



invasiveplantsolutions

## INVASIVE ALIEN PLANT SPECIES : SITE ASSESSMENT REPORT & MANAGEMENT PLAN

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PROPOSED DEVELOPMENT SITE AT ST. KEVIN'S ASYLUM, SHANAKIEL ROAD, CORK CITY

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DOCUMENT NAME	STATUS	REV	DATE	COMMENT	ISSUED BY	CKD.
DC-03-19/SARMP/00	1 <sup>st</sup> . DRAFT	00	19/03/20	DRAFT ISSUED TO CLIENT	KYRAN COLGAN	K.C.
DC-03-19/SARMP/01	2 <sup>nd</sup> . DRAFT	01	19/06/20	2 <sup>nd</sup> . SITE SURVEY RESULTS ADDED	KYRAN COLGAN	K.C.
DC-03-19/SARMP/02	3 <sup>rd</sup> . DRAFT	02	23/10/20	3 <sup>rd</sup> . SITE SURVEY RESULTS ADDED	KYRAN COLGAN	K.C.
DC-03-19/SARMP/03	4 <sup>th</sup> . DRAFT	03	18/11/20	EXECUTIVE SUMMARY & UPDATES	KYRAN COLGAN	K.C.
DC-03-19/SARMP/04	FINAL	04	23/11/20	FOR PUBLICATION	KYRAN COLGAN	K.C.
DC-03-19/SARMP/05	FINAL	05	08/12/20	PROPOSED SITE PLAN UPDATED	KYRAN COLGAN	K.C.

## I.A.P.S. SITE ASSESSMENT REPORT & MANAGEMENT PLAN

ST. KEVIN'S ASYLUM								
PROJECT NO.	CO-02-19	GPS POSITION : ITM	X	564896	Y	571793	AUTHOR	MR. KYRAN COLGAN

### EXECUTIVE SUMMARY

Invasive Plant Solutions were retained by the Land Development Agency, through their project consultants Cogent Associates and Reddy Architecture + Urbanism, to provide IAPS (invasive alien plant species) consultancy services in relation to the proposed development of lands at St. Kevins Asylum, Shanakiel Road, Cork City. The project comprises of the provision of a multi-phase mixed residential housing scheme, distributed across the approx. 5.7 Ha. / 14 a. sloping site, comprising of both new build construction and the refurbishment and repurposing of existing institutional buildings.

This IAPS Site Assessment Report and Management Plan represents to first stage of the ongoing programme of IAPS consultancy services, the scope of which is designed and intended to deliver the safe, bio-secure and comprehensive management of all identified invasive alien plant species, including necessary remediation measures that may be required to satisfy this purpose.

As the site in question is significant in size, is varied in its nature and terrain, and initial ecological inspections had identified the presence of Japanese Knotweed, it was concluded that its assessment for the presence of IAPS could not be satisfactorily achieved by a single site survey. It was decided to carry out a series of site surveys across the typical annual IAPS growing season, between the months of March and October. Three surveys were scheduled and carried out, the first on the 4<sup>th</sup>. March 2020, the second on the 29<sup>th</sup>. May 2020 and the final one on the 6<sup>th</sup>. October 2020. Therefore the data and information contained in this document is as up to date as is reasonably possible, and forms a sound basis for the development of realistic and deliverable IAPS management proposals.

For the purpose of clarity, and to fully illustrate the evolving information generated across this survey process, the Site Assessment Report section of this document illustrates the individual findings, conclusions and recommendations derived from the three individual site surveys, and are detailed sequentially in Sections 5 to 16 of this document.

To further understand the context and extent of IAPS present on the site, in parallel to the survey process we sought details on the property's history in relation to any historic or current plant management measures that may be in place. The information provided in this regard has been included in our conclusions and recommendations at Section 18 of this document.

Based on the cumulative information and details generated, we also sought to quantify a volume range for potentially IAPS infested soils that could present on site, and these figures were also included in our conclusions and recommendations at Section 18 of this document.

Using all the information gained from the site survey and site assessment process we have developed the initial, planning stage, IAPS Management Plan for the site, which is set out in Sections 19 to 22 of this document.

The management plan has been developed with reference to the UK Environment Agency's *The Knotweed Code of Practice : Managing Japanese Knotweed on Development Sites*. In applying both their planning matrix and the "precautionary principle" we can conclude that the IAPS management will consist of a combination of three specific treatment measures, as follows :

- Multi Annual in-situ herbicide control of IAPS infestations
- Bio-secure removal of IAPS infested soils and their placement in an on-site, below ground, containment cell
- Bio-secure removal of IAPS infested soils and their removal from site to a licenced waste facility

Based on the outcome of the project development process, including the planning approval and detailed design stages, assessed in conjunction with the overall phasing and timing of construction works, and ongoing site monitoring, this IAPS Management Plan will be developed and expanded upon. A "construction stage" document will further refine the IAPS management process and will set out the detailed bio-security requirements and individual remediation measures to be deployed at each IAPS location.

In the interim, in its ongoing implementation, this management plan will ensure that initial bio-security measures are deployed at all IAPS locations and that a structured, multi annual, herbicide control programme will continue be employed, ensuring optimum preparation for the full IAPS remediation process.

## I.A.P.S. SITE ASSESSMENT REPORT

### SECTION 1 : INTRODUCTION

This Site Assessment report has been prepared for the client / agency referenced in Section 2 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.

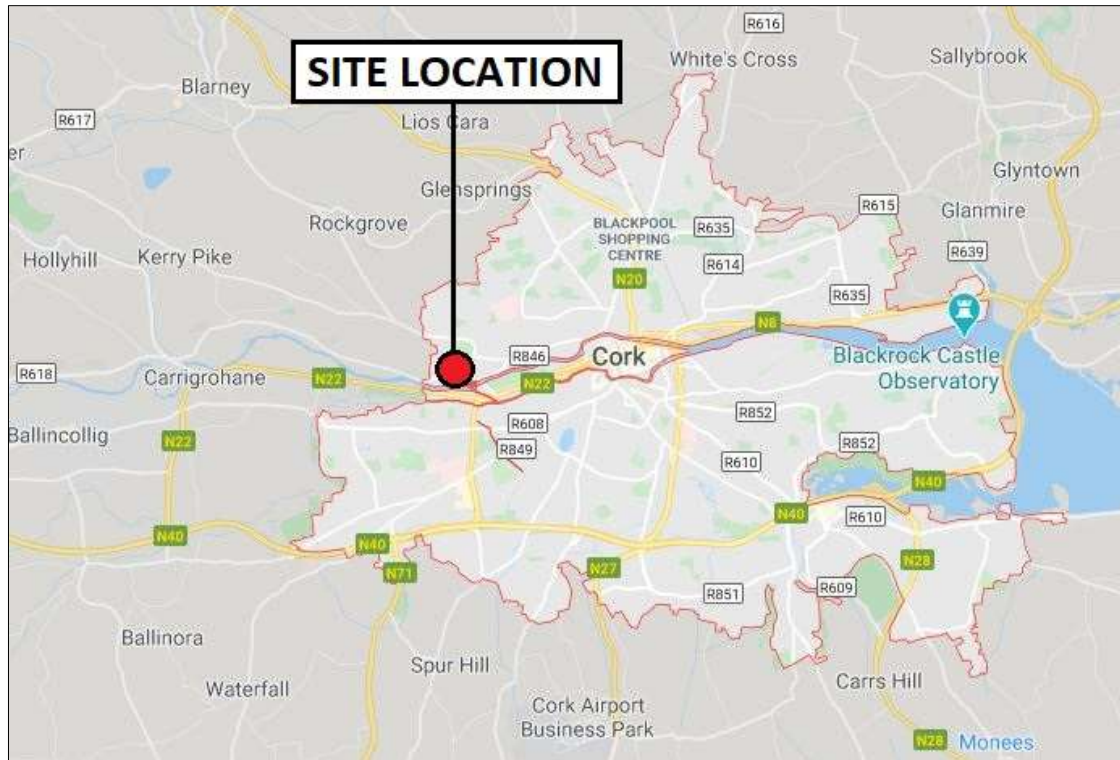
- 49(2) *Save in accordance with a licence granted [by the Department of Arts, Heritage and the Gaeltacht], any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place [a restricted non-native plant], shall be guilty of an offence.*
- 49(3) *... it 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.

<b>GENERAL DETAILS</b>										
<b>SITE ADDRESS</b>	SHANAKIEL ROAD, CORK CITY									
<b>CLIENT DETAILS</b>	<b>THE LAND DEVELOPMENT AGENCY</b> 2nd. FLOOR, ASHFORD HOUSE TARA STREET DUBLIN 2 D02 VX67						<b>OWNERSHIP</b>	PUBLIC	X	PRIVATE
							<b>TEL / MOB</b>	01 9103400		
							<b>EMAIL</b>	orla@tpa.ie		
<b>STATE AGENCIES INVOLVED</b>	CO. COUNCIL		NPWS		IFI		IRISH WATER		BORD NA MONA	
	ESB		IRISH RAIL		GNI		OTHER	X	HEALTH SERVICE EXECUTIVE	
<b>CONSULTANTS / AGENTS</b>	<p><b>ARCHITECTS – REDDY ARCHITECTURE &amp; URBANISM</b> DOUGLAS BUSINESS CENTRE CARRIGALINE ROAD DOUGLAS CORK CITY</p> <p><b>PLANNING CONSULTANTS – TOM PHILLIPS &amp; ASSOCIATES</b> 80 HARCOURT STREET DUBLIN 2 D02 F449</p> <p><b>ECOLOGICAL CONSULTANTS – OPENFIELD ECOLOGICAL SERVICES</b> 12 MAPLE AVE CARPENTERSTOWN DUBLIN 15 D15 YX7V</p>									
<b>SITE USAGE</b>	AGRICULTURAL		FORESTRY		RESIDENTIAL		COMMERCIAL		INDUSTRIAL	
	PUBLIC SPACE		GREENFIELD		BROWNFIELD	X	OTHER	X	INSTITUTIONAL	
<b>SITE AREA</b>	5.677 Ha. / 14.028 Acres									
<b>SITE DESCRIPTION</b>	<p>THE DEVELOPMENT SITE COMPRISES A SERIES OF DERELICT AND DISUSED INSTITUTIONAL BUILDINGS, HARD STANDINGS FROM PREVIOUSLY DEMOLISHED BUILDINGS, AND ATTEND GROUNDS, YARDS AND INTERNAL ROADS, FORMING THE EASTERNMOST SECTOR OF THE OVERALL ST. KEVIN'S ASYLUM COMPLEX. THIS SECTOR OF THE SITE IS ACCESSED AT ITS NORTH EASTERN CORNER, VIA A VEHICULAR ENTRANCE OFF SHANAKIEL ROAD, AND INTERNALLY FROM THE WEST, FROM THE REMAINING PORTION OF THE ASYLUM COMPLEX</p> <p>THE LANDS ARE LOCATED ABOVE THE NORTHERN BANK OF THE RIVER LEE, AND SLOPE STEEPLY FROM NORTH TO SOUTH. PROPERTY BOUNDARIES ARE GENERALLY CLEARLY DEFINED, AND ARE TYPICALLY DEMARCATED BY WALLS AND /OR FENCING, WITH THE EXCEPTION OF A SIGNIFICANT PORTION OF THE INTERNAL WESTERN SITE BOUNDARY, WHERE IT TYPICALLY CROSSES OPEN GROUND AND HAS NOT BEEN FENCED OR MARKED OUT</p>									



## SECTION 4 : SITE LOCATION MAP AND SITE LAYOUT PLAN



SITE LOCATION MAP

SITE LOCATION MAP REPRODUCED COURTESY OF GOOGLE MAPS



AERIAL SITE LAYOUT

AERIAL SITE LAYOUT REPRODUCED COURTESY OF GOOGLE MAPS

## SECTION 5 : I.A.P.S. OVERALL INFESTATION DETAILS – 04 MARCH 2020 ASSESSMENT

INVASIVE ALIEN SPECIES									
JAPANESE KNOTWEED	X	GIANT KNOTWEED		BOHEMIAN KNOTWEED		HIMALAYAN KNOTWEED			
GUNNERA		HIMALAYAN BALSAM		GIANT HOGWEED		RHODODENDRON		X	
AMERICAN SKUNK CABBAGE		THREE CORNERED GARLIC	X	SPANISH BLUEBELL		X	HOTTENTOT FIG		
OTHER NON NATIVE SPECIES									
BUDDLEIA	X	WINTER HELIOTROPE	X	MONTBRETIA			OTHER		
<b>DESCRIPTION &amp; EXTENT OF JAPANESE KNOTWEED COLONISATIONS</b> <u>JAPANESE KNOTWEED – JK1</u> JK 1 IS A VERY LARGE, MONOLITHIC, STAND OF JAPANESE KNOTWEED LOCATED IN OPEN GROUND IMMEDIATELY TO THE WEST OF THE NORTHERN END OF THE WESTERN INTERNAL SITE BOUNDARY.  THE STAND IS TYPICALLY SEPARATED FROM THE BOUNDARY BY A STAND OF BUDDLEIA PLANTS, BUT STRADDLES THE BOUNDARY AT THE SOUTHERN END OF THE STAND. THE JAPANESE KNOTWEED IS SPREADING EASTWARDS, ACROSS THE BOUNDARY ONTO THE DEVELOPMENT SITE, ALONG THE GRASSED BANK IMMEDIATELY SOUTH OF THE LEVEL GROUND, BEING THE SITE OF A NOW DEMOLISHED BUILDING  THE STAND IS VERY WELL ESTABLISHED AND APPEARS MATURE AND HEALTHY, BUT EXHIBITS SOME SIGNS OF POSSIBLE PREVIOUS CUTTING <u>JAPANESE KNOTWEED – JK2</u> JK2 IS LOCATED TO THE SOUTH OF JK1, WITHIN A GRASSED AREA WHICH IS SURROUNDED BY INTERNAL ROADWAYS AND BOUNDED BY ROUGH GROUND TO THE EAST. THE SITE IS ALSO LOCATED IMMEDIATELY TO THE WEST OF THE WESTERN INTERNAL SITE BOUNDARY, BUT MAY ALSO STRADLE IT  THE STAND COMPRISES AS SERIES OF 3 SEPARATE SMALL STANDS OF JAPANESE KNOTWEED WITHIN THE GRASSED AREA, WITH THE LIKELIHOOD OF FURTHER SMALLER SHOOTS AND HEALTHY RHIZOME BEING PRESENT BUT NOT CURRENTLY OBSERVABLE <u>JAPANESE KNOTWEED – JK3</u> JK3 IS A SINGLE STAND OF JAPANESE KNOTWEED, LOCATED IN THE UPPER NORTH WEST CORNER OF THE STEPPED FIELD WHICH FORMS THE SOUTHERNMOST PORTION OF THE DEVELOPMENT SITE.  THE STAND DOES NOT APPEAR TO HAVE BEEN ESTABLISHED IN THIS LOCATION FOR VERY LONG, BUT IT IS LIKELY THAT THE RHIZOME SPREAD UNDERGROUND WILL BE GREATER THAN THE PLANT MATERIAL SHOWING ABOVE GROUND <u>JAPANESE KNOTWEED – JK4</u> JK 4 IS A SMALL LINEAR STAND OF JAPANESE KNOTWEED, GROWING IN A GRASSED AREA IMMEDIATELY TO THE EAST OF A STEEP INTERNAL ROAD THAT RUNS NORTH TO SOUTH BETWEEN BUILDINGS AT THE EASTERN END OF THE SITE  THE STAND APPEARS HEALTHY BUT MAY NOT HAVE BEEN ESTABLISHED IN THIS LOCATION FOR VERY LONG. THERE IS THE LIKELIHOOD, HOWEVER, THAT SOME OF THE PLANT RHIZOME WILL HAVE SPREAD UNDER THE SURFACE OF THE ROADWAY <u>JAPANESE KNOTWEED – ADDITIONAL RISK AREAS</u> DUE TO THE TIME OF YEAR, THE FULL EXTENT OF IDENTIFIED INFESTATIONS CAN NOT BE FULLY VALIDATED. IN ADDITION THERE IS ALSO THE POSSIBILITY OF FURTHER, PARTICULARLY JUVENILE, STANDS BEING PRESENT ON THE SITE					<b>DESCRIPTION &amp; EXTENT OF SECONDARY I.A.P.S. COLONISATIONS</b> <u>TCG/SB 1 – ZONE OF POTENTIAL INFESTATION</u> TCG/SB1 REPRESENTS A ZONE OF POTENTIAL INFESTATION OF THREE CORNERED GARLIC/LEEK AND SPANISH BLUEBELL, LOCATED AT THE LOWER LEVEL OF THE STEPPED FIELD, TOWARDS THE WESTERN END OF THE SOUTHERN SITE BOUNDARY  IT IS TOO EARLY IN THE GROWING SEASON TO MAKE AN ABSOLUTE IDENTIFICATION BUT, FOR THE PURPOSES OF THIS ASSESSMENT AND REPORT, THE AREA SHOULD BE CONSIDERED TO BE FULLY INFESTED <u>TCG/SB 2 – ZONE OF POTENTIAL INFESTATION</u> TCG/SB 2 REPRESENTS A ZONE OF POTENTIAL INFESTATION OF THREE CORNERED GARLIC/LEEK AND SPANISH BLUEBELL, LOCATED IN THE NORTH EASTERN CORNER OF THE UPPER LEVEL OF THE STEPPED FIELD, WHICH OCCUPIES THE SOUTHERNMOST PORTION OF THE DEVELOPMENT SITE  IT IS TOO EARLY IN THE GROWING SEASON TO MAKE AN ABSOLUTE IDENTIFICATION BUT, FOR THE PURPOSES OF THIS ASSESSMENT AND REPORT, THE AREA SHOULD BE CONSIDERED TO BE FULLY INFESTED <u>TCG/SB 3 – ZONE OF POTENTIAL INFESTATION</u> TCG / SB 3 REPRESENTS A ZONE OF POTENTIAL INFESTATION OF THREE CORNERED GARLIC/LEEK AND SPANISH BLUEBELL, LOCATED IN THE NORTH EASTERN SECTOR OF THE DEVELOPMENT SITE, ON SLOPED AGROUND AND POSSIBLY MADE UP GROUND, IMMEDIATELY TO THE EAST OF THE MAIN ENTRANCE ROAD  IT IS TOO EARLY IN THE GROWING SEASON TO MAKE AN ABSOLUTE IDENTIFICATION BUT, FOR THE PURPOSES OF THIS ASSESSMENT AND REPORT, THE AREA SHOULD BE CONSIDERED TO BE FULLY INFESTED <u>RHODODENDRON – RHO 1</u> RHO 1 COMPRISES TWO SMALL RHODODENDRON STANDS, WHICH ARE POTENTIALLY <i>RHODODENDRON PONTICUM</i> , LOCATED ON SLOPING GROUND WITHIN THE CENTAL SECTION OF THE SITE  FURTHER INSPECTION, LATER IN THE GROWING SEASON, WILL BE REQUIRED, TO VALIDATE THE PRECISE SPECIES <u>INVASIVE PLANT SPECIES – ADDITIONAL COMMENTS</u> THIS SITE ASSESSMENT IS BEING CARRIED OUT DURING THE WINTER DORMANCY PERIOD, WITH PLANTS IN A PERIOD OF DIE-BACK. THEREFORE FURTHER SITE INSPECTIONS WILL BE REQUIRED, TO VALIDATE THE FULL SPREAD OF IDENTIFIED PLANTS AND THE POSSIBLE PRESENCE, OR OTHERWISE, OF FURTHER INVASIVE PLANT SPECIES ON THE SITE  <b>COMMENT ON NON-NATIVE PLANT SPECIES</b> <u>BUDDLEIA, WINTER HELIOTROPE &amp; LAUREL</u> NON-NATIVE BUDDLEIA, WINTER HELIOTROPE AND LAUREL PLANTS HAVE COLONISED LARGE AREAS OF THE OVERALL SITE, WITHIN GRASSED AREAS, DISTURBED AND UNDISTURBED GROUND, IN YARDS AND ON STRUCTURES, AS WELL AS ON AND BETWEEN BOUNDARY & INTERNAL WALLS				
CONDITION OF INFESTATIONS									
GROWTH STAGE	EMERGENT		REGROWTH		JUVENILE / SEMI MATURE		MATURE		X
CONDITION	HEALTHY	X	DISTRESSED		STUNTED		BONSAI		
PREVIOUS TREATMENT / CUTTING	YES	X	NO		DETAILS	EVIDENCE OF CUTTING AND/OR DISTURBANCE & GRAZING BY AMINALS			
RISKS FROM PLANTS									
BOUNDARIES	X	SOFT LANDSCAPE	X	HARD SURFACES	X	SITE DISPERSAL	X	ADJOINING PROPERTIES	X



