Planning and Environmental Consultants

Invasive Species Management Plan

Cleeves Riverside Quarter, Co. Limerick

DOCUMENT DETAILS

Client:	**Limerick City & County Council, in partnership with Limerick Twenty Thirty DAC**
Project Title:	**Cleeves Riverside Quarter, Co. Limerick**
Project Number:	**211052-a**
Document Title:	**Invasive Species Management Plan**
Document File Name:	**211052-a - ISMP - F - 2025.10.14**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Draft	05/09/2025	DM, SF	PR
02	Final	14/10/2025	DM, SF	PR

Table of Contents

TABLE OF FIGURES

APPENDICES

1. INTRODUCTION

MKO were commissioned to prepare a site-specific Invasive Species Management Plan on behalf of Limerick Twenty Thirty DAC for the proposed development of Cleeves Riverside Quarter. This ISMP has been prepared to provide information on the management of identified species listed on the *First Schedule* of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) at Cleeves Riverside Quarter, located on the northern side of the River Shannon, in Limerick City, Co Limerick. The location of the proposed development is shown in **Figure 1-1** below.

Cleeves Riverside Quarter is proposed to be developed into a mixed-use development that seeks the regeneration and adaptive reuse of a strategic brownfield site, as part of the Limerick City and County Council 'World Class Waterfront revitalisation and transformation project'.

Japanese knotweed (*Reynoutria japonica syn. Fallopia japonica*) and Himalayan Knotweed (*Koenigia polystachya*), two invasive species listed on the *First Schedule*, were identified within the Application Site. The proposed development will be carried out in a manner that ensures that these species will not spread through the site or the surrounding landscape.

This document has been prepared in accordance with to current legislation and best practice guidelines in the identification, treatment and management of invasive alien species listed on the *First Schedule*. The document does not provide advice or guidance with reference to waste legislation.

For the purposes of this document:

- Where 'the Application site', or 'the site', is referred to, this relates to the primary red line boundary of the proposed development
- Where 'the Masterplan site' is referred to, this relates to the wider MS area which has been considered as part of the assessment.

1.1 Statement of Authority

This report has been prepared with information gathered during initial Invasive Species Surveys by Invasive Plant Solutions in 2021, and updated surveys carried out by MKO Ecologists, Sara Fissolo (BSc. (Hons)) and David Mesarcik (BSc. Hons.). This report has been prepared by David Mesarcik (BSc. Ecology and Evolutionary Biology; Hons. Ecology) and Sara Fissolo (BSc. (Hons) Ecology and Environmental Biology). This report has been reviewed by Pat Roberts (B.Sc., M.Sc., MCIEEM). David is an Ecologist with two years consultancy experience. Sara is a Project Ecologist with MKO with over five years of professional consultancy experience. Pat has over 20 years' experience in ecological assessment and management.

1.2 Legislative Framework

The European Union (Invasive Alien Species) Regulations 2024 (S.I No. 374/2024) contain specific provisions that govern the control of listed invasive non-native species (INNS). It is an offence to release or allow to disperse or escape, to breed, propagate, import, transport, sell or advertise species listed on the *First Schedule* of the European Union (Invasive Alien Species) Regulations 2024 without a Permit.

The two regulations that deal specifically with this scheduled list of species are:

- Regulation 17 & 18: *Prohibition of introduction, dispersal, retention, breeding, importing, exporting, dealing or release certain species within or throughout the nation*

Following on from that, the following are strictly prohibited:

- Dumping invasive species cuttings anywhere other than in facilities licensed to accept them;
- Planting or otherwise causing to grow in the wild - hence the landowner should 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) to take such *First Schedule* material (plant or soil) that the waste contains invasive species material (this action requires an appropriate permit);
- Moving soil which contains *First Schedule*-specific non-native invasive species in the Republic of Ireland, unless under licence from the National Parks and Wildlife Service (NPWS) (this permit is 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 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 First Schedule species.

1.3 Guidance Documents

The high-level management options provided in this report are in compliance with the following guidance documents and literature sources :

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

Map Legend

Application Site

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Drawing Title

Site Location

Project Title	Cleeves Riverside Quarter
Drawn By: SF	Checked By: PR
Project No.: 211052-a	Drawing No.: Figure 1-1
Scale: 1:50,000	Date: 15.08.2025

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1.4 Location/Extent of Invasive Species within the Site

Dedicated invasive species surveys were first carried out by Invasive Plant Solutions between February 2021 and May 2021, and guided the treatment undertaken to date at the site. Further invasive species surveys were conducted by MKO Ecologists during the multidisciplinary surveys between 2021 and 2025 within the site to ensure no other *First Schedule* species had established. In 2025, the areas where Japanese Knotweed and Himalayan Knotweed had been recorded were reassessed to establish the current baseline.

Ecology of Japanese knotweed

Japanese knotweed is a tall, vigorous, ornamental plant that escaped cultivation in the late nineteenth century and has since become an aggressive invader in both rural and urban environments. The plant can grow up to 3m high and its root system can extend up to 3m into the ground and 7m laterally from the parent plant. The reason this plant is such a threat is due to the nature of its regeneration. Cut fresh stems can produce fresh shoots and roots from nodes when immersed in soil or water. Very small fragments (0.7g) of fresh knotweed shoot and root material have the potential to start a whole new plant.

Ecology of Himalayan knotweed

Himalayan knotweed is a perennial plant native to the Himalayas that was introduced to cultivation in the 19th century and has since spread beyond cultivated areas. It typically grows between 0.6 and 2.5 meters in height and spreads via an underground rhizome system. The plant has hollow, bamboo-like stems that are capable of producing roots from nodes when in contact with soil. Small stem fragments, as short as 2 cm, can develop into new plants. It forms dense colonies through vegetative reproduction, primarily via rhizomes and rooted stem nodes.

1.4.2 Previous Extent and Treatment

Himalayan knotweed was identified during the invasive species survey carried out by Invasive Plant Solutions in 2021. A series of healthy Himalayan Knotweed plants were recorded growing in a linear strip of vegetation between the southwestern boundary of the carpark at the Shipyard Site and the pedestrian path which leads up from the northern bank of the River Shannon onto the Condell Road above (See Figure 2-1). Although this area was not treated by Invasive Plant Solutions as it was outside the original site boundary, it was recommended for treatment to Limerick County Council. This area has since been included within the Application site boundary.

A large, mature stand of Japanese knotweed was found in an area of scrub adjacent to the Reservoir located within the Site in 2021. An Invasive Species Management Plan was prepared by Invasive Plant Solutions and is provided in **Appendix 1** of this document. Treatment began in mid 2021 with targeted stem injections on mature stands and spot spraying on seedlings. The site was revisited annually, and the extent was monitored and treated accordingly. The treatment of Japanese Knotweed on site since 2021 is summarised in Table 1-1 below.

Table 1-1 Treatment carried out by Invasive Plant Solutions

Year	Date	Treatment Type	Number of Treated Plants	Notes
2021	26/05/2021	Treatment 1: Stem Injection / Foliar Spraying	Stem Injection = 530 Spot Spray = 41	
	11/10/2021	Treatment 2: Stem Injection / Foliar Spraying	Stem Injection = 12 Spot Spray = 20	
2022	04/08/2022	Treatment 1:Stem Injection / Foliar Spraying	Stem Injection = 2 Spot Spray = 14	
	27/10/2022	Treatment 2: Foliar Spraying	Stem Injection = 0 Spot Spray = 3	No mature canes visible
2023	06/10/2023	Treatment 1: Foliar Spraying	Stem Injection = 0 Spot Spray = 2	No mature canes visible
2024	17/09/2024	-	-	No regrowth observed. Site colonised by Old Man's Beard

1.4.3 Current Baseline

A dedicated invasive species survey was carried out to reassess and map the full extent and distribution of Japanese knotweed on the 5th June 2025 in line with NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes) by MKO Ecologists, Sara Fissolo (BSc. Hons.) and David Mesarcik (BSc. Hons.).

The Application Site area was walked and systematically surveyed for the presence of invasive species (listed under the *First Schedule*) with an emphasis on Japanese knotweed and Himalayan knotweed. The full extent and distribution of *First Schedule* Invasive plant species was mapped. Invasive plant species that are not listed under the *First Schedule* of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024), were also recorded within the Site. This survey was carried out within the optimum survey season for botanical surveys

During the survey carried out in June 2025, new growth was recorded in close proximity to the original extent of the Japanese Knotweed infestation. While the extent of the knotweed seemed to have reduced significantly, small stands were found at three adjacent locations along the water edge (Plates 2-1 and 2-2, and Figure 2-1). The area was covered with thick old man's beard (*Clematis vitalba*) scrub and it was difficult to establish the full extent of the knotweed without removing the surrounding vegetation and risking fragmenting potentially hidden canes.

No above-ground growth of Himalayan knotweed was recorded at the previously identified location or anywhere else within the site.

Various other low and medium impact species, not listed on the *First Schedule* of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024), were recorded, including winter heliotrope (*Petasites pyrenaicus*), butterfly bush (*Buddleja davidii*), wall cotoneaster (*Cotoneaster horizontalis*), and old man's beard (*Clematis vitalba*). The mapped locations of the *First Schedule* invasive species within the Application Site identified in 2021 and 2025 are shown in **Figure 2-1** below.

Plate 2-1. View of J. knotweed stand almost hidden by surrounding vegetation.

Plate 2-2 View of a single shoot of J. knotweed recorded in proximity of the original extent of infestation.

Map Legend:

Application Site Boundary

Invasives

Japanese knotweed- 2021 Extent

Japanese Knotweed Stands recorded in 2025

Himalayan knotweed- 2021 Extent

7m Buffer

N

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Drawing Title

Invasive Species Map

Project Title

Limerick Twenty Thirty Cleeves Riverside Quarter

Drawn By	Checked By
DM	SF
Project No.	Drawing No.
211052	Figure 2.1
Scale	Date
1:1,790	2025-09-05

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2. MANAGEMENT AND TREATMENT METHODOLOGIES

2.1 Treatment Plan for Japanese Knotweed

It is proposed to continue previous treatment measures until the start of the proposed works as per the management plan included in **Appendix I**.

