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APPENDIX 6-2

INVASIVE SPECIES MANAGEMENT PLAN

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Invasive Species Management Plan

Kingston Stables, Knocknacarra West Proposed Large-Scale Residential Development

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DOCUMENT DETAILS

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

Planning and Environmental Consultants

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1. INTRODUCTION

The Proposed Development site is located at Knocknacarra, County Galway, approximately 3km west of Galway City Centre. The Proposed Development will comprise a Large-sale Residential Development (LRD), consisting of 133 no. residential units.

Two invasive plant species listed on the Third Schedule of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) and First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024), Three-cornered leek (*Alium triquetrum*) and Sea buckthorn (*Hippophae rhamnoides*), were identified within, or in proximity to, the Proposed Development site. The presence of these invasive species will be addressed as part of the Proposed Development in order to prevent their potential spread throughout the surrounding areas.

This document has been prepared with reference to current legislation and best practice guidelines in the identification, treatment and management of invasive alien species listed on the 'Third Schedule' of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) and First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024). The document does not provide advice or guidance with reference to waste legislation.

The objectives of this report are summarised below:

- Provide site-specific best practice guideline measures for the control and management of invasive species.
- Provide detailed recommendations for the management of invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) and First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024).

The appointed contractor will be responsible for preparing site-specific Method Statements in accordance with the site- specific management measures described in this report.

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1.1 Legislative Framework

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

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

> *"Soil or spoil taken from places infested with Japanese knotweed, Giant knotweed or their hybrid Bohemian knotweed".*

Regulation 49

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

Regulation 50

> *"a person shall be guilty of an offence if he or she has in his or her possession for sale, or for the purposes of breeding, reproduction or propagation, or offers or exposes for sale, transportation, distribution, introduction or release"*
>
> *(a) an animal or plant listed in Part 1 or Part 2 of the Third Schedule, (b) anything from which an animal or plant referred to in subparagraph*
>
> *(a), can be reproduced or propagated, or*
>
> *(c) a vector material listed in Part 3 of the Third Schedule,"*

1.2 Statement of Authority

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Field assessments were carried out by MKO Ecologist Fiona Killeen (B.Sc.) of MKO on the 20th March and 24th April 2024. An updated field survey was undertaken by Deepali Mooloo (B.Sc., M.Sc.) of MKO on the 23rd June 2026. This report has been prepared by Fiona Killeen (B.Sc.) and Caroline Kelly (BSc., MSc., MCIEEM) and reviewed by Sarah Mullen (B.Sc., MSc., ACIEEM). Fiona is an experienced Ecologist with over 2 years professional consultancy experience. Caroline is a Senior Ecologist with MKO and has over 10 years' professional experience as an ecological consultant. Deepali is an experienced ecologist with over 3 years professional experience. Sarah is Project Director of Ecology in MKO and has over 10 years' professional experience in ecological consultancy.

1.3 Guidance Documents

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

- TII (2020). The Management of Invasive Alien Plant Species on National Roads
- TII (2020). The Management of Invasive Alien Plant Species on National Roads – Standard
- NRA (2010). Guidelines on management of noxious weeds and non-native invasive plant species on national roads. National Roads Authority.
- Stokes et al. (2004) Invasive species in Ireland. Unpublished report.
- Department of Environment (2013). An Invasive Alien Species Strategy for Northern Ireland. www.doeni.gov.uk

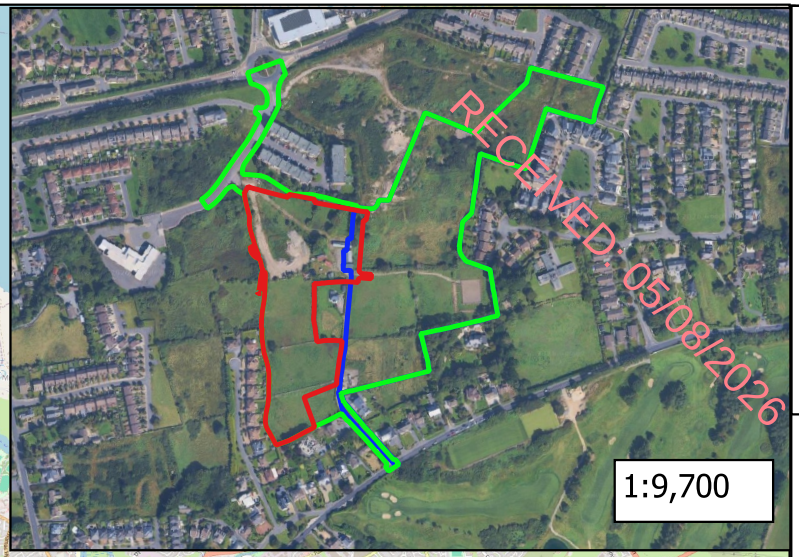
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2. CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

2.1 Site Location

The Proposed Development site is located at Knocknacarra, County Galway which is approximately 3 kilometres (km) west of Galway City Centre and covers an area of 2.9 hectares (ha). Irish Transverse Mercator (ITM) coordinates for the centre of the site are X 526562, Y 724646.

