
TAKA ARCHITECTS

**HOUSING DEVELOPMENT
MUNSTER AVENUE
CO. GALWAY**

OUTLINE INVASIVE SPECIES MANAGEMENT PLAN

JANUARY 2024

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OUTLINE INVASIVE SPECIES MANAGEMENT PLAN

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1 INTRODUCTION

1.1 BACKGROUND

Jennings O'Donovan & Partners Limited have been commissioned by Taka Architects to carry out an Outline Invasive Species Management Plan for a proposed development at Munster Avenue, Co. Galway. The works hereafter in this report will be identified as 'the Project'.

The purpose of this Outline Invasive Species Management Plan, hereafter referred to as the Outline ISMP, is to describe the options available to manage and prevent the spread of non-native invasive plant species recorded within the proposed development site at Munster Avenue. An indication of invasive species present in the immediate surrounding area was also conducted during the site visit. This Outline ISMP is intended to be a working document, that will be updated by the appointed contractor to form a detailed and final ISMP, prior to any construction works associated with the proposed development occurs. Disturbance to stands of non-native invasive plants and/ or soils contaminated with non-native invasive plant material can result in the spread of such plant species. Therefore, the implementation of the management measures set out in this plan are required to avoid any direct or indirect impacts to habitats, species and built structures and infrastructure within the locality, and to avoid committing an offence.

1.2 AUTHOR'S QUALIFICATION AND EXPERTISE

This Outline Invasive Species Management Plan has been prepared by Dr. Monica Sullivan, Principal Environmental Scientist and Lead Ecologist at Jennings O'Donovan & Partners Limited. She is a full member of the Chartered Institute of Ecology and the Environmental Management and a chartered Environmentalist. Dr. Sullivan has over 36 years' experience in the natural sciences, specialising in fisheries management, aquatic ecology and freshwater invertebrate taxonomy. She has lectured since the mid 1990's – 2017 in invertebrate zoology, ecology and environmental pollution control to both masters and degree students. She was the examiner for the freshwater biology module for the Institute of Fisheries Management, England. Monica's experience includes invasive species surveys, management plans, ecological studies, Environmental Impact Assessment (EIA) screenings, Appropriate Assessment (AA) screenings, Natura Impact Statements (NIS), otter surveys, badger surveys, freshwater macroinvertebrate and instream flora surveys.

Qualified to doctorate level, Monica previously worked as a partner in an environmental consultancy, undertaking fieldwork and specialising in Environmental Assessments of medium to large scale infrastructural projects and the coordination and management of AA and Environmental Impact Assessment processes. She has a clear understanding of the legislative framework governing the extent of environmental investigations, assessments and reports required to secure the necessary approvals on all types of projects. Dr. Sullivan was author and researcher on an Environmental Government Program on invasive species. She is chief author of a chapter in the book Zebra Mussels in Europe and has published many papers on the topic. She spent several years working as both English and Scientific editor for international scientific journals. In 2017, she was expert advisor for 'horizon scan' invasive species workshop.

1.3 REGULATORY CONTEXT

Specific provisions that govern the control of listed invasive species are outlined in *The European Communities (Birds and Natural Habitats) Regulations 2011* SI 477 of 2011 (as amended) (herein “the Regulations”) contain.

It is an offence to release or allow to disperse or escape, to breed, propagate, import, transport, sell or advertise species listed on the Third Schedule of the Regulations without a licence. Two Regulations deal specifically with the Third Schedule and include:

1. *Regulation 49: Prohibition of introduction and dispersal of certain species*
2. *Regulation 50: Prohibition on dealing in and keeping certain species.*

The Wildlife Acts, 1976 and 2000, contain a number of provisions relating to non-native invasive species covering several sections and subsections of the Acts. With regard to exotic species, it is prohibited without licence to plant or otherwise cause to grow in a wild state, in any place in the State, any species of flora, or the flowers, roots, seeds or spores of flora. The Minister may also issue regulations prohibiting possession or introduction of any species of wild bird, animal or flora, or any part, product or derivative of such wild bird, wild animal or wild flora which may be detrimental to native species. A review of legislative provisions is currently being undertaken on the island of Ireland and new regulations are likely to be forthcoming.

Ireland has also ratified a number of international conventions that oblige the Government to address the issues of non-native invasive species including the Convention on Biological Diversity, the Bern Convention and the International Plant Protection Convention. In addition, there are obligations under the EU Habitats Directive to address any threats to the conservation status of the various habitats and species listed for protection under the Directive.