Further to this, consideration has been given to on-site management options prior to construction, such as bunding of any residual infested material on site. However, there will be limited space for the creation of a knotweed cell, bund or on-site burial on site. In addition, the area infested with Japanese knotweed is located in close proximity to water and on uneven terrain, which includes large, dumped materials. Due to the extent of works proposed in this area, which include the construction of a temporary access road, site levelling, and landscaping excavations, the site is at risk of re-infestations from dormant rhizomes.

Off-site removal in-combination with continued monitoring is considered the best site-specific treatment. The treatment plan of Japanese Knotweed on the Application Site is detailed below.

2.1.1 Chemical Treatment

Chemical treatment and yearly monitoring of Japanese Knotweed will continue following the methodology outlined in the previous Invasive Species Management Plan included in **Appendix 1** (Section 13, Page 17), until construction works are set to begin on the Application Site.

The preferred treatment method for the infestation next to the reservoir is stem injection as it's safer to use in and around water:

- Stem injection will involve injecting a dose (2ml) of Glyphosate based and aquatic approved herbicide into the base of each heatlhy stem of the weed using a calibrated injection unit and narrow gauge needle.
- On-site handling of herbicide is to be avoided, with herbicide supplied via pre-filled dispensing units.
- The weed will absorb the Glyphosate into the rhizome (root crown) with a faster absorbency rate than foliar spraying, providing a quicker resolution to the knotweed problem and less risk to the surrounding environment.

2.1.2 Ex-Situ Removal

Research has shown that rhizomes can grow a distance of 7 m and achieve a depth of around 2 m from the parent crown (Environmental Agency, 2006). However, the actual extent of the rhizome can vary considerably depending on the soil type and the history of the site. Due visual assessments being impaired by the presence of dense *Clematis* scrub and the complexity of the terrain, whilst the extent of Japanese knotweed within the site seems to have significantly reduced since initial surveys in 2021, the original extent will be considered to be potentially contaminated. As described in more detail in the following sections, mechanical excavation will take place in this area. All plant material and potentially contaminated soil will be removed off the site to a licensed waste facility. The excavation will be fully supervised by an ecologist and all material inspected to make sure there are no living rhizome left. Toolbox talks will be held with all members of the site and contractors' team responsible for carrying out measures detailed in this management plan. This will detail locations of infested material and how

to carry out work on site in a biosecure way, in accordance with the measures listed in the following sections.

For off-site treatment, it will be necessary to obtain a permit from the National Parks and Wildlife Service to remove the contaminated material from the site and dispose of it at a waste facility that is licenced to receive it. An NPWS licence application will be prepared and submitted including the following information:

- Methods of removal
- Method of transportation
- Treatment of the species
- Proposed bio-security measures
- Invasive Species Management Plan
- Timeframe of works
- Evidence that the proposed landfill facility will accept the species.

The following procedure will be adhered to ensure that there is no contamination as part of the removal process:

- The potentially contaminated area will be marked out and fenced off, including a 7m buffer around its extent until the excavation has been completed. Once machinery and personnel enter the contaminated area, they will not leave until they have been cleaned down following the procedure that is set out below.
- All knotweed vegetative material above ground will be removed together with any Clematis scrub located in the contaminated areas. This removal will be carried out first to ensure spread of potential knotweed segments is avoided. All vegetation will be loaded onto a waiting truck to be taken off site to a waste facility under licence.
- Excavations will begin within the contaminated area under the supervision of an ecologist. Excavations will start from edge of the 7m buffer and excavated material will be checked for rhizomes by the ecologist:
    - Where no rhizomes are identified within the excavated material, it will be treated as uncontaminated and may be removed from the contaminated area.
    - Where rhizomes are encountered within the excavated material, this will be loaded onto a waiting truck to be transported to the waste facility under licence. The truck will be filled to no more than 75% capacity and will be covered to avoid spillage in transit.
    - Any large materials (i.e. cement blocks) likely to be excavated which can be completely cleared and excluded from infestation will not need to be sent to the licenced waste facility and can be either reused on site or sent to landfill.
- Following these operations, all personnel, equipment and machinery will be cleaned down as per the methodology below, prior to exiting the contaminated area.
- All site hygiene measures outlined in Section 3 will be adhered to.

Clean Down Procedure

- All plant, machinery, tools and personnel will be cleaned down prior to leaving the contaminated areas.
- Clean down will be undertaken on an impermeable membrane such as a radon barrier and following completion of the clean down operation, this will be brushed clean with sweepings left within the contaminated area to ensure that there is no potential to spread any contaminated material.

- Power washing will be avoided to prevent potentially contaminated run-off from spreading outside the site.

2.2 Treatment Plan for Himalayan Knotweed

Whilst no further evidence of Himalayan knotweed was found in 2025 in the area previously identified in 2021, where construction works including excavations are proposed, the site is at risk of re-infestations from dormant rhizomes. As such, the following measures will be followed:

- A buffer zone (7m) is implemented around the area where Himalayan knotweed was found to avoid any unnecessary personnel or machinery entering this area.
- The area will continue to be monitored annually prior to construction and,
- Where excavation works are proposed within the buffer zone, any contaminated soil material is removed ex-situ as per Section 2.1.2 prior to construction.

2.3 Post Treatment Monitoring

Ongoing monitoring will be carried out for all *First Schedule* Invasive Species and non-native Invasive Species of potential concern recorded with suitable follow-up management in order to control new growth or re-establishment within the infested areas.

Following the initial treatment and removal, at operation of the development the treated areas will be re-surveyed annually to ensure no invasive species re-establish. If any invasive plants are found, the areas will be re-treated as per the measures outlined in Section 2.1.1 of this report until no growth is recorded for two consecutive years.

3. SITE HYGIENE AND BIOSECURITY MEASURES

Prior to construction or treatment works being carried out, an Ecological Clerk of Works (ECoW) will be appointed. The ECoW will be responsible for supervising the treatment and removal of Japanese knotweed and moniotirng of Himalayan knotweed throughout the entire construction phase.

The following site hygiene and biosecurity measures will be adhered to throughout the duration of the proposed construction works:

- No ground works will take place on site prior to the application of this site-specific Invasive Species Management Plan (ISMP). The ISMP will ensure all measures are taken to avoid the spread of species listed on the First Schedule.
- A designated 7m bio-secure area/exclusion zone will be set up with hazard tape at the infested locations to prevent disturbance in these areas.
- 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 *First Schedule* invasive species will be supervised by the Ecological Clerk of Works (ECoW).
- The ECoW will give a Toolbox Talk to all staff in relation to knotweeds and their management on site.
- All machinery will be thoroughly cleaned down prior to arriving on the site to avoid the potential spread of invasive species from elsewhere.
- Machinery that is used for excavation of invasive material will not be used for any other works until they are fully cleaned down and then visually inspected by a specialist to ensure no fragments of Invasive plant material are present.
- 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.
- Clean down will be carried out using brushes and shovels and power washing will be avoided. This is to prevent potentially contaminated run-off from spreading outside the site.
- Once the machinery has been cleaned down as much as possible, the machines will be air blasted to remove any remaining material. The machine will track out of the contaminated areas on site over plywood or other suitable material in order to protect the machine from potential contamination while exiting the contaminated area.
- Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species, and where it is confirmed that none are present.
- All measures prescribed in the invasive species management plan will be incorporated into the contractor's respective method statements for works where *First Schedule* invasive species and invasive species of potential concern occur.

4. CONCLUSIONS

The bespoke management plan for the treatment of invasive species outlined in this document has been designed to comply with 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 1.2.

It should be noted that this management plan provides for the management of *First Schedule* invasive species only within the footprint of the current proposal. Any invasive species that are located outside the construction footprint will be left undisturbed and will not be the subject of any management as part of the current proposal. All such areas will be avoided during construction activities to avoid potential spread of any invasive plant species.

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APPENDIX 1

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INVASIVE ALIEN PLANT SPECIES :
SITE ASSESSMENT REPORT & MANAGEMENT PLAN

FORMER CLEEVE'S FACTORY & ASSOCIATED SITES – NORTH CIRCULAR ROAD, LIMERICK CITY
FOR
LIMERICK TWENTY THIRTY D.A.C.

24 MAY 2021 | DRAFT

CONTENTS

DOCUMENT NAME	STATUS	REV	DATE	COMMENT	AUTHOR	CKD.
LK-01-21/SARMP/00	DRAFT	00	24/05/2021	ISSUED FOR COMMENT	KYRAN COLGAN	K.C.

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FORMER CLEEVES FACTORY AND ASSOCIATED SITES								
PROJECT NO.	LK-01-21	**GPS POSITION : ITM**	**X**	556955	**Y**	657177	**TIME**	Various
DATE OF ASSESSMENT	February to May 2021	**WEATHER**	Suitable for inspection and survey work					

EXECUTIVE SUMMARY

In February 2021 Invasive Plant Solutions was retained by Limerick Twenty Thirty DAC, to provide IAPS (invasive alien plant species) consultancy services in connection with a group of four adjacent properties, located in the vicinity of The North Circular Road and O'Callaghan's Strand, on the western side of the River Shannon in Limerick City. The properties are in various current uses, including education, carparking, leisure and brownfield / former industrial.

Our appointment arose on foot of a Baseline Ecological Assessment carried out by Ecology Ireland on the former Cleeve's Condensed Milk factor site, reported in November 2020. That report identified the presence of Japanese Knotweed, an invasive alien plant species listed in Schedule 3 of S.I. 477 of 2011 (The European Communities (Birds and Natural Habitats) Regulations 2011), within the inaccessible lagoon area of the site. Their report advised on the need to prepare an IAPS management plan for the Japanese Knotweed.

A series of walk through inspections and surveys of the former Cleeve's Condensed Milk factor site, as well as the other three sites referred to, were carried out by Invasive Plant Solutions between February 2021 and May 2021. The outcome of these surveys was to validate the presence, and extent, of the identified Japanese Knotweed location, as well as identifying the presence of a further Himalayan Knotweed stand located outside, but immediately adjacent to, the southern / south western boundary of the carpark / brownfield site, itself located in the southern sector of the survey area.

As part of the inspection and survey process we were also retained to advise and monitor the opening up of the lagoon area containing the Japanese Knotweed stand, to facilitate the detailed inspection and survey of the infested area, as well as to carry out careful hand clearance of the enclosing scrub in the immediate environs of the Japanese Knotweed stand itself. The Japanese Knotweed stand has now been fully assessed, with a new access point established, with the enclosing fencing now re-secured, and with advisory / warning signage now put in place.