## SECTION 6 : I.A.P.S. DISTRIBUTION MAP – 04 MARCH 2020 ASSESSMENT



SITE LAYOUT WITH I.A.P.S. LOCATIONS

DISTRIBUTION MAP REPRODUCED COURTESY OF GOOGLE MAPS

## SECTION 7 : I.A.P.S. INDIVIDUAL INFESTATION DETAILS – 04 MARCH 2020 ASSESSMENT

DETAILS	NO.	ITM - X	ITM - Y	SIZE (M X M)	DETAILS / COMMENTS
INFESTATION 1	JK 1	564856 to 564877	571844 to 571874	+/- 30m x 15m + 5m x 2m	Full extent of stand to be validated with follow up site inspection in late April / early May 2020
INFESTATION 2	JK 2	564868 to 564872	571824 to 571830	3 no. plants + 15m x 15m	Full extent of stand to be validated with follow up site inspection in late April / early May 2020
INFESTATION 3	JK 3	564895	571666	1m dia.	Full extent of stand to be validated with follow up site inspection in late April / early May 2020
INFESTATION 4	JK 4	565036	571710	2.5m x 0.5m	Full extent of stand to be validated with follow up site inspection in late April / early May 2020
INFESTATION 5	TCG/SB 1	564919 To 564928	571626 To 571630	10m x 5m	Full extent of stand to be validated with follow up site inspection in early April 2020
INFESTATION 6	TCG/SB 2	565049	571649	8m x 6m	Full extent of stand to be validated with follow up site inspection in early April 2020
INFESTATION 7	TCG/SB 3	564860 To 564876	571844 To 571845	15m x 5m	Full extent of stand to be validated with follow up site inspection in early April 2020
INFESTATION 8	RHO 1	564955	571769	2 no. plants	Full extent of stand to be validated with follow up site inspection in late April / early May 2020



**SECTION 8 : I.A.P.S. SITE PHOTOGRAPHS – 04 MARCH 2020 ASSESSMENT**



**JK 1 – LOOKING NORTH**



**JK 1 – LOOKING SOUTH**



**SECTION 8 : I.A.P.S. SITE PHOTOGRAPHS – 04 MARCH 2020 ASSESSMENT (CONTD.)**



**JK 1 – DETAIL SHOWING BROKEN / DAMAGED STEMS**



**JK 1 – DETAIL SHOWING SPREAD EASTWARDS ACROSS THE SITE BOUNDARY**



**SECTION 8 : I.A.P.S. SITE PHOTOGRAPHS – 04 MARCH 2020 ASSESSMENT (CONTD.)**



**JK 2 – OVERVIEW OF SITE, LOOKING SOUTH WEST**



**JK 2 – DETAIL OF SITE, LOOKING SOUTH WEST**



SECTION 8 : I.A.P.S. SITE PHOTOGRAPHS – 04 MARCH 2020 ASSESSMENT (CONTD.)



JK 2 – SITE DETAIL, LOOKING SOUTH EAST



JK 2 – SITE DETAIL, LOOKING SOUTH



**SECTION 8 : I.A.P.S. SITE PHOTOGRAPHS – 04 MARCH 2020 ASSESSMENT (CONTD.)**



**JK 3 – OVERVIEW OF SITE, LOOKING SOUTH**



**JK 3 – SITE DETAIL, LOOKING NORTH**



SECTION 8 : I.A.P.S. SITE PHOTOGRAPHS – 04 MARCH 2020 ASSESSMENT (CONTD.)



JK 4 – OVERVIEW OF SITE, LOOKING WEST



JK 4 – OVERVIEW OF SITE, LOOKING EAST



**SECTION 8 : I.A.P.S. SITE PHOTOGRAPHS – 04 MARCH 2020 ASSESSMENT (CONTD.)**



**TCG/SB 1 – OVERVIEW OF SITE, LOOKING EAST**



**TCG/SB 1 – SITE DETAIL, LOOKING WEST**



**SECTION 8 : I.A.P.S. SITE PHOTOGRAPHS – 04 MARCH 2020 ASSESSMENT (CONTD.)**



**TCG/SB 2 – OVERVIEW OF SITE, LOOKING NORTH EAST**



**TCG/SB 2 – SITE DETAIL, LOOKING NORTH EAST**



**SECTION 8 : I.A.P.S. SITE PHOTOGRAPHS – 04 MARCH 2020 ASSESSMENT (CONTD.)**



**TCG/SB 3 – OVERVIEW OF SITE, LOOKING EAST**



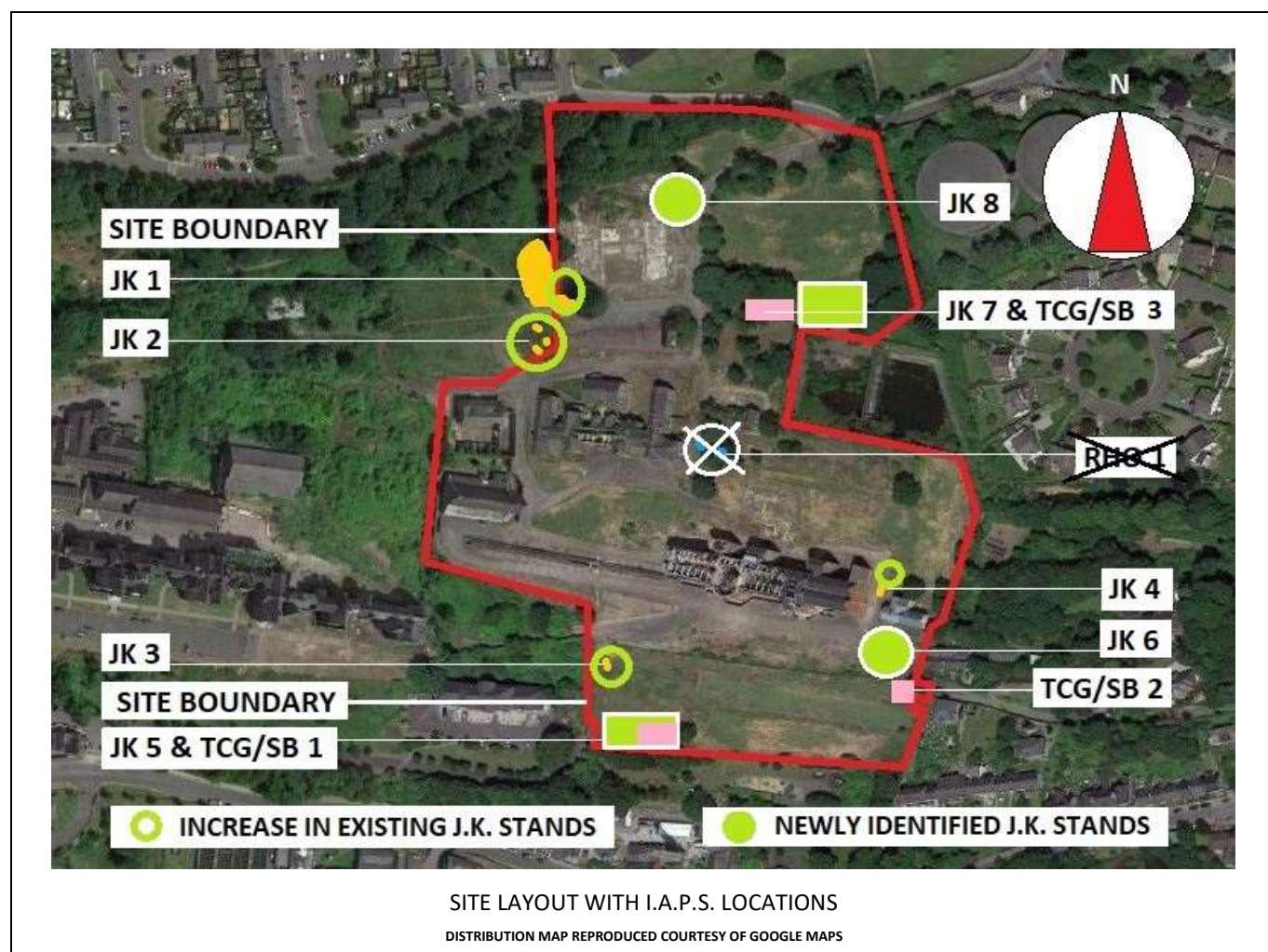
**TCG/SB 3 – SITE DETAIL, LOOKING SOUTH**

## SECTION 9 : I.A.P.S. OVERALL INFESTATION DETAILS – 29 MAY 2020 ASSESSMENT

INVASIVE ALIEN SPECIES									
JAPANESE KNOTWEED	X	GIANT KNOTWEED		BOHEMIAN KNOTWEED		HIMALAYAN KNOTWEED			
GUNNERA		HIMALAYAN BALSAM		GIANT HOGWEED		RHODODENDRON			
AMERICAN SKUNK CABBAGE		THREE CORNERED GARLIC	X	SPANISH BLUEBELL	X	HOTTENTOT FIG			
OTHER NON NATIVE SPECIES									
BUDDLEIA	X	WINTER HELIOTROPE	X	MONTBRETIA		OTHER			
<b>DESCRIPTION &amp; EXTENT OF JAPANESE KNOTWEED COLONISATIONS</b> <b>PREVIOUSLY IDENTIFIED JAPANESE KNOTWEED STANDS</b> <u>JAPANESE KNOTWEED – JK1</u> <p>THE STAND IS NOW IN ITS GROWTH STAGE AND IS PRESENTING AS BOTH MATURE AND HEALTHY. THE STAND IS ALSO SHOWING EVIDENCE OF FURTHER FRESH GROWTH AND SPREAD, PARTICULARLY ALONG ITS SOUTHERN AND EASTERN FRINGES.</p> <p>FRESH GROWTH WAS OBSERVED WITHIN THE NATIVE SCRUB ALONG THE EASTERN SIDE OF THE STAND, SUGGESTING FURTHER SPREAD EASTWARDS ONTO THE FOOTPRINT OF THE SUBJECT SITE</p> <p>THE ABOVE GROUND JAPANESE KNOTWEED ON THE GRASSED BANK WHICH FORMS THE SOUTH EASTERN CORNER OF THE INFESTATION, AND WHICH IS IMMEDIATELY SOUTH OF THE RAISED LEVEL GROUND BEHIND, IS ENCROACHING APPROX. 3m ONTO THE SUBJECT SITE. THERE IS EVIDENCE THAT THIS BANK, AND THE ADJOINING ROADSIDE MARGIN, MAY HAVE BEEN SUBJECT TO RECENT HERBICIDE SPRAYING.</p> <u>JAPANESE KNOTWEED – JK2</u> <p>THE JAPANESE KNOTWEED AT THIS LOCATION IS NOW PRESENTING COMPREHENSIVELY, WITH MULTIPLE HEALTHY STANDS EXTENDING TO THE SOUTHERN LIMIT OF THE GRASSED AREA. FOR THE PURPOSE OF THIS ASSESSMENT THE ENTIRE AREA SHOULD BE TREATED AS BEING INFESTED</p> <u>JAPANESE KNOTWEED – JK3</u> <p>AN ADDITIONAL 3 HEALTHY STANDS OF JAPANESE KNOTWEED HAVE NOW PRESENTED AT THIS LOCATION, MAKING IT A MORE SUBSTANTIAL AND WELL ESTABLISHED INFESTATION THAN PREVIOUSLY THOUGHT. ALTHOUGH THE STANDS ARE SEPERATED FROM EACH OTHER, THEIR RELATIVE PROXIMITY SUGGESTS THAT THEY LIKELY SHARE A COMMON RHIZOME NETWORK</p> <u>JAPANESE KNOTWEED – JK4</u> <p>THIS STAND DOES NOT CURRENTLY SHOW SIGNS OF RE-GROWTH AT THE PREVIOUSLY OBSERVED LOCATION. HOWEVER NEW HEALTHY SHOOTS OF JAPANESE KNOTWEED ARE PRESENTING IMMEDIATELY TO THE NORTH OF THE ORIGINAL LOCATION. THESE, AS WELL AS THE PREVIOUSLY OBSERVED LOCATION SHOULD NOW BE TREATED AS A SINGLE, LARGER, SITE</p> <b>NEWLY IDENTIFIED JAPANESE KNOTWEED STANDS</b> <u>JAPANESE KNOTWEED – JK5</u> <p>JK5 IS A VERY EXTENSIVE STAND OF JAPANESE KNOTWEED ASSOCIATED WITH THE PREVIOUSLY IDENTIFIED THREE CORNERED GARLIC / SPANISH BLUEBELL SITE TCG/SB 1, AND OCCUPIES THE MOST SOUTHERLY SECTOR OF THE SITE, IN ITS SOUTH WESTERN CORNER</p> <p>THE KNOTWEED IS PRESENTING AS A SERIES OF BOTH HEALTHY AND DISTRESSED STANDS AND STEMS, SCATTERED ACROSS THE SITE</p> <p>THERE IS EVIDENCE THAT THIS SECTOR OF THE SITE, AND PARTICULARLY ITS STEEPER BANKS, HAVE BEEN SUBJECT TO RECENT HERBICIDE SPRAYING. IT MAY ALSO BE THE CASE THAT THE JAPANESE KNOTWEED ITSELF IS ALSO UNDERGOING EITHER GENERAL OR SPECIFIC CONTROL</p>					<u>JAPANESE KNOTWEED – JK6</u> <p>JK6 IS AN EXTENSIVE STAND, LOCATED ON STEEPLY SLOPING ROUGH GROUND IMMEDIATELY TO THE SOUTH OF THE EASTERNMOST DETACHED STRUCTURE, EAST OF THE ASYLUM BUILDING. IT IS PRESENTING PRIMARILY AS A SERIES OF DISTRESSED STANDS AND STEMS, SCATTERED THINLY ACROSS THE SITE AMONGST NATIVE GRASS AND SCRUB, BUT WITH SOME HEALTHY STEMS AND WITH FRESH SHOOTS ON THE MARGIN OF THE ADJACENT HARD SURFACES TO THE NORTH AND WEST</p> <u>JAPANESE KNOTWEED – JK7</u> <p>JK7 IS AN EXTENSIVE STAND ASSOCIATED WITH THE PREVIOUSLY IDENTIFIED THREE CORNERED GARLIC / SPANISH BLUEBELL SITE TCG/SB 3, LOCATED IN THE NORTH EASTERN SECTOR OF THE SITE. IT IS PRESENTING AS A SERIES OF HEALTHY AND DISTRESSED STANDS AND STEMS, SCATTERED ACROSS THE SITE. THERE IS EVIDENCE THAT THIS SECTOR OF THE SITE HAS BEEN SUBJECT TO RECENT HERBICIDE SPRAYING. IT MAY ALSO BE THE CASE THAT THE JAPANESE KNOTWEED ITSELF IS ALSO UNDERGOING EITHER GENERAL OR SPECIFIC CONTROL</p> <u>JAPANESE KNOTWEED – JK8</u> <p>JK 8 IS A NEW STAND LOCATED ON THE SLOPED BANK AT THE NORTH EASTERN CORNER OF THE LEVELLED BUILDING SITE, IMMEDIATELY WEST OF THE ENTRANCE ROAD, IN THE NORTHERN SECTOR OF THE SITE. IT IS PRESENTING PRIMARILY AS A SERIES OF DISTRESSED STANDS AND STEMS, SCATTERED THINLY ACROSS THE SITE. THERE IS SOME EVIDENCE THAT THIS BANK, AND THE ADJOINING ROADSIDE MARGIN, MAY HAVE BEEN SUBJECT TO RECENT HERBICIDE SPRAYING</p> <b>DESCRIPTION &amp; EXTENT OF SECONDARY I.A.P.S. COLONISATIONS</b> <u>TCG/SB 1 – ZONE OF INFESTATION</u> <p>TCG/SB1 IS A ZONE OF INFESTATION OF THREE CORNERED GARLIC/LEEK AND SPANISH BLUEBELL, LOCATED AT THE LOWER LEVEL OF THE STEPPED FIELD, TOWARDS THE WESTERN END OF THE SOUTHERN SITE BOUNDARY. IT IS LIKELY THAT IT IS A SECONDARY COLONISER TO THE MORE EXTENSIVE, AND NEWLY IDENTIFIED, JAPANESE KNOTWEED STAND JK 5</p> <u>TCG/SB 2 – ZONE OF INFESTATION</u> <p>TCG/SB 2 IS A ZONE OF INFESTATION OF THREE CORNERED GARLIC/LEEK AND SPANISH BLUEBELL, LOCATED IN THE NORTH EASTERN CORNER OF THE UPPER LEVEL OF THE STEPPED FIELD, WHICH OCCUPIES THE SOUTHERNMOST PORTION OF THE DEVELOPMENT SITE</p> <u>TCG/SB 3 – ZONE OF INFESTATION</u> <p>TCG / SB 3 IS A ZONE OF INFESTATION OF THREE CORNERED GARLIC/LEEK AND SPANISH BLUEBELL, LOCATED IN THE NORTH EASTERN SECTOR OF THE DEVELOPMENT SITE, ON SLOPED AGOUND AND POSSIBLY MADE UP GROUND, TO THE EAST OF THE MAIN ENTRANCE ROAD. IT IS LIKELY THAT IT IS A SECONDARY COLONISER TO THE MORE EXTENSIVE, AND NEWLY IDENTIFIED, JAPANESE KNOTWEED STAND JK 7</p> <u>RHODODENDRON – RHO 1</u> <p>THE TWO SMALL PLANT STANDS, THOUGHT TO BE <i>RHODODENDRON PONTICUM</i>, HAVE BEEN RE-ASSESSED. THE PLANTS ARE <i>NERIUM OLEANDER</i>. THEREFORE THIS SITE HAS BEEN REMOVED FROM THE NEW I.A.P.S. DISTRIBUTION MAP PROVIDED IN SECTION 10</p>				
CONDITION OF INFESTATIONS									
GROWTH STAGE	EMERGENT		REGROWTH	X	JUVENILE / SEMI MATURE		MATURE		X
CONDITION	HEALTHY	X	DISTRESSED	X	STUNTED		BONSAI		
PREVIOUS TREATMENT / CUTTING	YES	X	NO		DETAILS	EVIDENCE OF SPRAYING, CUTTING AND/OR GRAZING BY AMINALS			
RISKS FROM PLANTS									
BOUNDARIES	X	SOFT LANDSCAPE	X	HARD SURFACES	X	SITE DISPERSAL	X	ADJOINING PROPERTIES	X