A site location map is provided as **Figure 2.1** below.



Map Legend

- Site Location Point
- Planning Application (red line) Boundary
- EIAR Study Area Boundary
- LRD East Application Planning Reference No. 2560320

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Drawing Title
Site Location

Project Title
Kingston Knocknacarra LRD West

Drawn By	Checked By
FK/ CK	PD/ SM
Project No.	Drawing No.
251145	Figure 2-1
Scale	Date
1:75,000	01.07.2026

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2.2 Development Description

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The Proposed Development will consist of the following:

- Provision of 133 no. residential units in 2 no. development areas with a mix of duplex and house types on a site area of 2.9 ha. The buildings range between 2 no. and 3 no. storeys in height. The development will comprise the following:
  - 51 no. 3-bed townhouses;
  - 6 no. 4-bed townhouses;
  - 1 no. 1-bed duplex apartments;
  - 1 no. 2-bed duplex houses;
  - 37 no. 2-bed ground floor duplex apartments;
  - 37 no. 3-bed duplex houses.
- Demolition of existing structures (388 m^2);
- Vehicular access to the proposed development from a permitted road (Planning Reference 24/60370 refers);
- Upgrades to the permitted road (Planning Reference 24/60370 refers);
- Pedestrian and cycle access to the adjacent Kingston Park (ACP Ref: 323873);
- Conversion and upgrade of an existing structure to a local centre (65.6 m^2);
- The provision of public open space;
- The provision of 192 no. bicycle parking spaces;
- The provision of 142 no. car parking spaces;
- Public lighting, bin stores, signage, services, 2 no. ground mounted substation kiosks, site landscaping and all ancillary site development and enabling works.

The proposed site layout is shown below in **Figure 2-2.**



Map Legend

- Planning Application (red line) Boundary
- EIAR Study Area Boundary
- LRD East Application Planning Reference No. 2560320

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Drawing Title

Site Layout

Project Title

Kingston Knocknacarra LRD West

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3. INVASIVE SPECIES LOCATED WITHIN THE PROPOSED DEVELOPMENT SITE

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3.1 Survey Results

A multidisciplinary walkover survey was carried out on the 20th of March 2024, 24th of April 2024, 15th of May 2024, 20th of March 2025 and a dedicated invasive species survey was carried out the 24th of April 2024 in line with TII (2008) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes) by Fiona Killeen (B.Sc.) of MKO. An updated multidisciplinary survey was carried out on the 23rd June 2026. Two invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) and First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) were recorded within, or in close proximity to, the Proposed Development site boundary.

During the invasive species survey, Three-cornered leek (*Alium triquetrum*) was recorded in the Proposed Development site. Small clusters of Three-cornered leek was recorded along the northern boundary of the Proposed Development site, growing along the base of hedgerow habitat (Grid references: M 26684 24749 and M 26677 24751)(Plate 3-1 and Plate 3-2). In addition, one small plant of this invasive species was recorded in the south of the Proposed Development site, along a field boundary, in June 2026 (Grid reference: M 26578 24511). In the wider EIAR Study Area, this was recorded along the access track in the south and by a boundary wall(Grid references: M 26694 24444, M 26707 24450, M 26668 24481, and M 26815 24662). A larger infestation of this invasive plant species was recorded adjacent the Kingston Rd (R337), outside of the Proposed Development site (Grid reference: M 26716 24418).

Sea buckthorn (*Hippophae rhamnoides*) plants were recorded, initially as saplings, along the base of a hedgerow in proximity to the northern boundary of the Proposed Development site in 2024 (Plate 3-3). However, in the 2026 survey it was noted that Sea buckthorn had now become established within the hedgerow and had spread along this field boundary. More than 5 stands of Sea buckthorn, approx. 4-5m tall and approx. 5m wide, were recorded within this hedgerow (Plate 3-4).

