

Invasive Species Management Plan



Invasive Non-Native Species Protocol/Management - New Park House, North Manchester General Hospital

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Date: September 2021

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Commissioned For: Arcadis UK Ltd

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Revision History

Revision	Date	Amendment
001	29/09/2021	FIRST DRAFT OF REPORT
002	20/10/2021	AMMEND POINTS MADE BY JULIE HIRLAM 18/10/2021
003	03/11/2021	REVISIT SITE 01/11/2021 AND EDIT REPORT

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1 Summary and Main Recommendations

RSK Habitat Management has been commissioned by Arcadis UK Ltd (hereafter referred to as the 'Client') on behalf of North Manchester General Hospital (NMGH) to undertake an Invasive Non-Native Species (INNS) survey of their proposed development site at North Manchester General Hospital, Manchester, M8 5RB.

The purpose of the survey was to identify any potential stands of INNS on the proposed development site to compile a site-specific management plan. It is understood that Japanese knotweed (*Falopia japonica*), Cotoneaster (*Cotoneaster horizontalis*) and Rhododendron (*Rhododendron ponticum*) have previously been identified within the New Park House application boundary forming the maximum extent of the survey boundary (hereafter referred to as the 'Site') within the NMGH. Intentions are to demolish the existing building on site to accommodate the construction of a new adult mental health unit with associated access, parking, soft and hard landscaping.

The brief was to undertake an INNS walkover survey of the Site to identify and map the extent of all known location of INNS. Consideration was given to the legal and practical issues which will need to be considered prior to the commencement of any development; these are recorded within the management plan.

The methods used in the survey were in line with (the now withdrawn) Environment Agency, INNS and CIRIA best practice. The main objective was to ascertain the extent of INNS growth on site and provide suitable recommendations for managing any identified stands of growth.

An INNS walkover was undertaken by Lloyd Fyfield (Project Supervisor) on Wednesday 22nd September 2021. During the survey, Japanese knotweed was identified on-site in 1 location, Cotoneaster in 12 locations, Rhododendron in 8 locations, Horsetail (*Equisetum arvense*) in 14 locations and Arrow bamboo (*Pseudosasa japonica*) in 1 location.

An INNS walkover revisit was undertaken by Lloyd Fyfield on Monday 01st November 2021. A revisit was required to survey new areas of the site as correspondence made on the 15th October 2021 confirmed that the initial boundary map provided was incorrect. New areas surveyed included the North-West sub-station, East car park and South-West verge. No INNS were identified in the following areas.

Japanese knotweed is an Invasive Non-Native Species (INNS) herbaceous perennial plant. Japanese knotweed is listed on Schedule 9 of the Wildlife and Countryside Act 1981. It is therefore illegal to cause the species to spread in the UK due to its ability to rapidly colonize, spread, outcompete native vegetation and cause significant damage to property.

Cotoneaster is an Invasive Non-Native Species (INNS) flowering plant. Cotoneaster is listed on Schedule 9 of the Wildlife and Countryside Act 1981. It is therefore illegal to cause the species to spread in the UK due to its ability to rapidly colonize, spread and outcompete native vegetation.

Rhododendron is an Invasive Non-Native Species (INNS) woody flowering plant. Rhododendron is listed on Schedule 9 of the Wildlife and Countryside Act 1981. It is therefore illegal to cause the species to spread in the UK due to its ability to rapidly colonize, spread, outcompete native vegetation and cause significant damage to property.

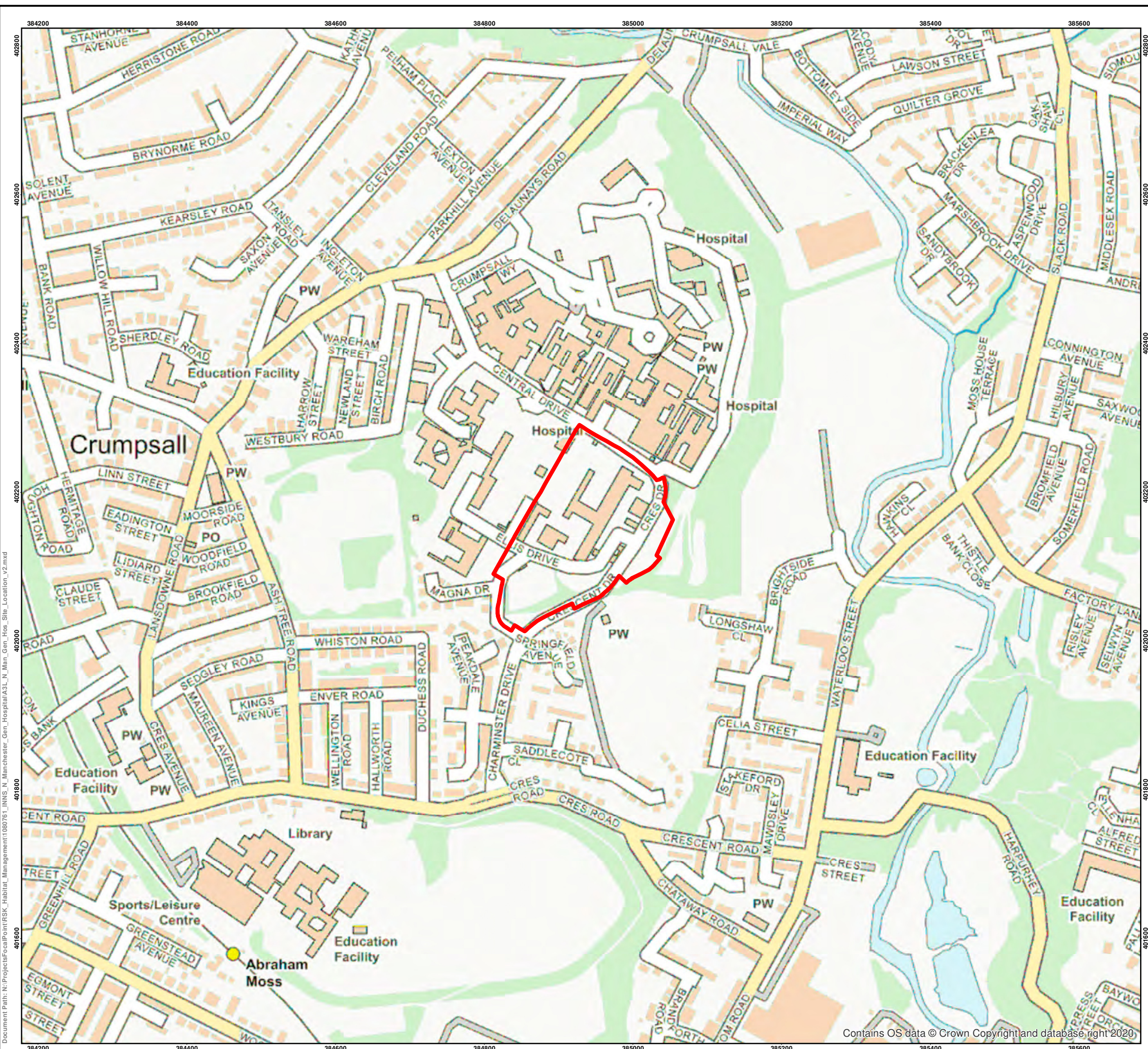
Arrow bamboo is an invasive non-native herbaceous flowering plant. Arrow bamboo is not listed on Schedule 9 of the WCA 1981. It is also not listed as an injurious weed. This means that it is not illegal to cause the species to spread in the UK. Despite not being listed on Schedule 9 of the WCA 1981, it should be treated as if it were a Schedule 9 species due to its ability to rapidly colonize, spread, outcompete native vegetation and cause significant damage to property.