This Site Assessment Report and Management Plan sets out the actions, measures and programme necessary to ensure that the Japanese Knotweed stand continues to be safely isolated and that the process of its control and eradication is commenced and safely implemented.

24 MAY 2021

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I.A.P.S. SITE ASSESSMENT REPORT

SECTION 1 : INTRODUCTION

This Site Assessment Report has been prepared for the client / agency referenced in Section 3 below, and is for their sole and exclusive use. The report reflects the particular site circumstances and conditions, as they presented on the days of inspection. Depending on the time of year of the site assessment, and particularly in advance of, the annual IAPS growing season, the evidence of invasive plant species on site may be limited. In these circumstances follow up site inspections, later in the growing season, may be recommended. This will be included in Conclusions and Recommendations at Sections 18 of the report.

By their nature, IAPS are aggressive interlopers to our native habitat, are capable of aggressive and rapid dominance, and if left untreated generally result in extensive habitat impairment. It is therefore reasonable to conclude that, where IAPS are identified, but control measures are not applied, these plant species will spread beyond their observed extents.

In addressing invasive alien plant species the precautionary principle should always be applied to their assessment, management and control. All recommended management and control measures should be carried out strictly in accordance with a Site Specific Treatment Plan, and follow "best practice" principles, as set out in technical reference documents such as the UK Environment Agency's *The Knotweed Code of Practice*

Control measures should be implemented using a recognised professional service with expertise in this field of work, and take into account any and all sensitivities highlighted in this report. Particular care should be taken in circumstances where the invasive plant species are located within a designated site of ecological importance, such as an SAC, SPA or NHA, or are set within the context of known ecological sensitivities. Where the use of herbicides are proposed, these should be applied strictly in accordance with the manufacturers recommendations, by a registered Professional Pesticides User, and fully in compliance with the European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. 155 of 2012).

Under no circumstances should any IAPS be cut or dug out without the advice, direction and supervision of an invasive species specialist. Many plant species have extensive root / rhizome systems which spread beyond the footprint of the above ground plant, and some can regenerate themselves from very small fragments of root or stem. Some plants produce very substantial quantities of seeds, which remain viable for many years, while others produce a sap which causes severe skin damage.

The off-site removal of Japanese knotweed, its variants, soil infested with knotweed material, and other IAPS, is strictly controlled by legislation and requires a licence from the National Parks and Wildlife Service in advance of its removal, in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477).

SECTION 2 : LEGISLATIVE CONTEXT

Japanese Knotweed, *Fallopia japonica*, and other invasive plant species, are listed as Invasive Alien Plant Species in Part 1 of the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations* 2011 (SI 477 of 2011, as amended). In addition, soils and other material containing Knotweeds are classified in Part 3 of the Third Schedule as vector materials and are subject to the same strict legal controls. Failure to comply with the legal requirements set down can result in either civil or criminal prosecution, with very severe penalties accruing. A person who commits an offence under Regulations 49 & 50 is liable (a) on summary conviction, to a Class A fine or imprisonment for a term not exceeding six months, or both, or (b) on conviction on indictment, to a fine not exceeding €500,000, or imprisonment for a term not exceeding three years, or both. A person who knowingly incites, directs, procures, permits or assists another person to carry out an action that is an offence under these Regulations shall also be guilty of an offence. The relevant sections of the regulations are reproduced below.

49(2) *Save in accordance with a licence granted* [by the Department of Arts, Heritage and the Gaeltacht]*, any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place* [a restricted non-native plant]*, shall be guilty of an offence.*

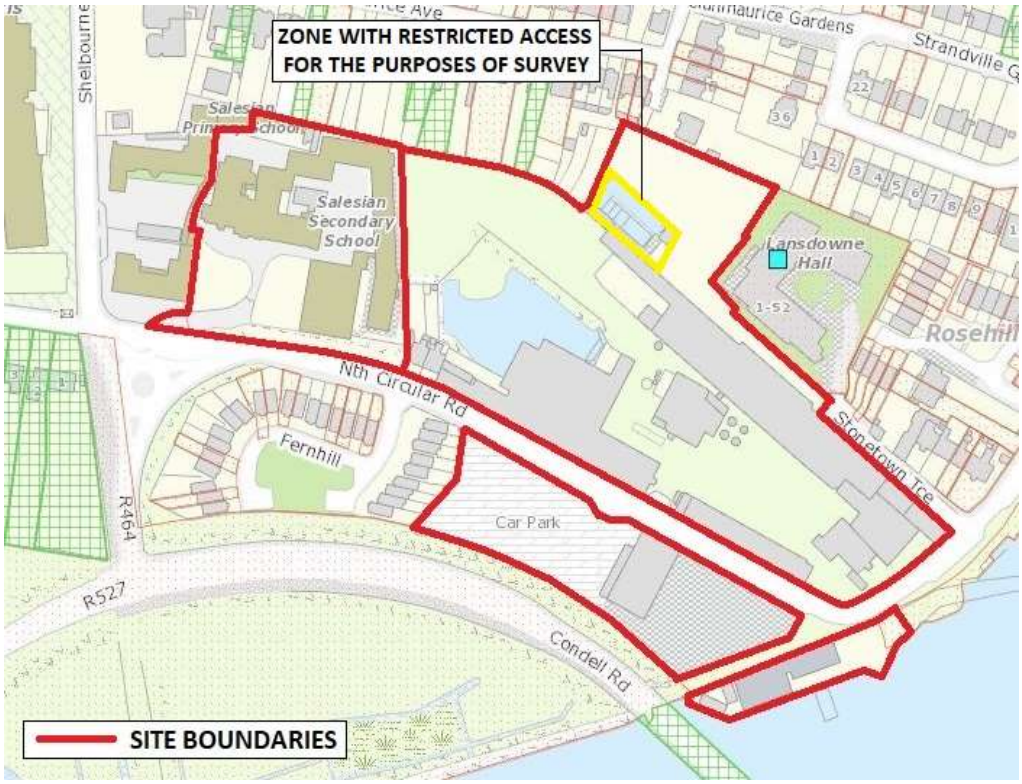
49(3) *… it shall be a defence to a charge of committing an offence under paragraph (1) or (2) to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.*

50(1) *Save in accordance with a licence, a person shall be guilty of an offence if he or she* […] *offers or exposes for sale, transportation, distribution, introduction or release—*

- *(a)* [any restricted non-native animal or plant species]*,*
- *(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 the Third Schedule,* [which includes] *soil or spoil taken from places infested with Japanese Knotweed….and its hybrids…*

It is an offence under regulations 49(2) and 50(1) to spread, or cause to spread, Japanese Knotweed and other IAPS. An offence may only be avoided if the relevant party can prove that they took all reasonable steps to avoid causing an offence under the legislation. To comply with these regulations, therefore, this management plan relies solely on methodologies necessary to ensure strict compliance with the legislation.