The locations of Three-cornered leek and Sea buckthorn, recorded within, or in close proximity to, the Proposed Development site is shown in **Figure 3-1** below.



Plate 3-1. View of three-cornered leek growing at the base of the adjacent existing hedgerow habitat.

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Plate 3-2. View of a single specimen of three-cornered leek, located in proximity to the northern boundary

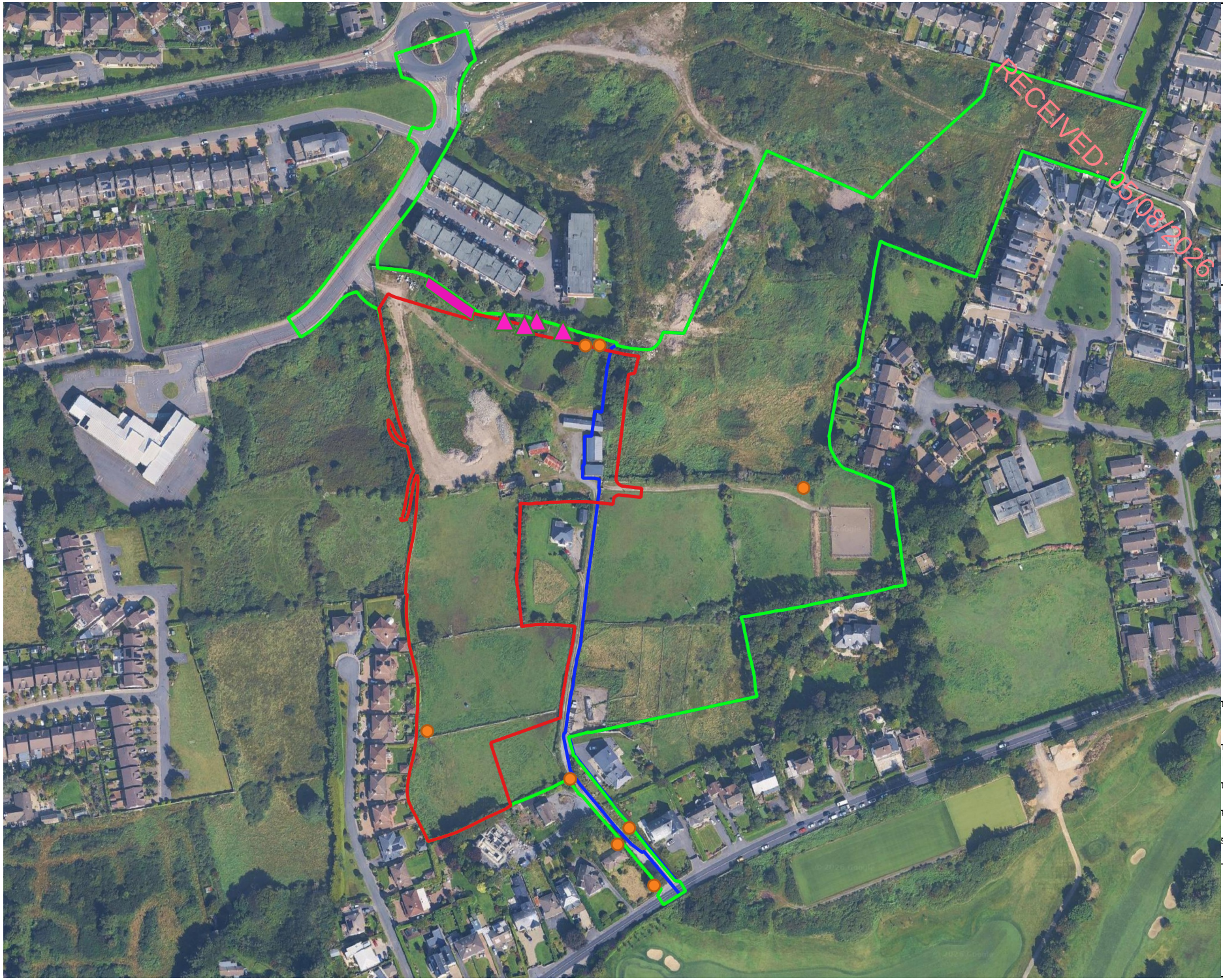
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Plate 3-3. View of juvenile saplings of sea buckthorn recorded in proximity to the northern boundary in 2024.



Plate 3-4. View of mature Sea buckthorn growing in amongst the existing hedgerow habitat to the north of the Proposed Development site boundary, as recorded in 2026.



