bush plants and other vegetation adjacent to informal path to cottages.
13	579069	561307	Himalayan honeysuckle	Himalayan honeysuckle adjacent to informal path to cottages.
14	579067	561313	Himalayan honeysuckle	Within scrub area in eastern area of the site.
15	579067	561313	Traveller's joy	Within scrub area in eastern area of the site.
16	579070	561321	Traveller's joy	Within scrub area in eastern area of the site.
17	579070	561321	Himalayan honeysuckle	Within scrub area in eastern area of the site.

18	579070	561321	Winter heliotrope	Within scrub area in eastern area of the site and at the edge of the scrub area on the western side of the informal path to the cottages.
19	579077	561336	Winter heliotrope	In extended garden area of cottage no.12.
20	579077	561336	Himalayan honeysuckle	In extended garden area of cottage no.12.
21	579077	561336	Traveller's joy	In extended garden area of cottage no.12.
22	579068	561269	Himalayan honeysuckle	Present within scrub area adjacent to earth embankment in the south-western area of the site.
23	579054	561266	Butterfly bush	Present at the edge of the scrub area adjacent to earth embankment in the south-western area of the site.
24	579054	561266	Winter heliotrope	Present at the edge of the scrub area adjacent to earth embankment in the south-western area of the site.
25	579054	561266	Himalayan honeysuckle	Present at the edge of the scrub area adjacent to earth embankment in the south-western area of the site.
26	579050	561265	Butterfly bush	Present in the grassland area adjacent to the western boundary wall.
27	579050	561265	Himalayan honeysuckle	Present in the grassland area adjacent to the western boundary wall.
28	579050	561265	Winter heliotrope	Present in the grassland area adjacent to the western boundary wall.
29	579048	561260	Butterfly bush	Significant area of non-native invasive species present south of the boundary wall adjacent to the coast guard station. Butterfly bush, Himalayan honeysuckle and winter heliotrope present.
30	579048	561260	Himalayan honeysuckle	Significant area of non-native invasive species present south of the boundary wall adjacent to the coast guard station. Butterfly bush, Himalayan honeysuckle and winter heliotrope present.
31	579048	561260	Winter heliotrope	Significant area of non-native invasive species present south of the boundary wall adjacent to the coast guard station. Butterfly bush, Himalayan honeysuckle and winter heliotrope present.
32	579063	561246	Winter heliotrope	Winter heliotrope present within the groundcover of the linear wooded area.
33	579065	561234	Winter heliotrope	Winter heliotrope present along the southern boundary between the site and the amenity grassland lands of the school.
34	579053	561244	Traveller's joy	Present within the linear wooded area.
35	579041	561249	Himalayan honeysuckle	Present at the western extent of the linear wooded area.
36	579041	561249	Butterfly bush	Present at the western extent of the linear wooded area.
37	579048	561277	Butterfly bush	Present at the western edge of the scrub area.
38	579048	561277	Winter heliotrope	Present at the western edge of the scrub area.
39	579048	561277	Himalayan honeysuckle	Present at the western edge of the scrub area.
40	579043	561288	Butterfly bush	Present in the grassland area adjacent to the western boundary wall.
41	579043	561288	Himalayan honeysuckle	Present in the grassland area adjacent to the western boundary wall.

42	579043	561288	Winter heliotrope	Present in the grassland area adjacent to the western boundary wall.
43	579040	561310	Himalayan honeysuckle	Present in the grassland area adjacent to the western boundary wall.
44	579031	561318	Winter heliotrope	Winter heliotrope present in the grassland area adjacent to the western boundary wall at the rear of cottages.
45	579037	561328	Traveller's joy	Traveller's joy present within large area of dense vegetation running along the southern boundary of the cottage gardens. This area was inaccessible due to the dense vegetation.
46	579037	561328	Himalayan honeysuckle	Himalayan honeysuckle present within large area of dense vegetation running along the southern boundary of the cottage gardens. This area was inaccessible due to the dense vegetation.

4. Recommendations & Conclusions

4.1. General

Due to their negative effect on native biodiversity, care should be taken not to spread any non-native invasive plant species during the proposed works, including those species for which there is no current legal guidance.

Good site hygiene and biosecurity protocols are required to prevent the spread of non-native invasive species. Tracked equipment should not be used in areas with non-native invasive species, as recorded in the site survey, and the Contractor must ensure that all vehicles / equipment being mobilised on site are free of plant material.