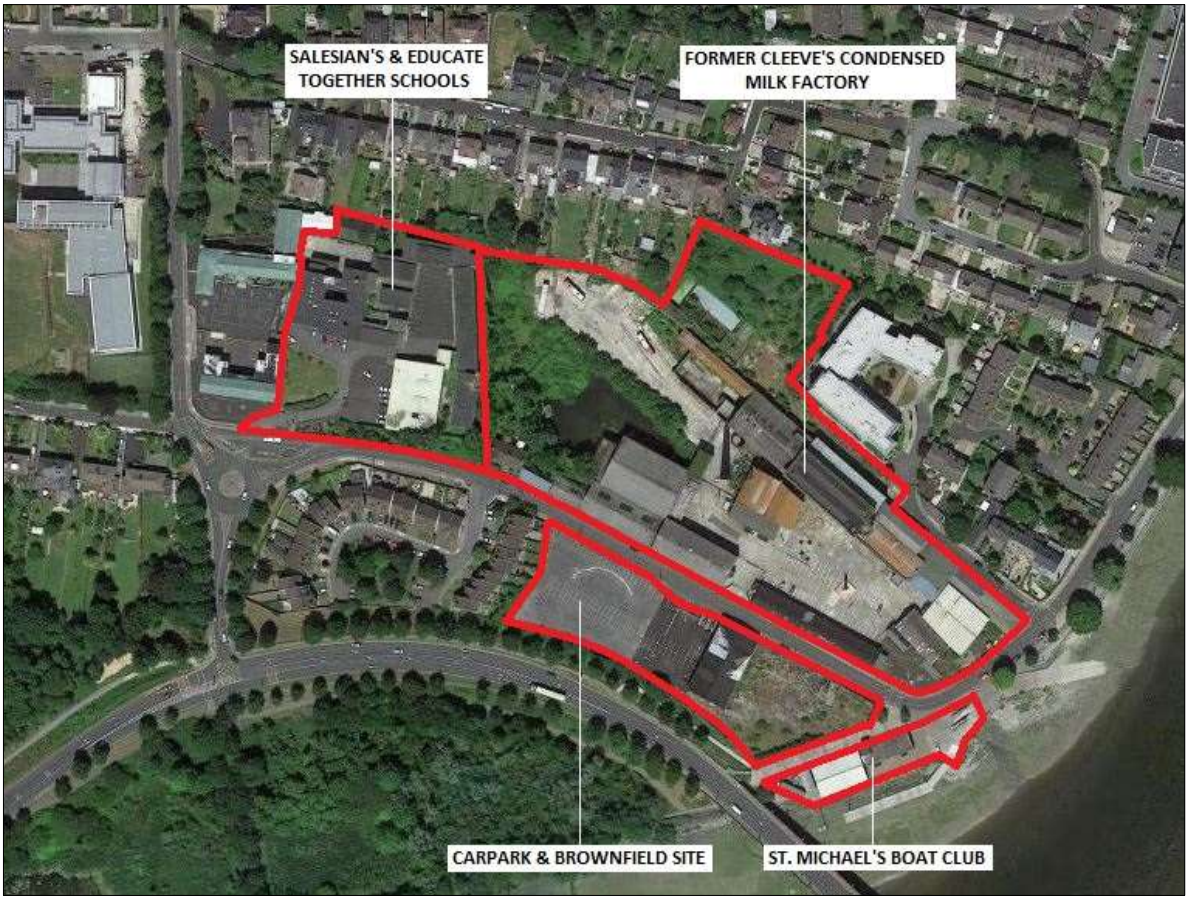
SECTION 3 : CLIENT & SITE DETAILS

GENERAL DETAILS												
SITE ADDRESS	NORTH CIRCULAR ROAD & O'CALLAGHAN'S STRAND, LIMERICK CITY											
CLIENT DETAILS	**LIMERICK TWENTY THIRTY DAC** MERCANTILE BUILDING GARDENS INTERNATIONAL HENRY STREET LIMERICK V94 4A62				**OWNERSHIP**	PUBLIC	**X**	PRIVATE				
					CONTACT	ADVANCE SERVICES - 061 546920						
					EMAIL	info@advanceservices.ie						
CONSULTANTS / AGENTS	**PROJECT MANAGERS –** T.B.C. **ARCHITECTS –** T.B.C. **PLANNING CONSULTANTS –** T.B.C. **ENVIRONMENTAL CONSULTANTS –** T.B.C. **ECOLOGICAL CONSULTANTS –** ECOLOGY IRELAND **FACILITIES MANAGEMENT** – ADVANCE SERVICES											
CURRENT SITE USAGE	AGRICULTURAL		FORESTRY		RESIDENTIAL		COMMERCIAL		INDUSTRIAL			
	PUBLIC SPACE		GREENFIELD		BROWNFIELD	**X**	OTHER					
SITE AREA	APPROX. 4.15 Ha. / 10.24 Acres											
AGENCIES INVOLVED	LOCAL AUT.	**X**	NPWS		IFI		IRISH WATER		BORD NA MONA			
	ESB		IRISH RAIL		GNI		OTHER					
SITE DESCRIPTION	THE SURVEY AREA CONSISTS OF A GROUP OF FOUR PROPERTY HOLDINGS, ORIENTATED AROUND THE NORTH CIRCULAR ROAD. THE LARGEST OF THESE IS THE FORMER CLEEVES CONDENSED MIK FACTORY, WHICH BOUNDS THE NORTHERN SIDE OF CIRCULAR ROAD AND THE WESTERN SIDE OF O'CALLAGHAN'S STRAND. THE SITE COMPRISES A SERIES OF LARGE INDUSTRIAL STRUCTURES, BUILDINGS AND SHEDS, OPEN YARDS, A WATER FILLED LAGOON, AND TWO RESIDENTIAL DWELLINGHOUSES. TO THE WEST OF THE FACTORY SITE IS THE SALESIAN SECONDARY SCHOOL HOLDING, WHICH ALSO INCORPORATES AN EDUCATE TOGETHER SCHOOL. DIRECTLY OPPOSITE THE CLEEVES FACTORY SITE, ON THE SOUTHERN SIDE OF NORTH CIRCULAR ROAD, LIES A GENERALLY OPEN SITE, COMPRISING A LARGE CARPARK TO THE WEST, OLD INDUSTRIAL STRUCTURES IN THE CENTRE, AND BROWNFIELD LANDS TO THE EAST. THE FOURTH SITE COMRISES THE ST. MICHAELS BOAT CLUB, LOCATED AT THE JUNCTION, AND TO THE SOUTH, OF NORTH CIRCULAR ROAD AND O'CALLAGNAN'S STRAND, AND BORDERING THE RIVER SHANNON ALONG ITS SOUTHERN SIDE BOUNDARIES ARE GENERALLY WELL DELINEATED AND CLEARLY DEMARCATED, AND ARE FORMED BY A COMBINATION OF BUILDINGS AND STRUCTURES, WALLS, FENCING AND RAILINGS FOR THE PURPOSE OF THE SURVEY OF THE PROPERTIES THERE WAS ONE SECTOR ON THE CLEEVES FACTORY SITE WHICH PROVIDE JUST LIMITED ACCESS, AND WHICH SHOULD BE REVISITED WHEN FULLER ACCESS IS POSSIBLE  **LAND HOLDING MAP WITH SURVEY AREA OUTLINES IN RED** MAP REPRODUCED COURTESY OF LAND DIRECT											

SECTION 4 : SITE LOCATION MAP & AERIAL SITE LAYOUT

SITE LOCATION MAP

SITE LOCATION MAP REPRODUCED COURTESY OF GOOGLE MAPS



AERIAL SITE LAYOUT

AERIAL SITE LAYOUT PLAN REPRODUCED COURTESY OF GOOGLE MAPS

SECTION 5 : SCOPE OF I.A.P.S. SURVEY

The scope and purpose of the I.A.P.S. Survey was to:

- Confirm presence, or otherwise, and extent of Japanese Knotweed and its hybrids within, or in close proximity to, the cluster of sites forming the study area
- Confirm the presence, or otherwise, of any other I.A.P.S. within or in close proximity to, the cluster of sites forming the study area
- Use the survey results to inform the preparation of an I.A.P.S. Site Assessment Report
- Use the survey results to inform the preparation of an I.A.P.S. Management Plan, particularly in relation to any necessary bio-security and control measures that may be required

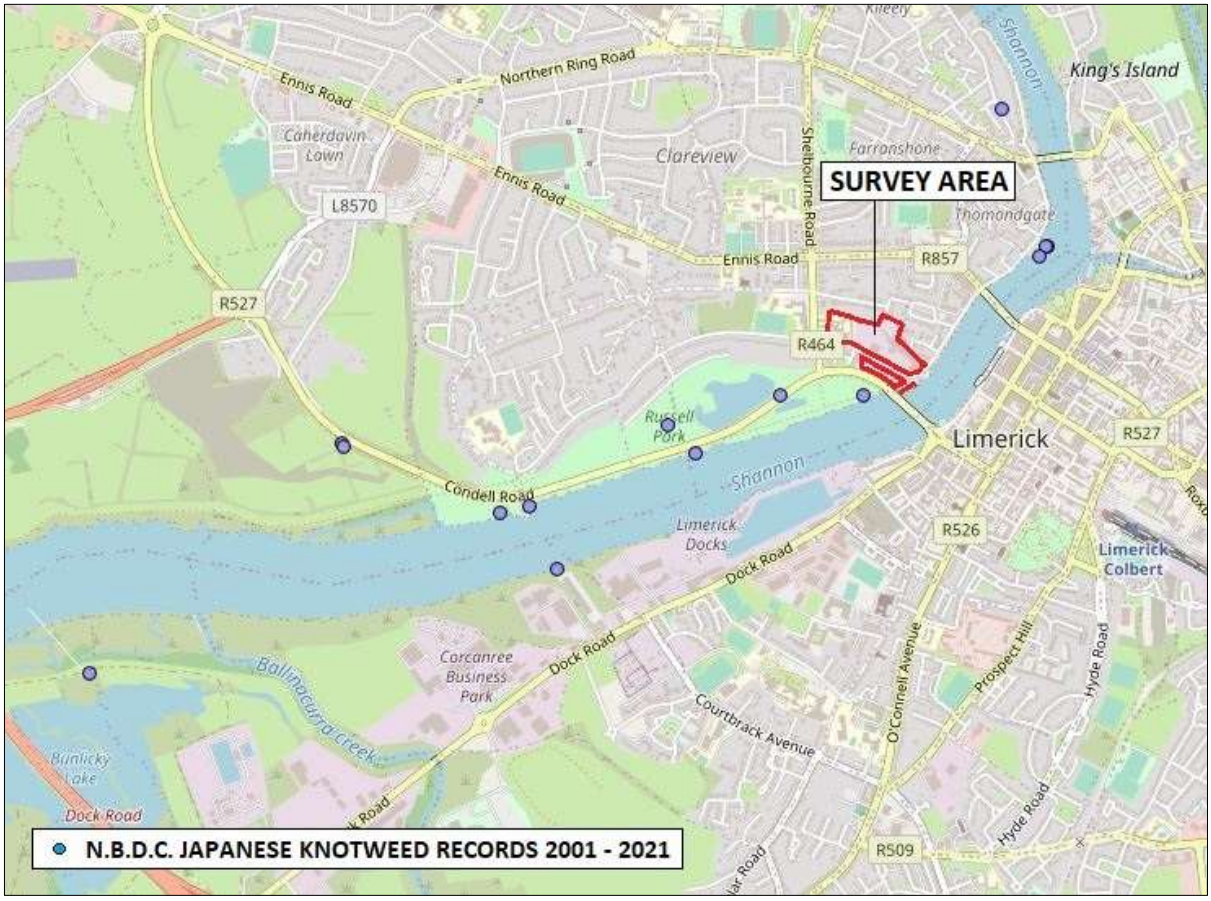
SECTION 6 : BACKGROUND RESEARCH

A desktop study was carried out in May 2021, to identify any formal records that may exist for the presence of land based I.A.P.S., as set out in Part 1, Schedule 3, of S.I. 477 of 2011, within for the study area.

The National Biodiversity Data Centre (NBDC) invasive species database and mapping system were reviewed, covering the study area, the immediately surrounding lands, and the broader hinterland.

The search of the NBDC invasive alien plant species database yielded no records of the presence of land based I.A.P.S. within the survey area itself or within its immediate surroundings. However there are a number of IAPS records for the broader hinterland, generally relating to the River Shannon upstream of the subject sites, and for Russell Park and Westfields Wetlands downstream, and to the west, of the sites. These records are primarily for the presence of Japanese Knotweed, but also include a small number of records for Giant Hogweed and Himalayan Balsam plants. For reference, we have reproduced below the NBDC map record for the nearest Japanese Knotweed sites, as recorded between 2000 and 2021.