## SECTION 10 : I.A.P.S. DISTRIBUTION MAP – 29 MAY 2020 ASSESSMENT



## SECTION 11 : I.A.P.S. INDIVIDUAL INFESTATION DETAILS – 29 MAY 2020 ASSESSMENT

DETAILS	NO.	ITM - X	ITM - Y	SIZE (M X M)	DETAILS / COMMENTS
INFESTATION 1	JK 1	564856 to 564877	571844 to 571874	+/- 30m x 15m + 5m x 2m	Follow up site inspection in May 2020 has validated the original extent of the stand, with some further spread to the south and east
INFESTATION 2	JK 2	564865 to 564872	571815 to 571830	6 no plants + +/- 25m x 30m	Follow up site inspection in May 2020 has established that the extent of the stand is greater, now occupying the full extent of the grassed area
INFESTATION 3	JK 3	564893 to 564897	571662 to 571667	5m x 4m	Follow up site inspection in May 2020 has established that the extent of the stand is greater than the earlier assessment in March 2020
INFESTATION 4	JK 4	565037 to 565044	571701 to 571705	7m x 3m	Follow up site inspection in May 2020 has established that the extent of the stand is greater than the earlier assessment in March 2020
INFESTATION 5	TCG/SB 1	564919 to 564928	571626 to 571630	10m x 5m	Stand concluded to be a secondary coloniser related to the newly identified, and associated, Japanese Knotweed stand JK 5
INFESTATION 6	TCG/SB 2	565049	571649	8m x 6m	The site inspection in May 2020 could not fully verify this stand, as the plant flowering window for 2020 had ended
INFESTATION 7	TCG/SB 3	564860 to 564876	571844 to 571845	15m x 5m	Stand concluded to be a secondary coloniser related to the newly identified, and associated, Japanese Knotweed stand JK 7
INFESTATION 8	JK 5	564892 to 564937	571640 to 571625	15m x 45m	Newly identified site from follow up site inspection in May 2020
INFESTATION 9	JK 6	565026 to 565038	571662 to 571683	15m X 20m	Newly identified site from follow up site inspection in May 2020
INFESTATION 10	JK 7	565004 to 565018	571835 to 571646	12m x 15m	Newly identified site from follow up site inspection in May 2020
INFESTATION 11	JK 8	564940 to 564948	571893 to 571899	5m x 8m	Newly identified site from follow up site inspection in May 2020

**SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT**



**JK 1 – LOOKING NORTH**



**JK 1 – LOOKING SOUTH EAST**



SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)



JK 1 – DETAIL SHOWING SPREAD EASTWARDS ACROSS THE SITE BOUNDARY



JK 1 – DETAIL SHOWING NEW STEM IN SCRUB ON EASTERN SIDE OF THE MAIN STAND



SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)



JK 2 – VIEW OF SITE, LOOKING SOUTH



JK 2 – VIEW OF SITE, LOOKING NORTH



SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)



JK 2 – NEWLY IDENTIFIED STAND ON SOUTHERN BOUNDARY OF THE SITE



JK 2 – SITE DETAIL, LOOKING SOUTH WEST



SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)



JK 3 – OVERVIEW OF SITE, LOOKING SOUTH



JK 3 – SITE DETAIL, LOOKING NORTH WEST



SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)



JK 3 – OVERVIEW OF SITE, LOOKING NORTH EAST



JK 3 – SITE DETAIL, LOOKING EAST



SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)



JK 4 – NEW STEM IN NATIVE SCRUB, NORTH OF THE ORIGINAL STAND



JK 4 – STUNTED RE-GROWTH, IN THE IMMEDIATE VICINITY OF THE ORIGINAL STAND



**SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)**



**JK5 & TCG/SB 1 – OVERVIEW OF SITE, LOOKING EAST**



**JK5 & TCG/SB 1 – OVERVIEW OF SITE, LOOKING WEST**



**SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)**



**JK5 & TCG/SB 1 – SITE DETAIL, TYPICAL HEALTHY MATURE STAND**



**JK5 & TCG/SB 1 – SITE DETAIL, TYPICAL DISTRESSED STAND WITH EVIDENCE OF HERBICIDE SPRAYING**



SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)



JK6 – OVERVIEW OF SITE, LOOKING NORTH WEST



JK6 – VIEW OF SITE, LOOKING SOUTH WEST



SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)



JK6 – VIEW OF SITE, LOOKING NORTH EAST



JK6 – SITE DETAIL, EMERGING STEM AT THE NORTH WEST CORNER OF THE SITE



SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)



JK7 & TCG/SB 3 – OVERVIEW OF SITE, LOOKING SOUTH EAST



JK7 & TCG/SB 3 – OVERVIEW OF SITE, LOOKING SOUTH EAST



SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)



JK7 & TCG/SB 3 – SITE DETAIL, HEALTHY STEMS WITH EVIDENCE OF HERBICIDE SPRAYING



JK7 & TCG/SB 3 – SITE DETAIL, NEW EMERGENT STEMS IN CENTRE OF SITE WITH SOME EVIDENCE OF HERBICIDE SPRAYING



SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)



JK8 – OVERVIEW OF SITE, LOOKING EAST



JK8 – OVERVIEW OF SITE, LOOKING NORTH EAST



SECTION 12 : I.A.P.S. SITE PHOTOGRAPHS – 29 MAY 2020 ASSESSMENT (CONTD.)



JK8 – SITE DETAIL, NEW HEALTHY EMERGENT STEM



JK8 – SITE DETAIL, EMERGENT STEM SHOWING EVIDENCE OF HERBICIDE SPRAYING



## SECTION 13 : I.A.P.S. OVERALL INFESTATION DETAILS – 06 OCTOBER 2020 ASSESSMENT

INVASIVE ALIEN SPECIES									
JAPANESE KNOTWEED	X	GIANT KNOTWEED		BOHEMIAN KNOTWEED		HIMALAYAN KNOTWEED			
GUNNERA		HIMALAYAN BALSAM		GIANT HOGWEED		RHODODENDRON			
AMERICAN SKUNK CABBAGE		THREE CORNERED GARLIC	X	SPANISH BLUEBELL	X	HOTTENTOT FIG			
OTHER NON NATIVE SPECIES									
BUDDLEIA	X	WINTER HELIOTROPE	X	MONTBRETIA		OTHER			
<b>DESCRIPTION &amp; EXTENT OF JAPANESE KNOTWEED COLONISATIONS</b>									
<b>PREVIOUSLY IDENTIFIED JAPANESE KNOTWEED STANDS</b>									
<u>JAPANESE KNOTWEED – JK1</u>  THE STAND IS IN ITS FLOWERING STAGE AND IS PRESENTING AS BOTH MATURE AND HEALTHY. IT CONTINUES TO SHOW EVIDENCE OF GROWTH AND SPREAD ALONG ITS SOUTHERN AND EASTERN FRINGES  GROWTH WAS VALIDATED WITHIN THE NATIVE SCRUB ALONG THE EASTERN SIDE OF THE STAND, INDICATING FURTHER POTENTIAL SPREAD EASTWARDS ONTO THE FOOTPRINT OF THE SUBJECT SITE  THE ABOVE GROUND JAPANESE KNOTWEED ON THE GRASSED BANK WHICH FORMS THE SOUTH EASTERN CORNER OF THE INFESTATION, AND WHICH IS IMMEDIATELY SOUTH OF THE RAISED LEVEL GROUND BEHIND, SHOWS EVIDENCE OF DISTURBANCE, INCLUDING FRESH GROWTH, EXPOSED RHIZOME MATERIAL, AND LOOSE SOIL.									
<u>JAPANESE KNOTWEED – JK2</u>  ALTHOUGH LIKELY SUBJECT TO HERBICIDE SPRAYING, THE JAPANESE KNOTWEED AT THIS LOCATION CONTINUES TO PRESENT ACROSS THE GRASSED AREA, WITH HEALTHY STANDS NOW IN THEIR POST FLOWERING STAGE  THERE IS EVIDENCE OF SITE DISTURBANCE, INCLUDING THE PRESENCE OF A PREVIOUSLY HEALTHY, BUT NOW DYING, STAND LYING ON THE TARMAC IMMEDIATELY EAST OF THE INFESTED AREA.									
<u>JAPANESE KNOTWEED – JK3</u>  THE FOLLOW UP SITE INSPECTION IN OCTOBER 2020 HAS VALIDATED THAT THE EXTENT OF THE STAND IS IN LINE WITH THE EXTENT IDENTIFIED IN THE EARLIER ASSESSMENT IN MAY 2020									
<u>JAPANESE KNOTWEED – JK4</u>  THIS STAND CONTINUES TO SHOW SIGNS OF NEW HEALTHY SHOOTS, PARTICULARLY TO THE NORTH OF THE ORIGINAL LOCATION. THESE, AS WELL AS THE PREVIOUSLY OBSERVED LOCATIONS SHOULD BE CONSIDERED TO BE A SINGLE, LARGER, SITE									
<u>JAPANESE KNOTWEED – JK5</u>  JK5 IS A VERY EXTENSIVE STAND OF JAPANESE KNOTWEED OCCUPYING THE MOST SOUTHERLY SECTOR OF THE SITE  THE KNOTWEED IS STILL PRESENTING AS A SERIES OF BOTH HEALTHY AND DISTRESSED STANDS AND STEMS, SCATTERED ACROSS THE SITE  THERE IS EVIDENCE THAT THIS SECTOR OF THE SITE, AND PARTICULARLY ITS STEEPER BANKS, HAVE BEEN SUBJECT TO RECENT HERBICIDE SPRAYING. IT MAY ALSO BE THE CASE THAT THE JAPANESE KNOTWEED ITSELF IS ALSO UNDERGOING EITHER GENERAL OR SPECIFIC CONTROL  A WARNING / ADVISORY SIGN HAS BEEN RECENTLY FITTED AT THE FRINGE OF THIS STAND									
<u>JAPANESE KNOTWEED – JK6</u>  JK6 IS AN EXTENSIVE STAND, LOCATED ON STEEPLY SLOPING ROUGH GROUND IMMEDIATELY TO THE SOUTH OF THE EASTERNMOST DETACHED STRUCTURE, EAST OF THE ASYLUM BUILDING. IT IS A SERIES OF DISTRESSED STANDS AND STEMS, SCATTERED ACROSS THE SITE AMONGST NATIVE GRASS AND SCRUB, BUT WITH SOME HEALTHY STEMS, AND WITH FRESH SHOOTS ON HARD SURFACES TO THE NORTH AND WEST  THE STEMS WITHIN THE HARD SURFACES ARE NOW PRESENTING MORE EXTENSIVELY, AND OCCUPY AN AREA OF APPROX. 8m x 5m									
<u>JAPANESE KNOTWEED – JK7</u>  JK7 IS AN EXTENSIVE STAND ASSOCIATED WITH THE PREVIOUSLY IDENTIFIED THREE CORNERED GARLIC / SPANISH BLUEBELL SITE TCG/SB 3, LOCATED IN THE NORTH EASTERN SECTOR OF THE SITE. IT IS PRESENTING AS A SERIES OF HEALTHY AND DISTRESSED STANDS AND STEMS, SCATTERED ACROSS THE SITE. THERE IS EVIDENCE THAT THIS SECTOR OF THE SITE HAS BEEN SUBJECT TO RECENT HERBICIDE SPRAYING									
<u>JAPANESE KNOTWEED – JK8</u>  JK 8 IS A STAND LOCATED ON THE SLOPED BANK AT THE NORTH EASTERN CORNER OF THE LEVELLED BUILDING SITE, IMMEDIATELY WEST OF THE ENTRANCE ROAD, IN THE NORTHERN SECTOR OF THE SITE. IT CONTINUES TO PRESENT AS A SERIES OF DISTRESSED STANDS AND STEMS, SCATTERED THINLY ACROSS THE SITE									
<b>NEWLY IDENTIFIED JAPANESE KNOTWEED STANDS</b>									
<u>JAPANESE KNOTWEED – JK9</u>  JK 9 IS A NEWLY IDENTIFIED STAND IN TWO PARTS, LOCATED ON BOTH SIDES OF A ROADWAY TO THE REAR OF THE MAIN ASYLUM BUILDING. THE NORTHERNMOST PART IS LOCATED ON THE SLOPED BANK IMMEDIATELY TO THE NORTH OF THE ROADWAY. THE SOUTHERNMOST PART OCCUPIES THE OPEN GROUND BETWEEN TO SOUTHERN SIDE OF THE ROADWAY AND THE REAR OF THE ASYLUM BUILDING									
<b>DESCRIPTION &amp; EXTENT OF SECONDARY I.A.P.S. COLONISATIONS</b>									
<u>THREE CORNERED GARLIC/SPANISH BLUEBELL - TCG/SB 1</u>  TCG/SB1 IS A ZONE OF INFESTATION OF THREE CORNERED GARLIC/LEEK AND SPANISH BLUEBELL, IN THE SOUTHERN SECTOR OF THE SITE. IT IS A SECONDARY COLONISER OF THE JAPANESE KNOTWEED STAND JK 5									
<u>THREE CORNERED GARLIC/SPANISH BLUEBELL - TCG/SB 2</u>  TCG/SB 2 IS A ZONE OF INFESTATION OF THREE CORNERED GARLIC/LEEK AND SPANISH BLUEBELL, IN THE NORTH EASTERN CORNER OF THE SOUTHERN SECTOR OF THE SITE									
<u>THREE CORNERED GARLIC/SPANISH BLUEBELL - TCG/SB 3</u>  TCG / SB 3 IS A ZONE OF INFESTATION OF THREE CORNERED GARLIC/LEEK AND SPANISH BLUEBELL, IN THE NORTH EASTERN SECTOR OF THE SITE. IT IS A SECONDARY COLONISER OF JAPANESE KNOTWEED STAND JK 7									
CONDITION OF INFESTATIONS									
GROWTH STAGE	EMERGENT		REGROWTH	X	JUVENILE / SEMI MATURE		MATURE	X	
CONDITION	HEALTHY	X	DISTRESSED	X	STUNTED		BONSAI		
PREVIOUS TREATMENT / CUTTING		YES	X	NO		DETAILS	EVIDENCE OF SPRAYING, CUTTING AND/OR GRAZING BY AMINALS		
RISKS FROM PLANTS									
BOUNDARIES	X	SOFT LANDSCAPE	X	HARD SURFACES	X	SITE DISPERSAL	X	ADJOINING PROPERTIES	X