Therefore, the following biosecurity protocols should be implemented on site to prevent the introduction or spread of non-native invasive plant species to site:

- Personnel, equipment and machinery shall avoid the key invasive species locations;
- All equipment intended to be used at the site shall be dry, clean and free from debris and plant material prior to being brought to site;
- During the duration of the proposed project, if equipment is removed off-site to be used elsewhere, the said equipment shall be cleaned and free of debris and plant material prior to leaving and returning to the works area of the proposed project;
- Appropriate storage and containment facilities shall be used for the containment, collection and disposal of material and/or water resulting from washing facilities of vehicles, equipment and personnel;
- Importation of all materials to site shall be checked to ensure they do not contain IAS plant material and shall comply with Regulation 49 of the EC (Birds and Natural Habitats) Regulations 2011.

If there are delays in the progression of the proposed project and no works take place within 1 year of the surveys contained within this current report, the non-native invasive species survey will need to be updated.

4.2. Site Specific Findings

The only invasive plant species recorded during the survey within the red line boundary of the proposed project that is listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011, (S.I. No. 477 of 2011), as amended, was three-cornered garlic (Table 3-2).

Three-cornered garlic was present in a well-established treeline with mature trees. It is not known if the proposed project will disturb this treeline. If the treeline, and hence three-cornered garlic, will be disturbed by the proposed project, a site-specific invasive species management plan will be required to address three-cornered garlic.

4.2.1. Invasive Species Management Plan

The site-specific ISPM will be informed by the finalised design of the proposed project and construction methods. The ISPM will outline the strategy that will be adopted during the site set-up and construction phases of the proposed project. During construction, the ISPM will be updated by the contractor and will form a detailed site-specific ISPM, which will form part of the Construction and Environmental Management Plan.

It is recommended that a pre-construction invasive species survey will be conducted prior to the commencement of works on site to establish if there has been a change in the distribution of invasive species on site.

Chemical and/or physical control of non-native invasive species may be undertaken prior to the commencement of works on site. If management and/or treatment is undertaken prior to construction, the specific method and regime must be informed by an appropriately qualified specialist.

Appendix B details control and disposal methods for winter heliotrope, traveller's joy and butterfly bush, extracted from TII's Technical Guidance document GE-ENV-01105 'The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (2020b). Species accounts are provided for Himalayan honeysuckle and three-cornered garlic (TII, 2020b).

The disposal of soils or materials containing the roots or vegetative material of non-native invasive species must be disposed of at a licensed facility.

The ISMP should include the following, at a minimum:

- Third Schedule non-native invasive plant species recorded within the zone of influence of the proposed project;
- Locations and measured areas of all Third Schedule invasive plant species recorded, including the findings of the pre-construction survey;
- Site and project specific management measures on site, including site hygiene and biosecurity measures to be implemented, which should adhere to the following guidance documents:
 - Management of Noxious Weeds and Non-Native Invasive Plant Species on National Road Schemes (NRA, 2010);
 - IFI Biosecurity Protocol for Field Survey Work (IFI, 2010);
 - Code of Practice. Managing Japanese Knotweed (INNSA, 2017);
 - The Management of Invasive Alien Plant Species on National Roads – Standard (TII, 2020a).

4.2.1.1. Biosecurity protocols

In order to prevent the further spread of non-native invasive species, it is necessary to implement site-specific biosecurity protocols on site.

The ISPM should include the following biosecurity measures, at a minimum:

- Ensure all personnel are aware of the measures set out in the ISPM. A tool-box talk should be used to inform personnel and signage should be erected to alert them to the presence of invasive species;
- Clearly identify the fenced off areas with signage to inform personnel;
- If possible, avoid the use of machinery within the fenced off areas;
- Create a designated entry and exit point at the site and a delineated access track free from invasive species;
- If applicable, install a footwear and vehicular wheel brush and/or wash down facility. If a wheel wash is used, the resultant water must be collected, contained and managed as contaminated water;
- All machinery and vehicles being brought to site, and leaving or returning to the site must be inspected for any plant or soil material and be clean and free of soil and debris;
- Importation of materials shall comply with Regulation 49 of the EC (Birds and Natural Habitats) Regulations 2011.
- If applicable, a designated area must be identified and marked out for the temporary storing of contaminated soils on site. If temporary storing of such material will occur on site, soils must be placed on a root barrier membrane. Contaminated soils must not be placed directly on bare ground. Such storage areas must not be within 50m of a watercourse or drain.

- All personal protective equipment (PPE), materials, equipment and machinery must be visually inspected for evidence of attached plant or animal material, mud or debris. They must be clean and dry prior to being brought to site. They must also be inspected before leaving site and any material removed accordingly.