Horsetail is an invasive native herbaceous perennial weed. Horsetail is a native species and is not listed on Schedule 9 of the WCA 1981. It is also not listed as an injurious weed. This means that it is not illegal to cause the species to spread in the UK. Despite not being listed on Schedule 9 of the WCA 1981, it should be treated as if it were a Schedule 9 species due to its ability to rapidly colonize, spread, outcompete native vegetation and cause significant damage to property.

1.1 Main Recommendations

- All INNS found on or near to the Site should be suitably demarcated with their locations and respective buffer zones mapped out. These zones must be fully protected to ensure no unauthorised which could lead to the spread of INNS.
- An Invasive Non-Native Clerk of Works (INNS CoW) should be employed to supervise works that take place within areas of INNS and their respective buffer zones. The INNS CoW should have 2 years minimum experience dealing with INNS.
- All contractors should receive toolbox talks on the INNS that have been identified, and how to prevent its spread and contamination. The toolbox talk should also include information on how to decontaminate plant and equipment effectively. The development and delivery of the toolbox talk will be the responsibility of the INNS CoW.
- In areas where stands of INNS will be affected by groundworks (including their buffer zones), contaminated soil or plant material should be excavated under the supervision of an INNS CoW and disposed off-site at a suitably licensed landfill in accordance with the Environmental Protection Act (EPA) 1990.
- If there is insufficient budget for off-site disposal, then the excavated material should be buried, with at least 5m (depth) of clean soils on top (preferably encapsulated by a geotextile root barrier membrane) or stockpiled for subsequent herbicide treatment if space allows.
- All plant, machinery, equipment and personnel entering the demarcated areas should be carefully and thoroughly decontaminated to prevent the spread of INNS with arisings being disposed off-site at a suitably licensed landfill in accordance with the Environmental Protection Act (EPA) 1990.

1.2 Figure 1 – Site Location



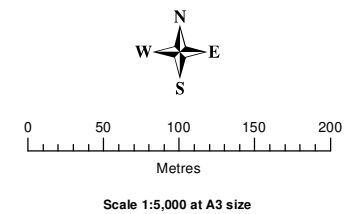
RSK Habitat Management

North Manchester General Hospital,
Manchester, M8 5RB

Location Plan

 Site boundary

Drawn by Andy Frost 19/10/2021, Verified by Lloyd Fyfield 19/10/2021



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1.3 Figure 2 – Location of Invasive Species

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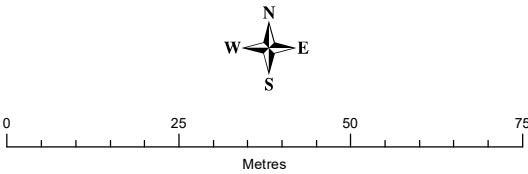
RSK Habitat Management

North Manchester General Hospital,
Manchester, M8 5RB

Invasive Non-Native Species Location Plan

- Site ownership boundary
- Surveyed 01/11/2021
- Contoneaster (*Cotoneaster horizontalis*)
- Horsetail (*Equisetum arvense*)
- Horsetail / Contoneaster (*Equisetum arvense* / *Cotoneaster horizontalis*)
- Japanese knotweed (*Fallopia japonica*)
- Rhododendron (*Rhododendron ponticum*)
- Arrow bamboo (*Pseudosasa japonica*)
- Invasive Species 7m buffer

Drawn by Andy Frost 03/11/2021, Verified by Lloyd Fyfield 03/11/2021



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2 Introduction

2.1 Background

The Client is proposing to redevelop the existing site at site at North Manchester General Hospital, Manchester, M8 5RB which will consist of demolition of the existing buildings on site to accommodate the construction of the new adult mental health unit with associated access, parking, soft and hard landscaping.

The Site defined as the New Park House site, forms part of the North Manchester General Hospital (NMGH) and is dominated by hardstanding bare ground, amenity grassland, broadleaved woodland with scattered derelict and occupied buildings throughout.

The Site is located at National Grid reference SD 84898, 02163 and can be accessed from the West along Central Drive leading from Delaunays Road or from the South along Charminster Drive leading from Crescent Road. The Site comprises of a roughly rectangular shaped parcel of land covering an approximate area of 34,454 m². The Site is enclosed to the North by Central Drive, to the East by Crescent Drive, to the South-West by Eyam Road, to the South by Ellis drive and to the West by an un-named road leading from Ellis Drive providing access to the central car park.

The Client intends to establish if any INNS are present within the proposed development Site and take appropriate action to control/eradicate any identified stands (if required) prior to the commencement of construction or enabling works.

2.2 Client brief and objectives

The Client commissioned RSK Habitat Management in September 2021 to:

- Undertake an INNS survey of the Site and record the locations of any plants identified; and
- Provide a report, in the form of a management plan, detailing the recommended actions that should be taken in order to manage any INNS identified within the proposed development Site, taking into account applicable legislation and good practice guidelines.

