



# Preliminary Ecological Appraisal

## Letterkenny Rd, Lifford, Co. Donegal

For:

**CARLIN**  
Planning Limited

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# Document history

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## Executive summary

- Blackstaff Ecology Ltd was appointed by Carlin Planning to undertake a Preliminary Ecological Appraisal of lands of ca. 12.43 ha at Letterkenny Rd, Lifford, Co. Donegal (H 33052 99101) in relation to a proposed development including residential housing, light industrial and amenity facilities. The size of the site for proposed development was later reduced to ca. 4.5 ha.
- A preliminary ecological appraisal was conducted on the site by Blackstaff Ecology Ltd in order to assess the potential ecological impacts of the proposed project, as well as to identify any need for further ecological surveys and to inform an Ecological Impact Assessment.
- The Fossitt habitat types found on site are improved grassland, dry/humid acid grassland, amenity grassland, drains, a line of trees and hedgerows. Scattered gorse scrub is present to the north-east and an area of former peatland to the north of the site has been converted into pasture.
- Few signs of badger foraging activity were found and no active setts were identified on site or within 25 m of the site boundary. A pre-commencement survey for badger is recommended however. A number of rabbit warren entrances were also found scattered across the site. No signs of otter were found along the drains running along part of the site boundary or within 30 m of the site.
- The site has an overall moderate to high bat roost potential rating with multiple trees with low to moderate bat roost potential present on site. Specific bat surveys are recommended on two of these trees and for bat activity on the site in general. Following the PEA, a potential bat roost feature inspection was subsequently conducted on the two trees.
- A number of bird species are present and likely to be breeding in the hedges and trees on site and it is recommended that any clearance take place outside the bird breeding season.
- The drains that run along most of the northern portion of the site have a direct hydrological connection to the River Finn SAC and appropriate measures must be observed to prevent any impact on the Natura 2000 site.
- The drains contain slow-moving water and have moderate suitability as a newt habitat. An eDNA survey for newts is recommended at the appropriate time of year.
- The invasive species Himalayan balsam has a scattered presence along the drains running along the northern part of the site boundary. An Invasive Non-Native Species (INNS) Management Plan will be required for the site prior to commencement of any proposed works.

## Introduction

1. Blackstaff Ecology Ltd was appointed by Carlin Planning to undertake a Preliminary Ecological Appraisal (PEA) of lands situated at the edge of Lifford town, on the northern side of the Letterkenny Road for proposed development – “the Site”. Blackstaff Ecology was also subsequently appointed to carry out a closer inspection, under license, of trees with bat roosting potential.
2. The PEA was commissioned in relation to a proposed development including a recreational facility and enabling infrastructure. This would consist of two sports pitches with associated flood lighting, club house and car parking, a wastewater pumping station and access roadways with associated street lighting, storm drainage and new access to the N14. The initial survey covered five fields of approximately 12.43 ha. The size of the Site for proposed development was later reduced to ca. 4.5 ha and the PEA was modified accordingly. The Site is shown in Appendix 1, Figure 2 (Grid ref: H 33052 99101).

## Aims

3. The aim of this PEA is to employ desk-based and field study approaches to:
  - *Assess the ecological value of the pre-development application site;*
  - *Identify any likely ecological constraints associated with the project;*
  - *Identify any mitigation measures likely to be required by the project;*
  - *Assess the need for further, specialist ecological surveys.*

## Statement of Authority

4. This report was prepared and undertaken by Dr Florentine Spaans BSc MSc PhD MRSB, reviewed by Dr Brian Sutton and approved by Cormac Loughran MSc CEnv MCIEEM of Blackstaff Ecology Ltd. Dr Marco Ilardi carried out subsequent field assessments and a closer inspection of trees with moderate bat roosting potential features.
5. Dr Spaans was awarded a PhD in Ecology by Queen’s University, Belfast. Prior to working at Blackstaff Ecology, she worked as a Plant Health Inspector in Forest Service for 3 years. During this time, she planned and carried out surveillance of quarantine organisms harmful to plants across Northern Ireland. In so doing she gained experience of conducting vegetation surveys in varied habitats. She also worked as a research assistant at Queen’s University, Belfast and has been responsible for fieldwork and sampling for various ecological projects. She has experience doing multiple PEAs for a wide range of habitats as an ecologist.
6. Dr Ilardi was awarded a MSc in Natural Sciences (Summa Cum Laude) from the University of Palermo (Italy) and a PhD in Soil Ecology from Queen’s University Belfast. He has conducted academic research on the ecology of various taxa, including reptiles, birds and soil microfauna. He has been involved in conservation projects and volunteering for a number of years with LIPU (Italian League for the Protection of Birds), RSPB, BTO and Conservation Volunteers NI. Since 2019 he has been working as an ecologist for different consultancy firms, conducting numerous preliminary ecological appraisals, bat roost potential assessments, and bat activity surveys (dusk/emergence and pre-dawn/re-entrance), including report writing, eventually joining Blackstaff Ecology in May 2022.
7. Dr Sutton was awarded a PhD in Environmental Science by the University of Ulster. Prior to working at Blackstaff Ecology, he worked as a member of the Habitat Survey Team of the Environment and Heritage Service (now the Northern Ireland Environment Agency) for two years. Following this, he worked as a consultant ecologist for AECOM Ltd for 15 years, carrying out habitat, bird and mammal surveys for a

wide range of governmental and private clients. He has produced numerous EclAs and PEAs, both during his time at AECOM and for Blackstaff Ecology. He has carried out HRA, both at Screening and Appropriate Assessment level, for numerous schemes, at a range of scales, from small private developments to major infrastructure projects. He has also prepared Strategic Environmental Assessments for a number of government plans. Brian has been a Principal Ecologist at Blackstaff Ecology for the past six years.