References

- IFI (2010) IFI Biosecurity Protocols for Field Survey Work. Inland Fisheries Ireland. Dublin, Ireland.
- INNSA (2017). Code of Practice. Managing Japanese Knotweed. Invasive Non-Native Specialists Association. Thornby, England.
- NRA (2010). Management of Noxious Weeds and Non-Native Invasive Plant Species on National Road Schemes. National Roads Authority. Dublin, Ireland.
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- TII (2020a). The Management of Invasive Alien Plant Species on National Roads – Standard. GE-ENV-01104. Transport Infrastructure Ireland. Dublin, Ireland.
- TII (2020b). The Management of Invasive Alien Plant Species on National Roads – Technical Guidance. GE-ENV-01105. Transport Infrastructure Ireland. Dublin, Ireland.

Appendices



Appendix A. Non-native species, Third Schedule Part 1

Non-native invasive plant species, as defined in Part 1 of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) and Amendment 2015 (S.I. No. 355/2015).

THIRD SCHEDULE

Non-native species subject to restrictions under Regulations 49 and 50.

Part 1: PLANTS

Common name	Scientific name	Geographical application
American skunk-cabbage	<i>Lysichiton americanus</i>	Throughout the State
A red alga	<i>Grateloupia doryphora</i>	Throughout the State
Brazilian giant-rhubarb	<i>Gunnera manicata</i>	Throughout the State
Broad-leaved rush	<i>Juncus planifolius</i>	Throughout the State
Cape pondweed	<i>Aponogeton distachyos</i>	Throughout the State
Cord-grasses	<i>Spartina</i> (all species and hybrids)	Throughout the State
Curly waterweed	<i>Lagarosiphon major</i>	Throughout the State
Dwarf eel-grass	<i>Zostera japonica</i>	Throughout the State
Fanwort	<i>Cabomba caroliniana</i>	Throughout the State
Floating pennywort	<i>Hydrocotyle ranunculoides</i>	Throughout the State
Fringed water-lily	<i>Nymphaoides peltata</i>	Throughout the State
Giant hogweed	<i>Heracleum mantegazzianum</i>	Throughout the State
Giant knotweed	<i>Fallopia sachalinensis</i>	Throughout the State
Giant-rhubarb	<i>Gunnera tinctoria</i>	Throughout the State
Giant salvinia	<i>Salvinia molesta</i>	Throughout the State
Himalayan balsam	<i>Impatiens glandulifera</i>	Throughout the State
Himalayan knotweed	<i>Persicaria wallichii</i>	Throughout the State
Hottentot-fig	<i>Carpobrotus edulis</i>	Throughout the State
Japanese knotweed	<i>Fallopia japonica</i>	Throughout the State
Large-flowered waterweed	<i>Egeria densa</i>	Throughout the State

Common name	Scientific name	Geographical application
Mile-a-minute weed	<i>Persicaria perfoliata</i>	Throughout the State
New Zealand pigmyweed	<i>Crassula helmsii</i>	Throughout the State
Parrots feather	<i>Myriophyllum aquaticum</i>	Throughout the State
Rhododendron	<i>Rhododendron ponticum</i>	Throughout the State
Salmonberry	<i>Rubus spectabilis</i>	Throughout the State
Sea-buckthorn	<i>Hippophae rhamnoides</i>	Throughout the State
Spanish bluebell	<i>Hyacinthoides hispanica</i>	Throughout the State
Three-cornered leek	<i>Allium triquetrum</i>	Throughout the State
Wakame	<i>Undaria pinnatifida</i>	Throughout the State
Water chestnut	<i>Trapa natans</i>	Throughout the State
Water fern	<i>Azolla filiculoides</i>	Throughout the State
Water-primrose	<i>Ludwigia</i> (all species)	Throughout the State
Waterweeds	<i>Elodea</i> (all species except <i>Elodea canadensis</i>)	Throughout the State
Wireweed	<i>Sargassum muticum</i>	Throughout the State

Appendix B. Extracted Information from TII Technical Guidance (GE-ENV- 01105)

6.7 Winter heliotrope (*Petasites fragrans*)

6.8.1 Ecology and Distribution

Winter heliotrope, a member of the Asteraceae family, is a low-growing herbaceous plant native to the Mediterranean region. It is established widely in Ireland, particularly in the south of the country. A shade-tolerant species, it is frequently found along roadsides, railway banks, river banks, hedgerows, woodland edges and waste ground. As only the male plant has been recorded in Ireland, its spread is confined to vegetative means. Winter heliotrope (often confused with Butterbur (*Petasites hybridus*) and Coltsfoot (*Tussilago farfara*)) forms large dense monocultures, which exclude native vegetation by shading out light.