The following practices are prohibited:

- Moving soil in the Republic of Ireland which contains specific invasive species unless under a licence from National Parks and Wildlife Service (NPWS).
- Disposing of invasive species at a landfill site without first informing the landfill site that the waste contains invasive species material (this action requires an appropriate licence)
- Planting or otherwise causing to grow in the wild (hence the landowner should be careful not to cause further spread)
- Dumping invasive species cuttings in the countryside

There are a significant number of non-native invasive plant species in Ireland. Those species selected for inclusion are those which have been shown to have an adverse impact on landscape quality, native biodiversity or infrastructure; and are likely to be encountered during road schemes.

Target 2G of *Ireland's 4th National Biodiversity Action Plan 2023-2030* (DCHG, 2024) identifies that “

Invasive alien species (IAS) are controlled and managed on an all-island basis to reduce the harmful impact that they have on biodiversity and measures are undertaken to tackle the introduction and spread of new IAS to the environment”.

The Regulation (EU) 1143/2014 on invasive alien species was agreed by the European Council on 22nd October 2014 and came into force on 1st January 2015. This Regulation conveys the rules to prevent, minimise and mitigate the adverse impacts of the introduction and spread (both with and without intention) of invasive alien species on biodiversity and the related ecosystem services, as well as other adverse impacts on human health or the economy (European Commission, 2017).

Chapter 10 of the adopted *Galway County Development Plan 2022-2028* goal is:

To contribute towards the protection, conservation and management of biodiversity and natural heritage including sites designated at national and EU Level and protected species and habitats outside of designated sites and to develop a green/blue infrastructure network in the interests of the proper planning and sustainable development of the county.

Section 10.10 identifies the risk of construction works within the county:

Excavation and construction works can lead to the further spread of such invasive species.

The measures for prevention and eradication of invasive species will include the dissemination of information to raise public awareness, the adoption of codes of practices/standard biosecurity measures in normal Local Authority activities, consultation with relevant stakeholders, the promotion of the use of native species in amenity planting and landscaping and the recording of invasive/non native species as the need arises and resources permit. The Council will also seek to prevent the spread of invasive non-native species through the control of movement of contaminated soil.

1.3.1 Policy Objectives Invasive Species

Policy Objectives Invasive Species are outlined in IS1 and ISA2:

IS 1 Control of Invasive and Alien Invasive Species

It is a policy objective of the Planning Authority to support measures for the prevention and eradication of invasive species.

IS 2 Invasive Species Management Plan

Ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are currently or were previously present, an invasive species management plan will be required. A landscaping plan will be required for developments near water bodies and such plans must not include alien invasive species.

This report has been prepared in accordance with current guideline documents:

Relevant plans from national to local scales were also considered in the development of this report.

- *National Biodiversity Action Plan, for the period 2023-2027*
- *River Basin Management Plan for Ireland 2018-2021*
- *Adopted Galway County Development Plan 2022-2028*

2 SITE LOCATION

The Project is located at the northern end of Munster Avenue, north of Fr. Burke Park within Galway City (Figure 2.1).



Figure 2.1 General location of the Project

2.1 GEOLOGY AND SOILS

The quaternary sediments at the site of the Project are classified as 'Urban'.

The Project is located entirely within the Metagabbro & orthogneiss suite. This bedrock formation is described by the Geological Survey of Ireland as 'Undifferentiated Quartz-Diorite Gneiss (Qd), Quartz Diorite Gneiss & Granitic Gneiss (Qg) and Metagabbro and Related Lithologies (Mg)'. Corine 2018 denotes this area as *continuous urban fabric with artificial surfaces*.

3 METHODOLOGY

3.1 DESKTOP SURVEY

This report and the mitigation strategies relating to invasive plant species have been prepared with regard to the following guidance documents, where relevant:

- National Roads Authority (2010). Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads
- Environment Agency 2010. Managing Invasive Non-native Plants in or near Freshwater

There are a significant number of non-native invasive plant species in Ireland. Those species selected for inclusion in the *Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads* include:

- Japanese Knotweed (*Fallopia japonica*)
- Giant Hogweed (*Heracleum mantegazzianum*)
- Himalayan Balsam (*Impatiens glandulifera*)
- Giant Rhubarb (*Gunnera tinctoria*)
- Montbretia (*Crocasmia x crocosmiflora*)
- Winter Heliotrope (*Petasites fragrans*)
- Old Man's Beard (*Clematis vitalba*)
- Common or Pontic Rhododendron (*Rhododendron ponticum*)
- Buddleia (*Buddleja davidii*)

These specific plants were selected on the basis that they have been shown to have an adverse impact on landscape quality, native biodiversity or infrastructure and are likely to be encountered during road schemes.

