APPENDIX 5-3

INVASIVE SPECIES MANAGEMENT PLAN

Planning and Environmental Consultants

Invasive Species Management Plan

Proposed Quarry Extraction and Restoration, Ballyquin, Co. Clare

DOCUMENT DETAILS

Client:	**Roadstone Ltd.**
Project Title:	**Proposed Quarry Extraction and Restoration, Ballyquin, Co. Clare**
Project Number:	**211137**
Document Title:	**Invasive Species Management Plan**
Document File Name:	**ISMP - F – 2024.11.07-211137**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Draft	10.04.2024	BB/CT	RW
02	Draft	26.06.2024	CT	RW
03	Final	07.11.2024	CT	RW

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1. INTRODUCTION

1.1 Background

MKO were commissioned by Roadstone Ltd. to carry out an Invasive Species Survey and Management Plan in relation to an extraction and restoration quarry project, located at Ballyquin More, Leitrim, Woodpark and Fahy More North, Co. Clare. The site is located approximately 8 kilometres southwest of the town of Killaloe and 1.5 kilometres to the northwest of the village of Bridgetown, Co. Clare. The site comprises a quarry void area which has been used for sand and gravel extraction since c. 1954. The Grid Reference co-ordinates for the approximate centre of the site are X 562651, Y 669425 in Irish Transverse Mercator (ITM). A Site Location Map is presented in Figure 1-1.