6.8.2 Identification

The following provides a brief summary of the defining characteristics of Winter heliotrope:

- It produces large round to kidney-shaped leaves up to 20cm in diameter with regular serration along the margins ([Figure 19](#)). The leaves have dull downy hairs underneath that rub off easily
- The foliage appears later in spring (although last year's foliage may not die back completely) and forms a dense carpet to *circa* 30cm in height
- Its pale pink flowers, which are amongst the earliest flowers of the year, appear in December and January and have a distinctive sweet smell
- It has a dense rhizomatous (underground stem) root system, which is extensive but relatively shallow – to *circa* 30cm deep



6.8.3 Control

The control or management of any IAPS should be undertaken in the four distinct phases outlined in GE-ENV-01104. It is recommended that a suitably qualified ecologist or horticulturalist with sufficient training, experience and knowledge in the control of IAPS should be employed to assist in the planning and execution of control measures in relation to Winter heliotrope.

In addition, those involved in the control of Winter heliotrope may be advised to have access to the advice of a Registered Pesticide Advisor on the register established by the Minister for Agriculture, Food and the Marine pursuant to Regulation 4 of the Sustainable Use of Pesticides Regulations. All pesticide users must be registered and have the appropriate training necessary to carry out the proposed method of control.

Due to its ability to regenerate and spread *via* rhizome material, great care must be taken when managing Winter heliotrope. Eradication of this species may take a number of years as it is important to ensure that no viable rhizome material remains in the soil.

6.8.3.1 Chemical control

Infestations of Winter heliotrope can be treated with herbicide during the active growing season. Due to the potential for re-infestation from rhizome fragments, follow-up treatments will be required to deal with any re-growth.

6.8.3.2 Physical control

Due to its extensive rhizome network, which extends to *circa* 30cm deep, total physical removal of Winter heliotrope is difficult to achieve. Where mechanical means can be employed, it should be possible to deal with larger infestations but due to the potential for regeneration from rhizome fragments, it may be best to tackle its control using a combination of excavation with follow-up treatment by herbicides. As with other plants with the potential to spread from small rhizome fragments, disposal of material should be undertaken with due caution to prevent accidental spread of the plant (refer to GE-ENV-01104 Biosecurity Measures). Other means of disposal include burial of material at a depth of at least 0.5m, incineration or disposal to licensed landfill.

6.9 Old man's beard (*Clematis vitalba*)

6.9.1 Ecology and Distribution

Old man's beard, also known as Traveller's joy, is a member of the Ranunculaceae family. It is a vigorous, fast-growing deciduous climber that produces characteristic feathery seed heads in the late summer, from which it derives its common name. It is a native of central and southern Europe, but has established itself throughout much of Europe, North America and New Zealand, where it has become a major weed of woodlands. In Ireland, its distribution is mainly in the eastern and southern half of the country, where it is found in hedgerows, roadsides, rail corridors, river banks and along forest edges. The vines can form dense thickets (growing up to 10m in a season), blanketing trees and shrubs (Figure 20) and ultimately depriving them of light. They can break tree limbs or cause their collapse from the sheer weight and mass. The blanketing growth of the plant also prevents growth and regeneration of native flora by blocking light and physically excluding plants. Hanging vines will set root at any node that comes into contact with the ground and produce new plants.



Figure 20 **Clematis vitalba - Winter Vines**

6.9.1 Identification

The following provides a brief summary of the defining characteristics of Old man's beard:

- It has pinnate leaves with three but more normally five leaflets on mature plants.
- The vines or stems are pale brown and have strong longitudinal ribs and furrows.
- The flowers are produced in late summer to early autumn and are green-white and mildly fragrant (Figure 21).
- The feathery seed heads (achenes) (Figure 22), which are produced in abundance in autumn, remain on the plant through the winter and are dispersed by wind, water, animals or humans. Individual plants can produce up to 100,000 seeds per season.

- After three years of growth, plants can produce viable seeds, which may remain viable in the soil for up to five years.
- The hanging vines will set root at any node that comes into contact with the ground and produce new plants.
- Cut/broken stems or stumps have the capacity to re-sprout.