Map Legend

- Sea buckthorn
- Three cornered leek
- Sea buckthorn
- Planning Application (redline) Boundary
- EIAR Study Area Boundary
- LRD East Application Planning Reference No. 2560320

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Drawing Title
Invasive Species Recorded

Project Title
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3.2 Ecology of Three-cornered leek (*Alium triquetrum*)

Three-cornered leek (*Alium triquetrum*) is a short to medium tufted plant. The green leaves are long and often drooping with a rigid mid-rib. The stem is similar to the leaves with a more triangular cross-section giving rise to the name. The flowers are white and bell-shaped measuring approx. 10-18mm long and drooping to one side.

Three-cornered Leek can be a threat as it forms monocultures that smother other plants. This plant frequently grows in woodland, grassy banks, waste ground and roadsides and has a leek scent. The plant has small bulbs which are 5-20mm across, egg-shaped and white in colour. These bulbs reproduce vegetatively by dividing. The bulbs are spread when soil is moved or cultivated. Seeds can be dispersed by ants, water and contaminated soil. The location of Three-cornered Leek recorded within the Proposed Development site is shown in **Figure 3-1** above.

3.3 Ecology of Sea buckthorn (*Hippophae rhamnoides*)

As described on the National Biodiversity Data Centre (NBDC), 'Sea buckthorn is a deciduous spiny shrub generally 3m tall that forms dense shrub patches to the exclusion of native vegetation, particularly on vulnerable sand dunes' (Reynolds, 2002). Its leaves are 2-8cm long and lanceolate with translucent orange fruits 6-10mm in size (Stace, 1997). This plant will form dense shrub patches and will exclude native vegetation by out competing it, particularly on sand dune habitats or sandy ground (Reynolds, 2002). This plant is dioecious in nature and is wind pollinated. This plant flowers in winter and fruits in autumn (Preston, 2002).

Sea buckthorn is listed as a 'Medium risk of impact' as per the National Biodiversity Data Centre, Ireland[1]. The location of the Sea Buckthorn recorded in close proximity to the Proposed Development site is shown in **Figure 3-1** above.

[1] *https://species.biodiversityireland.ie/profile.php?taxonId=29006*

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4. TREATMENT AND MANAGEMENT METHODOLOGIES

4.1 Preliminary Stages

A dedicated invasives species survey of the Proposed Development site will be carried out three months prior to commencement of works on site to determine if the species have spread further throughout the site. Surveys will be undertaken during the summer months (June - July) when the extent of infestation will be fully visible.

The treatment methodologies outlined below have been carefully considered and are proposed to eradicate Sea buckthorn and Three-corned leek and manage their spread further within the Proposed Development site. These treatment measures are considered as part of the planning application. An ecologist will be on site to supervise the treatment. The infested areas will be marked out with posts and hazard tape prior to any machinery ingress or works within or near this area.

4.1.1 Three-cornered leek

The following management is proposed in relation to Three-cornered Leek:

- An ecologist will be on site to supervise the treatment.
- The infested area will be marked out with posts and hazard tape prior to any machinery ingress or works within or near this area.
- Three-cornered leek can be controlled through chemical means.
- Chemical treatment is the chosen treatment method. It is advised to treat the plant *in-situ* and avoid disturbance and the increased risk for spread and dispersal.
- This plant can be treated with a Glyphosate based chemical herbicide on an annual basis. It is recommended that a Glyphosate-based herbicide will be applied as a spot treatment to individual plants, or by foliar and stem spray in early spring before the plant flowers which typically happens between April and June. It is best to manually break the leaves prior to applying the chemical to ensure it enters the leaf. Follow-up annual treatments are necessary as large numbers of shoots may re-appear the following year as may new seedlings.
- The timing of the treatment applied is vital for the eradication of three-cornered leek. The control methods must be implemented in March or April when the leaves of the three-cornered leek are fully formed. Control methods should not be carried out if plants have finished flowering and produced seed (from the outset of May) as the movement of plants at this stage in the plant's cycle can cause a further spread of the invasive species.
- Three-cornered leek produces vast amounts of seeds annually and these seeds can persist and remain dormant in the soil for years before germinating. Due to this, a monitoring programme will be established to eradicate the invasive plant where the plants currently exist onsite. Therefore, it is key to undertake the control and treatment measures for a consecutive number of years to eradicate the seed bank and bulbs. The developer will appoint a suitably qualified ecologist to carry out post-construction monitoring for invasive species. The area will be surveyed by an ecologist in March/April, May and again in September for the presence of Three-cornered leek for a minimum of 3 years after the treatment to ensure no further spread is taking place.