3 Survey Methodology

3.1 Desk Study

A desk-based study was completed on the 28th September 2021 by reviewing the following documents provided by the client:

- **'GMMH NPHD OBC Appx EA-11 Estate Annexe Vol11- WSP Preliminary Ecology Appraisal (1)'**
Prepared by: WSP, May 2020, Reference: 70069934
- **'20200-SRA-ISZ-XX-DR-A-0282_Redline Boundaries over NHPD Site Plan_r'** Prepared by:
Sheppard Robson, 21 03 2021, Reference: 6512
- **'2481604 North Manchester General Hospital PEA report Rev01'** Prepared by: RSK Biocensus,
July 2021, Reference: 2481604
- **'North Manchester General Hospital PEAR'** Prepared by: RammSanderson, September 2020,
Report Reference: RSE_3649_01_V1
- **'20200-SRA-ISZ-XX-DR-A-0025- Demolition Boundary'** Prepared by: Sheppard Robson, 21 03
2021, Reference: 6512

Information obtained from the following sources suggests that INNS was first identified at the NMGH on the 12th February 2020 by RammSanderson during a walkover survey forming part of their Preliminary Ecological Appraisal (PEA). The PEA covered the entirety of the NMGH which included the proposed development Site. No INNS were identified within the proposed development Site but Japanese knotweed and Himalayan balsam were identified in the North-East boundary of the NMGH.

Additional stands of INNS were identified in May 2020 by WSP during a walkover survey forming part of their PEA which specifically covered the Site intended for development. In total, 2 stands of Japanese knotweed were identified at National Grid Reference SD 84925, 02096 and 1 stand of Cotoneaster within a hedgerow at National Grid Reference SD85030, 02190. The PEA prepared by WSP describes the stand of Cotoneaster being located in the North-West of the site. However, the photograph and National Grid Reference provided positions the following stand in the North-East of the site. We can confidently determine that this is an error by WSP as Cotoneaster was identified in the North-East and not the North-West during our walkover survey completed on the 22nd September 2021.

Further stands of INNS were identified on the 28th May 2021 by RSK Biocensus during a survey forming part of their PEA which covered the entirety of the NMGH which included the proposed development Site. In total 1 stand of Cotoneaster and 3 stands of Rhododendron were all identified within the proposed development Site which had not previously been identified or recorded. Other INNS species such as Himalayan balsam (*Impatiens glandulifera*), Japanese Rose (*Rosa rugosa*), Japanese knotweed, Rhododendron, Cotoneaster had been identified on the NMGH but not within the proposed development Site. The PEA completed by RSK Biocensus failed to identify the stands of Japanese knotweed and Cotoneaster recorded by WSA in May 2020.

Despite inconsistencies between each PEA completed between February 2020 and May 2021 failing to identify each-others stands of INNS, it is possible to determine that there is a high probability of various

INNS being within the proposed development Site and the wider NMGH area. A thorough walkover by a competent and qualified person is therefore required to identify and record each stand of INNS to prepare an INNS Management Plan.

3.2 Invasive Species Survey Method

On the 22nd September 2021, a walkover survey of the Site was carried out by Lloyd Fyfield, the allocated ADAS surveyor. The areas surveyed were those identified as being part of the proposed development. Photographs were taken at each relevant location.

On the 01st November 2021, a walkover survey revisit was carried out by Lloyd Fyfield. A revisit was required to survey new areas of the site as correspondence made on the 15th October 2021 confirmed that the initial boundary map provided was incorrect. New areas surveyed included the North-West sub-station, East car park and South-West verge.

The survey was undertaken in accordance with the techniques and methodologies described in the Handbook for Phase 1 Habitat Survey (JNCC 2010) and using standard nomenclature (Stace, 2010). INNS identified to be present on site were recorded onto a field map, with written target notes, e.g. access restrictions and extent of infestation, added to provide supplementary information.

3.3 Limitations

Access to certain areas of the site during the walkover survey was not possible due to restrictions and safety concerns. Visual inspection was therefore completed from accessible and safe areas. These areas included various temporary construction compounds and derelict buildings.

Japanese knotweed identified within the proposed development Site appears to have been previously chemically treated or cleared of all above ground vegetation. Additional stands may therefore be present but concealed during the site walkover due to previous eradication attempts.

4 Location of invasive species

Japanese knotweed, Cotoneaster, Arrow bamboo, Horsetail and Rhododendron were identified on or in close proximity to the proposed development Site.

Japanese knotweed (*Fallopia japonica*) was identified in one location on site:

- Japanese knotweed Stand 1. Area: 4m x 3m Co-ordinates: 53°30'55.2"N 2°13'43.9"W

Cotoneaster (*Cotoneaster horizontalis*) was identified in twelve locations on site:

- Cotoneaster Stand 1. Area: 0.5m x 0.5m Co-ordinates: 53°30'57.2"N 2°13'46.3"W
- Cotoneaster Stand 2. Area: 0.5m x 0.5m Co-ordinates: 53°30'57.2"N 2°13'45.0"W
- Cotoneaster Stand 3. Area: 7m x 2m Co-ordinates: 53°30'56.0"N 2°13'45.7"W
- Cotoneaster Stand 4. Area: 3m x 3m Co-ordinates: 53°30'56.0"N 2°13'45.9"W
- Cotoneaster Stand 5. Area: 3m x 2m Co-ordinates: 53°30'56.2"N 2°13'46.8"W
- Cotoneaster Stand 6. Area: 1m x 1m Co-ordinates: 53°30'56.0"N 2°13'44.3"W
- Cotoneaster Stand 7. Area: 2m x 3m Co-ordinates: 53°30'56.2"N 2°13'44.3"W
- Cotoneaster Stand 8. Area: 12m x 4m Co-ordinates: 53°30'57.8"N 2°13'47.1"W
- Cotoneaster Stand 9. Area: 7m x 5m Co-ordinates: 53°30'57.4"N 2°13'39.2"W
- Cotoneaster Stand 10. Area: 7m x 2m Co-ordinates: 53°30'58.0"N 2°13'40.5"W
- Cotoneaster Stand 11. Area: 3m x 1m Co-ordinates: 53°30'58.1"N 2°13'40.4"W
- Cotoneaster Stand 12. Area: 25m x 1m Co-ordinates: 53°30'58.3"N 2°13'38.0"W

Arrow Bamboo (*Pseudosasa japonica*) was identified in one location on site:

- Arrow Bamboo Stand 1. Area: 3.5m x 7.5m Co-ordinates: 53°30'57.0"N 2°13'45.3"W

Horsetail (*Equisetum arvense*) was identified in fourteen locations on site:

- Horsetail Stand 1. Area: 3m x 0.5m Co-ordinates: 53°30'56.3"N 2°13'47.6"W
- Horsetail Stand 2. Area: 6m x 2m Co-ordinates: 53°30'56.5"N 2°13'47.5"W