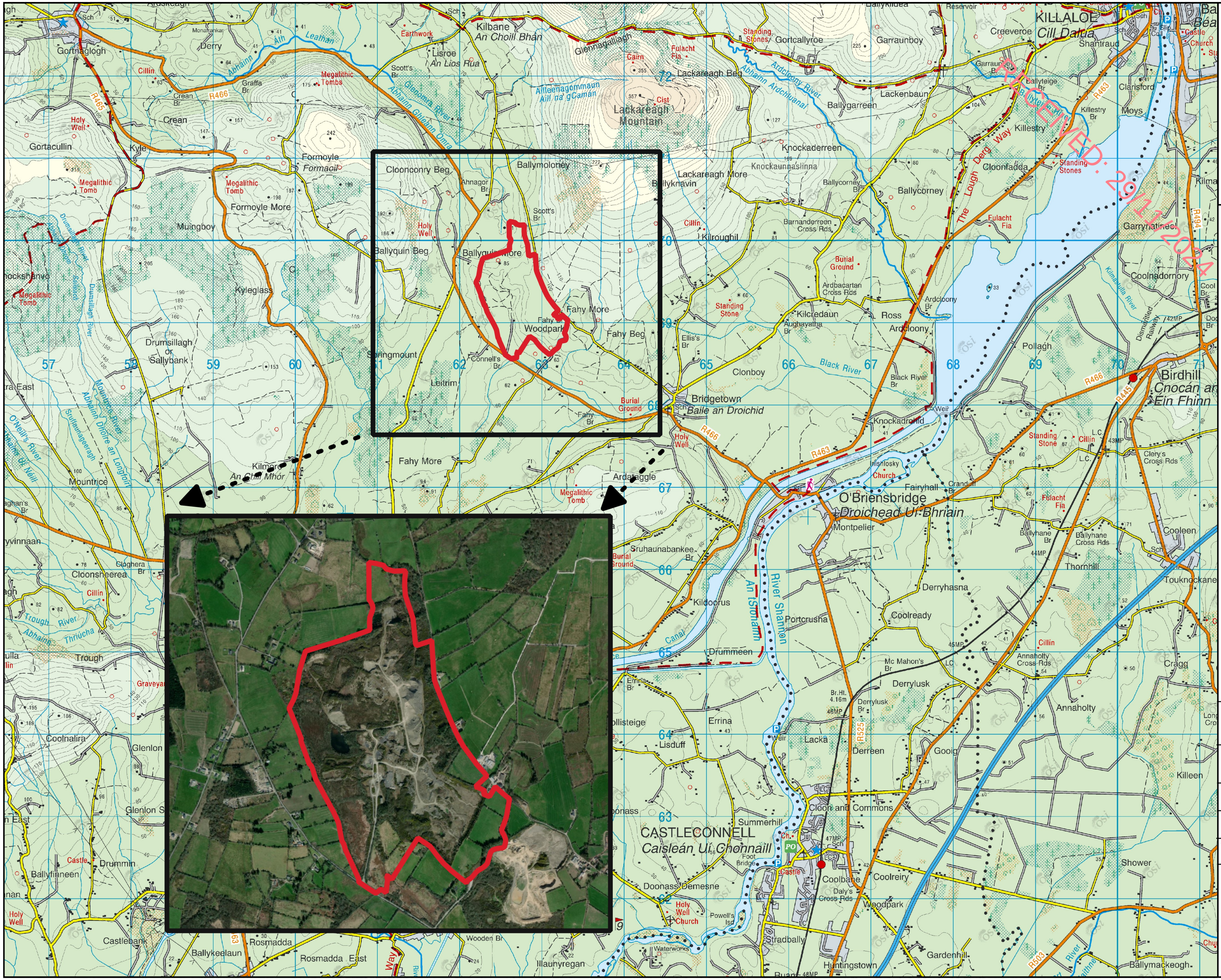
1.2 Development Description

The Proposed Development being applied for under this planning application includes for the construction of a soil inspection shed, refuelling area, settlement ponds, road improvements, drainage network and environmental berms. The Proposed Development also includes for the extraction, processing and washing of sand and gravel from an area measuring approximately 16.3 hectares (ha) which will allow for the extraction of approximately 1,428,571 tonnes of material.

The development proposals also include for the infilling and restoration of an existing and future quarry void back to original land contour levels. It is proposed to fill the void with either inert soil and stone waste (imported inert greenfield and non-greenfield soils and stone, and river dredge spoil) which will be a soil recovery facility and require a waste management licence or soil and stone by-product (i.e., essentially virgin soil or equivalent to virgin soil and stone, and river dredge spoil) which will be notified to the Environmental Protection Agency (EPA) as an Article 27 by-product. The quantity of soil and stone material required for restoration has been estimated to be approximately 4,471,200 tonnes.

The Proposed Development site comprises land in the townlands of Ballyquin More, Leitrim, Woodpark and Fahy More North, Co. Clare. It is located approximately 8 kilometres southwest of the town of Killaloe and 1.5 kilometres to the northwest of the village of Bridgetown, Co. Clare. The site comprises a quarry void area which has been used for sand and gravel extraction since c. 1954. The Grid Reference co-ordinates for the approximate centre of the site are X 562651, Y 669425 in Irish Transverse Mercator (ITM).

The site location is shown in Figure 1-1.



Map Legend

Proposed Development boundary

Drawing Title	Site Location Map
Project Title	Proposed Quarry Extraction and Restoration, Ballyquin, Co. Clare
Drawn By: CT	Checked By: RW
Project No.: 211137	Drawing No.: Figure 1-1
Scale: 1:60,000	Date: 15.10.24

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1.3 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,"

1.4 Guidance Documents

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

- Irish Water (2016) IW-AMT-SOP-009 Information and Guidance Document on Japanese Knotweed
- Stokes et al. (2004). Stokes, K., O'Neill, K. & McDonald, R.A. (2004) *Invasive species in Ireland*. Unpublished report.
- TII (2020) The Management of Invasive Alien Plant Species on National Roads – Technical Guidance
- Property Care Association (2018) Code of Practice for the Management of Japanese Knotweed
- NRA (2010). *Guidelines on management of noxious weeds and non-native invasive plant species on national roads*. National Roads Authority.
- www.invasivespeciesireland.com
- www.invasivespeciesni.co.uk

1.5 Statement of Authority

Multidisciplinary walkover surveys were undertaken on the 20th of March 2023, 25th of April 2023, 18th of May 2023, 17th of July 2023, 28th of August 2023, and 16th of April 2024 by Brónagh Boylan (BSc. Env),

Rachel Minogue (BSc. Env), Aran von der Geest Moroney (BSc. Eco) and David Cullerton (BSc. Zoo, M.Sc. Conservation Behaviour) of MKO. This report has been prepared by Brónagh Boylan (BSc.) and Cora Twomey (B.Sc. Eco) and has been reviewed by Rachel Walsh (BSc. Env) who has extensive experience in ecological consulting.