8. Cormac Loughran is a Chartered Environmentalist (CEnv) and a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Cormac has worked professionally as a Consultant Ecologist for the past twelve years. He holds an MSc (Distinction) in Environmental Management from the University of Ulster and has extensive experience in a broad range of flora and fauna surveys. He has undertaken and coordinated the EclAs for numerous infrastructure developments. Cormac is also an experienced field naturalist and prior to his consultancy work, he worked as a warden/ranger for The National Trust on a number of important nature reserves between 1995 and 2004. These included Crom Estate in County Fermanagh and Murlough NNR and Slieve Donard in County Down. Cormac therefore also has a wide range of habitat management experience including broadleaved woodland, wetland, dune grassland, wet and dry heathland and blanket bog.

## Wildlife Legislation, Policy and Guidance

9. The appraisal was carried out with reference to the CIEEM Technical Guidance Series Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017); the Joint Nature Conservation Committee Handbook for Phase 1 Habitat Survey – a technique for environmental audit (JNCC, 2010); and CIEEM Guidelines for Ecological Impact Assessment in the United Kingdom (CIEEM, 2006) and BS42020:2013 Biodiversity – Code of practice for planning and development (BSI, 2013). The requirements of Planning Policy 2 (PPS 2) and CIEEM guidance are considered in greater detail.
10. This scoping report has been informed by the following key legislation, policy and guidance notes.
  - *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (The Habitats Directive);*
  - *Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (codified version of Directive 79/409/EEC as amended) (The Birds Directive);*
  - *European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) (European Communities Regulations);*
  - *The Wildlife Act 1976 (No. 39 of 1976) as amended by the Wildlife (Amendment) Act 2000 (No. 38 of 2000) (The Wildlife Act);*
  - *The Flora (Protection) Order 2015 (S.I. No. 356 of 2015) (The Flora Protection Order);*
  - *CIEEM Technical Guidance Series Guidelines for Preliminary Ecological Appraisal (CIEEM, 2012);*
  - *Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM 2018);*
  - *NPWS (2009) Appropriate Assessment for plans and projects in Ireland; guidance for Planning Authorities. Environment, Heritage and Local Government (NPWS 2009);*
  - *OPR Practice Note PN01; Appropriate Assessment Screening for Development Management (OPR 2021)*
  - *Fossitt (2000) A guide to habitats in Ireland. The Heritage Council (Fossitt 2000);*
  - *Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland. (NPWS 2006);*

## European Legislation

11. The Bern Convention (The Convention on the Conservation of European Wildlife and Natural Habitats) came into force in 1982 and the European Community adopted the EC Habitats Directive to implement this agreement.
12. Ireland has also signed The Bonn Convention (The Convention on the Conservation of Migratory Species of Animals) and is therefore party to various agreements.

### **Bats**

13. All bat species found in Ireland are listed under Appendix III of the Bern Convention and Annex IV of the EC Habitats Directive. In addition, bats and their habitats are listed under Appendix II of the Bonn Convention; therefore, there is an obligation to protect the habitat of bats, including links to important feeding areas. Bats are protected in Ireland under the Wildlife Act (1976) and Wildlife [Amendment] Act (2000) which make it an offence to wilfully interfere with or destroy the breeding or resting place of these species.
14. In relation to European protected species, it is an offence if:
  - *They are deliberately captured, injured or killed;*
  - *These animals are disturbed in such a way as to significantly affect their ability to survive, breed, or rear/nurture their young, or in a way that affects the local distribution or abundance of that species;*
  - *A breeding site or resting place of these species is damaged or destroyed, even if this is unintentional and/or when the animal is not present;*
  - *Access to a structure or place used by these species for protection or shelter is intentionally or recklessly obstructed.*
15. This legislation applies to all life stages of these species, and a European protected species licence is required to conduct any activity that would otherwise involve committing an offence.

### **Otter**

16. Otter is listed in Appendix III of the Bern Convention and Annex IV of the EC Habitats Directive. The Otter and its holts are also protected under the Wildlife Act (as amended). This makes it an offence if:
  - *They are deliberately captured, injured or killed;*
  - *They are disturbed in such a way as to significantly affect their ability to survive, breed, or rear/nurture their young, or in a way that affects the local distribution or abundance of this species;*
  - *A breeding site or resting place of this species is damaged or destroyed, even if this is unintentional and/or when the animal is not present;*
  - *Access to a structure or place used by this species for protection or shelter is intentionally or recklessly obstructed;*
17. This legislation applies to all life stages of this species.



## National Legislation

### **Badger**

18. Badger receives protection under the Wildlife Act (as amended). This makes it an offence to:
  - *Hunt a badger*
  - *Injure a badger*
  - *Wilfully interfere with or destroy the breeding place or resting place of a badger*
19. Any persons who attempt to commit an offence under the Wildlife Act, or aids, abets, counsels, procures the commission of an offence under the Act or who solicits or incites any other person to commit an offence under the Act shall also be guilty of an offence. Additionally, any person who by act or omission, contravenes or fails to comply with regulations under the Wildlife Act is guilty of an offence.

### **Breeding Birds**

20. All wild birds are protected under the Wildlife Act (as amended), making it an offence to:
  - *Hunt a wild bird (expect certain species during the open season and under licence)*
  - *Injure a protected wild bird otherwise than while hunting it*
  - *Wilfully take or remove the eggs or nest of a protected wild bird except under licence*
  - *Wilfully destroy, injure or mutilate the eggs*
  - *Wilfully disturb a protected wild bird on or near a nest containing eggs or unflown young*

### **Smooth Newt**

21. The smooth or common newt (*Lissotriton vulgaris*) is the only species of newt found in Ireland. It is protected under Schedule 5 of the Wildlife Act (as amended). The species is also afforded additional protection under Appendix III of the Convention on the Conservation of European Wildlife and Natural Habitats (The Bern Convention). It is an offence to:
  - *Hunt a newt*
  - *Injure a newt*
  - *Wilfully interfere with or destroy the breeding place or resting place of a newt*

### **Other protected wild animals**

22. Other wild animals given protection under the Wildlife Act (as amended) include all deer species, hare, hedgehog, otter, pine marten, red squirrel, pygmy shrew, stoat, Natterjack toad, common frog, common lizard, freshwater crayfish, freshwater pearl mussel and the Kerry slug as well as marine mammals.