This report has been informed by an invasive species survey carried out by Dr. Monica Sullivan of Jennings O'Donovan carried out in January 2024. The location of any invasive species were recorded and photographs were taken. Areas of infestation were then digitized, and a map produced, showing the indicative locations of these invasive species (Appendix I).

3.2 FIELD STUDY

The Site was surveyed in January 2024 by a suitably qualified ecologist (Dr. Monica Sullivan MCIEEM CEnv) for the species noted above and also invasive alien species as listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) Part 1 or 2 and species listed of Union Concern. The entire Project site was surveyed and also the close environs (incorporating 7m in all directions, to allow for any Japanese knotweed root system).

3.3 LIMITATIONS

The survey was carried out outside of the optimum survey period for identifying flowering plants, including invasive species. Identification of flowering plants outside of the growing season can be challenging and whilst a number of invasive species are identifiable throughout the year (e.g. Japanese Knotweed), the time of year in which the survey was undertaken must be considered alongside the results. This survey represents a snapshot of the invasive species recorded on the site at that time of the survey in January 2024. Invasive species may spread or become established post survey and relying on the report should consider passage of time and any activity/development that may have commenced on the site.

4 RESULTS

Two non-native invasive species were recorded within the proposed Project site, namely **Buddleja** (*Buddleja davidii*) and Himalayan honeysuckle (*Leycesteria formosa*), also known as pheasant berry. Neither of these species are listed on the Third Schedule of the Regulations or as a species of Union Concern. However, Buddleia (*Buddleja davidii*) is listed within *the Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads*. Descriptions of the species and locations of the invasive species recorded onsite are given in Table 1 below.

Table 1. Distribution of Invasive Species onsite at Munster Avenue, Galway.

Way Points	Species	Grid Reference	X	Y
692	<i>Buddleja davidii</i>	M 29402 24832	129402	224832
693	<i>Buddleja davidii</i>	M 29401 24835	129401	224835
694	<i>Buddleja davidii</i>	M 29398 24836	129398	224836
695	<i>Buddleja davidii</i>	M 29392 24853	129392	224853
696	<i>Buddleja davidii</i>	M 29391 24851	129391	224851
699	<i>Leycesteria formosa</i>	M 29388 24849	129388	224849
697	<i>Buddleja davidii</i>	M 29386 24849	129386	224849
698	<i>Buddleja davidii</i>	M 29386 24847	129386	224847

Indicative locations of the invasive species within the Project boundary are outlined in Appendix I.

4.1 BUDDLEJA (BUDDLEJA DAVIDII)

Buddleja (also known as the butterfly bush) is a member of the Buddlejaceae family. It is very fast growing and can reach 2m in its first year, producing flowers and setting seed. Buddleja is a native of China but is common as a garden plant owing to its profusion of flowers which tend to attract a considerable diversity of butterflies (hence its other common name).

It is frequently found in waste ground in urban environments (common in Dublin and Cork), but has a widespread distribution throughout the country. The National Biodiversity Data Centre identify 11 records of this plant within 1km of the Project in the urban environment (NBDC, accessed January 22, 2024). *Buddleja davidii* is capable of colonising bare ground very rapidly and can quickly form monotypic stands. Since buddleja tolerates very poor soils, it is capable of growing on walls, stoney gardens, roof tiles, rock outcrops or sub-soils. In particular, it poses a threat where such features are being left to re-colonize naturally.



Figure 4.1 Buddleja (*Buddleja davidii*) in the rear garden at Munster Street

Himalayan honeysuckle (*Leycesteria formosa*), also known as pheasant berry

This plant is a member of the Caprifoliaceae family and was originally planted as an ornamental shrub from China and Tibet, even though it is now categorised as an invasive species with a risk of medium impact on native plants because it spreads so easily. In autumn it bears berries which are red at first, becoming black and subsequently eaten by birds. The seeds are then dispersed by birds (and some small mammals), which feed on the fruits, so it is highly likely that this single shrub at Munster Avenue front garden has been planted here by a bird (or possibly a small passing mammal).