Figure 21 **Clematis vitalba - Flowers and Foliage**



Figure 22 **Clematis vitalba - Seeds**

6.9.1 Control

The control or management of any IAPS should be undertaken in the four distinct phases outlined in GE-ENV-01104. It is recommended that a suitably qualified ecologist or horticulturalist with sufficient training, experience and knowledge in the control of IAPS should be employed to assist in the planning and execution of control measures in relation to Old man's beard. In addition, those involved in the control of Old man's beard may be advised to have access to the advice of a Registered Pesticide Advisor on the register established by the Minister for Agriculture, Food and the Marine pursuant to Regulation 4 of the Sustainable Use of Pesticides Regulations. All pesticide users must be registered and have the appropriate training necessary to carry out the proposed method of control.

Old man's beard can be controlled both mechanically and using herbicides, although typically its control relies on a combination of both, i.e. cut-stump application.

6.9.3.1 Chemical control

A number of chemicals have been used effectively against Old man's beard, including glyphosate and triclopyr, although control invariably takes more than one year. Foliar application of herbicides should be undertaken while the plant is actively growing. Due to the sheer biomass of vegetation that the plant can produce, it may be difficult to access infested sites to implement control measures. For large, extensive infestations of Old man's beard, chemical treatment should be carried out in June or July when the plant is growing vigorously and in full leaf, using specialised spraying equipment to target the tall canopy layer. The purpose of this is to minimise the amount of herbicide that will reach the host tree or shrubs underneath.

6.9.3.2 Physical control

At newly infested sites, small seedlings can be manually pulled, preferably during damp conditions (i.e. during winter or spring). The seedlings should be collected for composting, adopting the biosecurity measures outlined in GE-ENV-01104. Where isolated mature aerial vegetation is present, the vines should be manually pulled and bagged. The thin stems that remain rooted in the soil may now be manually pulled and removed for composting in a biosecure manner, along with the aerial vegetation. Where Old man's beard has only recently invaded an area and not yet produced dense foliage, the aerial vegetation may be cut and left to die. The roots and seedlings left in the ground may then be removed manually or treated with herbicide.

6.9.3.3 Combined chemical and physical control

For combined treatment of dense infestations of mature aerial Old man's beard vegetation, the vines should be cut back to around 10cm above ground level and the cut stems that remain in the ground immediately painted with a concentrated dose of approved herbicide. They may also be dug from the ground and removed for composting, if this is practicable. The aerial vines can be left hanging to die naturally. This method will minimise the impact on the host plant that the plant is covering. For large old specimens, the stem or trunk can be cut at the base with a straight horizontal cut and herbicide applied immediately to the cut stump. The aerial vegetation should be left *in situ* until it is dead. Cut and treated stumps can re-sprout and must be monitored and retreated, as necessary.

6.10 Buddleia (*Buddleja davidii*)

6.11.1 Ecology and Distribution

Buddleia (also known as the Butterfly bush) is a member of the Buddlejaceae family. It is a very fast-growing shrub that can reach 2m in its first year, producing flowers and setting seed prolifically.

Buddleia is a native of China and is widely planted as an ornamental in gardens, demesnes or parks. Because of its profusion of long, purple and nectar-rich flowers it also attracts a considerable diversity of butterflies (hence, its other common name – Butterfly bush) and other pollinating insects.

It has a widespread distribution throughout Ireland and is particularly frequent in waste ground in urban environments. It colonises bare ground very rapidly and can quickly form monotypic stands.

As Buddleia tolerates a broad range of environmental conditions and a wide diversity of soil types, including very poor soils, it is capable of growing on walls, rock outcrops or sub-soils; conditions that are frequently encountered on new road schemes. In particular, it poses a threat where features such as rock cuttings or eskers remain abandoned or are left to re-colonize naturally. In many countries it has established itself as a problem plant along watercourses where, due to its shallow root system, it is frequently washed away, resulting in erosion of the river banks and downstream blockages. In Ireland, Buddleia must be considered an invasive species because of the damage it can cause to hard standings and structures, and to native biodiversity.

Buddleia produces very large numbers of viable seeds, which are dispersed *via* wind and water. The seeds are relatively short-lived in the soil, rarely lasting longer than four years. The plant can also readily spread by producing roots, and ultimately new plants, where stem nodes come into contact with the ground. It can also spread by fragmentation of stems or roots.