2. INVASIVE SPECIES RECORDED

2.1 Himalayan Knotweed

Himalayan Knotweed (*Persicaria wallichii*) is an ornamental shrubby perennial plant native to China, Bhutan, Afghanistan, Nepal, Pakistan and Myanmar and has been introduced across parts of Europe, North America and Oceania. Himalayan Knotweed is known to occur in primarily terrestrial habitats such as disturbed areas, roadsides, forests and grasslands but also in aquatic habitats such as riparian zones. Himalayan Knotweed is characterised by smooth to densely haired red-brown stem, erect and branching in nature, with an orange-brown rhizome which is creeping in nature and has a pale ivory core. The leaves of Himalayan Knotweed are lanceolate in shape measuring between 8-20cm long and 3-8cm wide and can be smooth or densely hairy below the leaf. Flowers of Himalayan Knotweed are generally white to pinkish in colour featuring generally five lobes but can feature between three and five lobes.

Due in part to spreading vegetatively and rapid growth, Himalayan Knotweed is highly invasive and can impact native species by shading out native and rare plant species. As with other species of Knotweed, Himalayan Knotweed is expensive to control and difficult to deal with.

The proposed development site is an abandoned sand and gravel extraction quarry site, with access roads running through the site. Piles of sand and gravel are present across the site. During the walkover surveys of the Proposed Development Site, Himalayan Knotweed was found growing in the centre and northwest associated with areas of past quarry activities within site, within several stands and single plant growths (Plate 2-1) within the Proposed Infill Boundary.

The largest stand of Himalayan Knotweed can be found growing along a bank located next to an access track running up to the north of the site (Plate 2-2). A second smaller stand of Himalayan Knotweed can be found west of the first stand (Plate 2-3). Smaller growths of Himalayan Knotweed can also be found southeast of the largest stand (Plate 2-4). The stands are found within the Proposed Infill Boundary where regrading and reprofiling works are proposed, followed by natural recolonisation of this section of the site. There is a further stand of Himalayan Knotweed outside of all proposed works footprint, north of the man-made lake onsite.

Himalayan Knotweed is an invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). Consequently, a management plan has been prepared in Section 3 below.

A map showing the location of Himalayan Knotweed recorded is shown in Figure 2-1.

Plate 2-1 Himalayan Knotweed within proposed development site.

Plate 2-2 Largest stand of Himalayan Knotweed Stand located at the north of the site next to an existing access track.

Plate 2-3 A second patch of Himalayan Knotweed found to the west of the largest stand.

Plate 2-4- Smallest patch of Himalayan Knotweed found south of the largest stand.

Map Legend

- Proposed Development boundary
- Himalayan Knotweed

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Drawing Title

Himalayan Knotweed Records

Project Title

Proposed Quarry Extraction and Restoration, Ballyquin, Co. Clare

Drawn By	Checked By
CT	RW
Project No.	Drawing No.
211137	Figure 2-1
Scale	Date
1:11,000	15.10.24

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3. HIMALAYAN KNOTWEED MANAGEMENT PLAN

The guidance document "*The Management of Invasive Alien Plant Species on National Roads-Technical Guidance* - GE-ENV-01105" and "*The Management of Invasive Alien Plant Species on National Roads – Standard* GE-ENV-01104" (TII 2020) has been consulted. Measures outlined for the management of Japanese knotweed within the aforementioned document will be detailed below and are recommended to be adopted for the management of Himalayan knotweed within the proposed development site.

The location of Himalayan Knotweed within the Proposed Development Boundary is shown in Figure 2-1.

It is proposed to manage the invasive on site and bury the Himalayan knotweed infested material in a suitable area within the site. Any removal of contaminated material from the Proposed Development will require a license from the National Parks and Wildlife Service (NPWS).