### **Protected Plant Species**

23. The Flora Protection Order provides protection to a range of vascular and non-vascular plants. A small number of specified species e.g. the marsh saxifrage also receive protection under the EU Habitats Directive.
24. Under the Wildlife Act, it is not allowed, other than with a licence granted by the Minister for Arts, Heritage and the Gaeltacht, to "*cut, pick, collect, uproot or otherwise take, injure, damage, or destroy any specimen*" of the species listed in the Flora Protection Order; to "*purchase, sell, keep for sale, transport for sale or exchange, offer for sale or exchange or be in possession of any such specimen whether alive or dead or the flowers, roots, seeds, spores or any part, product or derivative thereof*"; or to "*wilfully alter, damage, destroy or interfere with the habitat or environment*" of any of the listed species.

### **Invasive Non-native Species**

25. The spread of invasive non-native species is regulated under the European Communities Regulations. Under this regulation, it is an offence to:
  - *Plant, disperse, allow or cause to disperse, spread or otherwise cause to grow in any place specified in relation to such plant, any plant listed in the 3<sup>rd</sup> Schedule; this includes species such as Japanese knotweed and Himalayan balsam.*
  - *Breed, reproduce or release or allow or cause to disperse or escape from confinement any animal which is not ordinarily resident in or is not a regular visitor to the State in a wild state; or of a kind that is domesticated or that is in the normal course the subject of human husbandry; or is listed in the 3<sup>rd</sup> Schedule. This includes animals such as roe deer, muntjac deer, zebra mussel and common toad.*
26. The Invasive Alien Species Regulation (1143/2014 EU) (as amended) also lists animal and plant species of union concern that have restrictions on being kept, bred, transported or placed on the market. Several of these are already present in Ireland.

### **CIEEM PEA Guidance**

27. The methodology presented in the CIEEM Guidelines for Preliminary Ecological Appraisal (2017) was followed to conduct this PEA. The purpose of a PEA is to rapidly assess ecological features present (or potentially present) within the zone of influence of a development site. This allows us to:
  - *identify the likely ecological constraints associated with a project;*
  - *identify any mitigation measures likely to be required; and*
  - *identify any additional surveys that may be required.*
28. The zone of influence of a proposed development site is defined by the guidelines as ‘the area(s) over which ecological features may be affected by the biophysical changes caused by a proposed project and associated activities.’
29. The Guidelines also state that ‘existing ecological information for the site and adjacent areas should be obtained, normally extending to at least 1 km from the site boundaries or 0.5 km for sites of approximately 1 ha or less’. In this case the site is approximately 12.43 ha in area, therefore records were obtained for an area extending 1km beyond the site boundary.
30. The primary audience for a PEAR is the client or developer and relevant members of the project team, such as the architect, planning consultant, and landscape architect. It is normally produced to inform a developer (or other client), and their design team, about the key ecological constraints and opportunities associated with a project, possible mitigation requirements and any detailed further surveys required to inform an Ecological Impact Assessment (EclA).
31. “Under normal circumstances it is not appropriate to submit a PEAR in support of a planning application as the scope of a PEAR is unlikely to fully meet planning authority requirements in respect of biodiversity policy and implications for protected species.”

## Methodology

### Desk Study

#### **Designated Site Information**

32. As the Site lies very close to the border with Northern Ireland, both the NIEA Natural Environment Map Viewer (<https://apps.d.aera-ni.gov.uk/nedmapviewer/>) and the EPA map viewer (<https://gis.epa.ie/EPAMaps/>) were used to identify designated conservation sites within a potential zone of influence of the proposed development and to review the application site within the context of its surrounding environment, in order to assess the relationship of the proposed Site to adjacent habitats. A search was carried out for Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites, Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHA) sites within 10km of the site, Areas of Special Scientific Interest (ASSIs) within 2km, and sites of Local Nature Conservation Importance (SLNCIs), and native woodland within 250m. Designated sites that may be affected by the proposed works were identified using the Source-Pathway-Receptor framework, as outline in OPR 2021.

#### **Biological Records**

33. Records of any species of conservation concern found within the 2 km grid square in which the Site is located (H39J) were retrieved from the National Biodiversity Data Centre records taken from their website [www.biodiversityireland.ie](http://www.biodiversityireland.ie). Records for forty-seven species were returned and are included in Appendix 5.

### Field Survey

#### **Habitat Survey**

34. The Site was visited by Dr Florentine Spaans on 20.09.21. All habitats and key plant species were recorded. Habitats were classified based on Fossitt 2000, and target notes were used to record any additional features as required (Appendix 2). Relevant photographs are appended (Appendix 3) and a plant species list is included in Appendix 4.

#### **Protected Species Surveys**

35. A detailed faunal survey was not carried out, but the potential for the Site and adjacent areas to support protected faunal species was considered. Bird species encountered during the survey were also noted. Any findings were target noted as required (Appendix 2). Dr Marco Ilardi subsequently visited the Site on the 25<sup>th</sup> and 26<sup>th</sup> of May 2022, to carry out further field assessments and inspect some of the trees on Site, deemed to have moderate bat roosting potentials, at a closer range.