- Horsetail Stand 3. Area: 4m x 1m and 4m x 1m (L-shaped) Co-ordinates: 53°30'57.4"N 2°13'46.3"W
- Horsetail Stand 4. Area: 4m x 2m Co-ordinates: 53°30'56.0"N 2°13'44.3"W
- Horsetail Stand 5. Area: 2m x 2m Co-ordinates: 53°30'58.0"N 2°13'46.0"W
- Horsetail Stand 6. Area: 2m x 2m Co-ordinates: 53°30'56.5"N 2°13'48.4"W
- Horsetail Stand 7. Area: 10m x 2m Co-ordinates: 53°30'57.8"N 2°13'47.1"W
- Horsetail Stand 8. Area: 3m x 1m Co-ordinates: 53°30'57.0"N 2°13'47.9"W
- Horsetail Stand 9. Area: 4m x 2m Co-ordinates: 53°30'58.1"N 2°13'47.6"W
- Horsetail Stand 10. Area: 6m x 2m Co-ordinates: 53°30'58.4"N 2°13'47.3"W
- Horsetail Stand 11. Area: 2m x 2m Co-ordinates: 53°30'55.3"N 2°13'44.7"W
- Horsetail Stand 12. Area: 15m x 6m Co-ordinates: 53°30'55.0"N 2°13'45.1"W
- Horsetail Stand 13. Area: 3m x 3m Co-ordinates: 53°30'58.1"N 2°13'40.4"W
- Horsetail Stand 14. Area: 6m x 9m and 10m x 7m (L-shaped) Co-ordinates: 53°30'58.5"N 2°13'40.1"W

Rhododendron (*Rhododendron ponticum*) was identified in eight location on site and off site:

- Rhododendron Stand 1. Area: 95m x ?m Co-ordinates: 53°30'58.6"N 2°13'37.3"W
- Rhododendron Stand 2. Area: 60m x 7m Co-ordinates: 53°30'54.4"N 2°13'42.3"W
- Rhododendron Stand 3. Area: 20m x 2m Co-ordinates: 53°30'55.2"N 2°13'41.1"W
- Rhododendron Stand 4. Area: 6m x 2m Co-ordinates: 53°30'56.0"N 2°13'40.2"W
- Rhododendron Stand 5. Area: 15m x 30m Co-ordinates: 53°30'54.0"N 2°13'49.1"W
- Rhododendron Stand 6. Area: 12m x 15m Co-ordinates: 53°30'53.9"N 2°13'44.5"W
- Rhododendron Stand 7. Area: 14m x 10m Co-ordinates: 53°30'52.9"N 2°13'47.2"W
- Rhododendron Stand 8. Area: 60m x ?m Co-ordinates: 53°30'55.2"N 2°13'40.5"W

Despite Horsetail and Arrow bamboo not being listed on Schedule 9 of the Wildlife and Countryside Act 1981, we recommend that it should be treated as if they were a Schedule 9 species due to their ability to rapidly colonize, spread, outcompete native vegetation and cause significant damage to property as already seen on-site.

Figure 2 shows the location of all INNS found on or in close proximity to the proposed development Site, with a 7m buffer zone. This buffer zone is the area in which no works should be undertaken without an INNS CoW presence. The buffer zone also indicates the potential limits and extents of any excavation works that may be required.

5 Results

The results of the survey can be seen in Figure 2. We found the following INNS on our survey:

- Japanese knotweed (*Fallopia japonica*)
- Cotoneaster (*Cotoneaster horizontalis*)
- Rhododendron (*Rhododendron ponticum*)
- Horsetail (*Equisetum arvense*)
- Arrow Bamboo (*Pseudosasa japonica*)

5.1 Japanese knotweed stand 1

Japanese knotweed was identified on the proposed development site approximately 54m from the East boundary and approximately 13m from the hospital building.

The stand was identified by WSP as part of their PEA in May 2020 and has been demarcated with a ground marker. No visible growth of Japanese knotweed was apparent suggesting that the area has been cleared or chemically treated as part of a herbicide treatment programme.

Despite no visible growth of Japanese knotweed being identified, several mature and well-established crowns were identified along the grass verge on both sides of the palisade fencing encroaching towards the car park.

5.2 Cotoneaster stand 1

Cotoneaster was identified on the proposed development site approximately 35m from the West boundary and approximately 8m from the hospital building.

The stand consisted of a single shoot amongst a well established hedge of Scarlet firethorn (*Pyracantha coccinea*) within the gated central garden of the proposed development Site.

5.3 Cotoneaster stand 2

Cotoneaster was identified on the proposed development site approximately 56m from the West boundary and approximately 7.5m from the hospital building.

The mature stand was identified in a raised overgrown brick planter amongst other vegetation within the gated central garden of the proposed development Site.

5.4 Cotoneaster stand 3

Cotoneaster was identified on the proposed development site approximately 60m from the West boundary and approximately 0m from the hospital building.

The mature stand was identified along the top of a 4m brick wall which was densely overgrown with various vegetation. The stand is visible from the gated central garden but best accessed from above via the temporary construction compound that has been established.

5.5 Cotoneaster stand 4

Cotoneaster was identified on the proposed development site approximately 55m from the West boundary and approximately 6m from the hospital building.

The mature stand was identified at ground level amongst other densely overgrown vegetation within the gated central garden of the proposed development Site.

5.6 Cotoneaster stand 5

Cotoneaster was identified on the proposed development site approximately 40m from the West boundary and approximately 11m from the hospital building.

The stand was identified at ground level underneath the canopy of the poorly maintained Eastern red cedar (*Juniperus virginiana*) hedgerow within the gated central garden of the proposed development Site.

5.7 Cotoneaster stand 6

Cotoneaster was identified on the proposed development site approximately 70m from the East boundary and approximately 1m from the hospital building.

The stand was identified at ground level amongst other densely overgrown vegetation including Horsetail, within the gated central garden of the proposed development Site.

5.8 Cotoneaster stand 7

Cotoneaster was identified on the proposed development site approximately 75m from the East boundary and approximately 0m from the hospital building.

The stand was identified growing through and along the brick façade of the foundations for the cooling tower/chimney within the gated central garden of the proposed development Site.

5.9 Cotoneaster stand 8

Cotoneaster was identified on the proposed development site approximately 14m from the West boundary and approximately 3.5m from the hospital building.