3.1 Spraying Schedule (Chemical Control)

- Prior to the outset of works, the plant will be sprayed with herbicide that is suitable for use in or near water such as Glyphosate or 2,4-D Amine. This will be undertaken to reduce above ground biomass. This will be undertaken between May - September or before leaves discolour and fall. Spring treatment is also an option but less effective. The majority of herbicides require living foliage to take up the active ingredient, therefore the more foliage the greater the uptake. Spraying will be undertaken twice, once in early summer (May) and again in autumn (September) to achieve maximum results. Spraying will be carried out by a competent person adhering to the specific label instructions.
- Note: After the above spraying schedule, it is still possible for regrowth to occur. Additionally, root materials may still be viable within the soil (can remain viable up to 20 years) and any disturbance to the soil is likely to stimulate more growth. For this reason, it is necessary to carry out both chemical and physical treatment in order to obtain full eradication of the plant. Physical removal of the plant is described in Section 3.2.

3.2 Physical Control

3.2.1 Site Set-up and Biosecurity Area

- Prior to the commencement of any works, a pre-commencement survey for Himalayan Knotweed will be undertaken by a fully qualified ecologist to determine the locations and extent of the species within the development site and to determine whether there have been any changes in the extent of the infestation since the undertaking of surveys in 2023 & 2024.
- The locations and extent of Himalayan Knotweed within Proposed Infill Boundary and north of the man-made lake will be clearly marked out using temporary fencing to ensure they are not disturbed. An exclusion zone surrounding each stand will also be identified and the will inform the extent of the area to be treated as potentially contaminated. The exclusion zone will be 7m.
- Tool box talks will be held with all members of the contractors team responsible for carrying out measures detailed in this mangement plan. This will detail locations of infested material and how to carry out work on site in a biosecure way.
- Areas infested with Invasive Alien Plant Species (IAPS) will be clearly identified and the specific sites of infestation isolated with fencing or warning tape.
- 'Biosecure zone' signs will be erected at each contaminated site to alert workers that IAPS are present and to avoid entering or interfering with these sites. Likewise, any stockpiles of soil that are or could be contaminated with IAPS must be clearly marked.

- Designated and clearly marked cleaning and/or disinfection stations will be strategically placed within the work site for use by staff, vehicles and machinery.
- Where it is necessary to work in contaminated areas, vehicles with caterpillar tracks will be avoided.
- As a precautionary measure, machinery will be thoroughly cleaned down before entering the site to prevent potential spread of invasive species from elsewhere.
- All vehicles and equipment that have been used in IAPS control operations will be thoroughly pressure-washed in a designated wash-down area each time they leave the works site and once work in that area has been completed. This also includes footwear, personal protective equipment (PPE), tools, and other light equipment. It is important to remove soil that may contain seeds or plant fragments, which otherwise could be transported along the road corridor as works are being undertaken.
- Vehicles leaving contaminated area(s) will either be confined to marked haulage routes protected by root barrier membranes or be pressure-washed before leaving the area. Only vehicles that are deemed to be biosecure (i.e. sealed so that no soil can escape) shall be used to transport contaminated soil and all will be thoroughly pressure-washed in the designated washdown area before exiting the infested area.
- The clean-down area will be underlain with an impermeable membrane such as a radon barrier to prevent contamination resulting from this operation. In addition, a boot wash with a stiff brush will be installed at the edge of the exclusion zone for pedestrian use.

3.2.2 Excavation and Burial

- Particular care is required in relation to the disposal of Japanese and other knotweed species. Where burial is being used to dispose of these species, a non-persistent herbicide shall be applied to the infestation prior to excavation. The material shall then be excavated and subsequently buried to a minimum depth of 5m. The waste shall be covered with a proprietary root barrier membrane layer and infilled with a minimum 5m depth of uncontaminated soil[1].
- Any geotextile membranes used for burial must be undamaged, sealed securely, have a manufacturer's guarantee that it will remain intact for at least 50 years, and be UV resistant. Where burial to a depth of 5m is not possible, the infestation shall be treated with a non-persistent herbicide prior to excavation, excavated and then completely encapsulated in a proprietary root barrier membrane cell. The upper surface of the cell shall be buried to a depth of at least 2m with uncontaminated soil.
- Clean down will be carried out using brushes and shovels and power washing will be avoided. This is to prevent potentially contaminated run-off spreading outside the Proposed Development site.
- Once the machinery has been cleaned down as much as possible in the dry, the machines will be power-washed, or air blasted to remove any remaining material. The machine will track out of the cell over plywood or other suitable material in order to protect the machine from potential contamination while exiting the contaminated cell area.
- Material used for tracking machinery out of the cell will be thoroughly cleaned down under supervision of the invasive species specialist prior to removal off site.