## SECTION 14 : I.A.P.S. DISTRIBUTION MAP – 06 OCTOBER 2020 ASSESSMENT



SITE LAYOUT WITH I.A.P.S. LOCATIONS

DISTRIBUTION MAP REPRODUCED COURTESY OF GOOGLE MAPS

## SECTION 15 : I.A.P.S. INDIVIDUAL INFESTATION DETAILS – 06 OCTOBER 2020 ASSESSMENT

DETAILS	NO.	ITM - X	ITM - Y	SIZE (m x m)	DETAILS / COMMENTS
INFESTATION 1	JK 1	564856 to 564877	571844 to 571874	+/- 30m x 15m + 5m x 2m	Main body of the stand remains untreated. Stand has been subjected to some disturbance, and possible further spread
INFESTATION 2	JK 2	564865 to 564872	571815 to 571830	6 no plants + +/- 25m x 30m	Inspection in October 2020 has validated that the extent of the stand is greater, and now occupied the full extent of the grassed area. Evidence of disturbance
INFESTATION 3	JK 3	564893 to 564897	571662 to 571667	+/- 5m x 4m	Follow up site inspection in October 2020 has validated that the extent of the stand is greater than the original assessment in March 2020
INFESTATION 4	JK 4	565037 to 565044	571701 to 571705	+/- 7m x 3m	Follow up site inspection in October 2020 has validated that the extent of the stand is greater than the original assessment in March 2020
INFESTATION 5	JK 5	564892 to 564937	571640 to 571625	+/- 15m x 45m	Follow up site inspection in October 2020 has validated the extent of the site, as previously identified during the site inspection in May 2020
INFESTATION 6	JK 6	565026 to 565038	571662 to 571683	+/- 15m X 20m	Follow up site inspection in October 2020 has validated the extent of the site, as previously identified during the site inspection in May 2020. Stand has been subject to some disturbance
INFESTATION 7	JK 7	565004 to 565018	571835 to 571646	+/- 12m x 15m	Follow up site inspection in October 2020 has validated the extent of the site, as previously identified during the site inspection in May 2020
INFESTATION 8	JK 8	564940 to 564948	571893 to 571899	+/- 5m x 8m	Follow up site inspection in October 2020 has validated the extent of the site, as previously identified during the site inspection in May 2020
INFESTATION 9	TCG/SB 1	564919 to 564928	571626 to 571630	+/- 10m x 5m	Stand concluded to be a secondary coloniser related to the newly identified, and associated, Japanese Knotweed stand JK 5
INFESTATION 10	TCG/SB 2	565049	571649	+/- 8m x 6m	The site inspection in May 2020 could not fully verify this stand, as the plant flowering window for 2020 had ended
INFESTATION 11	TCG/SB 3	564860 to 564876	571844 to 571845	+/- 15m x 5m	Stand concluded to be a secondary coloniser related to the newly identified, and associated, Japanese Knotweed stand JK 7
INFESTATION 12	JK 9	565025 to 565028	571712 to 571723	+/- 4m x 5m + 2m dia.	A newly identified site from the inspection in October 2020, located on both sides of the internal roadway directly behind the main asylum building



SECTION 16 : I.A.P.S. SITE PHOTOGRAPHS – 06 OCTOBER 2020 ASSESSMENT



JK 1 : SOUTHERN END OF STAND, LOOKING EAST – HEALTHY GROWTH



JK 1 : SOUTHERN END OF STAND - DETAIL SHOWING NEW SIGNAGE WITH KNOTWEED STEMS IN FRONT



SECTION 16 : I.A.P.S. SITE PHOTOGRAPHS – 06 OCTOBER 2020 ASSESSMENT (CONTD.)



JK 1 : DETAIL SHOWING NEW JAPANESE KNOTWEED GROWTH AND EXPOSED RHIZOME ON DISTURBED GROUND



JK 2 : VIEW OF SITE, LOOKING WEST, WITH DYING STAND ON TARMAC IN FOREGROUND



SECTION 16 : I.A.P.S. SITE PHOTOGRAPHS – 06 OCTOBER 2020 ASSESSMENT (CONTD.)



JK 2 : CLOSE UP OF BASE OF DYING JAPANESE KNOTWEED STAND, WITH POTENTIALLY VIABLE ROOT CROWN MATERIAL



JK 3 : VIEW OF SITE, LOOKING SOUTH WEST, WITH STAND IN POST FLOWERING DIEBACK



SECTION 16 : I.A.P.S. SITE PHOTOGRAPHS – 06 OCTOBER 2020 ASSESSMENT (CONTD.)



JK 3 : VIEW OF SITE, LOOKING NORTH WEST, WITH STAND IN POST FLOWERING DIEBACK



JK 2 : VIEW OF SITE, LOOKING SOUTH



**SECTION 16 : I.A.P.S. SITE PHOTOGRAPHS – 06 OCTOBER 2020 ASSESSMENT (CONTD.)**



**JK 4 : CLOSE UP OF DEAD JAPANESE KNOTWEED STEM, AT THE NORTHERN LIMIT OF THE STAND**



**JK 5 : OVERVIEW OF SITE, LOOKING SOUTH**



SECTION 16 : I.A.P.S. SITE PHOTOGRAPHS – 06 OCTOBER 2020 ASSESSMENT (CONTD.)



JK 5 : NEW ADVISORY SIGNAGE, FITTED IN FRONT OF JAPANESE KNOTWEED STAND



JK 6 : VIEW OF SITE, LOOKING NORTH, WITH FURTHER HEALTHY GROWTH IN NORTH WESTERN SITE SECTOR



SECTION 16 : I.A.P.S. SITE PHOTOGRAPHS – 06 OCTOBER 2020 ASSESSMENT (CONTD.)



JK 7 : VIEW OF SITE, LOOKING SOUTH, WITH NEWLY FITTED SIGNAGE IN FOREGROUND



JK 7 : VIEW OF SITE, LOOKING WEST - VIABLE JAPANESE KNOTWEED STEMS GROWING IN SOIL MOUND



SECTION 16 : I.A.P.S. SITE PHOTOGRAPHS – 06 OCTOBER 2020 ASSESSMENT (CONTD.)



JK 8 : VIEW OF SITE, LOOKING WEST, WITH NEWLY FITTED SIGNAGE IN FOREGROUND



JK 8 : CLOSE UP OF POST FLOWERING JAPANESE KNOTWEED STEMS



SECTION 16 : I.A.P.S. SITE PHOTOGRAPHS – 06 OCTOBER 2020 ASSESSMENT (CONTD.)



JK 9 : VIEW OF NORTHERNMOST SECTOR OF SITE, LOOKING NORTH



JK 9 : CLOSE UP OF POST FLOWERING JAPANESE KNOTWEED STEMS



SECTION 16 : I.A.P.S. SITE PHOTOGRAPHS – 06 OCTOBER 2020 ASSESSMENT (CONTD.)



JK 9 : VIEW OF SOUTHERNMOST SECTOR OF SITE, LOOKING SOUTH



JK 9 : CLOSE UP OF POST FLOWERING JAPANESE KNOTWEED STEMS



**SITE LOCATION**

700m

1600m

**LEE VALLEY pNHA No. 000094**

**CORK LOUGH pNHA No. 001081**

## RELATIONSHIP BETWEEN THE SITE & THE CLOSEST DESIGNATED SITES

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



## SECTION 18 : CONCLUSIONS & RECOMMENDATIONS

1. BASED ON THE OUTCOME OF THE THREE SITE SURVEYS CARRIED OUT IN 2020, IN CONJUNCTION WITH THE PREVAILING SITE CONDITIONS, IT IS POSSIBLE THAT I.A.P.S. PLANTS COULD BE PRESENT BEYOND THE LIMITS RECORDED AT THE TIME OF THESE INSPECTIONS. IN APPLYING THE "PRECAUTIONARY PRINCIPLE", REGULAR AND ON-GOING SITE MONITORING SHOULD BE MAINTAINED ACROSS THE COMING GROWING SEASON

FURTHER FORMAL SITE SURVEYS SHOULD BE SCHEDULED FOR AS EARLY AS POSSIBLE IN THE 2021 SPRING GROWING PERIOD, TO FURTHER VALIDATE EMERGENT I.A.P.S., INCLUDING SPANISH BLUEBELL AND THREE CORNERED GARLIC, AS WELL NEW SEASON GROWTH OF JAPANESE KNOTWEED RELATED TO THE IDENTIFIED STANDS. THE SURVEYS SHOULD ALSO INSPECT FOR VIABLE JAPANESE KNOTWEED PLANT/RHIZOME MATERIAL THAT MAY HAVE BEEN DISPERSED INTO, AND ESTABLISHED ITSELF IN, AS YET UNIDENTIFIED LOCATIONS

THIS REPORT AND MANAGEMENT PLAN SHOULD BE UPDATED ACCORDINGLY, TO TAKE ACCOUNT OF THE RESULTS OF THE 2021 SPRING SURVEY RESULTS

2. THIS REPORT AND MANAGEMENT PLAN, AND ANY SUBSEQUENT UPDATES, SHOULD BE CIRCULATED TO ANY ADJOINING LAND OWNERS THAT ARE AFFECTED BY THE I.A.P.S. PRESENCE, AND TO RELEVANT PRESCRIBED AUTHORITIES, WHERE REQUIRED OR APPROPRIATE TO DO SO
3. THE SITE SURVEYS HAVE CONFIRMED THAT ALL IDENTIFIED STANDS OF JAPANESE KNOTWEED REMAIN VIABLE, WITH ALL SHOWING EVIDENCE OF ONGOING GROWTH AND SOME SPREAD, AND WITH A NUMBER OF THE STANDS NOW ALSO BEING LARGER IN SIZE THAN WHEN FIRST OBSERVED IN THE EARLIER SITE SURVEYS
4. AS A RESULT OF SCHEDULING LIMITATIONS DUE TO COVID-19 THERE REMAINS A DOUBT AS TO THE VERACITY OF THE THREE CORNERED GARLIC/SPANISH BLUEBELL STAND TCG/SB 2, AS THE FLOWERING PERIOD HAD PASSED BY THE TIME FOLLOW UP INSPECTION WAS POSSIBLE. IT HAS TRANSPIRED THAT THE OTHER THREE CORNERED GARLIC/SPANISH BLUEBELL STANDS, TCG/SB 1 AND TCG/SB 3, HAVE BEEN POSITIVELY ASSOCIATED WITH NEWLY IDENTIFIED JAPANESE KNOTWEED STANDS. WE ADVISE THAT, FOR THE PURPOSES OF THIS REPORT AND MANAGEMENT PLAN, ALL THREE SITES SHOULD BE CLASSIFIED AS VALIDATED STANDS, AND MANAGED OUT AS PART OF THE I.A.P.S. REMEDIATION PROCESS
5. THIS SITE SURVEYS HAS CONFIRMED THAT THE PLANTS ORIGINALLY THOUGHT TO BE RHODODENDRON PONTICUM ARE NOT, IN FACT, THAT PLANT, AND THEREFORE THEY HAVE BEEN REMOVED FROM THE LATEST I.A.P.S. DISTRIBUTION MAP
6. IN THE ABSENCE OF HAVING HISTORIC BASELINE I.A.P.S. SURVEY DETAILS, AND CONSIDERING THAT NEW JAPANESE KNOTWEED INFESTATIONS HAVE BEEN OBSERVED ON EACH SITE SURVEY VISIT, WE WOULD ADVISE THAT PROPOSALS STILL PROCEED WITH CAUTION, AS IT REMAINS REASONABLE TO CONCLUDE THAT THE HISTORIC EXTENT OF INVASIVE ALIEN PLANT SPECIES PRESENT ON THE SITE IS LIKELY TO BE MORE EXTENSIVE THAN THAT CURRENTLY OBSERVED
1. IT WAS OBSERVED THAT THERE HAS BEEN RECENT SIGNIFICANT HERBICIDE SPRAYING CARRIED OUT ACROSS THE SITE, WHICH APPEARS TO BE PARTICULARLY TARGETED AT ROADSIDE MARGINS AND AREAS OF SLOPING GROUND. THERE MAY ALSO BE A PARALLEL PROGRAMME OF JAPANESE KNOTWEED HERBICIDE CONTROL BEING CARRIED OUT. THE FOLLOWING INFORMATION WAS PROVIDED TO US VIA THE CLIENT'S REPRESENTATIVES :

- *Treatment for knotweed started two years ago, one treatment a year*
- *Knotweed sprayed with GARLON ultra at 200ml to 10lt water when weed is in flower in September*
- *Other areas sprayed one week later with round up at 330ml to 20lt of water, grass areas topped one week later*
- *General weed treatment twice a year May and September*

AN ON-GOING STRUCTURED AND CO-ORDINATED MULTI ANNUAL HERBICIDE CONTROL PROGRAMME SHOULD BE AGREED AND IMPLEMENTED, TO ARREST THE RISK OF FURTHER SPREAD OF JAPANESE KNOTWEED AND OTHER I.A.P.S., TO CONTINUE THE PROCESS OF CONTROL AND ERADICATION, AND TO PREPARE THE INFESTATIONS FOR ANY PHYSICAL REMEDIATION MEASURES PROPOSED AS PART OF THE ACCOMPANYING MANAGEMENT PLAN

7. ALL AREAS OF KNOWN INFESTATION SHOULD NOW BE SECURELY FENCED OFF WITHOUT DELAY, INCLUDING A 5 – 7m BUFFER ZONE WHERE POSSIBLE. FENCING SHOULD BE STURDY AND INCORPORATE APPROPRIATE WARNING / ADVISORY SIGNAGE. WHERE STANDS ARE SMALL, OR JUST INDIVIDUAL STEMS, OR HAVE BEEN PREVIOUSLY TREATED AND ARE DEAD STEMS, THEN ADVISORY SIGNAGE ON STURDY TIMBER POSTS MAY SUFFICE