#### **Badger**

36. The search area comprised all land within the Site boundary and 25m beyond this where possible.
37. The search area was thoroughly surveyed for evidence of badgers in the form of:
- *Faeces: badgers usually deposit faeces in characteristic excavated pits, concentrations of which (latrine sites) are typically found at home range boundaries;*
  - *Setts, comprising either single isolated holes or a series of holes, likely to be interconnected underground;*
  - *Paths between setts or leading to feeding areas;*

- *Scratching posts at the base of tree trunks;*
- *Snuffle holes (small scrapes where badgers have searched for insects, earthworms and plant tubers);*
- *Day nests (bundles of grass and other vegetation where badgers may sleep above ground);*
- *Hair traces; and*
- *Footprints*

**Otter**

38. The search area comprised all land within the Site boundary and 30 m beyond this along either side of any waterways where possible.
39. The search area was thoroughly surveyed for evidence of Otter in the form of:
- *Faeces: Otters usually deposit faeces in prominent areas such as an area of raised ground, stone or log;*
  - *Holts, comprising either single burrows or a series of burrows*
  - *Paths leading to and from water bodies;*
  - *Paths leading to and from holts;*
  - *Day nests (bundles of grass and/or areas of flattened vegetation where Otters may rest above ground);*
  - *Hair traces;*
  - *Prey remains e.g. fish; and*
  - *Footprints*

**Bats**

40. An assessment of both the quality of the foraging habitat and the Bat Roosting Potential (BRP) of trees and buildings on Site was conducted during the field survey following the Bat Conservation Trust (BCT)'s 'Bat Surveys for Professional Ecologists: Good Practice Guidelines' (2016). This entailed a ground level assessment with the aim of identifying any features that bats could use for roosting (Potential Roosting Features or PRFs).
41. The potential presence of roosting bats was also assessed by searching for:
- *Bat droppings*
  - *Odour*
  - *Staining*
42. The BRP of each PRF was assessed as negligible, low, moderate or high (see Table 1) based on Table 4.1 of the BCT's 'Bat Surveys for Professional Ecologists: Good Practice Guidelines' (2016).

**Table 1 - Guidelines for Assessing the Suitability of a Structure for Roosting Bats** [taken from Table 4.1 of the BCT's 'Bat Surveys for Professional Ecologists: Good Practice Guidelines' (2016)]

Suitability	Description
<b>Negligible</b>	Negligible habitat features on site likely to be used by roosting bats.
<b>Low</b>	A structure or tree with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and / or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation roosts).

<b>Moderate</b>	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, appropriate conditions and / or surrounding habitat, but unlikely to support a roost of high conservation status.
<b>High</b>	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

### Breeding Birds

43. Any features on Site which were assessed as having the potential to support breeding birds, e.g. hedgerows, scattered trees, woodland and cavities within buildings, as well as any birds displaying breeding behaviour such as singing or nest building, were recorded.

### Smooth Newt

44. The suitability of habitat for the smooth newt within the boundary of the application Site was assessed during the walkover survey and the location and features of any areas of standing/slow flowing water were target noted.
45. The potential for newts to be present in a particular pond increases when the waterbody holds certain characteristics (Oldham et al., 2000). These characteristics include:
- **S1 - Geographic location** – *lowland areas are more likely to support newts*
  - **S2 - A large pond surface area** – *the suitability of a pond for newts increases with its surface areas until 800m<sup>2</sup>, after which the suitability begins to decline again, but remains higher than that of ponds smaller than 400m<sup>2</sup> in surface area.*
  - **S3 - Pond permanence** – *the less likely a pond is to dry out, the more likely newts are to be present.*
  - **S4 - High water quality** – *an abundant and diverse invertebrate community, as well abundant submerged plants are indicators of good water quality. The higher the water quality, the more likely newts are to be present.*
  - **S5 - Shade** – *a high level of shade at the edge of the water body is most preferable*
  - **S6 - Absence of waterfowl** – *waterfowl reduce habitat quality of a pond for newts by removing vegetation, polluting the water and even predated the newts. Therefore, if waterfowl are absent or are low in number, this increases the likelihood that newts are present.*
  - **S7 - Absence of fish** – *fish can predate upon newt larvae. Therefore, if fish are low in number, newts are more likely to be present.*
  - **S8 - A high pond count** – *the higher the number of ponds within a 1 km radius of the pond in question, the higher the likelihood that newts might have dispersed to the area.*
  - **S9 - Terrestrial habitat** – *A water body surrounded by suitable newt habitat offering cover and foraging opportunities is more likely to support newts.*
  - **S10 - Macrophyte cover** – *The higher the percentage of macrophyte cover (up to 80%), the higher the suitability of the pond for newts. Macrophytes provide them with shelter and habitat for females to lay eggs. When macrophyte cover increases above 80%, suitability begins to decline, but remains high.*
46. The Habitat Suitability Index (HSI) for this site was calculated following the methodology presented in ARG UK Great Crested Newt Habitat Suitability Index (2010) document.
47. The HSI is a geometric mean of ten suitability indices (SI) and is calculated as follows:

$$HSI = (SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \times SI_9 \times SI_{10})^{1/10}$$

## Results

### Designated Sites

48. There are no designated areas on the Site itself nor in the immediate area around the Site, as shown in Figure 1 in Appendix 1. The water in the ditches along the northern site boundary flows into the River Deelee less than 500 m to the north and from there into the River Finn SAC less than 600 m further downstream.