In addition we also referred to various open source mapping, satellite imaging, and data sets, including Land Direct, Geohive, NPWS Map Viewer, Google Maps and Bing Maps



MAPPING RECORDS OF JAPANESE KNOTWEED IN THE VICINITY OF THE SURVEY AREA, 2001- 2021

MAP REPRODUCED COURTESY OF NATIONAL BIODIVERSITY DATA CENTRE

SECTION 7 : I.A.P.S. - OVERALL INFESTATION DETAILS

INVASIVE ALIEN SPECIES							
JAPANESE KNOTWEED	X	GIANT KNOTWEED	n/a	BOHEMIAN KNOTWEED	n/a	HIMALAYAN KNOTWEED	X
GUNNERA	n/a	HIMALAYAN BALSAM	n/a	GIANT HOGWEED	n/a	RHODODENDRON	n/a
AMERICAN SKUNK CABBAGE	n/a	THREE CORNERED GARLIC	n/a	SPANISH BLUEBELL	n/a	HOTTENTOT FIG	n/a
OTHER NON NATIVE SPECIES							
BUDDLEIA	n/a	WINTER HELIOTROPE	n/a	MONTBRETIA	n/a	OTHER	n/a

DESCRIPTION & EXTENT OF PRIMARY I.A.P.S. COLONISATIONS

JAPANESE KNOTWEED – JK 1

JK 1 IS A SINGLE MONOLITHIC, HEALTHY, STAND OF MATURE JAPANESE KNOTWEED, LOCATED ON THE NORTH WESTERN EDGE OF THE INTERNAL LAGOON AREA, ITSELF LOCATED TOWARDS THE WESTERN END OF THE FORMER CLEEVES FACTORY SITE. THE STAND IS POSITIONED ON STEEP SLOPING GROUND WHICH APPEARS TO HAVE BEEN FORMED, IN PART, BY HISTORICALLY PLACED RUBBLE OR C & D FILL MATERIAL. THE STAND IS FRINGED ON ITS OTHER SIDES BY WELL ESTABLISHED NATIVE VEGETATION, SCRUB AND TREES.

THE ENTIRE LAGOON AREA IS GENERALLY INACCESSIBLE AND IS ENCLOSED BY SECURE FENCING AND EXISTING BUILDINGS

IN FEBRUARY 2021 LIMITED, CONTROLLED AND SUPERVISED SCRUB CLEARANCE WITHIN THE LAGOON AREA WAS CARRIED OUT, SUFFICIENT TO PROVIDE SAFE ACCESS TO THE ZONE OF INFESTATION, AS PART OF THE PROCESS TO ENABLE BETTER ASSESSMENT AND SURVEY

THE LAGOON AREA WAS SUBSEQUENTLY RE-SECURED, WITH WARNING / ADVISORY SIGNAGE FITTED ON THE ENCLOSING FENCING

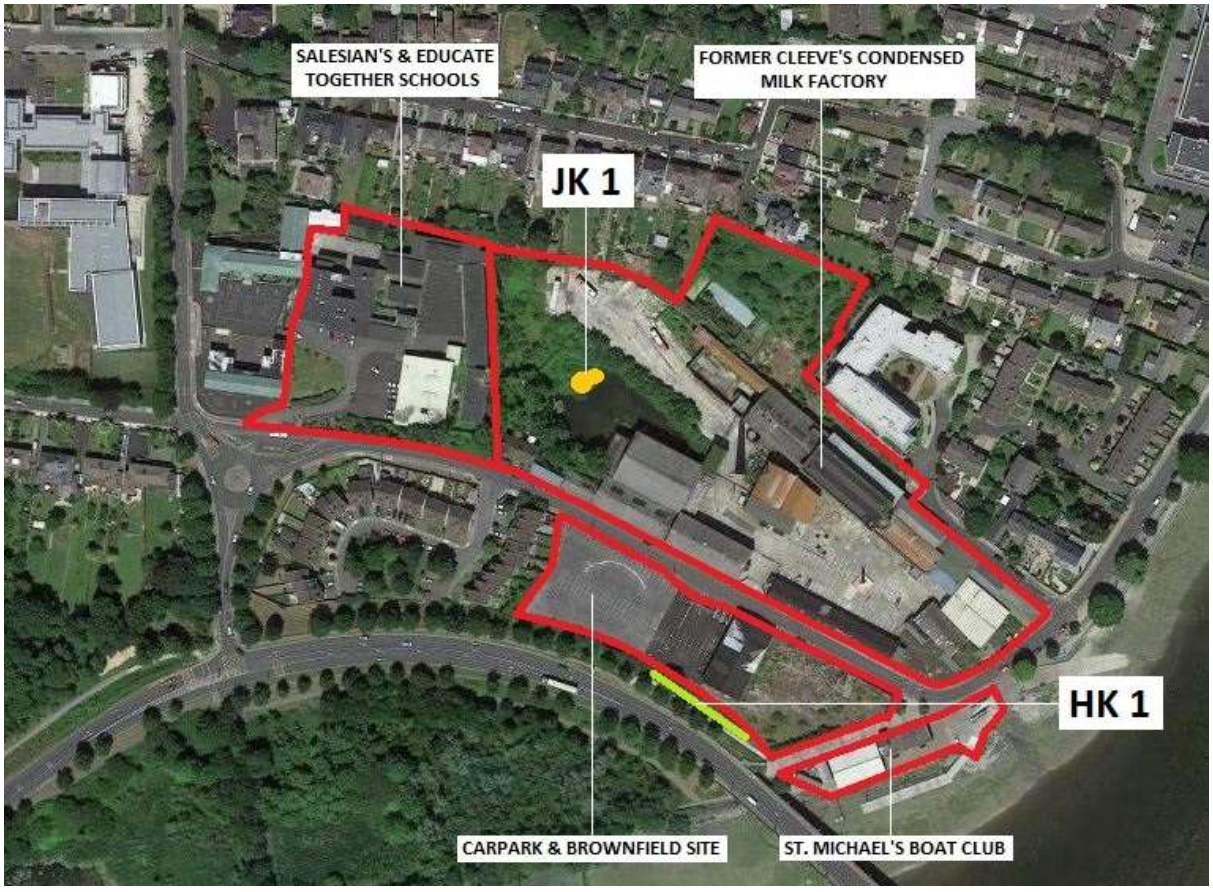
DESCRIPTION & EXTENT OF SECONDARY I.A.P.S. COLONISATIONS

HIMALAYAN KNOTWEED – HK 1

HK 1 IS A SERIES OF HEALTHY HIMALAYAN PLANTS, THINLY SPREAD THROUGH NATIVE GRASSES AND SCRUB, OCCUPYING THE LINEAR ZONE OF VEGETATION THAT RUNS BETWEEN THE OUTSIDE OF THE SOUTH WESTERN BOUNDARY OF THE CARPARK / BROWNFIELD SITE AND THE PEDESTRIAN PATH WHICH LEADS UP FROM THE NORTHERN BANK OF THE RIVER SHANNON ONTO THE CONDELL ROAD ABOVE.

ALTHOUGH THIS AREA OF INFESTATION IS OUTSIDE THE LIMITS OF THE SURVEY AREA AND WITHIN THE PUBLIC REALM THE PLANTS ARE GROWING ALONG, AND IMMEDIATELY AGAINST, THE BOUNDARY OF THIS PROPERTY. IF LEFT UNADDRESSED, THERE IS THE POSSIBLE THREAT OF VIABLE PLANT MATERIAL SPREADING ONTO, AND ESTABLISHING ON, THE PROPERTY, EITHER BY GROWING OVER OR THROUGH THE BOUNDARY WALL., OR AS A RESULT OF DISPERSAL AS PART OF GENERAL GROUND MAINTENANCE AND CUTTING ACTIVITIES ALONG THIS SECTION OF PUBLIC GROUND

DISTRIBUTION MAP



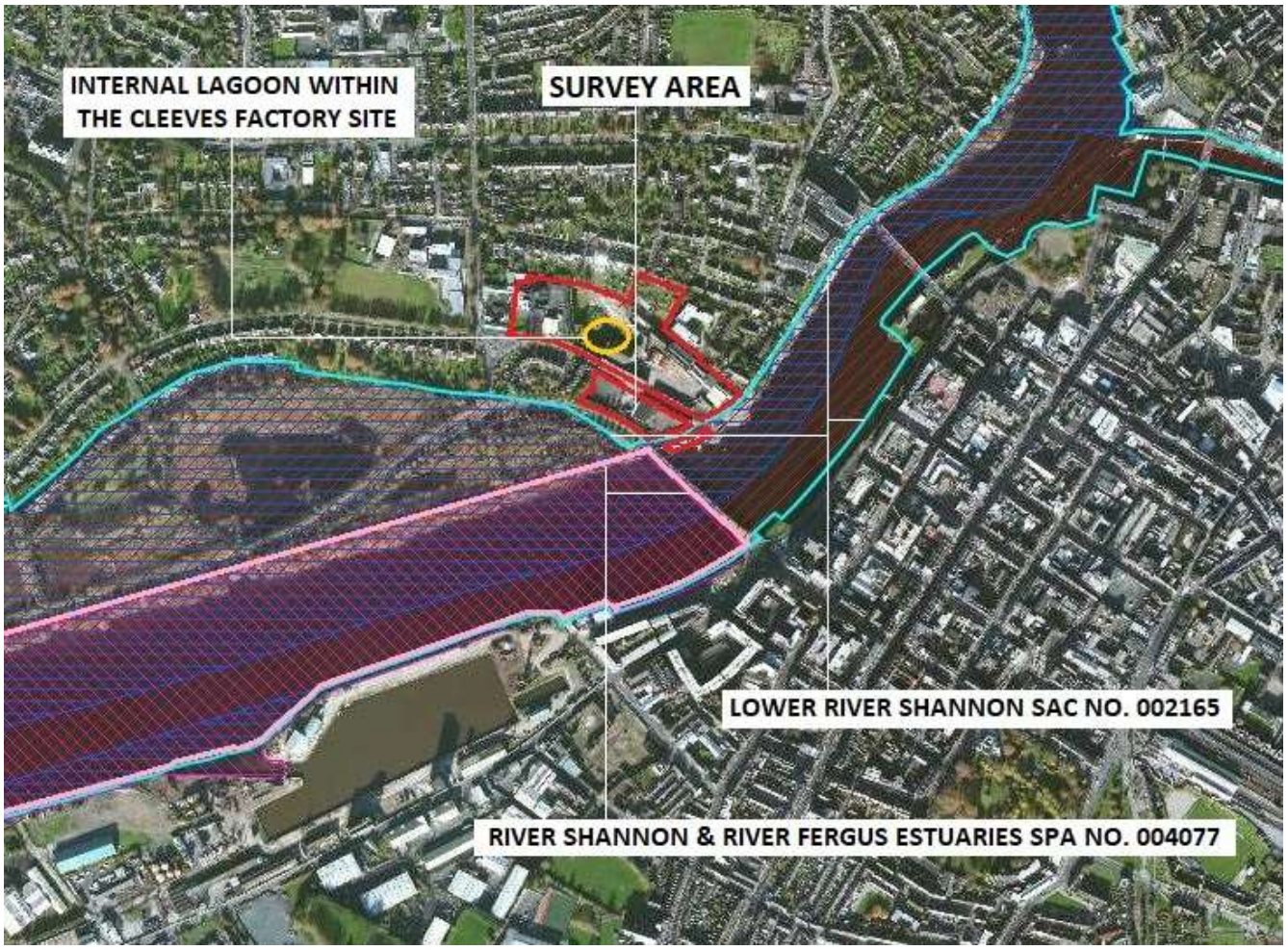
SECTION 8 : I.A.P.S. - INDIVIDUAL INFESTATION DETAILS