8. NO GROUND MAINTENANCE, OPENING UP OR ANY OTHER GROUND DISTURBANCE SHOULD TAKE PLACE WITHIN THE FENCED AREAS, WITHOUT PRIOR CONSULTATION WITH, AND THE DIRECTION OF, AN INVASIVE PLANT SPECIES SPECIALIST, AND THEN ONLY UNDER STRICT SUPERVISION
9. IF ACCESS TO THE INFESTED AREAS IS NECESSARY, AND PARTICULARLY IF ANY ESSENTIAL WORK HAS TO BE CARRIED OUT WITHIN THE FENCED LOCATIONS, 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 OR RHIZOME SHOULD BE DISTURBED IN, OR REMOVED FROM, THE ZONES OF INFESTATION
10. WHERE DEVELOPMENT PROPOSALS WILL ENCROACH ON THE I.A.P.S. INFESTED AREAS, THEN A SITE SPECIFIC GROUND REMEDIATION PROGRAMME SHOULD BE DEVELOPED AND DEPLOYED, WHICH WOULD PROVIDE FOR THE REMOVAL OF ALL ASSOCIATED INFESTED SOILS, AND THEIR BIO-SECURE MANAGEMENT AND DISPOSAL. THIS PLAN SHOULD INCLUDE PROVISION FOR VERTICAL AND HORIZONTAL GROUND PROTECTION ALONG PROPERTY BOUNDARIES, WHERE APPROPRIATE, AND ANY OTHER RELEVANT MEASURES WHICH WILL ENSURE STRICT BIO-SECURITY COMPLIANCE ACROSS THE SITE & WORKS
11. 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 DEVELOPMENT SITE
12. THE ACCOMPANYING MANAGEMENT PLAN AND TREATMENT METHODOLOGY SHOULD BE SCREENED FOR POTENTIAL IMPACTS ON ECOLOGICAL RECEPTORS AND SENSITIVITIES, WHERE THEY EXIST, TO FULLY CONSIDER THE REQUIREMENTS OF S.I. 155 OF 2012 – THE EUROPEAN COMMUNITIES (SUSTAINABLE USE OF PESTICIDES) REGULATIONS
13. WHEN USING HERBICIDES AS PART OF THE MANAGEMENT PLAN AND REMEDIATION PROGRAMME, CONSIDERATION MUST BE GIVEN TO THE PROXIMITY OF ECOLOGICAL RECEPTORS AND DESIGNATED SITES. NON RESIDUAL, AQUATIC APPROVED, HERBICIDES SHOULD BE SPECIFIED FOR TREATMENT, WHERE HERBICIDE USE IS DEEMED SUITABLE
14. INVASIVE PLANT SPECIES, BY THEIR NATURE, ARE AGGRESSIVE AND CAN BE INTRODUCED ONTO PROPERTY INADVERTENTLY, VIA MANY DIFFERENT MEANS AND ROUTES. WE WOULD THEREFORE ENCOURAGE ALL PARTIES TO FAMILIARISE THEMSELVES WITH THE IDENTIFICATION OF THE PRIMARY INVASIVE ALIEN PLANT SPECIES PRESENT IN IRELAND, AND PARTICULARLY JAPANESE KNOTWEED, ITS VARIANTS AND HYBRIDS. WE ALSO RECOMMEND VIGILANCE IN THE INSPECTION OF PROPERTY, AND THE USE OF SPECIALIST ADVICE WHERE THERE IS DOUBT ABOUT ANY PARTICULAR PLANTS ENCOUNTERED
15. CONSIDERATION SHOULD ALSO BE GIVEN TO CARRYING OUT A TEST TRENCHING PROGRAMME, OR SIMILAR G.I. EXERCISE, TO PROFILE THE DEPTH AND SPREAD OF JAPANESE KNOTWEED RHIZOME AT EACH INFESTATION, FOR THE PURPOSES OF HAVING AN ACCURATE ASSESSMENT OF THE TOTAL VOLUME OF INFESTED SOILS WHICH MAY REQUIRE REMEDIATION, IN TURN WHICH WILL HELP INFORM THE FINAL DETAILS OF THE CONSTRUCTION STAGE I.A.P.S. MANAGEMENT PLAN
16. AS STATED ABOVE, THE FULL EXTENT AND DEPTH OF THE JAPANESE KNOTWEED STANDS, AND THEIR ASSOCIATED VECTOR MATERIALS, CAN NOT BE ACCURATELY QUANTIFIED AT THIS STAGE OF THE PROCESS. HOWEVER, TO ASSIST IN PREPARING THE ACCOMPANYING PLANNING STAGE I.A.P.S. MANAGEMENT PLAN, OUR PRELIMINARY ASSESSMENT OF THE QUANTUM OF INFESTED SOIL MATERIAL REQUIRING MANAGEMENT HAS BEEN ESTIMATED AS FOLLOWS :
  - *INFESTED SOILS LOCATED OUTSIDE THE SOUTHERN SITE SECTOR (JK1, JK2, JK4, JK6 – JK9, TCG/SB3)*  
*Minimum quantity : 1,203 cu.m.*  
*Maximum quantity : 2,251 cu.m.*
  - *SOILS RETAINED AND MANAGED WITHIN THE SOUTHERN SITE SECTOR (JK3, JK5, TCG/SB1 & TCG/SB2)*  
*Minimum quantity : 1,181 cu.m.*  
*Maximum quantity : 1,872 cu.m.*
17. THERE SHOULD BE ONGOING ENGAGEMENT WITH THE DESIGN TEAM, PARTICULARLY THE CIVIL/STRUCTURAL ENGINEERING CONSULTANTS, TO FINALISE THE DETAILS OF CONSTRUCTING AN UNDERGROUND SOIL CONTAINMENT CELL, AS SUGGESTED IN THE MANAGEMENT PLAN SECTION OF THIS DOCUMENT. THE OUTCOME OF THAT ENGAGEMENT SHOULD THEN BE USED TO DETERMINE THE DEGREE TO WHICH THE OFF-SITE DISPOSAL OF INFESTED SOILS WILL BE REQUIRED



## I.A.P.S. MANAGEMENT PLAN

### SECTION 19 : 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 INTENDED TO ARRIVE AT THE OPTIMUM JAPANESE KNOTWEED MANAGEMENT SOLUTION, WHICH POSES THE LEAST BIO-SECURITY RISK, AND WHICH MANAGES THE PLANT REMEDIATION PROCESS AS CLOSE AS PRECTICABLE TO IT'S EXISTING POSITION

## Flowchart for treating Japanese knotweed





## SECTION 20 : JAPANESE KNOTWEED – PLANNING STAGE MANAGEMENT PLAN

MANAGEMENT PLAN				
MANAGEMENT METHODOLOGY	<p>BASED ON THE OUTCOME OF THE ANALYSIS CARRIED OUT USING THE FLOWCHART AT SECTION 19 ABOVE, IN CONJUNCTION WITH THE CURRENT PREVAILING SITE CONDITIONS, AND THE INTENTIONS FOR THE COMPREHENSIVE, PHASED, RE-DEVELOPMENT OF THE SITE IN THE SHORT TO MEDIUM TERM, THE PRINCIPLE MEASURES OF THE MANAGEMENT AND REMEDIATION SOLUTION ARE AS FOLLOWS :</p> <ol style="list-style-type: none"> <li>FENCE OFF THE IDENTIFIED JAPANESE KNOTWEED LOCATIONS, USING SECURE FENCING AND APPROPRIATE ADVISORY/WARNING SIGNAGE – SEE APPENDIX 7 AND 8 FOR TYPICAL EXAMPLES</li> <li>CARRY OUT ON-GOING INSPECTIONS OF THE SITE ACROSS THE 2021 SUMMER GROWING PERIOD, TO FURTHER VALIDATE THE RESULTS OF THE CURRENT SITE SURVEYS, AND TO SCREEN THE SITE FOR ADDITIONAL JAPANESE KNOTWEED STANDS THAT MAY HAVE BEEN SUBJECT TO HISTORIC HERBICIDE TREATMENT AND/OR WHICH HAVE YET TO EITHER FULLY EMERGE OR REGENERATE - UPDATE ASSESSMENT REPORT &amp; MANAGEMENT PLAN, AS NECESSARY</li> <li>INSTITUTE AN INITIAL MULTI-ANNUAL HERBICIDE TREATMENT PROGRAMME, COMMENCING IN LATE SPRING 2021</li> <li>WHEN THE FINAL DEVELOPMENT DESIGN, PHASING AND WORKS PROGRAMME ARE APPROVED AND AGREED, PREPARE A DETAILED CONSTRUCTION STAGE MANAGEMENT PLAN, TO PHASE OUT THE HERBICIDE TREATMENT PROCESS, AND TO REPLACE IT WITH A SITE REMEDIATION PROGRAMME WHICH WILL INCORPORATE ALL NECESSARY PHYSICAL MEASURES FOR MANAGING I.A.P.S. INFESTED SOILS. SEE APPENDIX 4 FOR THE CURRENT PROPOSED SITE LAYOUT PLAN AND THE CURRENT PROPOSED PHASING OF THE WORKS.</li> <li>THE LONG TERM MANAGEMENT SOLUTION WILL, HOWEVER, CONSIST OF A COMBINATION OF THE FOLLOWING REMEDIATION ACTIONS : <ul style="list-style-type: none"> <li>A LONG TERM IN-SITU HERBICIDE CONTROL PROGRAMME FOR SITES NOT IMPACTED BY DEVELOPMENT WORKS</li> <li>THE BIO-SECURE REMOVAL OF INFESTED SOILS AFFECTED BY DEVELOPMENT WORKS, AND THEIR PLACEMENT IN AN ON-SITE UNDERGROUND CONTAINMENT CELL – SEE APPENDIX 5 FOR PROPOSED LOCATION</li> <li>THE BIO-SECURE REMOVAL OF INFESTED SOILS AFFECTED BY DEVELOPMENT WORKS, AND THEIR OFF-SITE TRANSPORT FOR DISPOSAL AT A LICENCED AND APPROVED WASTE FACILITY</li> <li>THE INSTALLATION OF CERTIFIED VERTICAL ROOT BARRIER MEMBRANES ALONG VULNERABLE BOUNDARY LINES</li> </ul> </li> <li>BASED ON THE REQUIREMENT FOR AN ON-SITE UNDERGROUND CONTAINMENT CELL, AND ITS NEED TO BE COVERED BY EITHER A MINIMUM 2M DEEP SOIL CAPPING LAYER OR A 600mm DEEP REINFORCED STONE SUB-BASE LAYER, THE LOCATION OF SUCH A CELL ON SITE WILL BE DETERMINED BY EITHER THE AVAILABILITY OF SUFFICIENT SOIL DEPTH AT A SUITABLE LOCATION, OR A LOCATION WHICH HAS THE FLEXIBILITY TO SIGNIFICANTLY ALTER THE PROFILE OF THE GROUND AT ITS LOCATION. BASED ON THE CURRENT DESIGN PROPOSALS, AND ASSUMING THAT THE AREA WILL NOT UNDERGO DEVELOPMENT IN THE FUTURE, THE FIELD AT THE SOUTHERN END OF THE SITE IS THE MOST SUITABLE LOCATION FOR SUCH A CELL – SEE APPENDIX 5 FOR PROPOSED LOCATION</li> <li>FOR THE PURPOSES OF THIS STAGE OF THE PLAN, WITH THE UNCERTAINTY IN RELATION TO THE FINAL VOLUME OF INFESTED SOILS TO BE MANAGED, IT HAS BEEN ASSUMED THAT THE ON-SITE UNDERGROUND CELL WILL NOT HAVE THE CAPACITY TO HOLD THE FULL VOLUME OF SOILS REQUIRING MANAGEMENT, AND THAT OFF-SITE DISPOSAL WILL FORM AN INTEGRAL PART IN THE SOIL REMEDIATION PROCESS</li> </ol>			
MANAGEMENT ELEMENTS	INITIAL / MULTI-ANNUAL HERBICIDE CONTROL	X	ON-SITE BELOW GROUND SOIL CONTAINMENT CELL	X
	EXCAVATE AND DISPOSE OFF-SITE	X	CERTIFIED ROOT BARRIER MEMBRANE SYSTEMS	X
HERBICIDE TREATMENT	<p><b>ON-SITE BELOW GROUND SOIL CONTAINMENT CELL &amp; CERTIFIED ROOT BARRIER MEMBRANE SYSTEM</b></p> <p>THE BELOW GROUND SOIL CONTAINMENT CELL SHOULD BE SITED IN A LOCATION WHICH HAS STABLE GROUND CONDITIONS, WHICH WILL NOT BE AT RISK OF FUTURE DISTURBANCE, AND IMPACT ON, OR BE IMPACTED BY, UNDERGROUND HYDROLOGY OR SURFACE WATER DRAINAGE</p> <p>THE CELL SHOULD BE FORMED USING A PROPRIETARY, CERTIFIED, JAPANESE KNOTWEED ROOT BARRIER SYSTEM WHICH FULLY ENCAPSULATES THE INFESTED SOIL, AND WHICH INCORPORATES PROTECTION LAYERS ON BOTH SIDES OF THE MEMBRANE, TO SAFEGUARD IT FROM PUNCTURE DURING CONSTRUCTION AND FILLING OPERATIONS. THE CELL MUST THEN BE COVERED BY A MINIMUM OF 2M OF SOIL OR INERT MATERIAL, OR A REINFORCED STONE CAPPING LAYER, TO PROTECT THE INTEGRITY OF THE CELL MEMBRANE FROM PLANT ROOTS AND BURROWING ANIMALS</p> <p>THE MATERIALS AND INSTALLATION METHODOLOGY FOR THE CELL, AND FOR VERTICAL ROOT BARRIER MEMBRANE PROTECTION ALONG BOUNDARIES, SHOULD BE CARRIED OUT FULLY IN ACCORDANCE WITH THE MANUFACTURERS DETAILS. THE SELECTED MEMBRANE SYSTEM SHOULD ALSO BE SUPPORTED BY FULL TEST DATA AND PRODUCT CERTIFICATION</p> <p>SEE APPENDIX 6 FOR TYPICAL INSTALLATION GUIDELINES USING THE DENDRO-SCOTT EA APPROVED MEMBRANE SYSTEM</p> <p><b>EXCAVATE AND DISPOSE OFF-SITE</b></p> <p>CARRIED OUT BY FULLY APPLYING ALL NECESSARY BIO-SECURITY AND WORKS MEASURES, AS SET OUT IN <i>The Knotweed Code of Practice</i> AND MEETING ALL LICENCING REQUIREMENTS PROVIDED FOR UNDER IRISH LEGISLATION, PARTICULARLY <i>The European Communities (Birds and Natural Habitats) Regulations 2011</i>, INCLUDING :</p> <ul style="list-style-type: none"> <li>Soil testing to establish and confirm EWC waste classification code</li> <li>Application to NPWS for licence to remove, transport and dispose of viable material off-site</li> <li>Controlled removal of Japanese Knotweed plant tissue material for disposal to incineration</li> <li>Controlled removal of Japanese Knotweed infested soil, for certified off-site disposal</li> <li>Bio-security control, works supervision &amp; monitoring, wash down of equipment and materials</li> <li>Transport of plant tissue material for incineration</li> <li>Transport of vector material for disposal at licenced landfill, waste transfer station or direct shipping overseas</li> <li>Works supervision and completion reports</li> </ul>			
HERBICIDE TYPE	STEM INJECTION	X	SPOT SPRAY / LEAF WIPE / SWAB	X
	<p><b>STEM INJECTION</b></p> <p>TO CONSIST OF A 2ml DOSE OF UNDILUTED ROUNDUP BIACTIVE XL, OR ALTERNATIVE LICENCED GLYPHOSATE BASED HERBICIDE, APPLIED BI-ANNUALLY 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 GAUGE NEEDLE, WITH HERBICIDE SUPPLIED VIA A PRE-FILLED DISPENSING UNIT. ON-SITE HANDLING OF HERBICIDE TO BE AVOIDED</p> <p><b>SPOT SPRAY</b></p> <p>TO CONSIST OF A TARGETED DOSE OF ROUNDUP BIACTIVE XL IN SOLUTION, AT A DILUTION RATE OF 1:40, OR ALTERNATIVE GLYPHOSATE BASED HERBICIDE, APPLIED BI-ANNUALLY IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. SPRAY TO BE APPLIED ONLY TO SUITABLE HEALTHY KNOTWEED LEAVES, AND APPLIED USING A PROPRIETARY 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</p>			
BIO-SECURITY MEASURES	APPROVED FOR USE WITH JAPANESE KNOTWEED	X	APPROVED FOR USE IN AQUATIC ENVIRONMENTS	
	FENCE OFF INFESTATIONS AND FIT WARNING SIGNS	X	SET 5 – 7m SAFETY ZONE AROUND INFESTATIONS	X
BIO-SECURITY MEASURES	ADVISE AFFECTED PARTIES / NOTIFY NEIGHBOURS	X	BRIEF WORKERS AND VISITORS TO PROPERTY	X
	IF MORE THAN 1 PARTY, AGREE WORKS IN ADVANCE	X	ONGOING MONITORING AND RECORDING	X