**Table 2.** Designated sites within 10 km of the proposed development.

Name	Designation	Distance (approximate)	Pathway of effect
River Finn	SAC	570 m E	Yes
River Foyle and Tributaries	SAC and ASSI	600 m E	Yes
Feddyglass Woods	pNHA	4.4 km NW	No
Lough Foyle	SPA	30 km NNE	Very weak
Lough Foyle	Ramsar site	31.5 km NE	Very weak

49. The River Finn SAC covers almost the entire freshwater element of the River Finn to the international border with Northern Ireland along the River Foyle, together with several of its tributaries. It covers upland habitats listed in Annex I of the Habitats Directive but the lower areas such as those closest to the Site are designated mainly for the river itself (oligotrophic waters containing very few minerals). The river is important for Atlantic salmon and otter (Annex II Habitats Directive species) and hosts a population of Arctic char. Wet grassland, marsh and reedbeds occur along some of the lower stretches of the river. The fish populations are especially sensitive to water quality and agricultural run-off poses a threat.
50. The River Foyle and Tributaries SAC and ASSI, designated in Northern Ireland, is contiguous with the River Finn SAC in the locality of the proposed development. The SAC was designated for its otter and Atlantic salmon populations and for the habitat type '*Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation*' which is characterised by communities of water-crowfoot, which only grows in relatively unpolluted waters.
51. Lough Foyle lies some 30 km downstream from the Site of the proposed development and contains several sites designated for populations of waterfowl and habitats of scientific interest. Although there is a hydrological connection with the site of the proposed development, the distance between them makes any potential effects unlikely.

## Habitats

### Overview

52. The results of the habitat survey are illustrated in the Phase 1 habitat map in Appendix 1 Figure 2; this should be utilised alongside the target notes (TN) in Appendix 2. Examples of relevant target notes are included in habitat descriptions below. Representative and illustrative photographs are provided in Appendix 3 and a botanical species list for the Site is to be found in Appendix 4.
53. The Site lies across five fields (TN1; F1-F5) and their boundaries (H1-H13) and is situated on the northern side of the Letterkenny Rd (N14) on the western side of Lifford town, across from The Commons. While most of the adjacent land consists of agricultural fields, a petrol station borders the Site to the south (TN2) and individual residential houses and gardens line the N14 to the west and south. Drainage ditches

(TN3) mark the northern site boundary, their waters flowing into the River Deelee around 470 m to the north and from there into the River Finn SAC around 990 m downstream. The River Foyle SAC and ASSI is contiguous with the River Finn SAC along the border between Northern Ireland and the Republic of Ireland. An area of peatland that has been converted into pasture lies adjacent to the site to the north (TN4). Scattered gorse scrub grows near the ditch to the north-east of the site (TN5). A strip of amenity grassland with a line of planted trees lies alongside the Letterkenny Road (TN6). The part within the site boundary also has a hedgerow (Hedge 1) close to the line of trees. The site lies on a variety of mostly poorly draining acid soils, including gleys, podzols, peaty lithosols and alluvial soils.

#### **FW4 – Drainage ditch**

54. A wet area in F2 at the top of a small ditch where water feeds into a drain that flows north-east to join another drain flowing north-west, which then enters a small stream. Himalayan balsam (*Impatiens glandulifera*) is present along the ditch at various isolated spots (TN 3; Photograph 3). Remote sedge (*Carex remota*) and reed canary grass (*Phalaris arundinacea*) are occasional, soft rush (*Juncus effusus*) and ferns, including hart's tongue fern (*Asplenium scolopendrium*) are frequent. Marsh stitchwort (*Stellaria palustris*), ragwort (*Senecio jacobaea*) and greater bird's foot trefoil (*Lotus pedunculatus*) are also present.
55. The ditch at the northern site boundary is deep (over 2 m) with a steep bank (TN3; Photograph 4). Meadowsweet (*Filipendula ulmaria*), hedge bindweed (*Calystegia sepium*), bush vetch (*Vicia sepium*), bramble (*Rubus fruticosus* agg) and stinging nettle (*Urtica dioica*) are common here and there are scattered downy birch trees (*Betula pubescens*) and gorse (*Ulex europaeus*), black alder (*Alnus glutinosa*) and grey willow (*Salix cinerea*) scrub. Tufted hair-grass (*Deschampsia cespitosa*) and floating sweet-grass (*Glyceria fluitans*) occur occasionally. The ditch runs along the edge of an area of converted peatland (TN5), has a silty bottom and is choked with aquatic plants including bog pondweed (*Potamogeton polygonifolius*), water horsetail (*Equisetum fluviatile*), water plantain (*Alisma plantago-aquatica*) and bulrush (*Typha latifolia*).

#### **GA1- Improved agricultural grassland**

56. *Field 1 (F1)* - Cattle grazed field sloping up towards the road in its western corner. Perennial ryegrass (*Lolium perenne*) dominates with abundant broadleaved dock (*Rumex obtusifolius*), creeping buttercup (*Ranunculus repens*) and white clover (*Trifolium repens*) throughout. Common chickweed (*Stellaria media*) and common mouse ear (*Cerastium fontanum*) are also frequent. Other grasses such as cock's foot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), annual meadow grass (*Poa annua*) and creeping bent (*Agrostis stolonifera*) are also present, especially near the edges, where wood dock (*Rumex sanguineus*) also occurs occasionally and nettles and creeping and spear thistles (*Cirsium arvense* and *C. vulgare*) are frequent. The ground is firm but areas around accesses and sheltered corners are churned up and muddy and the site is wetter in the lower area towards the north. Knotgrass (*Polygonum aviculare*), redshank (*Persicaria maculosa*), marsh cudweed (*Gnaphalium uliginosum*) and hairy bittercress (*Cardamine hirsuta*) are common around the disturbed areas.
57. *Field 2 (F2)* - Similar to F1 but a rise is located at the centre of the field and some very wet soft rush (*Juncus effusus*) -dominated areas are located near the top of the drainage ditch along the northwestern site boundary. Brooklime (*Veronica beccabunga*) and marsh willowherb (*Epilobium palustre*) are present in the wettest areas.
58. *Field 3 (F3)* - Improved grassland similar to F1 and F2 with a hill in the middle of this long field.

59. *Field 4 (F4)* - Field with wide margins with a semi-improved nature, in particular near the residential houses to the south-east. Soft rush is more common in those areas and there is lower dominance of perennial ryegrass.
60. *Field 5 (F5)* - Improved grassland covers a hill in the centre of the field but the northern end is a little wetter with much soft rush so is partially semi-improved. Perennial ryegrass is less dominant in this area, with more creeping bent, Yorkshire fog, occasional common bent (*Agrostis capillaris*), velvet bent (*A. canina*) and tufted hair-grass. The main forbs remain white clover and creeping buttercup. Mushrooms are frequent.