This plant can form dense thickets that can exclude native vegetation, outcompeting and displacing native plants that have been naturally growing in Ireland for centuries. It can tolerate deep shade, frost, damage, damp, and most soil types.



Figure 4.2 Himalayan honeysuckle (*Leycesteria formosa*) in front garden, Munster Street

5 GENERAL MEASURES TO CONTROL/PREVENT THE SPREAD OF NON-NATIVE INVASIVE PLANT SPECIES

5.1 PRE-CONSTRUCTION SURVEY

A pre-construction invasive species survey has been carried out prior to any construction activities (including enabling works) by a suitably qualified specialist to confirm the presence and extent of any invasive species within the proposed development site prior to the development and implementation of the final ISMP. Data collected as part of this survey are outlined in Table above and includes the approximate area of the respective colonies (m²). This information will inform the chosen method to eradicate any invasive species onsite.

5.2 GENERAL MEASURES TO AVOID SPREADING INVASIVE SPECIES DURING CONSTRUCTION OR SOIL MOVEMENT

The species noted in Table 1 are invasive and are particularly effective at colonising disturbed ground (e.g. construction / abandoned / neglected sites such as at Munster Street). Some species spread by the re-growth of cut fragments or root material and can readily regrow in new areas if the existing stands are disturbed e.g. by machinery, people, mammals etc. The most common ways that these species can be spread is: i) Site and vegetation clearance, mowing, hedge-cutting or other landscaping activities; ii) Spread of plant fragments during the movement or transport of soil; iii) Spread of plant fragments through the local surface water and drainage network; iv) Contamination of vehicles or equipment with plant fragments which are then transported to other areas; and; v) Importation of soil from off-site sources contaminated with invasive species plant material.

It is preferable to eradicate invasive species prior to the onset of construction of any proposed development in close proximity. If control programmes have not been achieved before construction begins, then the affected areas must be fenced off prior to and during construction in order to avoid spreading seeds or plant fragments around or off the construction site. Earthworks or machinery movement must be avoided in these areas until the relevant species have been eradicated. If soil is imported to the site for landscaping, infilling or embankments, the contractor must gain documentation from suppliers that the material is free from invasive species.

5.3 DISPOSAL OF MATERIAL

If any invasive species plant material is collected (e.g. by hand-pulling or mowing), it is important that its disposal does not lead to a risk of further spread. The movement of plant material of any plants listed on the Third Schedule requires a licence from the National Parks and Wildlife Service (NPWS) under Section 49 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended). Invasive species (particularly roots, flower heads or seeds) must be disposed of at licensed waste facilities or composting sites, appropriately buried, or incinerated having regard to relevant legislation, for example; Section 32 of the Waste Management Act, 1996 to 2008; Section 4 of the Air Pollution Act, 1987; relevant local authority byelaws and any other relevant legislation. All disposals must be carried out in accordance with the relevant Waste Management legislation (as per guidance from NRA, 2008).

It should be noted that some invasive species plant material or soil containing residual herbicides may be classified as either 'hazardous waste' or 'non-hazardous waste' under the terms of the Waste Management Acts, and both categories may require special disposal procedures or permissions. Advice should be sought from a suitably qualified waste expert regarding the classification of waste and the suitability of different disposal measures.

As noted above, additional specific measures for the management of Japanese knotweed cuttings or contaminated soil can be found in the UK Environment Agency document The Knotweed Code of Practice: Managing Japanese Knotweed on development sites (UK Environment Agency, 2013 (withdrawn 2016)), and further Japanese Knotweed specific measures are outlined in Section 5.

5.4 MEASURES TO BE FOLLOWED DURING THE APPLICATION OF HERBICIDES

The control options for some species will require the use of herbicides, which can pose a risk to human health, to non-target plants or to wildlife. In order to ensure the safety of herbicide applicators and of other public users of the site, a qualified and experienced contractor, and qualified Herbicide Advisor must be employed to carry out all work.

It is advised that the appointed contractor refer to the following documents, which provide detailed recommendations for the control of invasive species and noxious weeds:

- Chapter 7 and Appendix 3 of the NRA Publication: The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (NRA, 2010)
- Managing invasive non-native plants in or near fresh water (Environment Agency, 2010)

These documents include measures to aid the identification of relevant species, with details for the timing, chemicals, methodology for chemical control, and for measures to avoid environmental damage during the use of herbicides.