## SECTION 21 : THREE CORNERED GARLIC & SPANISH BLUEBELL – PLANNING STAGE MANAGEMENT PLAN

TREATMENT PLAN				
TREATMENT METHODOLOGY	THE SOLUTION FOR MANAGING THREE CORNERED GARLIC & SPANISH BLUEBELL IS :			
	<ol style="list-style-type: none"> <li>1. FENCE OFF THE IDENTIFIED I.A.P.S. LOCATIONS, USING SECURE FENCING AND APPROPRIATE ADVISORY/WARNING SIGNAGE – SEE APPENDIX 7 AND 8 FOR TYPICAL EXAMPLES</li> <li>2. CARRY OUT ON-GOING INSPECTIONS OF THE SITE, TO VALIDATE THE RESULTS OF THE CURRENT SITE SURVEY, AND TO SCREEN THE SITE FOR ADDITIONAL INVASIVE PLANT SPECIES THAT MAY HAVE DIED BACK AND WOULD NOT BE EVIDENT AT THIS TIME OF YEAR - UPDATE ASSESSMENT REPORT &amp; MANAGEMENT PLAN, AS NECESSARY</li> <li>3. INSTITUTE AN INITIAL MULTI-ANNUAL HERBICIDE TREATMENT PROGRAMME, COMMENCING IN LATE SPRING 2021</li> <li>4. WHEN THE DEVELOPMENT PROGRAMME BECOMES CLEAR THEN DETAILED MANAGEMENT PLANS SHOULD BE DEVELOPED TO PHASE OUT THE HERBICIDE TREATMENT PROCESS IF NECESSARY, AND REPLACE IT WITH THE PHYSICAL REMEDIATION OF THE INFESTED SOILS. THE PRECISE DETAILS AND TIMING OF THIS PLAN WILL BE BASED ON SUCH FACTORS AS THE SUCCESS OF THE HERBICIDE CONTROL PROGRAMME, UP TO DATE SITE SURVEY INFORMATION, THE FINALISATION OF DETAILED DESIGN PROPOSALS, DETAILS FOR ANY PHASING OF THE WORKS, AND FINAL DATES FOR THE COMMENCEMENT OF CONSTRUCTION WORKS</li> <li>5. THE CURRENT PREFERRED LONG TERM SOLUTION CONSISTS A COMBINATION OF IN-SITU HERBICIDE CONTROL, WHERE PRACTICABLE, IN CONJUNCTION WITH THE NECESSARY REMOVAL OF INFESTED SOILS, AND THEIR PALCEMENT IN AN ON-SITE UNDERGROUND CONTAINMENT CELL, IN CONJUNCTION WITH THE USE OF VERTICAL ROOT BARRIER MEMBRANES INSTALLED ALONG VULNERABLE SITE BOUNDARIES</li> <li>6. BASED ON THE CURRENT DESIGN PROPOSALS, AND ASSUMING IT IS NOT GOING TO BE SUBJECT TO FUTURE DEVELOPMENT, THE FIELD AT THE SOUTHERN END OF THE SITE WOULD APPEAR TO BE THE MOST SUITABLE LOCATION FOR SUCH A CELL</li> <li>7. FOR THE PURPOSES OF THIS STAGE OF THE PLAN, WITH THE UNCERTAINTY IN RELATION TO THE FINAL VOLUME OF INFESTED SOILS TO BE MANAGED, IT HAS BEEN ASSUMED THAT THE ON-SITE UNDERGROUND CELL WILL NOT HAVE THE CAPACITY TO HOLD THE FULL VOLUME OF SOILS REQUIRING MANAGEMENT, AND THAT OFF-SITE DISPOSAL WILL FORM AN INTEGRAL PART IN THE SOIL REMEDIATION PROCESS</li> </ol>			
MANAGEMENT ELEMENTS	MULTI ANNUAL HERBICIDE CONTROL PROGRAMME	X	ON-SITE BELOW GROUND SOIL CONTAINMENT CELL	X
	DEEP BURIAL – GREATER THAN 5m		EXCAVATE AND DISPOSE OFF-SITE	X
	EXCAVATE AND TREAT IN ON-SITE TEMPORARY BUND		CERTIFIED ROOT BARRIER MEMBRANE SYSTEMS	X
HERBICIDE TREATMENT TECHNIQUE	FOLIAR SPRAY	X	STEM INJECTION	
	CUT AND STEM FILL		SPOT SPRAY / LEAF WIPE / SWAB	
HERBICIDE	APPROVED FOR 3 CORNERED GARLIC & SPANISH BLUEBELL	X	APPROVED FOR USE IN AQUATIC ENVIRONMENTS	
BIO-SECURITY MEASURES	FENCE OFF INFESTATIONS AND FIT WARNING SIGNS	X	SET SAFETY ZONE AROUND INFESTATIONS	X
	ADVISE AFFECTED PARTIES / NOTIFY NEIGHBOURS	X	BRIEF WORKERS AND VISITORS TO PROPERTY	X
	IF MORE THAN 1 PARTY, AGREE WORKS IN ADVANCE	X	MONITOR AND RECORD	X
COMMENTS / NOTES	PROPOSALS FOR MANAGING RHODODENDRON ARE NO LONGER REQUIRED			

## SECTION 22 : PRELIMINARY MANAGEMENT PROGRAMME

PROGRAMME	
STAGE 1 AUTUMN 2020	<ul style="list-style-type: none"> <li>• DEPLOY BIOSECURITY MEASURES, COMPRISING SECURE FENCING AND ADVISORY / WARNING SIGNAGE</li> <li>• CARRY OUT FOLLOW UP SITE SURVEYS, TO INSPECT FOR NEW, EMERGING AND SPREADING I.A.P.S.</li> <li>• UPDATE ASSESSMENT REPORT AND MANAGEMENT PLAN, BASED ON OUTCOME OF SURVEYS</li> </ul>
STAGE 2 SPRING/SUMMER 2021	<ul style="list-style-type: none"> <li>• CARRY OUT FIRST HERBICIDE TREATMENT AT JAPANESE KNOTWEED STANDS, CONSISTING STEM INJECTION &amp; FOLIAR/SPOT SPRAYING</li> <li>• CARRY OUT FIRST TWO FOLIAR/SPOT SPRAYING TREATMENTS AT THREE CORNERED GARLIC/SPANISH BLUEBELL STANDS</li> <li>• INSPECT FENCING AND SIGNAGE. CARRY OUR ANY NECESSARY REPAIRS / REPLACEMENT / RE-CONFIGURATION</li> <li>• CONTINUE REGULAR MONITORING OF SITE FOR THE EMERGENCE OF NEW/TEMPORARILY DORMANT I.A.P.S. STANDS</li> </ul>
STAGE 3 SUMMER 2021 ONWARDS	<ul style="list-style-type: none"> <li>• CONTINUE IMPLEMENTATION OF THE MULTI-ANNUAL HERBICIDE TREATMENT PROGRAMME, WITH MINIMUM BI-ANNUAL TREATMENT AND INSPECTION VISITS, SCHEDULED AS REQUIRED AND AS NECESSARY, UNTIL FULL ERADICATION HAS BEEN VALIDATED</li> <li>• IF PLANNING PERMISSION IS GRANTED AND DEVELOPMENT OF THE SITE IS SCHEDULED, IN ADVANCE OF FULL ERADICATION BEING ACHIEVED, PREPARE AND IMPLEMENT A CONSTRUCTION STAGE INVASIVE ALIEN PLANT SPECIES MANAGEMENT PLAN, TO FULLY REMEDIATE THE INFESTED SOILS IN ACCORDANCE WITH SECTIONS 20 AND 21 ABOVE, IN ADVANCE OF THE COMMENCEMENT OF ENABLING WORKS AND CONSTRUCTION ACTIVITIES</li> </ul>

  
**KYRAN COLGAN**  
 Director



INVASIVE PLANT SOLUTIONS  
 The Stationhouse,  
 Station Road,  
 Dundrum,  
 Co. Tipperary,  
 E34 EK83

T : 086-2621443 / 062-71589 W : [www.knotweed.ie](http://www.knotweed.ie) E : [info@knotweed.ie](mailto:info@knotweed.ie)



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**APPENDIX 1**

Japanese Knotweed I.D. Sheet



# 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.

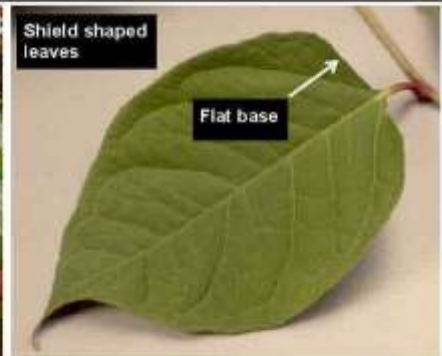
Introduced in the early 19<sup>th</sup> century as an ornamental plant. Now common and widespread across the UK. Spreads rapidly in the wild by natural means and as a result of spread by humans. Spread is solely by vegetative means, either fragments of rhizome or stem. Does not produce seed in the UK. 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 or 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](http://www.nonnativespecies.org/legislation).



## Key ID Features

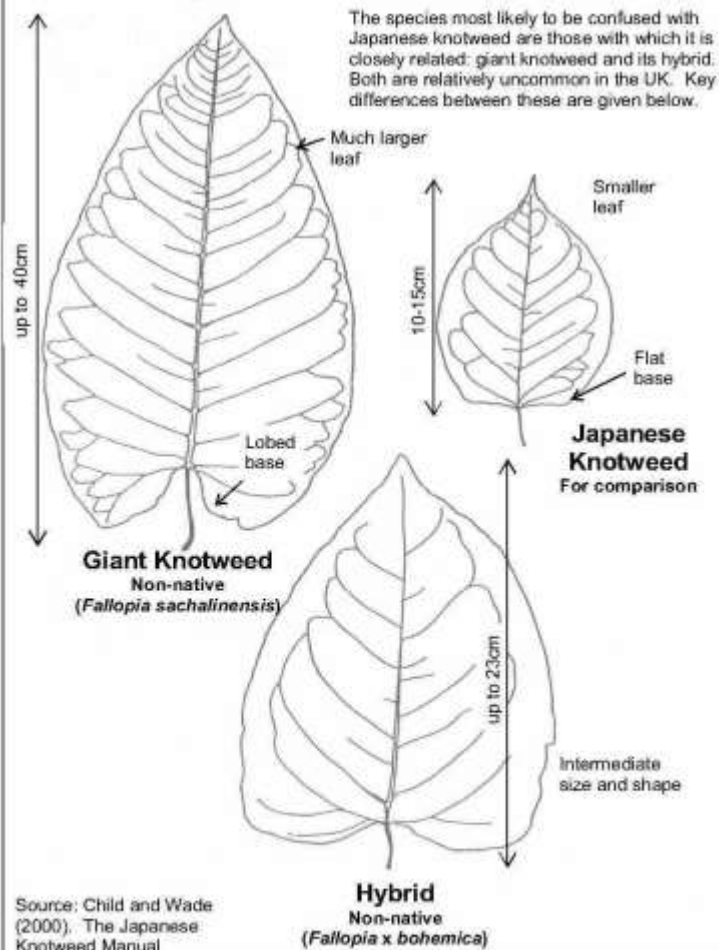




## Identification throughout the year



## Similar Species



## 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**

Three Cornered Garlic (Leek) I.D. Sheet

# Non-Native Garlics

## Species Description

**Scientific names:** *Allium* species

**AKA:** Gerllyg (Welsh)

**Native to:** Mediterranean, Caucasus and Iran

**Habitat:** Roadsides, hedge banks, riverbanks, field margins, rough and waste ground and in woodland

Garlics are perennial herbs with bulbs and grass-like leaves, usually smelling of garlic when fresh and crushed. The most widespread invasive garlics in the UK are Three-cornered Garlic *Allium triquetrum* and Few-flowered Garlic *Allium paradoxum*. Other invasive species include Rosy Garlic *Allium roseum* and Keeled Garlic *Allium carinatum*.

The seeds of Three-cornered Garlic are spread naturally by ants. It was established initially in Guernsey in 1849 and is now naturalised and increasingly abundant and widespread in milder areas of the UK, especially in the south and west, with scattered, sometimes short-lived, populations elsewhere.

Few-flowered Garlic spreads by means of bulbils (small bulbs produced above ground). It was first recorded in the wild near Edinburgh in 1863 and can be very invasive in disturbed habitats. It is increasingly abundant throughout its range, especially in southern Scotland and is most common in the east of Britain.

Rosy Garlic was first recorded in the wild in 1837 and is spreading, especially in south-west England. Keeled Garlic has been naturalised since at least 1806, but there is little evidence of a significant increase in range over the last 50 years.



## Key ID Features

### Few-flowered Garlic



### Three-cornered and few-flowered garlic



Stem cross section is strongly angled

### Rosy garlic



Stem cross section is round

### Three-cornered Garlic





## Identification throughout the year

Three-cornered garlic flowers April to June.

Few-flowered garlic flowers April to May.

Rosy garlic flowers May to June.

Keeled garlic flowers in August.

Leaves are not present over winter as these species die back in cold winters and come up from bulbs in the spring.

## Distribution

Three-cornered garlic is widespread in milder areas, especially the south-west, and has increased in numbers and range.

Few-flowered garlic has a mainly eastern distribution and is increasing throughout its range.

Rosy garlic is scattered in the south and west and is spreading.

Keeled garlic is scattered throughout the lowlands but does not seem to be increasing.

## Similar Species

There are a number of native onion and garlic species in the UK with ramsons and wild onion being the most common. There are many species with leaves which are similar to the non-native garlics but the onion/garlic smell is distinctive.



**Ramsons**  
Native  
(*Allium ursinum*)

Smells of onions.  
Few-flowered, three-  
cornered, rosy and  
keeled Garlic smell  
of garlic.

Flowers white, no bulbils

**Wild Onion**  
Native  
(*Allium vineale*)

Smells of onions

Plants up to  
75 cm tall

Round stem

Flowers pink to dark  
red or greenish-  
white. Can have  
bulbils

Round stem

### References and further reading:

Preston *et al.* (2002) "New Atlas of the British & Irish Flora". Oxford University Press

Sell, P & Murrell, G (1996) "Flora of Great Britain and Ireland, Volume 5: *Butomaceae-Orchidaceae*". Cambridge University Press

Stace, C (1997) "New Flora of the British Isles". Cambridge University Press

Photos from: Becky Dewdney-York, Nhu Nguyen, William Vann, Max Wade

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**APPENDIX 3**

Spanish Bluebell I.D. Sheet



WIKIPEDIA

# Hyacinthoides hispanica

***Hyacinthoides hispanica*** (syn. *Endymion hispanicus* or *Scilla hispanica*), the **Spanish bluebell**, is a spring-flowering bulbous perennial native to the Iberian Peninsula. It is one of around 11 species in the genus *Hyacinthoides*, others including the common bluebell (*Hyacinthoides non-scripta*) in northwestern Europe, and the Italian bluebell (*Hyacinthoides italica*) further east in the Mediterranean region.<sup>[1]</sup>

It is distinguished from the common bluebell by its paler and larger blue flowers, which are less pendulous and not all drooping to one side like the common bluebell; plus a more erect flower stem (raceme), broader leaves, blue anthers (where the common bluebell has creamy-white ones) and little or no scent compared to the strong fragrant scent of the northern species. Like *Hyacinthoides non-scripta*, both pink- and white-flowered forms occur.

The Spanish bluebell was introduced in the United Kingdom. Since then, it has hybridised frequently with the native common bluebell and the resulting hybrids are regarded as invasive. The resulting hybrid *Hyacinthoides* × *massartiana* and the Spanish bluebell both produce highly fertile seed but it is generally the hybrid that invades areas of the native common bluebell. This has caused the common bluebell to be viewed as a threatened species.

The Spanish bluebell is also cultivated as a garden plant, and several named cultivars exist with flowers in various shades of white, pink and blue.

## References

- World Checklist of Selected Plant Families* (<http://apps.kew.org/wcsp/home.do>). The Board of Trustees of the Royal Botanic Gardens, Kew, retrieved 2011-07-05, search for "Hyacinthoides"

### General

- The-Tree.org: Bluebell (<https://web.archive.org/web/20060427035443/http://www.the-tree.org.uk/EnchantedForest/WoodlandFlowers/bluebell.htm>) (includes key to identification of hybrids)
- Huxley, A. (1992). *New RHS Dictionary of Gardening* vol. 2: 604. Macmillan.

## External links

- Media related to *Hyacinthoides hispanica* at Wikimedia Commons

Retrieved from "https://en.wikipedia.org/w/index.php?title=Hyacinthoides\_hispanica&oldid=889188975"

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### Hyacinthoides hispanica



#### Scientific classification

Kingdom:	Plantae
Clade:	Angiosperms
Clade:	Monocots
Order:	Asparagales
Family:	Asparagaceae
Subfamily:	Scilloideae
Genus:	<i>Hyacinthoides</i>
Species:	<i><b>H. hispanica</b></i>

#### Binomial name

***Hyacinthoides hispanica***  
(Mill.) Chouard ex Rothm.



**Native bluebells (*Hyacinthoides non-scripta*)**

- Distinctive 'droop' like the top of a shepherd's crook
- Sweet, cool perfume
- Narrow bell-shaped flowers with rolled back tips
- Creamy white pollen

If your bluebells have all of these characteristics then they're native bluebells.



**Spanish bluebells (*Hyacinthoides hispanica*) and hybrids**

- Upright stems
- No scent
- Conical bell-shaped flowers with open tips
- Blue pollen

If the bluebells you see have some or all of these characteristics then they're not a pure native bluebell.