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4.1.2 Sea buckthorn

Mechanical/ physical removal of Sea buckthorn controls the spread of the invasive species by either damaging or removing the plant material via physical action, i.e., uprooting, felling, slashing, mowing, grubbing etc. Juvenile Sea buckthorn saplings were previously recorded in close proximity to the Proposed Development boundary and given its proximity it is proposed to eradicate this species from nearby lands on a precautionary basis. It is anticipated that the construction phase will span 3 years and as such it is likely to mature with time, in the absence of control measures being implemented.

The recommended treatment methodology for Sea buckthorn includes;

- Any juvenile new shoots of Sea buckthorn will be removed by hand pulling or manual removal using hand tools. The plant will be physically cut and dug up from the root either by hand or using an excavator to grub up the plant.
- Larger stumps will be cut and the stumps painted with Glyphosate herbicide.
- Following clearance of woody material, any necessary excavation of the ground will be undertaken. As sea-buckthorn can readily regenerate from root and rhizomatous material present in soil, any soil arising from areas infested with sea-buckthorn must be contained and disposed of appropriately.
- The vegetation material can be disposed of by burning or incineration.
- If for any reason, burning of plant material is not feasible on-site this material and the soil potentially contaminated within root or rhizome fragments must be gathered and disposed of off-site, to a waste disposal facility that has a pollution prevention and control permit or waste management licence. In order to move material potentially contaminated with Third or First Schedule invasive plant species, a licence is required to be obtained from NPWS. The conditions of the permit or licence of the waste disposal facility must allow the disposal of invasive plants at the site. Delivery should be agreed with the waste site in advance to make sure they can accept material containing invasive plants. When transporting invasive plant material and soil potentially contaminated with invasive plant material, any vehicle used must be covered or securely sheeted so that plant material cannot be accidentally dispersed during transportation.

4.1.3 Post Treatment Monitoring

Ongoing monitoring will be required within the Proposed Development site for all invasive species listed on the Third and First Schedules with suitable follow-up management implemented, in order to control new growth or re-establishment within the infested areas.

Following the initial removal, treatment and completion of the development, the treated areas will be re-surveyed annually and if necessary, re-treated until no growth of Three-cornered leek or Sea buckthorn is recorded for two consecutive years. If Three-cornered Leek or Sea buckthorn are found to be re-establishing, they shall be treated as per the measures outlined in Section 4 of this report.

5. SITE HYGIENE

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The following measures will be adhered to throughout the duration of the proposed construction works:

- The Project Ecologist will give a Toolbox Talk to all staff in relation to Three-cornered leek and Sea buckthorn and their management on site.
- A designated bio-secure area/exclusion zone will be set up at the Three-cornered Leek and Sea buckthorn locations to prevent disturbance in these areas.
- Prior to leaving the invasive species exclusion zones, all boots and clothing will be thoroughly brushed down to remove any contaminated material prior to leaving the area.
- The contractor will assign a member of their team as Environmental Officer to ensure the management plan is adhered to throughout the proposed works.
- All works in relation to invasive species will be supervised by the Ecological Clerk of Works (ECoW).
- As a precautionary measure, machinery will be thoroughly cleaned down before entering the site to prevent potential spread of invasive species from elsewhere.
- Clean down will be carried out using brushes and shovels and power washing avoided insofar as possible. This is to prevent potentially contaminated run-off spreading outside the site.
- All measures prescribed in the invasive species management plan will be incorporated into the contractor's respective method statements for works.

To avoid the introduction of invasive species to the site the following best practice measures will be adhered to:

- Any material imported to the site will be screened for invasive species by a suitably qualified ecologist before transportation to the site.
- All machinery will be thoroughly cleaned down prior to arriving on the site to avoid the potential spread of invasive species from elsewhere.

6. CONCLUSIONS

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The bespoke management plan for the treatment of Three-cornered Leek and Sea buckthorn outlined in this document has been designed to follow the guidance outlined in Section 1.3. Careful implementation of the prescribed management measures will ensure that the works are conducted within the confines of legislation as outlined in Section 1.1. All of the identified Three-cornered leek and Sea buckthorn within, or in close proximity to, the Proposed Development site will be treated and eradicated.

It should be noted that this management plan provides for the management of invasive species listed on the Third Schedule of of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) and First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) only within the footprint of the current proposal or in close proximity to the Proposed Development site boundary.

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