It is recommended that the appointed contractor update this Outline Invasive Species Management Plan in accordance with the relevant guidelines before commencing works.

5.5 SPECIES SPECIFIC MANAGEMENT OPTIONS FOR MUNSTER AVENUE PROJECT

5.5.1 Butterfly-bush (*Buddleja davidii*)

Butterfly-bush is a highly invasive species that is widespread in urban environments. It can grow in very poor, shallow soil, on walls and buildings. Each plant can produce up to 3 million seeds that can remain viable in the soil for many years. It creates competition for resources such as pollinators, light and space and poses a threat to native plant species.

5.5.1.1 Measures to Control and Eradicate Butterfly-bush

Option 1: Physical control

Physical removal of the butterfly-bush is only suitable for very small infestations of this species. If this is the chosen method of removal, care should be taken to remove all parts of the plant as branches are capable of re-rooting from cuttings. The plants should not be removed when in seed as there would be a risk of spreading the seeds further. Where removal of mature plants is not immediately feasible, the flower heads should be removed in June before they go to seed. It is essential to plant the ground with native species immediately following removal to prevent new seedlings taking hold.

Option 2: Chemical control

It is recommended that plants are cut back to a stump during active growth (late spring to early summer) and then immediately treated with a systemic weed killer (brushed on). Foliar application of herbicide may be adequate for smaller infestations of younger plants, but must be followed up on a 6-monthly basis.

5.5.2 Himalayan honeysuckle (*Leycesteria formosa*)

Himalayan honeysuckle is a deciduous or semi-evergreen, many-stemmed perennial shrub that grows up to 2m+ tall. It has straight, hollow, green stems that turn woody once older. From December to May, drooping spikes of white and reddish-purple flowers grow from the tips of the branches; these are followed by dark brownish-purple or red berries that contain a high number of seeds.

Himalayan honeysuckle grows rapidly to produce dense thickets that replace and exclude other species. It is a good coloniser of disturbed areas and will replace native species that are trying to establish. It prefers sunny sites but can tolerate shade, frost, physical damage, damp, and most soil types. It therefore can and readily outcompete pioneer native plants.

5.5.2.1 Measures to Control and Eradicate Himalayan honeysuckle

Option 1: Physical control

The Munster Avenue site has only one young plant. This plant can be dug out at any time of the year. It is recommended to dig it up before flowering and/or berries appear on the plant. Remove the entire plant carefully, making sure to get the whole root tuber (this is a very young plant and should be relatively easy to remove in its entirety).

Option 2: Chemical control

The area around the plant should be immediately treated (after the plant is removed) with a systemic weed killer, as a precautionary measure, in case this plant has already dropped seed in the area.

CAUTION: When using any herbicide, PLEASE READ THE LABEL THOROUGHLY to ensure that all instructions and safety requirements are followed.

6 CONCLUSION

This Outline Invasive Species Management Plan provides measures to prevent the spread of invasive species and measures to control and eradicate invasive species recorded within the proposed development site at Munster Avenue. Prior to the implementation of this plan, a re-survey of the Project (if action not taken before June 2024, new growing season underway) should be carried out to confirm the extent of the invasive species at the time of treatment and to ensure there are no new invasive species present.

Control measures suggested within this report should be implemented by a qualified licenced invasive species treatment specialist. The proposed development site should be monitored after control measures have been implemented and monitoring will take place for a minimum of three years following construction. Any regrowth of invasive species will be subsequently treated as detailed in this report