#### **GA2- Amenity grassland (improved)**

61. There is a strip of tightly mown amenity grassland between the Letterkenny Road and Field 1 (TN6; Photograph 5). Springy turf-moss (*Rhytidiadelphus squarrosus*) is common among a sward of annual meadow-grass, perennial ryegrass, cock's foot. Dandelion (*Taraxacum officinale*), ribwort plantain (*Plantago lanceolata*), curled dock (*Rumex crispus*) and creeping buttercup appear occasionally in the turf.
62. An overflowing man-hole is present at one location, causing localised nutrient enrichment in which a number of naturalised tomato plants grow abundantly (TN7; Photograph 6).

#### **GS3 Dry-humid acid grassland**

63. Some small areas of F4 and F5 are semi-improved and can be classed as dry-humid acid grassland. Perennial ryegrass is less dominant here and soft rush is abundant. (TN1; Photograph 2)

#### **WS1 – Scrub**

64. Scattered gorse (*Ulex europeus*) scrub covers a small area to the north-east of the site (TN7).

#### **WL1 - Hedgerows**

65. **Hedge 1 (H1)** (Photographs 5, 6) – Untrimmed hedge on a low earth bank with the ground sloping sharply up from the road near the corner. The hedge has abundant hawthorn (*Crataegus monogyna*), occasional blackthorn (*Prunus spinosa*), ash (*Fraxinus excelsior*) and sycamore (*Acer pseudoplatanus*). The understory has abundant ivy, frequent ground elder (*Aegopodium podagraria*), nettles, occasional male fern (*Dryopteris filix-mas*), brambles, herb Robert (*Geranium robertianum*), nipplewort (*Lapsana communis*), bush vetch, common figwort (*Scrophularia nodosa*), wood dock (*Rumex sanguineus*), foxgloves (*Digitalis purpurea*), wood dog violet (*Viola reichenbachiana*) and hogweed (*Heracleum sphondylium*). A large ash tree with moderate BRP grows near the corner of the field.
66. **Hedge 2 (H2)**- Untrimmed hedge dominated by hawthorn but with frequent blackthorn, occasional holly (*Ilex aquifolium*), gorse and dog rose (*Rosa canina*). The understory has abundant ivy and frequent foxgloves and nettles and occasional brambles, common figwort and ferns such as golden-scaled male fern and lady fern (*Dryopteris affinis* and *Athyrium filix-femina*). Wood dog violet is also present. The hedge borders a private garden with a small wildflower meadow. An earth bank behind the hedge reaches up to 2m high in places.
67. **Hedge 3 (H3)** – Untrimmed hedge similar in composition to H2 extending only partway across the northern side of F1 with a gap for access into F2. The hedge is rather gappy with open areas filled in by a



barbed wire fence. Hawthorn dominates but blackthorn, gorse and holly are frequent and a willow (*Salix caprea*), rose and honeysuckle (*Lonicera periclymenum*) are also present.

68. **Hedge 4 (H4)** - Untrimmed hedge of irregular shape with some emergent trees and extremely gappy towards the southern end. Willow (*Salix caprea* and *S. cinerea*) are abundant in the hedge and there is frequent black alder, ivy, hawthorn, and occasional holly, blackthorn, gorse, honeysuckle, horse chestnut (*Aesculus hippocastanum*) and aspen (*Populus tremula*). A tall black poplar (*Populus nigra*) with moderate ivy cover emerges from the hedge.
69. **Hedge 5 (H5)** - Untrimmed hedge with some emergent trees running along drainage ditch. The hedge is dominated by hawthorn but contains frequent grey willow, aspen and occasional gorse, holly, sycamore, honeysuckle, rose, elder and cherry (*Prunus* spp).
70. **Hedge 6 (H6)**- Consists almost entirely of goat willow (*Salix caprea*) beside ditch. There is also abundant ivy and occasional hawthorn and elder (*Sambucus nigra*).
71. **Hedge 7 (H7)** - Untrimmed hedge dominated by hawthorn with frequent blackthorn, occasional gorse, grey willow, bramble, dog rose and ivy. The hedge is slightly gappy at either end, which is filled in with fencing.
72. **Hedge 8 (H8)** - Untrimmed hedge with abundant gorse and hawthorn, frequent brambles and nettles, occasional soft rush and wood dock.
73. **Hedge 9 (H9)** - Untrimmed hedge with abundant blackthorn, hawthorn and gorse. Brambles and nettle are frequent, dog-rose is occasional. The ground flora includes occasional foxglove and violets (*Viola* spp).
74. **Hedge 10 (H10)** - Untrimmed hedge dominated by hawthorn with a sparse ground layer of grasses and nettles. Ivy is frequent and blackthorn, dog rose and bramble occasional.
75. **Hedge 11 (H11)** - The hedge is dominated by hawthorn but has abundant blackthorn and frequent mature ash which almost turns the hedge into a line of trees in places. Holly, rose, bramble and honeysuckle are occasional and ivy is frequent. The southern end slopes down steeply to an area of wet woodland. Foxgloves are present in the ground flora.
76. **Hedge 12 (H12)** - Untrimmed hedge with abundant blackthorn and hawthorn and occasional ash, dog rose, honeysuckle, holly, yew (*Taxus baccata*) and grey willow. A dry ditch runs along the western side. The ground layer is dominated by ivy but contains nettles, brambles, marsh bedstraw (*Galium palustre*), hart's tongue fern, common polypody (*Polypodium vulgare*) and lady fern.
77. **Hedge 13 (H13)** - Untrimmed slightly gappy hedge dominated by hawthorn with abundant ivy and occasional bramble, gorse, honeysuckle and dog rose.
78. **Hedge 14 (H14)** - A somewhat defunct untrimmed hedgerow dominated by hawthorn with frequent gorse and occasional ivy, holly and rose. There is a ground flora of grasses, bush vetch, foxglove, moss- covered rocks, a little ivy and patches of bare ground. The remnants of an old stone wall are visible in places. Some navelwort (*Umbilicus rupestris*) grows at the base of a mature beech (*Fagus sylvatica*).