The stand was identified growing amongst other vegetation including Horsetail along the unnamed road hedgerow leading towards the car park.

5.10 Cotoneaster stand 9

Cotoneaster was identified on the proposed development site approximately 14m from the West boundary and approximately 2m from the hospital building.

The stand was identified growing amongst other vegetation including Horsetail along the unnamed road hedgerow leading towards the car park.

5.11 Cotoneaster stand 10

Cotoneaster was identified on the proposed development site approximately 16m from the East boundary and approximately 0m from the hospital building.

The stand was identified at ground level within a low level planter amongst other overgrown vegetation in close proximity to the Crescent Drive.

5.12 Cotoneaster stand 11

Cotoneaster was identified on the proposed development site approximately 45m from the East boundary and approximately 1m from the hospital building.

The stand was identified growing amongst other vegetation along the car park hedgerow near the disabled ramp providing access to the hospital building.

5.13 Cotoneaster stand 12

Cotoneaster was identified on the proposed development site approximately 45m from the East boundary and approximately 0m from the hospital building.

The stand was identified growing amongst other vegetation including Horsetail along the car park hedgerow near the disabled ramp providing access to the hospital building.

5.14 Cotoneaster stand 12

Cotoneaster was identified on the proposed development site approximately 6m from the East boundary and approximately 8m from the hospital building.

The stand was previously identified by WPA as part of their PEA in May 2020 along Crescent Drive hedgerow near the access ramp leading from the footpath to the car park mixed with other vegetation.

5.15 Arrow bamboo stand 1

Arrow Bamboo was identified on the proposed development site approximately 52m from the East boundary and approximately 0m from the hospital building.

The mature and well established approximately 5m high stand was identified within the gated central garden of the proposed development Site. Several offshoots had encroached from the central stand penetrating and damaging the surrounding hard standing surface.

5.16 Horsetail stand 1

Horsetail was identified on the proposed development site approximately 25m from the West boundary and approximately 2m from the hospital building.

The stand was identified in a low level brick planter amongst other vegetation within the gated central garden of the proposed development Site.

5.17 Horsetail stand 2

Horsetail was identified on the proposed development site approximately 25m from the West boundary and approximately 0m from the hospital building.

The mature stand was identified at ground level penetrating the hard standing surface in several location within the gated central garden of the proposed development site.

5.18 Horsetail stand 3

Horsetail was identified on the proposed development site approximately 32m from the West boundary and approximately 5m from the hospital building.

The stand was identified at ground level growing around the hedgerow and the amongst the grass within the gated central garden of the proposed development site.

5.19 Horsetail stand 4

Horsetail was identified on the proposed development site approximately 70m from the East boundary and approximately 1m from the hospital building.

The stand was identified at ground level amongst other densely overgrown vegetation including Cotoneaster within the gated central garden of the proposed development Site.

5.20 Horsetail stand 5

Horsetail was identified on the proposed development site approximately 28m from the West boundary and approximately 1m from the hospital building.

The stand was identified growing amongst other vegetation along the unnamed road hedgerow leading towards the car park.

5.21 Horsetail stand 6

Horsetail was identified on the proposed development site approximately 14m from the West boundary and approximately 5m from the hospital building.

The stand was identified growing amongst other vegetation along the unnamed road hedgerow leading towards the car park.

5.22 Horsetail stand 7

Horsetail was identified on the proposed development site approximately 14m from the West boundary and approximately 2m from the hospital building.

The stand was identified growing amongst other vegetation including Cotoneaster along the unnamed road hedgerow leading towards the car park.

5.23 Horsetail stand 8

Horsetail was identified on the proposed development site approximately 14m from the West boundary and approximately 5m from the hospital building.

The stand was identified growing amongst other vegetation around a signpost along the unnamed road hedgerow leading towards the car park.

5.24 Horsetail stand 9

Horsetail was identified on the proposed development site approximately 1m from the West boundary and approximately 15m from the hospital building.

The stand was identified at ground level along the boundary of the proposed development site along the unnamed road verge leading towards the car park.

5.25 Horsetail stand 10

Horsetail was identified on the proposed development site approximately 1m from the West boundary and approximately 16m from the hospital building.

The stand was identified at ground level along the boundary of the proposed development site along the unnamed road verge leading towards the car park.

5.26 Horsetail stand 11

Horsetail was identified on the proposed development site approximately 66m from the East boundary and approximately 18m from the hospital building.

The stand was identified at ground level along the roadside verge of the proposed development site along the palisade fencing near the Japanese knotweed.

5.27 Horsetail stand 12

Horsetail was identified on the proposed development site approximately 66m from the East boundary and approximately 29m from the hospital building.

The stand was identified at ground level along the periphery of the South-West corner of the park and extending onto the grass verge on the other side of the palisade fencing of the proposed development site.

5.28 Horsetail stand 13

Horsetail was identified on the proposed development site approximately 45m from the East boundary and approximately 0m from the hospital building.

The stand was identified growing amongst other vegetation including Cotoneaster along the car park hedgerow near the disabled ramp providing access to the hospital building.

5.29 Horsetail stand 14

Horsetail was identified on the proposed development site approximately 45m from the East boundary and approximately 0m from the hospital building.

The mature and well-established stand was identified growing in an L-shaped format at ground level penetrating the hard standing surface in several location within proposed development site.

5.30 Rhododendron stand 1

Rhododendron was identified on and outside of the proposed development site approximately 0m from the East boundary and approximately 14m from the hospital building.

The mature and well-established stand was first identified by WSP as part of their PEA in May 2020 who failed to record the exact locations. The following stand was subsequently identified and recorded by RSK Biocensus as part of their PEA in May 2021. The exact extent is unknown, but information suggests it is extensive in the North-East woodlands beyond Crescent Drive.

5.31 Rhododendron stand 2

Rhododendron was identified on the proposed development site approximately 7m from the East boundary and approximately 2m from the hospital building.

The mature and well-established stand was first identified by WSP as part of their PEA in May 2020 who failed to record the exact locations. The following stand was subsequently identified and recorded by RSK Bio census as part of their PEA in May 2021. The stand extends North from the gravel laid footpath along Crescent Drive within the proposed development site.

5.32 Rhododendron stand 3

Rhododendron was identified on the proposed development site approximately 8m from the East boundary and approximately 0m from the hospital building.

The mature and well-established stand was first identified by WSP as part of their PEA in May 2020 who failed to record the exact locations. The following stand was subsequently identified and recorded by RSK Biocensus as part of their PEA in May 2021. The stand is a continuation from Rhododendron stand 2 and continues North along Crescent Drive within the proposed development site.