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**APPENDIX 4**

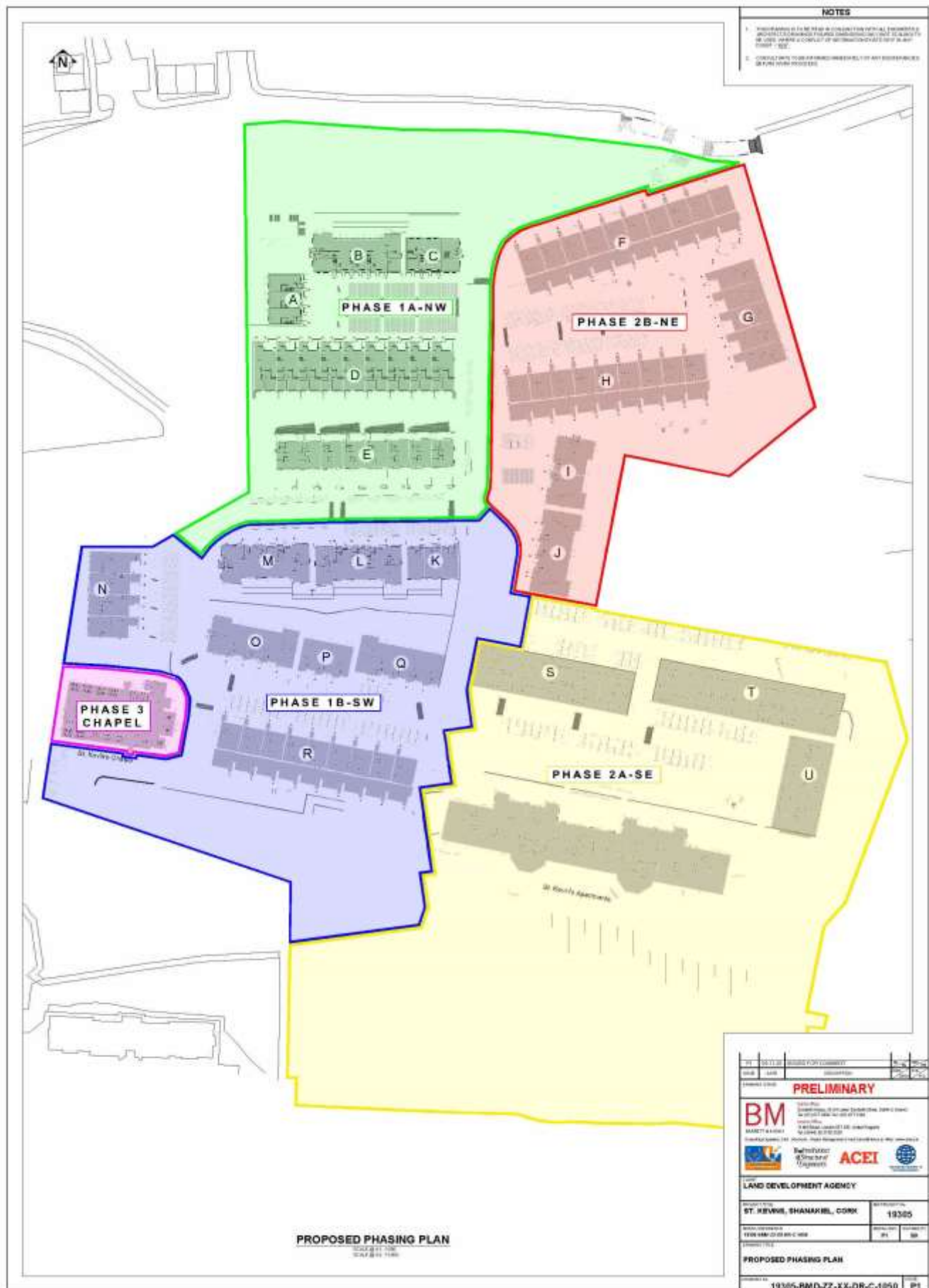
Proposed Site Layout Plan and Current Phasing Plan



**PROPOSED SITE LAYOUT PLAN**  
(DRAWING REPRODUCED COURTESY OF REDDY ARCHITECTURE & URBANISM)



- [illegible]



(DRAWING REPRODUCED COURTESY OF BARRETT MAHONY ENGINEERS)

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**APPENDIX 5**

Underground Cell and Vertical Membrane Locations



(DRAWING REPRODUCED COURTESY OF REDDY ARCHITECTURE & URBANISM)

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**APPENDIX 6**

Dendro-Scott Root Barrier Membrane – Installation Guidelines





Root Barrier Specialists

30 Ravensbury Avenue  
Morden, Surrey SM4 6ET

Tel: 020 8254 5889  
Mob: 07966 213 010

Email: [sales@rootbarrier.com](mailto:sales@rootbarrier.com)  
[www.rootbarrier.com](http://www.rootbarrier.com)

## DENDRO-SCOTT™ Root Barrier

*... why use anything else?*

DENDRO-SCOTT™ Root Barrier, recognised by the Environment Agency, is known for its quality and reliability. It is flexible and adaptable, specified for all types of projects, from the very large, including new builds, to small residential projects. It is an excellent and proven way to protect structures and services from **tree roots** and **Japanese Knotweed**.

Due to enhanced storage capacity, we are now able to offer a much wider range of sizes (rolls and sheets) from 1m x 10m rolls to 30m x 30m sheets. Our new Price List is available on our website: [www.rootbarrier.com](http://www.rootbarrier.com).

Also, we have changed the method of jointing the membrane on site from the previous glue and tape system to a butyl tape system. This makes installation quicker, easier and considerably more cost-effective.



## Contents

PAGE	HEADING
1	General installation guidelines for DENDRO-SCOTT™ Root Barrier
2	Securing DENDRO-SCOTT™ Root Barrier to a wall—External
3	Securing DENDRO-SCOTT™ Root Barrier to a wall—Internal
4	Finishing top edge of DENDRO-SCOTT™ Root Barrier (soft and hard landscapes)
5	Finishing top edge of DENDRO-SCOTT™ Root Barrier (using ornamental bricks and landscaping finish)
6	General example of DENDRO-SCOTT™ Root Barrier installation
7	Building a 'Cell' with DENDRO-SCOTT™ Root Barrier (detail)
8	Jointing DENDRO-SCOTT™ Root Barrier (method)
9	Jointing DENDRO-SCOTT™ Root Barrier (example)
10	Services/objects passing through DENDRO-SCOTT™ Root Barrier (photos)
11	Example of a vertical installation of DENDRO-SCOTT™ Root Barrier (photos)
12	Example of using DENDRO-SCOTT™ Root Barrier to protect services (photos)
13	Example of residential use of DENDRO-SCOTT™ Root Barrier (photos)
14	Example of custom sheet of DENDRO-SCOTT™ Root Barrier (photos)—Large cell
15	Example of building a very large 'Cell' with DENDRO-SCOTT™ Root Barrier (photos)
16	Example of protecting foundations with DENDRO-SCOTT™ Root Barrier (photos)



## General installation guidelines for DENDRO-SCOTT™ Root Barrier

### Vertical Installation

The root barrier membrane should be installed vertically and as taut as possible, with the grey side facing the tree. The root barrier should line the side of the trench nearest the tree, with back-filling to the blue side.

To prevent roots growing over the top, the root barrier should be brought up to ground level, or just above.

When back-filling the excavated trench, care must be taken that any sharp stones or debris that may damage the root barrier must be removed. The back-filling should be carried out to Institute of Civil Engineers standards, to prevent subsidence. As back-filling takes place, the root barrier can, in some circumstances, be dragged down during consolidation. It is important that the installer should allow for this to prevent the top of the root barrier being lower than required.

Where the soil contains flint, sharp stone or any other sharp object, these should be removed from the face of the trench, which is to be lined with root barrier membrane. If this is not practicable, consideration should be given to lining both sides of the root barrier membrane with plywood or another suitable material.

Where the root barrier will be bisected by existing services, it will be necessary to cut the root barrier membrane and to re-seal it with DENDRO-SCOTT™ double-sided butyl jointing tape; preferably from both sides.

Where land drains will be dissected by the root barrier, it is important that they be re-routed around the root barrier and not through it.

As with all root barriers, it is important to determine the correct depth, length and position to prevent the roots from growing under and around the root barrier.

Care must be taken that the position of a root barrier does not affect the stability of the tree(s) and that the loss of rooting material is such that it does not cause the tree(s) to go into terminal decline.

These are guidelines only—the installer must take into account the varying conditions of individual sites; for example, the necessity to install drainage to prevent the build-up of hydrostatic pressure on sloping ground. The installer

should also ascertain whether the input of a structural engineer is required, for example, if the excavation of the trench to take the root barrier could affect existing foundations.

The manufacturers or suppliers cannot be held responsible for the non-performance of this product due to misuse of incorrect installation practices.

It is advisable when installing root barrier on depths of 2.0 metres or more that the blue side should be lined with plywood or similar to prevent damage or 'drag-down' during back-filling.

When it is deemed necessary to line the sides of individual tree pits, consideration should be given to the use of DENDRO-SCOTT™ ready-made tree pit liners, which can line pits up to a circumference of 6 metres (diameter of 1.9 metres). If a larger planting pit is required, then creating a tree pit liner for your own requirements is a simple operation using the DENDRO-SCOTT™ Root Barrier and DENDRO-SCOTT™ double-sided butyl jointing tape. As the installation of the DENDRO-SCOTT™ tree pit liner will initially restrict the development of the tree root system, there will be a need to maintain the tree(s) in a staked condition for a longer period than if it were growing in an open ground situation.

When using the DENDRO-SCOTT™ double-sided butyl jointing tape, and/or PVC cover tape, surfaces must be smooth, free from dirt, dust, etc., and dry. The joint must then be pressed together to ensure a good, continuous seal; this may be achieved by using a small roller.

### Horizontal Installation

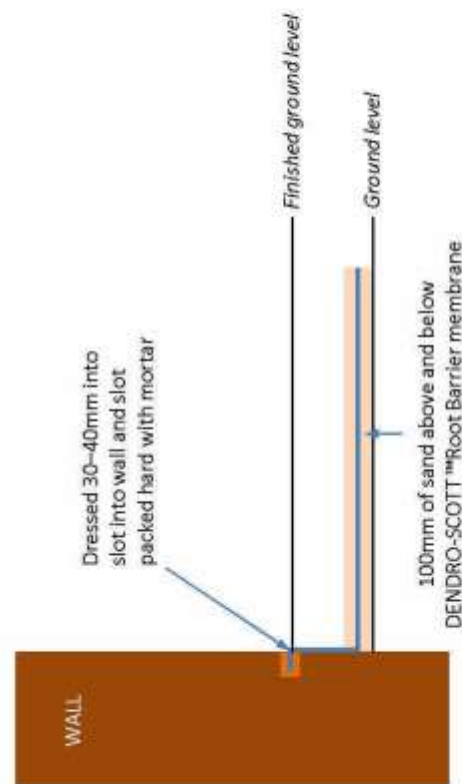
Where the DENDRO-SCOTT™ root barrier is being laid horizontally, for example, to control Japanese knotweed, Operatives should first consult with Peter Scott Tree Care (Southern) Limited.

Peter Scott Tree Care (Southern) Limited reserves the right to alter these guidelines at any time.

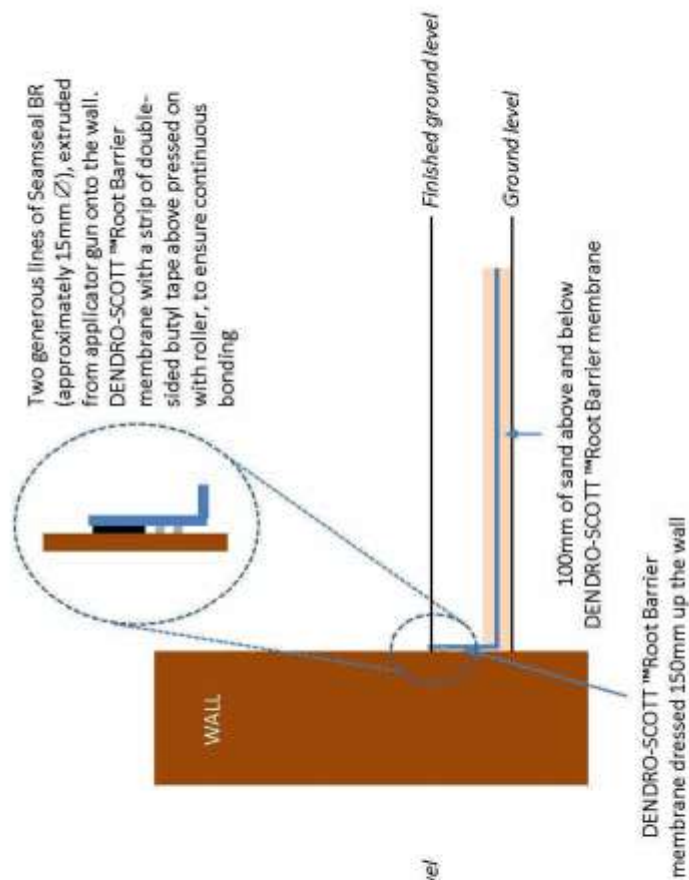
## Securing DENDRO-SCOTT™ Root Barrier to a wall—External

We recommend two options for securing DENDRO-SCOTT™ Root Barrier to a wall ...

Option A:

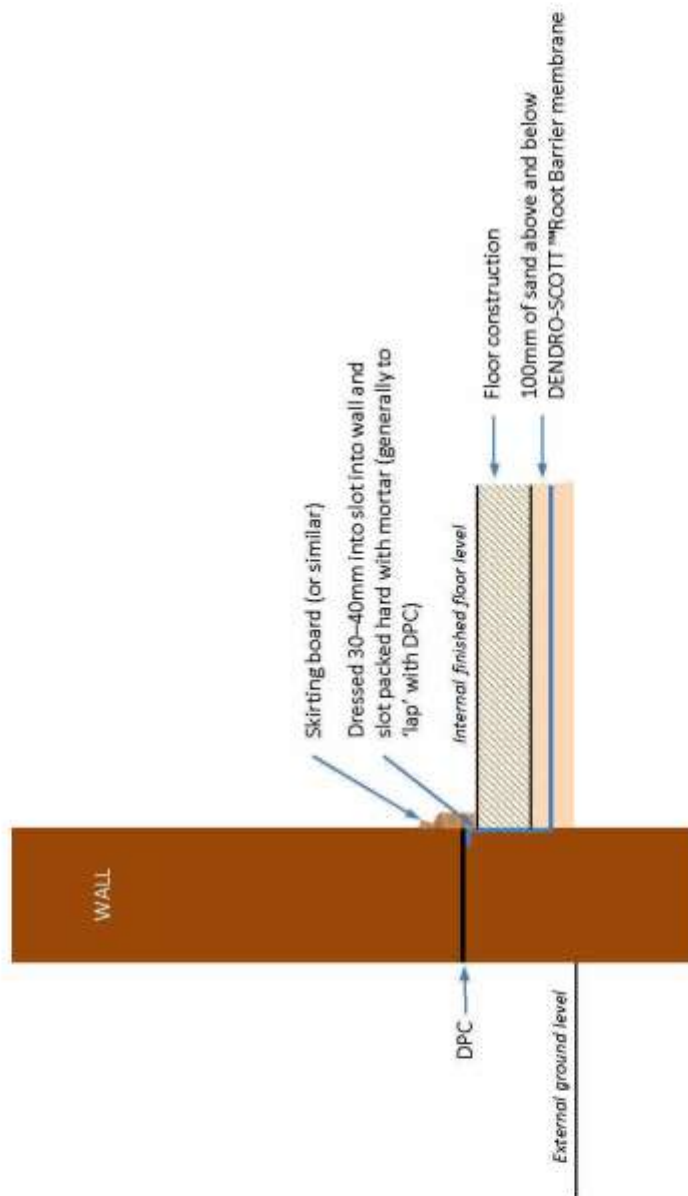


Option B:



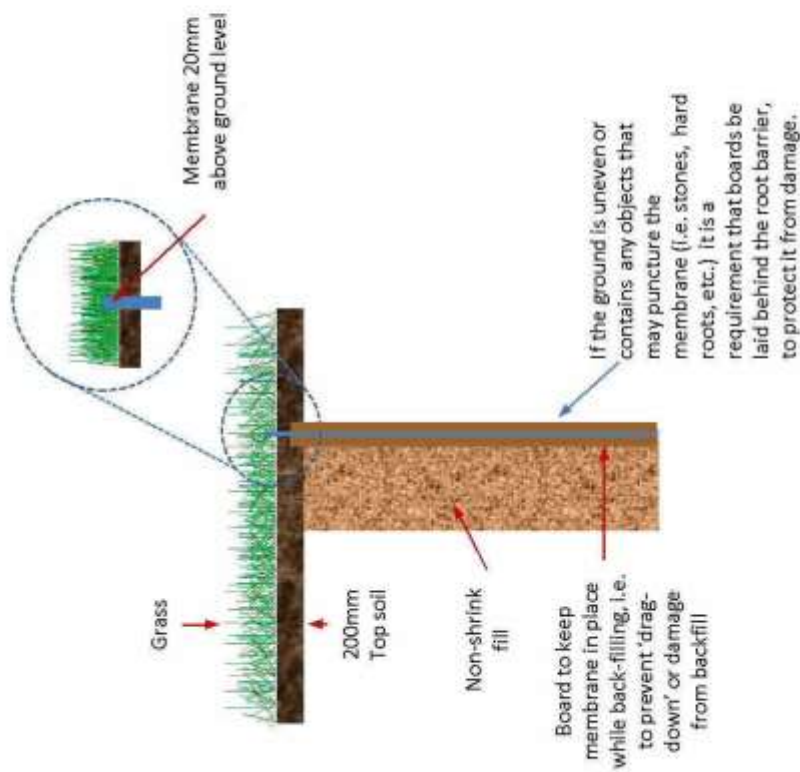


## Securing DENDRO-SCOTT™ Root Barrier to a wall—Internal

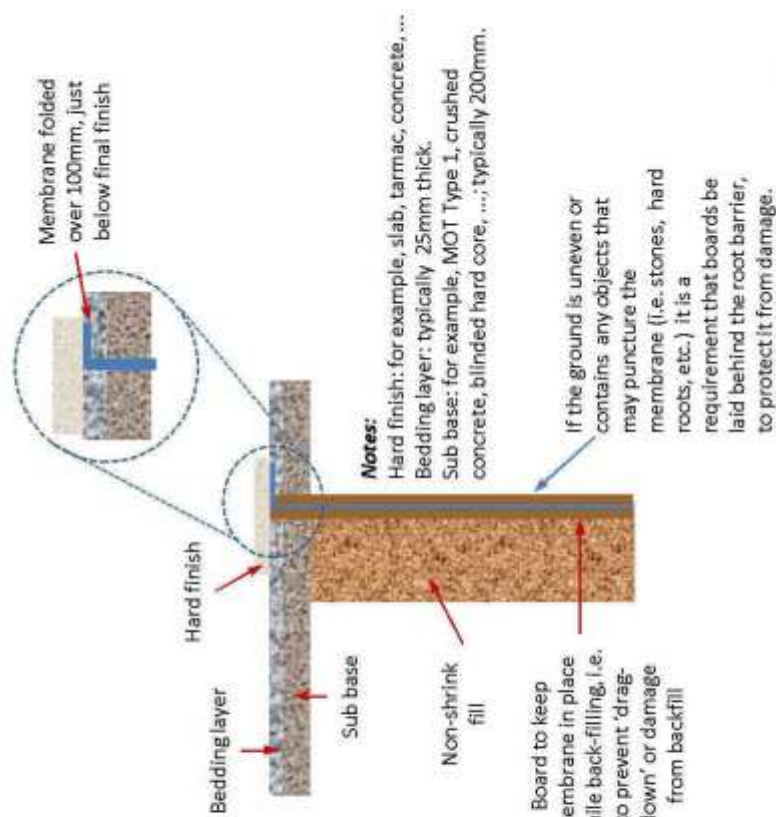


## Finishing top edge of DENDRO-SCOTT™ Root Barrier (soft and hard landscapes)

### Soft landscape ...



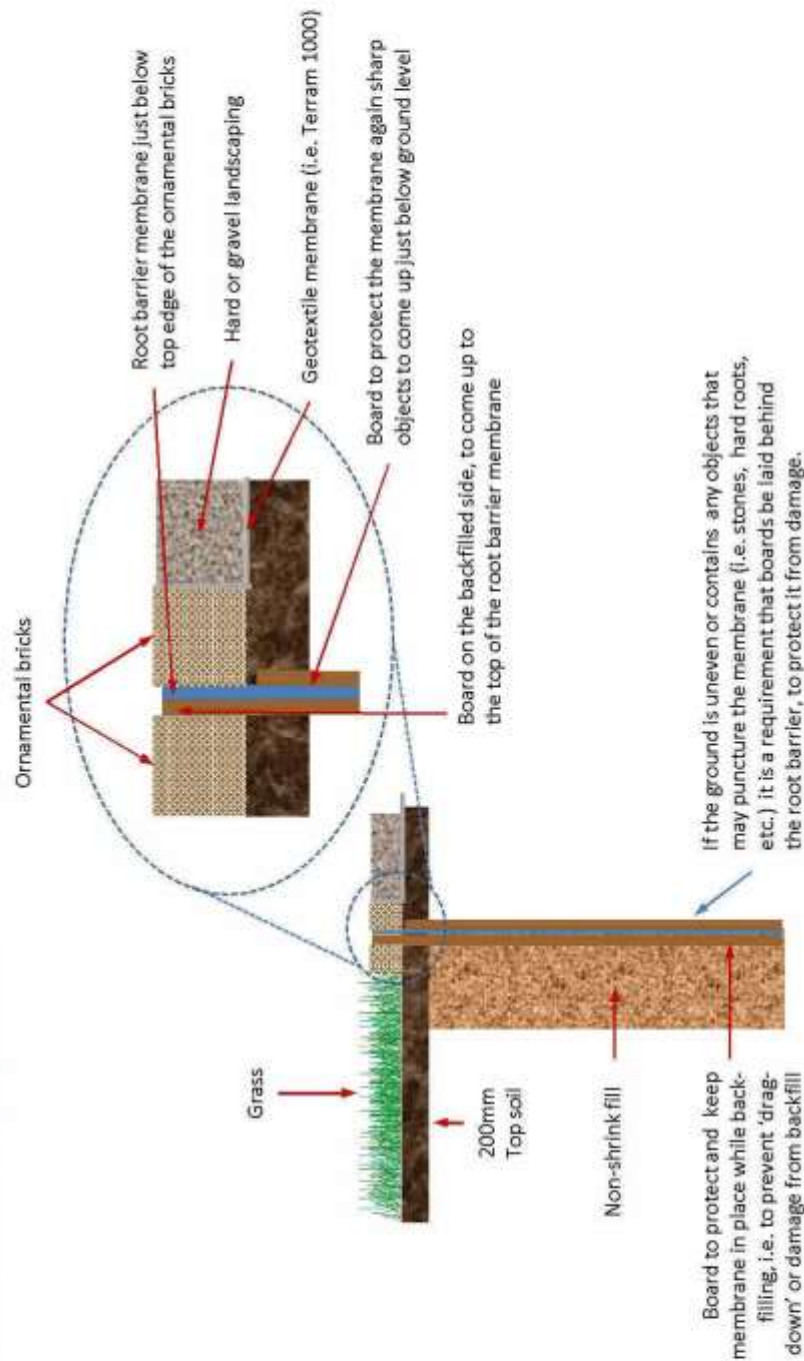
### Hard landscape ...



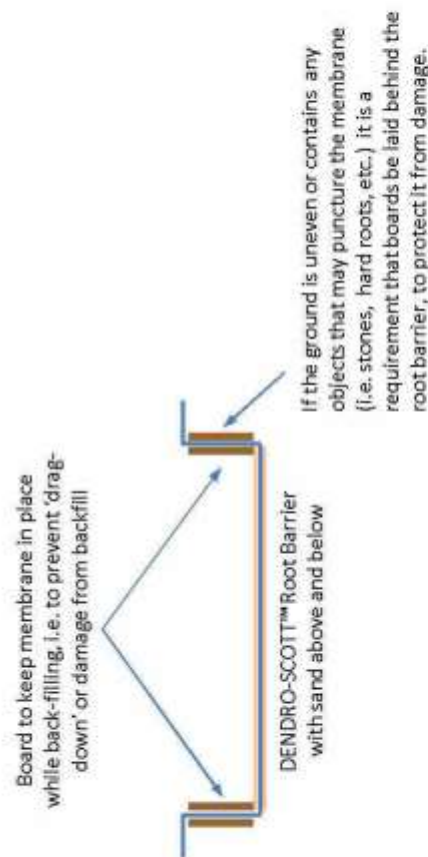


## Finishing top edge of DENDRO-SCOTT™ Root Barrier (using ornamental bricks and landscaping)

Using ornamental bricks and landscaping ...



## General example of DENDRO-SCOTT™ Root Barrier installation



Place the DENDRO-SCOTT™ Root Barrier membrane in the prepared excavation up to ground level at the sides and leave at least 100mm along the ground. Lay 100mm of sand (or more as may be required to fully protect the membrane from any damage), then lay the membrane.

Lay 100mm of sand on top of the membrane, so that there is 100mm above and below the membrane.

For the sides, place boards against the sides to stop it slipping back, being dragged down or damaged whilst back-filling.

The result will be a barrier against root penetration and Japanese Knotweed.



## Building a 'Cell' with DENDRO-SCOTT™ Root Barrier (detail)

Building a cell is a cost-effective way to contain Japanese Knotweed on site.

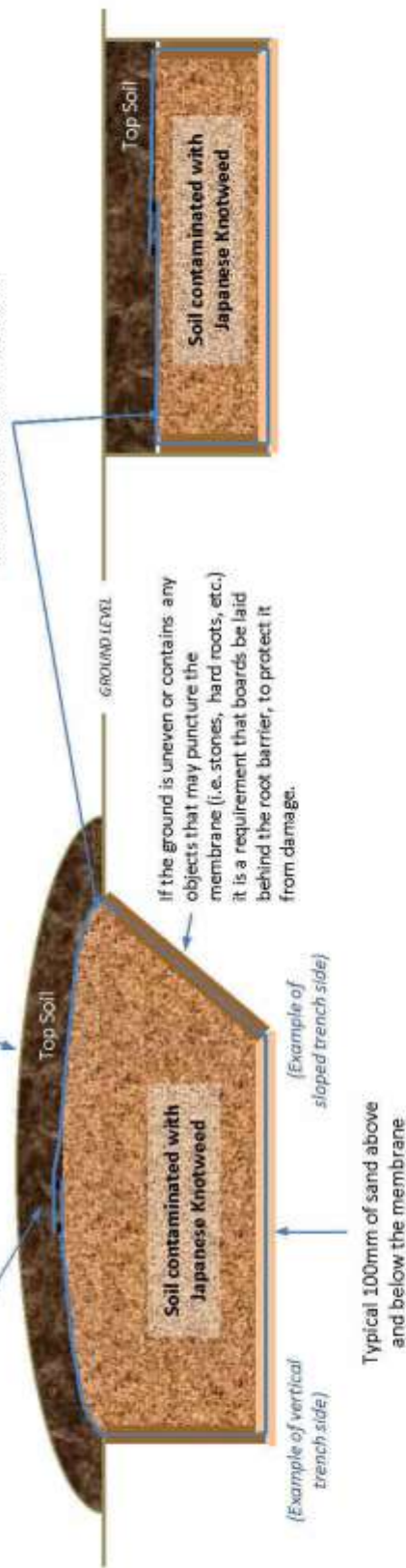
### Partially Buried/Visible cell

Minimum cover of 1m if no risk of burrowing animals or disturbance; otherwise, 2–3m, depending on site conditions.

Seal, as detailed below

### Completely buried cell

Grey side of membrane facing inwards, i.e. towards the contaminated soil.



### Sealing cells, using DENDRO-SCOTT™ tape

Two strips of double-sided butyl tape, pressed well with roller, to seal the cell  
(See detail on Pages 8 and 9.)



## Joining DENDRO-SCOTT™ Root Barrier (method)

DENDRO-SCOTT™ Root Barrier membrane comes in various sizes, but it may necessary to cut and joint to achieve the shape you require. We also supply some ready-made larger sizes—please check with our Sales team.

Place the rolls of membrane adjacent to each other and overlap each one to make the joint, or cut it into required size pieces *(if applicable)*. These will need to be jointed together, side-by-side with tape.



**Note:** the grey side of the membrane to face the tree/roots. Therefore, for vertical installations the blue side will be visible during installation.  
For 'cells' to bury contaminated soil, the grey side will be the inside of the cell and the blue side will be on the outside.



Apply two strips of double-sided butyl tape, as shown and press well with roller.



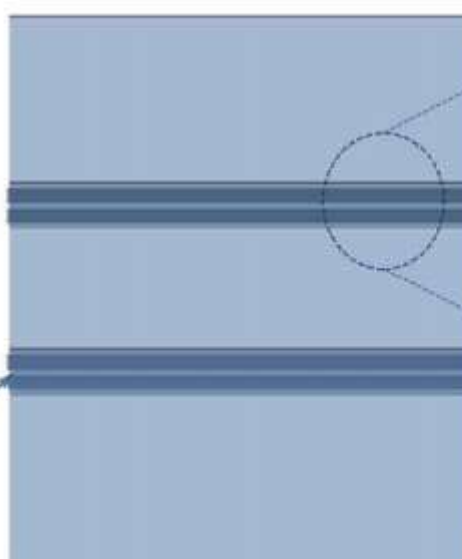
The result will be a barrier against root penetration and Japanese Knotweed



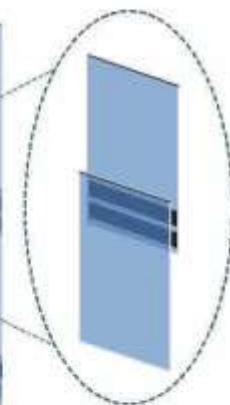
## Joining DENDRO-SCOTT™ Root Barrier (example)

Standard rolls or sheets can be joined together to create larger custom sheets ...

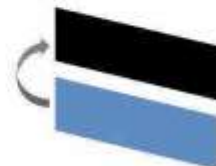
250mm overlap for each joint



Two strips of double-sided butyl tape, pressed well with roller, to secure the joint



## Services/objects passing through DENDRO-SCOTT™ Root Barrier

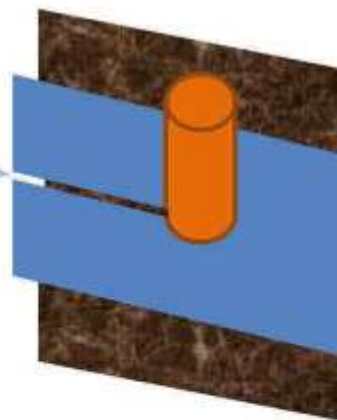


Prepare 100mm wide strips of DENDRO-SCOTT™ Root Barrier.  
Stick onto one side of double-sided butyl tape.

### Note:

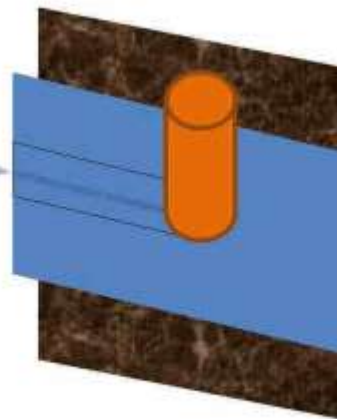
If the object passing through the DENDRO-SCOTT™ Root Barrier has a rough surface (i.e. Concrete pile) its surface should be primed with a bonding slurry, using Cementone SBR/ordinary Portland cement. The bonding slurry should be allowed to cure and dry prior to applying DENDRO-SCOTT™ double-sided butyl tape.

Cut a slit\* in the root barrier membrane and wrap it around the pipe

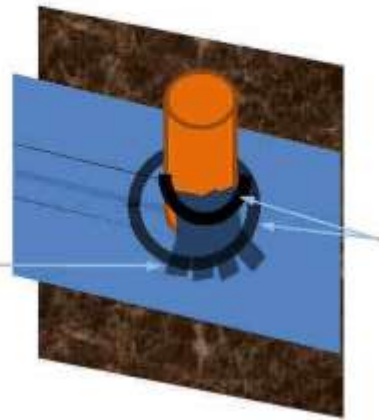


\* If laying the DENDRO-SCOTT™ Root Barrier over a pile, cut a hole just sufficient to accommodate the pile.

Use a strip of tape backed DENDRO-SCOTT™ Root Barrier to seal the gap



Use strips of tape backed DENDRO-SCOTT™ Root Barrier (shown in darker blue here) to join and seal the membrane to the pipe (or pile)





## Example of vertical installation of DENDRO-SCOTT™ Root Barrier

Buildings can be protected from root intrusion. The use of boards ensures that the root barrier remains in place while back-filling.



## Example of using DENDRO-SCOTT™ Root Barrier to protect services

Root barriers can protect services and the membrane can be installed across service lines.





## Example of residential use of DENDRO-SCOTT™ Root Barrier

Root barriers are not only for large projects; they can be used in small residential projects, with rolls from as small as 1m x 10m.



## Example of custom sheet of DENDRO-SCOTT™ Root Barrier—Large cell

Custom sheets are typically the most cost-effective option for large installations.





## Example of building a very large 'Cell' with DENDRO-SCOTT™ Root Barrier

Removing Japanese Knotweed from site can be problematic and extremely expensive. DENDRO-SCOTT™ Root Barrier can be used to build a cell. In which to bury soil contaminated with Japanese Knotweed, on site.



## Example of protecting foundations with DENDRO-SCOTT™ Root Barrier

Root barriers can be used to protect foundations. After the concrete has been poured, the remaining rectangular areas (floors) can be protected with sheets, jointed (with two strips of double-sided butyl tape) to effectively 'line' under the whole building.





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**RESIDENTIAL DEVELOPMENT SITE**

ST. KEVIN'S ASYLUM

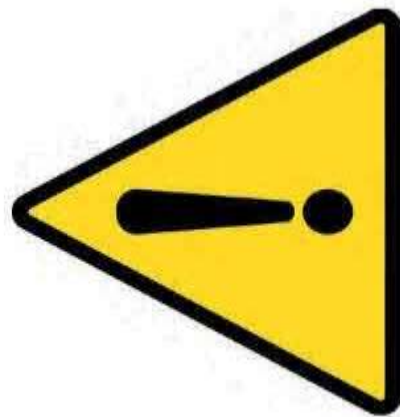
SHANAKIEL ROAD

CORK CITY

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**APPENDIX 7**

Sample Site Signage – Japanese Knotweed



# Restricted Access

**The soil in this area  
contains Japanese Knotweed  
and is being treated.**

**Do not enter unless authorised.**

**Do not remove soil from this  
area without authorisation.**



***Glúineach Bhiorach***  
***Ná Gearrtar***  
**JAPANESE KNOTWEED**  
**DO NOT CUT**



 **invasiveplantsolutions**  
[www.knotweed.ie](http://www.knotweed.ie)

Sureprint

SAMPLE SIGN 2

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**RESIDENTIAL DEVELOPMENT SITE**

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**APPENDIX 8**

Sample Site Fencing





**SAMPLE FENCING 1 – POST AND WOVEN MESH FENCING**



**SAMPLE FENCING 2 – HEAVY DUTY HERRAS FENCING**