## WL2 - Treeline

79. A line of semi-mature trees of mixed species has been planted on the amenity grassland along the Letterkenny Road (TN8; Photograph 6).

## Fauna

### Bat Roost Potential Survey

80. There are no existing buildings on site but several of the hedgerows contain trees with low to moderate bat roost potential.
81. All the trees on site were assessed for bat roost potential. Their locations are shown in Appendix 1, Figure 2. Details for each are included in Table 3 below.

**Table 3.** Trees with bat roost potential on the site for proposed development.

Tree no	Species	Location (Hedge; Irish Grid)	Description	BRP rating
1	Ash	H1; H 32759 99033	Several broken branches; some holes where small branches rotted; some ivy cover (Photo 13, Appendix 3)	Moderate
2	Ash	H12; H 33180 98952	Damaged trunk; ivy (Photo 14, Appendix 3)	Low to Moderate
3	Ash	H12; H 33133 99038	Ivy	Low
4	Ash	H12; H 33135 99034	Ivy	Low
5-10	Ash	H12; H 33121 99095	Line of semi-mature trees	Low

82. Following the PEA, a closer inspection of potential bat roosting features, under license, was conducted on the two trees with moderate BRP ratings on the 26<sup>th</sup> of May 2022. A specialised tree climber carried out the survey, in the presence of a qualified ecologist (Dr Marco Ilardi). No bats were found within the identified cavities or in the spaces between the tree trunks and the ivy coverage, and no other suitable cavities/crevices were identified under the ivy coverage. Therefore, the BRP rating for the two trees (no. 1 and 2) was changed from **moderate** to **low/negligible**. See pictures in appendix ...

### Terrestrial mammals

83. Tunnel entrances were found at multiple locations on site (TN8) but most were too small (less than 20 cm diameter) to be used by badger and are more likely to be entrances to rabbit warrens. The only holes that could possibly be attributed to badger were located in Hedge 11 and appeared disused (Photographs 7-8). Possible signs of badger on site were limited to animal trails and potential snuffle holes. No latrines, hair or tracks were identified. There are no records of badger within the 2 km tetrad which encompasses the site in the Biodiversity Ireland database.
84. No signs of otter were found on site or within 30 m surrounding the site. There is one record for otter within the 2 km tetrad which encompasses the site.
85. The Biodiversity Ireland database also had a record for Irish hare (*Lepus timidus* subsp. *hibernicus*) and hedgehog (*Erinaceus europaeus*) (see Appendix 5). These species were not observed during the site visit.

### Amphibians

86. No records were found for Smooth newt (*Lissotriton vulgaris*) or Common frog (*Rana temporaria*) within the 2km tetrad of the Site. The drainage ditches (TN3) contain slow-moving water and are potentially suitable for frogs and newts. A subsequent field assessment of the drainage ditch carried out on the 25<sup>th</sup>

of May 2022 revealed the presence of young Common frogs (*R. temporaria*) within the ditch.

### Breeding birds

87. A dedicated breeding bird survey was not carried out, but all species encountered during the Phase 1 habitat survey were noted and are listed in Table 4. The primary habitat on Site that is suitable for breeding birds is hedgerow.

**Table 4:** Birds observed during habitat survey. Colour codes reflect the BOCCI status (Gilbert et al. 2021)

Species common name	Scientific name	Description
Blackbird	<i>Turdus merula</i>	1 seen in H6
Blue Tit	<i>Cyanistes caeruleus</i>	2 seen in H3
Chaffinch	<i>Fringilla coelebs</i>	1 seen in H3
Goldcrest	<i>Regulus regulus</i>	2 seen in H3
Great Tit	<i>Parus major</i>	1 seen in H5
Jackdaw	<i>Corvus monedula</i>	5 birds in birch trees beside road
Robin	<i>Erithacus rubecula</i>	1 robin in H1, 2 more in H2, 1 in hedge 13
Rook	<i>Corvus frugilegus</i>	12 seen in ash tree with mod BRP in H1 beside road
Starling	<i>Sturnus vulgaris</i>	Ca 80 birds on telephone line off site to west
Woodpigeon	<i>Columba palumbus</i>	2 seen flying S, 4 more flying E out of H4

\*Colour codes refer to conservation status of high (red), medium (amber) and no concern (green) as categorised in the Birds of Conservation Concern Ireland 2020-2026 (Gilbert G, Stanbury A and Lewis L (2021). Irish Birds 43: 1–22).

88. There are National Biodiversity Data Centre records for 21 bird species within the 2 km of the site, including grey heron (*Ardea cinerea*) and sand martin (*Riparia riparia*) (See Appendix 5 for full list).

### Insects

89. Insects were not actively surveyed for but two speckled wood butterflies (*Pararge aegeria*) were observed.
90. Bumble bees (*Bombus* spp) were occasional on site around the few remaining wildflowers. There are several records of beetles within the 2 km tetrad (Appendix 5).

### Invasive Non-Native Species

91. Himalayan Balsam is present on site at scattered locations. There are also records for Japanese knotweed and giant hogweed in the area but neither of these species was identified on Site.

### Survey Constraints

92. Weather conditions at the time of the initial survey were dry with occasional sunny spells and a light breeze. The weather was no constraint during this survey.
93. Many bird species would have completed their breeding activities by the time of the survey, and birds in the later stages of their breeding cycle are often silent and difficult to detect. Records at this time of year may therefore not be representative of the local breeding bird population.
94. The disturbance caused by the presence of livestock in the fields made signs of badger and other animals difficult to determine on site.