6.11.2 Identification

The following provides a brief summary of the defining characteristics of Buddleia:

- It is a multi-stemmed, perennial, woodyshrub reaching up to 4m in height, with arching branches.
- The leaves are up to 20cm in length, lanceolate with a slightly serrated edge, deep green above and felted whitish underneath.
- Flowers are present in dense pyramidal panicles that are normally lilac or purple in colour but may be pink, red or even white (Figure 25). Flowering occurs between June and September.
- The plant is deciduous, although in winter the desiccated flower heads and seed capsules remain on the bush.
- The seeds produced are very small and numerous, with up to 3 million tiny winged seeds produced per plant. They can remain viable in the soil for up to four years.



Figure 25 Buddleia - Flowers and Foliage

6.11.1 Control

The control or management of any IAPS should be undertaken in the four distinct phases outlined in GE-ENV-01104. It is recommended that a suitably qualified ecologist or horticulturalist with sufficient training, experience and knowledge in the control of IAPS should be employed to assist in the planning and execution of control measures in relation to Buddleia. In addition, those involved in the control of Buddleia may be advised to have access to the advice of a Registered Pesticide Advisor on the register established by the Minister for Agriculture, Food and the Marine pursuant to Regulation 4 of the Sustainable Use of Pesticides Regulations. All pesticide users must be registered and have the appropriate training necessary to carry out the proposed method of control.

As Buddleia is a plant that favours disturbed sites, physical removal of plants can provide ideal conditions for the germination of seeds that are present in the soil. For this reason, care needs to be taken to ensure that revegetation of treated areas is undertaken swiftly. The branches of Buddleia are capable of rooting as cuttings, so care should also be taken to ensure material is disposed of in a manner to avoid this risk.

6.11.3.1 Chemical control

Foliar application of herbicide is capable of providing control with young plants and small infestations, but should be followed up at six-monthly intervals as regrowth is common.

6.11.3.2 Physical control

Removal of the flower heads before seed set (June or even July) is an important control method as it reduces the volume of seeds that are available to spread. Hand-picking of young plants will provide control but it is very

tedious and should be undertaken with care to avoid soil disturbance, which can give rise to a flush of new seedling.

Digging out plants is only practical with relatively minor infestations, at the initial stage of invasion, or where a site is to be excavated for development or road construction purposes. Mowing of young plants does not provide effective control as they re-sprout with vigour. The physical removal of mature stands is not recommended for the same reason. After uprooting, it is essential to plant the ground in order to prevent a flush of new seedling growth.

When Buddleia plants are cut, regrowth from the stump can be very vigorous.

6.11.3.1 Combined chemical and physical control

Effective control can be achieved by cutting Buddleia plants to a basal stump during active growth (late spring to early summer) and immediately treating the total cut surface with herbicide concentrate. Monitoring will be required and retreatment, as necessary.

Do not leave cut stems and branches on the ground as they will re-root and produce new plants.

6.12.1 Himalayan honeysuckle (*Leycesteria formosa*)

Himalayan honeysuckle (also known as Pheasant berry or Flowering nutmeg) is a deciduous, perennial woodyshrub and member of the Caprifoliaceae family, native to the Himalayas and south-western China. It is likely an escapee from cultivation in Ireland and is mostly found in woodlands, roadsides, railway banks and quarries (Reynolds, 2002). Himalayan honeysuckle is still widely sold as an ornamental plant and is often used as a hedging plant to provide cover for pheasants (Preston, et al., 2002). It is well established in the south-east of the country.

Himalayan honeysuckle flowers from June to the end of October, producing long, hanging clusters of bell-shaped flowers (Figure 26). Its large, red-purple berry-like fruits are widely dispersed by birds (Heleno, et al., 2011). Its bamboo-like stems can grow up to 2m tall and commonly form dense thickets, which can dominate hedgerows and displace native species (Booy, et al., 2015).



Figure 26 Himalayan honeysuckle - Flowers and Foliage [Photograph: Pádraig Whelan]

6.12.1 Three-cornered leek (*Allium triquetrum*)

Three-cornered leek, also known as Three-cornered garlic, is a member of the Lily family. It is native to the Mediterranean basin and has become widely established in the east and south-east of Ireland. Three-cornered leek is a bulbous perennial herb with a strong garlic scent. It has narrow, green, strongly keeled and hairless leaves. The flowers are bell-shaped and white, and flowering occurs from April to June. It is often found on roadsides, waste grounds, forests, and riparian and shaded areas in Ireland. Although no impacts of this species have been documented to date, it is known to rapidly colonise and dominate waste ground, outcompeting native vegetation (Booy, et al., 2015). The species is widely available in the horticultural trade in Ireland and human activity is likely the greatest disperser of this species (National Biodiversity Data Centre, n.d.).

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