3.2.3 Laying of Root Barrier Membrane

- Once burial is complete, in order to prevent potential re-growth of rhizomes, infested areas will be overlain with a solid root barrier membrane. The root barrier membrane must stay intact for at least 50 years. A manufacturers' guarantee is required. This will be sized and installed under the supervision of a suitably qualified ecologist and in accordance with the relevant guidelines.

[1] *'The Management of Invasive Alien Plant Species on National Roads', TII (2020)*

- A layer of no sharps sand or equivalent will be placed on the ground beneath the membrane to ensure that there are no opportunities for it to become ripped. The membrane will be inspected for damage prior to it being laid.
- Ideally, the membranes would consist of a single sheet with no joints. However, if joints are necessary, they will be sufficiently overlapped and sealed with a solid seam (either glue, heat or tape as per manufacturer's recommendations).
- The supervising ecologist will oversee the installation of the membrane and determine whether further measures are required to prevent lateral spread of the plant outward from under the excavated area.
- Following satisfactory laying of the membrane, it will be covered with a 50mm sand layer and then a solid concrete cap for extra protection.
- Once the soil has been removed, the membrane placed and the slab poured, the site will be considered uncontaminated for the purposes of continued works
- A record will be kept of the affected areas and no further excavations or below ground works will be permitted in these areas.

3.3 General Biosecurity Measures

The following best practice measures should be adhered to during the treatment and management of the Himalayan Knotweed within the proposed development site.

- No ground works should take place on site prior to the application of the site- specific Invasive Species Management Plan (ISMP). The ISMP will ensure all measures are taken to avoid the spread of species listed on the Third Schedule.
- Ensure all visitors to the site are made aware of the location of the Himalayan Knotweed recorded and are familiar with its characteristics and method of reproduction.
- Machinery operatives and all staff will be given a Toolbox Talk on Himalayan Knotweed and the risks associated with the Third Schedule invasive species prior to any works commencing in either of the Knotweed exclusion zones.
- Only people familiar with identifying Himalayan Knotweed will be allowed to work in close proximity to the plant.
- A clearly defined bio-secure clean-down area will be established as outlined in Section 3.2. Additionally, all bio-secure clean-down area associated measures will be carried out as described in Section 3.2.
- No works will take place within the Himalayan Knotweed exclusion zone other than those prescribed in the management plan.
- All excavation works within the exclusion zone will be supervised by the contractor's ecologist.
- All measures prescribed in the Himalayan Knotweed management plan will be incorporated into the contractor's respective method statements for works where Third Schedule invasive species occur.
- Any material imported to the site should be screened for invasive species by a suitably qualified ecologist before transportation to the site.
- All machinery should be thoroughly cleaned down prior to arriving on the site to avoid the potential spread of invasive species from elsewhere.

4. CONCLUSIONS

The bespoke invasive species management measures outlined in the document have been designed to follow the guidance outlined in Section 1.4. Careful implementation of the prescribed management measures will ensure that the works are conducted within the confines of legislation as outlined in Section 1.3.

Initially it is proposed for two rounds of spraying of the Himalayan Knotweed during the growing season (Once in the spring and once in the summer). It is proposed to excavate Himalayan Knotweed and infested soils and bury the infested material in a designated area on site. Once excavations have ceased, a root barrier membrane will be installed. The installation of root barrier membrane will be checked by a suitably qualified ecologist to ensure root barrier membrane has been properly laid and sealed. The ecologist will also supervise the excavation of the Himalayan Knotweed and its burial.

It should be noted that this Invasive Species Management Plan provides treatment of invasive species only within the work footprint of the Proposed Development Site. Any invasive species that are located outside the construction footprint will be left undisturbed and will not be the subject of any treatment as part of the current proposal.

5. REFERENCES

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