INFESTATION DETAILS	NO.	ITM - X	ITM - Y	SIZE (m X m)	COMMENTS
INFESTATION 1	JK 1	556898	657229	12m x 8m	On north western edge of the lagoon in the factory site
INFESTATION 2	HK 1	556921 to 556972	657057 to 657090	65m x 1-4m	Scattered through undergrowth on north side of path

SECTION 9 : I.A.P.S. - ENVIRONMENTAL IMPACT AND LOCAL SENSITIVITIES

ENVIRONMENTAL CONTEXT								
VISUAL IMPACT	MINIMAL	X	MODERATE		SIGNIFICANT		SEVERE	
ENVIRONMENTAL IMPACT	LIMITED	X	MODERATE		SIGNIFICANT		SEVERE	
TRANSLOCATION RISK	LOW		MEDIUM	X	HIGH		ACUTE	
PROXIMITY TO WATER BODY	DISTANT	n/a	VICINITY		ADJOINING	X	WITHIN	
NATURE OF WATER BODY	RIVER	X	SEA		LAKE		CANAL	
DESIGNATED STATUS								
WITHIN A DESIGNATED SITE	SAC	YES	SPA	NO	NHA / pNHA	NO	NO.	
DESIGNATED SITE NEARBY	SAC	YES	SPA	YES	NHA / pNHA	YES	NO.	SEE BELOW
DESIGNATED SITES								
DETAILS	THE NEAREST DESIGNATED SITE IS **THE LOWER RIVER SHANNON SAC NO. 002165,** WHOSE NORTH WESTERN BOUNDARY FALLS ALONG THE LINE OF THE SOUTH EASTERN BOUNDARY OF BOTH THE CLEEVES FACTORY SITE AND THE CARPARK / BROWNFIELD SITE, AS WELL AS ENCOMPASSING THE FULL EULL EXTENT OF THE ST. MICHAEL'S BOAT CLUB SITE THE NORTH EASTERN LIMIT OF **THE RIVER SHANNON & RIVER FERGUS ESTUARIES SPA NO. 004077** IS IN CLOSE PROXIMITY TO THE SOUTH AND SOUTH WESTERN BOUNDARIES OF BOTH THE CARPARK / BROWNFIELD SITE AND THE ST. MICHAEL'S BOAT CLUB SITE THERE IS A LAGOON AREA WITHIN THE CLEEVE'S FACTORY SITE WHICH EXHIBITS SOME POTENTIAL FOR TIDAL INFLUENCES, AND WHICH MAY BE DIRECTLY, OR INDIRECTLY, LINKED TO THE ABOVE REFERENCED SAC OR SPA							

MAP



RELATIONSHIP BETWEEN THE SURVEY AREA & THE CLOSEST DESIGNATED SITES

MAP REPRODUCED COURTESY OF THE N.P.W.S. MAPVIEWER FACILITY

SECTION 10 : SITE PHOTOGRAPHS

JAPANESE KNOTWEED – JK 1

FEBRUARY 2021 – LOOKING NORTH

MARCH 2021 – LOOKING WEST

SECTION 10 : SITE PHOTOGRAPHS – CONTD.

JAPANESE KNOTWEED – JK 1

APRIL 2021 – LOOKING WEST

APRIL 2021 – EMERGENCE OF NEW SEASON GROWTH

SECTION 10 : SITE PHOTOGRAPHS – CONTD.

JAPANESE KNOTWEED – JK 1

MAY 2021 – LOOKING WEST

MAY 2021 – NEW SEASON GROWTH REACHING FULL EMERGENCE

SECTION 10 : SITE PHOTOGRAPHS – CONTD.

JAPANESE KNOTWEED – JK 1

SECURE FENCING AND ADVISORY SIGNAGE ALONG THE NORTH WESTERN BOUNDARY OF THE LAGOON

SECURE FENCING, WALL AND ADVISORY SIGNAGE ALONG THE NORTH EASTERN BOUNDARY OF THE LAGOON

SECTION 10 : SITE PHOTOGRAPHS – CONTD.

HIMALAYAN KNOTWEED – HK 1

FEBRUARY 2021 – ZONE OF INFESTATION LOOKING SOUTH EAST

FEBRUARY 2021 – DEAD STEMS FROM 2020 GROWTH

SECTION 10 : SITE PHOTOGRAPHS – CONTD.

HIMALAYAN KNOTWEED – HK 1

MAY 2021 – ZONE OF INFESTATION LOOKING SOUTH EAST

MAY 2021 – ZONE OF INFESTATION LOOKING NORTH WEST

SECTION 10 : SITE PHOTOGRAPHS – CONTD.

HIMALAYAN KNOTWEED – HK 1

MAY 2021 – EMERGING NEW SEASON GROWTH AMONGST OTHER VEGETATION, CLOSE TO PROPERTY BOUNDARY WALL

MAY 2021 – CLOSE UP OF EMERGING NEW SEASON GROWTH

SECTION 11 : SITE ASSESSMENT CONCLUSIONS & RECOMMENDATIONS

1. As confirmed in this report, viable Japanese Knotweed (JK 1) has been identified at one location, at the north western end of the lagoon contained within the former Cleeves condensed milk factory site. In addition, viable Himalayan Knotweed (HK 1) has been identified within the linear vegetation strip which runs along the outside of the southern / south western boundary of the carpark / brownfield site.

2. based on the time of year that the site inspections were carried out, particularly at the early stages of the 2021 growing season for Himalayan Knotweed, it is possible that I.A.P.S. plants could present beyond the limits of those recorded. In applying the "precautionary principle", on-going site monitoring should be maintained

3. Further site monitoring visits should be scheduled for the 2021 summer growing period, to inspect for newly emergent I.A.P.S., as well for possible additional growth and spread at the already identified sites

4. Although the Himalayan Knotweed (HK 1) is located within the public domain, and not yet identified on the surveyed sites, the Himalayan Knotweed plants presence pose a risk to the immediately adjacent property due to their proximity, and the realistic risk of crossing the boundary line from either natural growth and spread, or via dispersal as a result of disturbance

   Therefore the relevant public authorities should be immediately notified of the plants presence. They should be provided with the relevant section of this assessment report, if considered necessary, and they should be formally requested to prepare, provide and implement a bio-secure management plan for the Himilayan Knotweed stands as soon as practicable

5. The lagoon area in the vicinity of the Japanese Knotweed infestation (JK 1) has been hand cleared to provide safe access for assessment, and is now securely fenced off, with appropriate warning / advisory signage put in place. This fencing should be maintained in position for the duration of the Japanese Knotweed management process. Additional fencing should be fitted along the north eastern bank of the lagoon when, and if, any activities need to take place within the vicinity of the Japanese Knotweed infested zone or the broader lagoon area

6. The Japanese Knotweed infestation is healthy and suitable for the commencement of a herbicide control programme during the summer of 2021. A multi annual treatment programme should be agreed and implemented at the earliest appropriate opportunity, to arrest the risk of further spread of the Japanese Knotweed, and to commence the process of control and eradication. See Sections 11 to 13 for further details

7. This management plan, and any potential treatment methodology, may need to be screened for potential impacts on ecological receptors and sensitivities, where they exist, to fully consider and comply with the requirements of S.I. 477 of 2011 – The European Communities (Birds and Natural Habitats) Regulations 2011 and S.I. 155 of 2012 – the European Communities (Sustainable use of Pesticides) Regulations 2012

   When using herbicides as part of an I.A.P.S. management plan and treatment programme, consideration must always be given to the proximity of ecological receptors and designated sites. typically non residual, aquatic approved, herbicides should be specified for treatment

8. This Report and Management Plan should be circulated to ALL relevant parties, as well as any prescribed authorities or adjoining land owners affected by the I.A.P.S. presence, where either relevant or appropriate to do so

9. All relevant staff and site visitors should be briefed on the identification, risks and dangers of Japanese Knotweed and other I.A.P.S., and on the specific measures, restrictions and protocols to be deployed on the four sites

10. No ground maintenance, opening up or any other ground disturbance should take place within the fenced area, without prior consultation with, and the direction of, an invasive alien plant species specialist, and then only under strict supervision

11. If access to the infested area is necessary, and particularly if any essential work has to be carried out within the fenced location, then this must only be done following formal approval in advance, and after the preparation and agreement of a "task specific" method statement. No viable plant material, rhizome, infested soils or other vector materials should be disturbed in, or removed from, the zone of infestation

12. If and when development proposals are being considered for the former Cleeve's Condensed Milk factory site, and particularly if those proposals would necessitate the disturbance of the zone of Japanese Knotweed infestation before the completion of a multi-annual herbicide control programme, and before full eradication of the Japanese Knotweed can be validated, then this Report and Management Plan should be re-visited, and amended and updated as necessary