5.33 Rhododendron stand 4

Rhododendron was identified on the proposed development site approximately 8m from the East boundary and approximately 0m from the hospital building.

The mature and well-established stand was first identified by WSP as part of their PEA in May 2020 who failed to record the exact locations. The following stand was subsequently identified and recorded by RSK Biocensus as part of their PEA in May 2021. The stand is a continuation from Rhododendron stand 3 and continues North along Crescent Drive within the proposed development site.

5.34 Rhododendron stand 5

Rhododendron was identified on the proposed development site approximately 0m from the South-West boundary and approximately 15m from the hospital building.

The mature and well-established stand was first identified by WSP as part of their PEA in May 2020 who failed to record the exact locations. The following stand was subsequently identified and recorded by RSK Biocensus as part of their PEA in May 2021. The stand is sporadically spread throughout the woodland area in various densities between Eyam Road and the car park within the proposed development site.

5.35 Rhododendron stand 6

Rhododendron was identified on the proposed development site approximately 14m from the East boundary and approximately 48m from the hospital building.

The mature and well-established stand was first identified by WSP as part of their PEA in May 2020 who failed to record the exact locations. The following stand was subsequently identified and recorded by RSK Biocensus as part of their PEA in May 2021. The stand is sporadically spread throughout the woodland area in various densities between Crescent Drive and the car park within the proposed development site.

5.36 Rhododendron stand 7

Rhododendron was identified on the proposed development site approximately 11m from the East boundary and approximately 6m from the hospital building.

The mature and well-established stand was first identified by WSP as part of their PEA in May 2020 who failed to record the exact locations. The following stand was subsequently identified and recorded by RSK Biocensus as part of their PEA in May 2021. The single stand is bounded by Eyam Road to the West and Crescent Drive to the West.

5.37 Rhododendron stand 8

Rhododendron was identified on and outside of the proposed development site approximately 0m from the East boundary and approximately 12m from the hospital building.

The mature and well-established stand was first identified by WSP as part of their PEA in May 2020 who failed to record the exact locations. The following stand was subsequently identified and recorded by RSK Biocensus as part of their PEA in May 2021. The exact extent is unknown, but information suggests it is extensive in the East woodlands beyond Crescent Drive.

6 Management Plan

Following discussions with the client concerning their ongoing management of the proposed development site, it has become apparent that they wish to deal with the stands of INNS in a timely manner that will not impede the proposed development by excavating all stands.

6.1 General considerations

As a minimum, an appointed INNS CoW should be present at the start and completion of all works which might result in the disturbance or spread of INNS and/or within 7m of all stands identified. The INNS CoW will work with contractors to ensure the measures in this document are followed and that spread of contaminated soil is avoided.

All stands of INNS identified within or near to the proposed development Site, should be demarcated with appropriate signage taking into consideration respective 7m buffer zones to prevent any unauthorised on unintentional entry into infested areas with associated wash facilities for decontamination.

Prior to the excavation of Japanese knotweed, Cotoneaster, Rhododendron and Arrow bamboo; vegetation should be cleared (within specific constraints see 6.2). Cleared vegetation should be removed off site in accordance with the Environmental Protection Act (EPA) 1990 to a registered landfill along with all waste containing INNS materials. There is no requirement to clear Horsetail before excavation.

6.2 Vegetation Clearance

On site presence from an INNS CoW will be required for any vegetation clearance of INNS.

All above ground vegetation of INNS, excluding Horsetail, should be cleared prior to excavation. Vegetation clearance is recommended, but not limited to, between December through to March. Completing clearance in preparation for excavation during winter will significantly reduce the potential of spreading INNS and it will not interfere with nesting bird season. On site presence from an Ecological Clerk or Works (ECoW) may be required for any vegetation clearance.

Vegetation clearance can be completed via hand tools or mechanical machinery, yet decontamination procedures should be followed to ensure any personnel, machinery or hand tools entering any infested areas are adequately cleaned before exiting. A holding point with appropriate wash facilities should be established at the interface of the work area also taking the 7m buffer zone into consideration. Arisings from the decontamination procedure should be adequately sealed and removed off site in accordance with the EPA 1990 to a registered landfill.

Care should be taken not to disturb the below ground structures of INNS stands to reduce the potential of spreading INNS to other areas of the site. Arisings from the vegetation clearance can be chipped where possible, sealed and removed off site in accordance with the EPA 1990 to a registered landfill.

Pedestrian and vehicle management should be taken into consideration when working near footpaths, car parks or roads. Further consideration should be taken for noise and dust pollution as the proposed development Site is located within the NMGH grounds and near residential properties which may be directly affected by specific work activities.

6.3 Mechanical Excavation and Off-Site Disposal of INNS

On site presence from an INNS CoW will be required for any excavation of INNS.

Mechanical excavation should be introduced to excavate all INNS stands identified within the proposed development Site where ground-breaking activities are intended on or within 7m of the INNS stand.

All above ground vegetation of INNS stands should be cleared as outlined in 6.2. prior to the commencement of any mechanical excavation.

The INNS CoW will indicate where INNS are present. A suitable demarcation barrier will be put in place, marking the start and end of the contamination zone and work area to prevent unauthorised entry. A holding point with appropriate wash facilities should be established at the interface of the work area to decontaminate any machinery, equipment or personnel exiting the work area. Arisings from the decontamination procedure should be adequately sealed and removed off site in accordance with the EPA 1990 to a registered landfill.

All structures or vegetation presenting an obstruction to the excavation of INNS will need to be demolished/cut and removed from the worksite for subsequent disposal via the appropriate waste channels. The INNS CoW will ensure that no waste being removed from the work area contains INNS material to avoid spreading to other parts of the site. Waste containing INNS with no means of separation will need to remain on site and be included in the overall works programme for subsequent disposal.

Prior to breaking ground, all services are to be identified and isolated/switched-off with all permits approved and signed to create a safe working environment. Infested material will be mechanically excavated at each location under careful supervision of the INNS CoW who will determine the maximum extent and depth of the excavation to ensure complete removal. The excavator should be positioned on clean soil where possible to avoid spreading INNS to other areas of the site. We are anticipating that the excavation will be up to 7m out from the edge of each stand and down to a maximum depth of 2.5m for Japanese knotweed, 300mm for Cotoneaster, Rhododendron, Arrow bamboo and 400mm for Horsetail. This may vary subject to site specific constraints. The excavation will be periodically checked at successive 300mm depths and scanned for services until completion where the sides will be adequately battered to prevent failure.