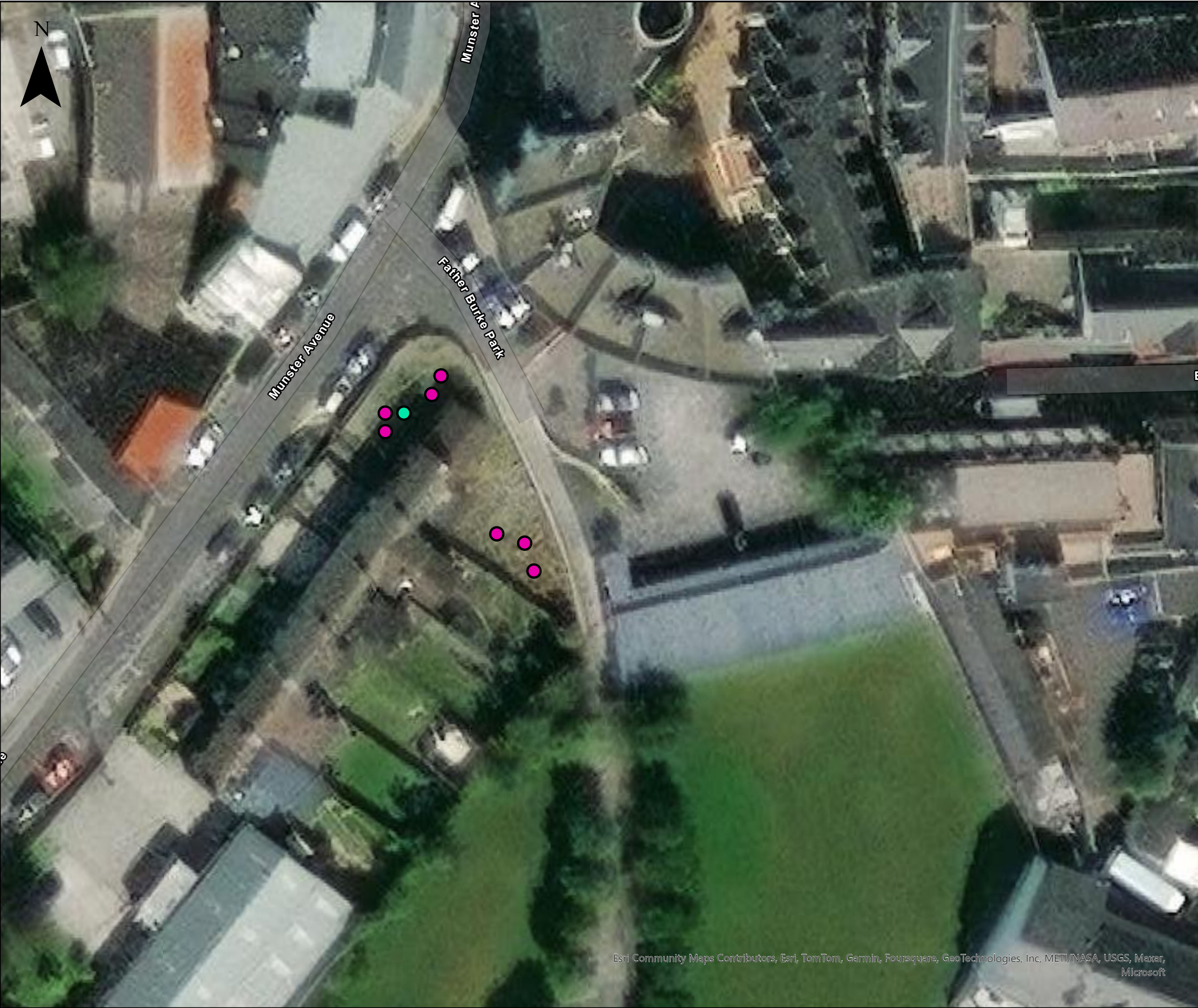
7 RECOMMENDATIONS

While no invasive alien species as listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) Part 1 or 2 or of Union Concern were recorded within the Project or its close environs (incorporating 7m in all directions, to allow for any Japanese knotweed root system), there are non-native plants onsite that are invasive and can cause problems into the future if not handled and managed correctly. These include the following:

- *Buddleja davidii* (butterfly bush) is treated and controlled onsite. It is a highly invasive plant that produces a lot of light seeds which spread extremely easily. It can grow in many habitats and can develop in the smallest of spaces, e.g. between stones in a wall. It can grow rapidly and form thickets, outcompeting other native plants.
- Himalayan honeysuckle (*Leycesteria formosa*) is treated and controlled onsite. This plant can also be a highly invasive, as birds or small mammals can readily spread the plant seeds across a site or to a new site location.

APPENDIX I

Map Showing Indicative Locations of Invasive Species



Legend			
Species			
●	Buddleja davidii		
●	Leycesteria formosa		
Rev	Date	By	Comment
Client			
Taka Architects			
Client Representative			
 JENNINGS O'DONOVAN CONSULTING ENGINEERS			
Project			
Munster Avenue IAS Management Plan			
Title			
Map Showing Indicative Locations of Invasive Species			
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Drg. By	AB	Project	7162
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