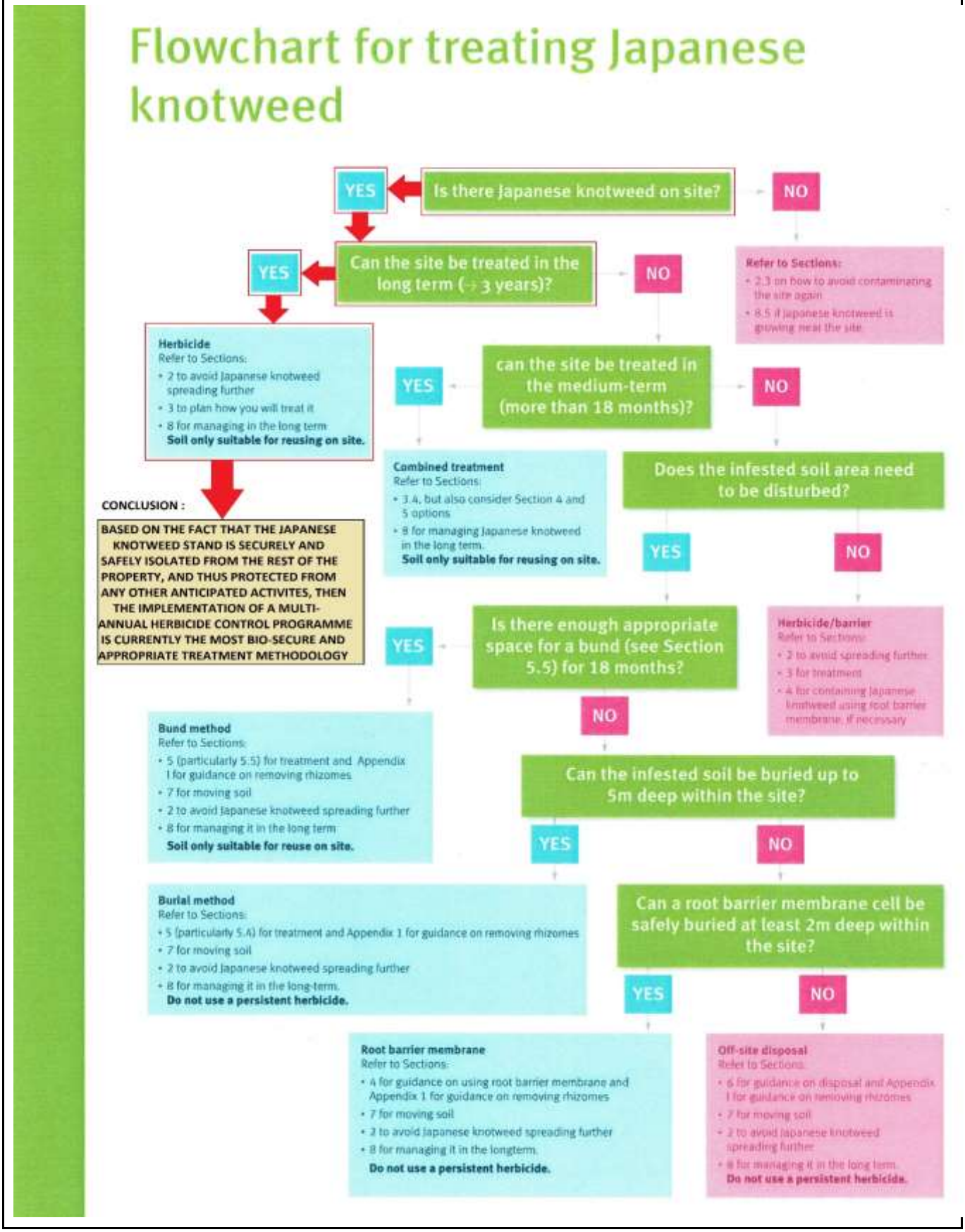
    In such circumstances detailed consideration will have to be given to replacing the multi-annual herbicide treatment programme with a site specific ground remediation process, designed to provide for removal of all infested soils, and their bio-secure management via either on-site containment or off-site disposal to an appropriate licenced waste facility

I.A.P.S. MANAGEMENT PLAN

SECTION 12 : JAPANESE KNOTWEED - PROCESS OF TREATMENT SELECTION

INVASIVE ALIEN SPECIES							
JAPANESE KNOTWEED	X	GIANT KNOTWEED		BOHEMIAN KNOTWEED		HIMALAYAN KNOTWEED	
SELECTION OF TREATMENT							

THE MATRIX BELOW HAS BEEN DEVELOPED BY THE U.K. ENVIRONMENT AGENCY, BASED ON BEST PRACTICE AND THE APPLICATION OF "THE PRECAUTIONARY PRINCIPLE". THIS PROCESS IS DEVISED TO ARRIVE AT THE OPTIMUM JAPANESE KNOTWEED MANAGEMENT SOLUTION, WHICH POSES THE LEAST BIO-SECURITY RISK, AND WHICH MANAGES THE PLANTS ERADICATION / REMEDIATION AS CLOSE AS POSSIBLE TO THE PLANTS LOCATION



SECTION 13 : JAPANESE KNOTWEED - MANAGEMENT MEASURES

TREATMENT PLAN				
TREATMENT METHODOLOGY	BASED ON THE ANALYSIS CARRIED OUT USING THE FLOWCHART AT SECTION 12 , THE CURRENT MANAGEMENT SOLUTION IS AS FOLLOWS : 1. FENCE OFF THE POTENTIAL JAPANESE KNOTWEED STAND JK 1, USING SECURE FENCING, AND INCLUDING ADVISORY/WARNING SIGNAGE – SEE APPENDIX 3 AND 4 FOR TYPICAL EXAMPLES 2. CARRY OUT A FURTHER INSPECTION OF THE GROUNDS DURING THE 2021 SUMMER GROWING PERIOD, TO VALIDATE THE RESULTS OF THE CURRENT SITE SURVEYS, AND TO SCREEN THE SITE FOR ADDITIONAL INVASIVE ALIEN PLANT SPECIES WHICH MAY NOT HAVE FULLY EMERGED AT THE TIME OF THE MOST RECENT SITE INSPECTION 3. UPDATE THIS I.A.P.S. ASSESSMENT REPORT & MANAGEMENT PLAN, IF REQUIRED, FOLLOWING THE FOLLOW UP SITE SURVEY 4. SCREEN THE PROPOSED TREATMENT METHODOLOGY FOR COMPLIANCE WITH S.I. 477 OF 2011 AND S.I. 155 OF 2012, AS WELL AS FOR POTENTIAL IMPACTS ON ECOLOGICAL SENSITIVITIES AND RECEPTORS WITHIN ANY NEARBYDESIGNATED SITES 5. WHEN SCREENED, AND CLEARED, INSTITUTE A MULTI-ANNUAL HERBICIDE TREATMENT PROGRAMME AT JK 1, COMMENCING AS SOON AS PRACTICABLE IN SUMMER 2021			
MANAGEMENT ELEMENTS	INITIAL / MULTI-ANNUAL HERBICIDE CONTROL	**X**	ON-SITE BELOW GROUND SOIL CONTAINMENT CELL	
	DEEP BURIAL – GREATER THAN 5m		EXCAVATE AND DISPOSE OFF-SITE	
HERBICIDE TREATMENT	FOLLIAR SPRAY		STEM INJECTION	**X**
	CUT AND STEM FILL		SPOT SPRAY / LEAF WIPE / SWAB	**X**
	STEM INJECTION TO CONSIST OF A 2ml DOSE OF UNDILUTED ROUNDUP BIACTIVE XL, OR ALTERNATIVE LICENCED GLYPHOSATE BASED AND AQUATIC APPROVED HERBICIDE, APPLIED FULLY IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. INJECTION TO BE APPLIED TO ALL SUITABLE HEALTHY KNOTWEED STEMS, AS CLOSE AS POSSIBLE TO THE BASE OF EACH HOLLOW STEM, USING A PROPRIETARY CALLIBRATED INJECTION UNIT AND NARROW GUAGE NEEDLE, WITH HERBICIDE SUPPLIED VIA A PRE-FILLED DISPENSING UNIT. ON-SITE HANDLING OF HERBICIDE TO BE AVOIDED **SPOT SPRAY** TO CONSIST OF A TARGETED DOSE OF ROUNDUP BIACTIVE XL IN SOLUTION, AT A DILUTION RATE OF 1:40, OR ALTERNATIVE GLYPHOSATE BASED AND AQUATIC APPROVED HERBICIDE, APPLIED FULLY IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. SPRAY TO BE APPLIED ONLY TO SUITABLE HEALTHY KNOTWEED LEAVES, AND APPLIED USING A PROPRIETRY SPRAY UNIT FITTED WITH AN ANTI DRIFT SHIELD. SPRAY ONLY TO BE APPLIED UNDER SUITABLE PREVAILING WEATHER CONDITIONS AND APPLIED AT A RATE AND PRESSURE WHICH MINIMISES RUN OFF FROM THE KNOTWEED LEAVES. SITE HANDLING AND MIXING OF HERBICIDE TO BE AVOIDED TO THE GREATEST EXTENT POSSIBLE			
HERBICIDE TYPE	APPROVED FOR USE WITH JAPANESE KNOTWEED	**X**	APPROVED FOR USE IN AQUATIC ENVIRONMENTS	**X**
BIO-SECURITY MEASURES	FENCE OFF INFESTATIONS AND FIT WARNING SIGNS	**X**	SET 5 – 7m SAFETY ZONE AROUND INFESTATIONS	**X**

SECTION 14 : JAPANESE KNOTWEED - TREATMENT PROGRAMME

PROGRAMME	
STAGE 1 SPRING / SUMMER 2021	• DEPLOY BIOSECURITY MEASURES, COMPRISING SECURE FENCING AND ADVISORY / WARNING SIGNAGE • CARRY OUT FOLLOW UP SITE SURVEYS, TO INSPECT FOR NEW, EMERGING AND SPREADING I.A.P.S. • UPDATE ASSESSMENT REPORT AND MANAGEMENT PLAN, BASED ON OUTCOME OF SURVEY • INSPECT FENCING AND SIGNAGE. CARRY OUR ANY NECESSARY REPAIRS / REPLACEMENT / RE-CONFIGURATION • WHEN CLEARED TO DO SO, CARRY OUT THE FIRST HERBICIDE TREATMENT AT JAPANE3SE KNOTWEED STAND JK 1, CONSISTING OF STEM INJECTION & SPOT SPRAYING APPLICATIONS
STAGE 2 SUMMER/AUTUMN 2021	• INSPECT FENCING AND SIGNAGE. CARRY OUT ANY NECESSARY REPAIRS / REPLACEMENT / RE-CONFIGURATION • RECORD RESULTS OF SPRING / SUMMER HERBICIDE TREATMENT • CARRY OUT SECOND HERBICIDE TREATMENT AT JAPANESE KNOTWEED STAND JK 1, CONSISTING OF STEM INJECTION, IF NECESSARY, & SPOT SPRAYING APPLICATIONS
STAGE 3 SPRING 2022 – 2024/26	• CONTINUE IMPLEMENTATION OF THE MULTI-ANNUAL HERBICIDE TREATMENT PROGRAMME AND MANAGEMENT MEASURES, WITH SUFFICIENT TREATMENT, CONTROL AND INSPECTION VISITS, SCHEDULED TO SUIT THE EVOLVING SITE AND CLIMATIC CONDITIONS, AND AS NECESSARY TO ACHIEVE AND VALIDATE FULL ERADICATION OF THE JAPANESE KNOTWEED STAND JK 1