Adequate barriers and warning signs will be installed to protect the work area and safeguard the open excavation to ensure no unauthorised entry is possible. The INNS CoW will periodically check the excavation, particularly at the beginning and end of every day until a time the site is officially handed over on completion or the excavation is backfilled.

Excavated material will be temporarily stockpiled on the hard-standing surface ready for disposal via grab/tipper lorries to a suitably registered landfill. Stockpiled material will not exceed a height of 1.2m and the sides will be adequately battered to prevent failure. The soil will need to be chemically tested for contaminants to determine if the waste material is hazardous or non-hazardous. Further testing to determine the Waste Acceptance Criteria (WAC) may be required to satisfy the landfill prior to off-site disposal.

Stockpiles will be segregated into two classifications; >5% contaminated and less than <5% contaminated material. Segregation is required to ensure contaminated material is removed off site and disposed of at

a registered landfill correctly. Material will be stockpiled using a forward tipping dumper (if required) which will be loaded with infested material excavated from the stand of INNS. The dumper will follow a designated haul route and the skip will be filled below level load to avoid spilling any material containing INNS. The forward tipping dumper will always be positioned on non-infested ground and will be loaded on a root membrane to avoid spreading any infested material. If the material can be stockpiled without the use of a forward tipping dumper, the excavator will cast all infested material back to the proposed stockpile location.

If the excavator or forward tipping dumper is unable to position itself on non-infested ground, decontamination procedures must be followed at appropriate holding points before the excavator or forward tipping dumper exits the infested area onto non-infested ground.

Loading operations of the grab/tipper lorry should be supervised by the INNS CoW to ensure no spillages occur. All work will stop and only recommence once spillages have been cleaned and checked by the INNS CoW. The lorry will be filled to below level load and secured with a net or cover. All waste being removed off-site will be supported with a Waste Transfer Note (WTN) which will be correctly completed in accordance with the waste being removed off-site and weight. All lorry movement will need to be assisted by a banksman/vehicle marshal to avoid any complications.

Machinery, tools, footwear and work area must be thoroughly cleaned before leaving the work area, so that all traces of vegetation and sediment are removed. Arisings from the decontamination process are to be removed off-site with the remaining stockpiled material in accordance with EPA 1990 to a registered landfill.

If insufficient funds are available for off-site disposal of INNS, excavated material could be stockpiled in a sacrificial area and subsequently chemically treated as part of a herbicide treatment programme or buried as part of a deep cell-burial. A cell burial involves significant earth works and a large sacrificial area which was not identified during the walkover survey. It has therefore not been included in detail within this INNS management plan unless adequate space is identified and the option becomes a possible solution.

Pedestrian and vehicle management should be taken into consideration when working near footpaths, car parks or roads. Further consideration should be taken as the proposed development Site is located within the NMGH grounds and near residential properties which may be directly affected by specific work activities.

7 References

- **BS42020:2013 Biodiversity** – *Code of Practice for Planning and Development*, BSI Standards Publications.
- **Environment Agency (2013)** Managing Japanese Knotweed on development Sites (Version 3).
- **INNSA (2018)** INNSA Code of Practice – Managing Japanese Knotweed

Appendix 1: Relevant Legislation

The Environmental Protection Act 1990 (EPA 1990) contains legal provisions concerning controlled waste. The relevant provisions are set out in Part II, Sections 33 (1a) and (1b) of the Act. This outlines relevant offences relating to the deposit, treating, keeping or disposing of controlled waste. Waste must be handled responsibly and in accordance with legislation at all stages from its initial production to final recovery or disposal. Under the Controlled Waste Regulations 1991, waste must only be transferred to a waste carrier who is registered with the Environment Agency (applicable within England and Wales). Additionally provisions for compliant waste transfer notes, as set out in the Environmental Protection (Duty of Care) Regulations 1991, must be adhered to (EA 2006).

The Hazardous Waste Regulations 2005 (HWR 2005) contain provisions about the handling of hazardous waste. Japanese knotweed is not classed as a hazardous waste, but material containing Japanese knotweed which has been treated with residual herbicides (such as Picloram), may be classified as hazardous waste (EA 2006). The INNS on site has to date, as far as we understand, not been treated with a non-residual herbicide, therefore the material can be classified as 'contaminated' and not 'hazardous'.

The Infrastructure Act 2015 (Chapter 7) is an act which in part makes provision for the control of INNS. This act gives an environmental authority the power to enforce a 'species control agreement' with a landowner of any premises where the authority considers there to be INNS present. Under this 'species control agreement', both parties agree to carrying out species control operations, to which the environmental authority must be satisfied that the provisions of the agreement are proportionate to the objective to be achieved. The agreement will also detail who will carry out the treatment, what the treatment will consist of, and the time by which the treatment must be carried out. When the environmental authority considers the owner of the premises has complied with all the requirements of the agreement, they must give the owner notice to that effect. If the environmental authority considers that an owner has failed to comply with a species control agreement (having been given notice to that effect and a reasonable opportunity to rectify the failure) or has refused to enter into such an agreement, they can make a 'species control order' in relation to a premises if it considers that there is an INNS present on the premises. If the landowner does not comply with this order, the environmental authority may carry out the work themselves and charge the land owner, or the land owner could receive a fine of up to £40,000, or imprisonment of up to 51 weeks, or both.

Appendix 2: Site Photographs



Photograph 1: Japanese knotweed stand 1 located along grass verge with several mature and well established stands identified.



Photograph 2: Horsetail stand 14 identified penetrating hard standing surface.



Photo 3: Arrow bamboo stand 1 identified penetrating hard standing surface.



Photograph 4: Rhododendron stand 2 identified along Crescent Drive.



Photograph 5: Cotoneaster stand 3 and stand 4 identified above and below 4m brick wall.



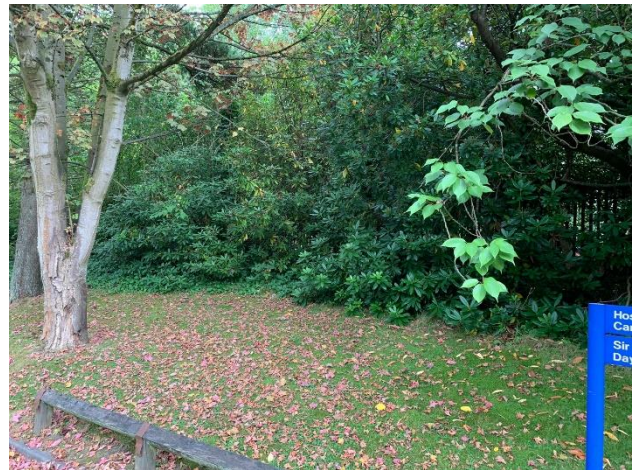
Photograph 6: Horsetail stand 8 identified within hedgerow around signpost.