24 MAY 2021

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FORMER CLEEVES FACTORY & ASSOCIATED SITES
NORTH CIRCULAR ROAD
LIMERICK CITY

APPENDIX 1
Japanese Knotweed I.D. Sheet

NNSS
GB non-native species secretariat

www.nonnativespecies.org

Produced by Olaf Booy, Max Wade and Vicky White of RPS

Japanese Knotweed

Species Description

Scientific name: *Fallopia japonica*
AKA: Japanese Bamboo, Pysen saethwr (Welsh), *Polygonum cuspidatum*, *Reynoutria japonica*
Native to: Japan, Taiwan, northern China
Habitat: Common in urban areas, particularly on waste land, railways, road sides and river banks

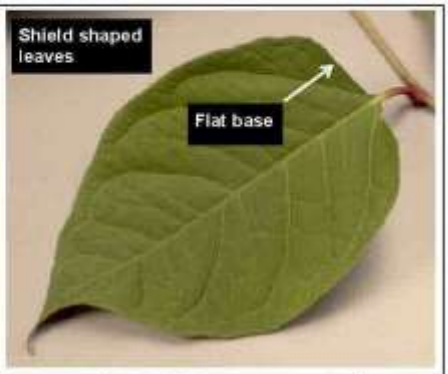
Tall herbaceous perennial with bamboo like stems. Often grows into dense thickets. Characteristic leaves and stems, persistence of last year's dead canes and distinctive rhizome (underground root-like stems) enables year round identification.

Introduced in the early 19th century as an ornamental plant. Now common and widespread across the UK. Spreads rapidly in the wild by natural means and as a result of spread by humans. Spread is solely by vegetative means, either fragments of rhizome or stem. Does not produce seed in the UK. Negative impacts include outcompeting native flora, contributing to river bank erosion and increasing the likelihood of flooding. Can also cause significant delays and cost to development as well as structural damage (it can grow through asphalt and some other surfaces).

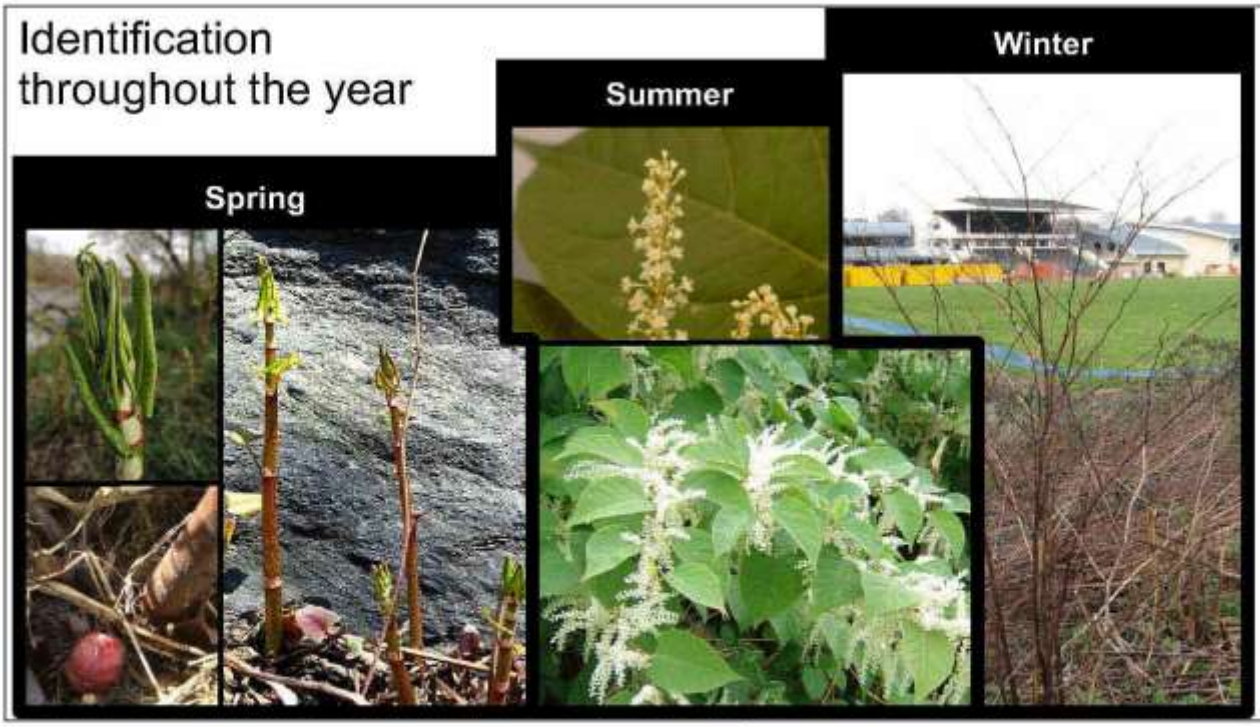
Japanese Knotweed is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. As such it is an offence to plant of otherwise cause Japanese knotweed to grow in the wild. Under the Environmental Protection Act 1990, Japanese Knotweed is classified as controlled waste.

For details of legislation go to www.nonnativespecies.org/legislation.

Key ID Features

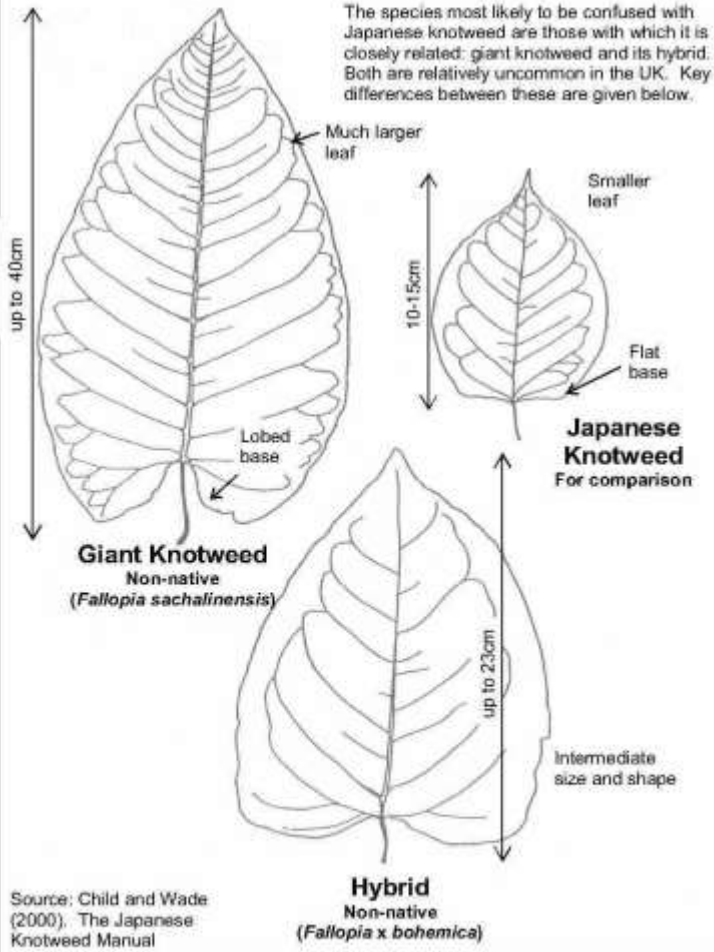


Identification throughout the year



Similar Species

The species most likely to be confused with Japanese knotweed are those with which it is closely related: giant knotweed and its hybrid. Both are relatively uncommon in the UK. Key differences between these are given below.



Source: Child and Wade (2000). The Japanese Knotweed Manual

Distribution

Widespread and common across the UK. Notably extensive infestations are found in the south-west of England, south Wales and Greater London, however similarly extensive populations can also be found elsewhere.

Source: NBN Gateway. Check website for current distribution

References and further reading:

Blamey, M, Fitter, R and Fitter, A (2003) *"The Wild Flowers of Britain and Ireland. The Complete Guide to the British and Irish Flora."* A & C Black

Child, L E and Wade, P M (2000) "The Japanese Knotweed Manual". Packard

Environment Agency (2006) "*The Japanese Knotweed Code of Practice*". Environment Agency

Preston, C D, Pearman, D A and Dines, T A (editors) (2002) *"New Atlas of the British and Irish Flora"*. Oxford University Press

Stace, C (1999) *"Field Flora of the British Isles"*. Cambridge University Press

Photos from: Olaf Booy, Helen Parish, Max Wade, Vicky White

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APPENDIX 2
Himalayan Knotweed I.D. Sheet

Himalayan knotweed (Print):Layout 1 01/11/2011 11:55 Page 1

Inspect Remove Clean Dispose Notify

Himalayan Knotweed

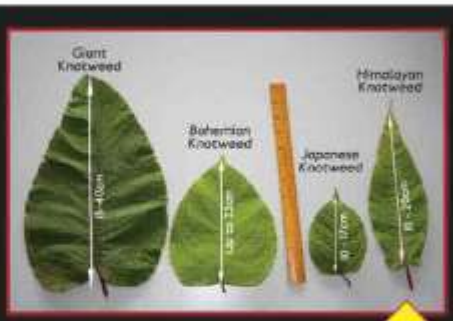
Iascach Intire Éireann
Inland Fisheries Ireland

Can be confused with Himalayan balsam, though the leaf edge is not serrated and leaf base is slightly lobed

Photos: Joe Caffrey (IFI)

Be biosecurity aware! To avoid the risk of introducing and / or spreading harmful aquatic invasive species or pathogens, please clean and disinfect any equipment that has been used or come into contact with water. For best practice guidelines refer to:
http://www.fisheriesireland.ie/Invasive-Species/invasive-species.html

For reporting incidences of invasive species
FREEPHONE 1890 34 74 24



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APPENDIX 3
Sample Site Signage

SAMPLE SIGN 1

SAMPLE SIGN 2

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APPENDIX 4
Sample Site Fencing

SAMPLE FENCING 1 – POST AND WOVEN MESH FENCING

SAMPLE FENCING 2 – HEAVY DUTY HERRAS FENCING