Photograph 7: Cotoneaster stand 12 identified in North-East mixed with other vegetation.



Photograph 8: Horsetail stand 2 identified penetrating hard standing surface.



Photograph 9: Rhododendron stand 1 was identified outside of the proposed development site.

Appendix 3: Invasive Species Information

Japanese Knotweed (*Fallopia japonica*) Facts & Figures



Native range:

- Asia

Stem:

- Spring: Red
- Summer: Green-Red/Brown with purple speckle
- Winter: Brown
- Up to 300cm
- Hollow and jointed with zig-zag structure

Leaves:

- Spring: Red-Green
- Summer: Green
- Autumn: Yellow- Brown
- Winter: Shed leaves
- Heart shaped leaves

Flower:

- Creamy clusters small in size
- Develop towards late summer/early autumn

Dispersal and Spread

Japanese knotweed spreads by natural rhizome encroachment and reproduction of detached rhizomes and vegetation matter. The above ground vegetation completely dies off over winter leaving hollow brittle canes. New shoot form in early spring, with the plant reaching heights of up to 3m. The plant's main method of spread is by the plants creeping rhizomes which can down as deep as 2m below the surface. These rhizomes also spread up to 7m laterally.

Horsetail (*Equisetum arvense*) Facts & Figures



Native range:

- Eurasia and North America

Stem:

- Spring: light brown
- Summer: Green
- Up to 60cm.
- Hollow, jointed and ridged.

Leaves:

- Arranged in whorls fused into nodal sheets.
- Dark green or light brown.

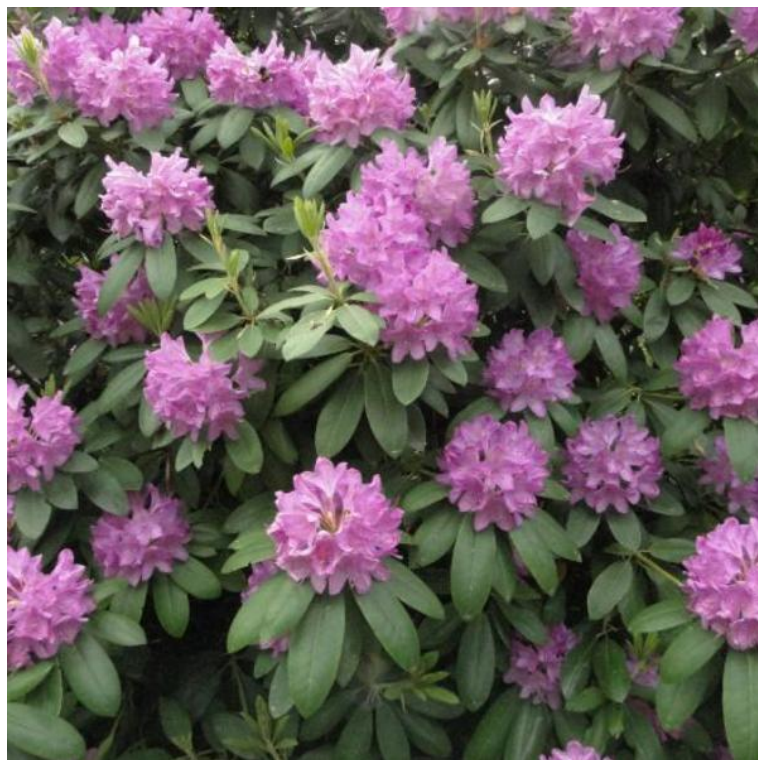
Spores:

- Spores are borne at the top of the cone-line structures at the tips of some of the stems.
- A single cone can contain up to 1000,000 spores.
- Produced early in spring.

Dispersal and Spread

Horsetail spreads by both rhizome and by spores, with the plant a perennial, with the above ground growth completely dying off over the winter. Spores form in early spring, with the spores being distributed in late spring throughout the summer. The plant's main method of spread is by its creeping rhizomes which can go as deep as 2m below the surface. These rhizomes spread out laterally. The plant spreads by both spores and through the vegetative reproduction of detached rhizomes and tubers.

Rhododendron (*Rhododendron ponticum*) Facts & Figures



Native range:

- Eurasia

Stem:

- Woody light-dark brown.
- Up to 8 metres in height
- Rough bark.

Leaves:

- Dark green.
- Oblong to elliptical.
- Up to 22cm in length and up to 5cm wide.
- Whorls around stem.

Flower:

- 3-5cm in diameter.
- Light pink to dark purple.
- Located in centre of whorl.
- Spores are borne at the top of the cone-like structures at the tips of some of the stems.
- Produced early in spring.

Dispersal and Spread

Rhododendron spreads by seeds which can remain dormant for several years. The above ground green growth remains throughout winter producing a capsule 1.5-2.5cm long in spring containing numerous seeds which spread late spring throughout summer.

Arrow bamboo (*Pseudosasa japonica*) Facts & Figures



Native range:

- Asia

Culms:

- Yellow-brown stems.
- Up to 6m in height

Leaves:

- Shiny.
- Light to dark green leaves.
- Up to 25cm long.

Dispersal and Spread

Arrow bamboo is a running variety of bamboo and spreads by natural encroachment of underground roots. The above ground growth remains all year with new shoots appearing in early spring and growing throughout summer.

Cotoneaster (*Cotoneaster horizontalis*) Facts & Figures



Native range:

- Asia

Stems:

- Light-dark brown.
- Woody stems.
- Fishbone structure.
- Up to 1m height.

Leaves:

- Shiny.
- Dark green evergreen leaves.
- Up to 10mm long.

Fruit:

- Red berries.
- Emerge in Autumn persisting into winter.
- Up to 10mm diameter.

Flower:

- Pink to white.
- Appear in summer.
- Up to 10mm in diameter.

Dispersal and Spread

Cotoneaster spreads through viable seeds which can remain dormant for several years. Seeds are naturally dispersed but birds have been recorded as being a significant contributor towards the spread.