## Evaluation

### Designated Sites

95. There are no designated areas within the Site itself. However, the drainage ditches that run along the site boundary flow into the River Deele less than 500 m to the north and from there into the River Finn SAC less than 600 m further downstream. The River Foyle SAC and ASSI includes an area that is proposed as a Natural Heritage Area and it lies next to the River Finn SAC across the border between Northern Ireland and the Republic of Ireland. The River Foyle flows into the Foyle estuary, which contains multiple designated sites. Pollution events during construction could therefore impact two SACs, a pNHA and the Foyle estuary. The potential impact of the proposed development on the Foyle Estuary is unlikely to be significant due to the dilution factor provided by distance but the impact on the SACs could be substantial, particularly if there are cumulative effects.
96. There is no pathway of impact on any other designated site in the area and the proposed development will not affect any of their qualifying features.

### Habitats

97. There are no habitats on Site that are listed in Annex 1 of the Habitats Directive. The site does contain ca. 2km of hedgerow, which is an important habitat for many plant, animal and insect species and plays an important role in landscape connectivity.

### Fauna

#### **Bats**

98. Several trees on Site were initially assessed as having low to moderate bat roosting potential. However, the subsequent close inspection survey carried out on the two trees with moderate BRPs revealed the absence of roosting bats within the identified cavities and no other potentially suitable roosting features behind the ivy coverage. Consequently, the BRP rating for the two trees was changed from moderate to low/negligible. Nevertheless, the bat roosting potential of the site and the potential for bats to use the site as foraging ground or ecological corridor, with the presence of waterways which connect to the River Deele less than 500m away, a good internal network of hedges and a small area of woodland nearby, remains overall moderate to high. Moreover, the fields surrounding the site contain few mature trees thus any other roosts potentially present on Site may be desirable to bats.
99. The proposed development includes new flood lighting associated with the recreational area and street lighting along the new roads' infrastructure. This may prove disruptive for bats foraging in the area and it may therefore be beneficial to do a bat activity survey on Site before commencement of construction. In this manner, bat activity can later be compared with a post-construction survey to assess the impact of the development.

#### **Amphibians**

100. A habitat suitability index rating was calculated for the drainage ditch with slow-moving water present along the northern Site boundary as follows:

$$HSI = (1 \times 0.7 \times 1.0 \times 0.33 \times 0.6 \times 0.67 \times 0.67 \times 0.6 \times 0.67 \times 0.1)^{1/10} = 0.69$$

101. This HSI score is greater than 0.5 and so the drainage ditch has some suitability for newts. Specific surveys

should be considered at the appropriate time (mid-March to mid-June).

### ***Terrestrial mammals***

102. While the site initially appears suitable for badger with a high density of hedgerows and nearby woodland available for tunnelling and fields available for foraging, a landscape-scale assessment suggests the site is not optimal for badger. The site is located on an area of land with roughly triangular shape that is bounded by the Rivers Deelee and Foyle on two sides and a busy road on the third. Landscape connectivity is thus limited for badger. No active setts were identified on site thus there should be no disturbance to the species. However, a pre-commencement survey will be necessary to ensure no badger have moved into the area in the interim.
103. Otter is likely to be present in the River Deelee which runs only ca. 500 m to the north of the site. While the drainage ditches bounding the site are too small to be suitable for otter, otters may occasionally travel along them while foraging or when migrating locally. Water pollution may affect the species and there is a risk of the proposed project impacting on the species.
104. Removal of hedgerows may lead to loss of habitat connectivity and fragmentation for any hedgehogs present locally. Clearance of vegetation during the winter may disturb hibernating hedgehogs.

### ***Breeding birds***

105. Ten species of birds were recorded on or near the site during the walkover survey and two of them are of moderate conservation concern. Birds are likely to breed in the hedgerows, trees and scrub on site.

### ***Insects***

106. The fruiting hawthorn, brambles and wildflowers present in the hedgerows are beneficial for a range of insects including butterflies and bees. No species of high conservation concern were identified during the site visit.

## **Invasive Non-Native Species**

107. Himalayan balsam appears to be widespread in Lifford town but while it is present on the Site, it appears to be at a colonising stage, with only a scattered patches in limited areas. Spread of this species is prohibited under the European Communities Regulations. Care will have to be taken that no more is imported onto the site or spread within the site during construction work.

## **Recommendations**

108. All vegetation clearance should be done outside the bird breeding season (1<sup>st</sup> March -31<sup>st</sup> August). As some birds still nest outside this time it is recommended that any clearance close to the breeding season is done under the supervision of a qualified ecologist (ECoW). Potential nesting habitat, where retained, should be fenced off to prevent damage by plant or operatives.
109. Two trees in the hedgerows present on Site were identified during the PEA as having moderate bat roost potential, and retention of the trees was advised if possible. Blackstaff Ecology was then commissioned to carry out a potential bat roost feature inspection survey, under licence, at a closer range, on the two

trees. This was undertaken on the 26<sup>th</sup> of May 2022, and it revealed the absence of roosting bats within the potential roosting features on the trees, and no other roosting potentials behind the ivy coverage. However, an assessment of bat activity on Site should be carried out both pre- and post- development, as the planned additional lighting is potentially disruptive to foraging bats.

110. As the site is part of a watershed area that drains into the Deele River and the River Foyle a hydrological connection to two SACs and a pNHA, is important that good practice is observed during construction to prevent any water pollution. It is likely that a Natura Impact Statement will be required.
111. Specific surveys for newts may be required around the drainage ditch along the northern site boundary, which was determined to have moderate suitability for smooth newt. These surveys should take place prior to commencement of works on the Site. The subsequent assessment of the drainage ditch carried out on the 25<sup>th</sup> of May 2022, which revealed the presence of young Common frogs within the ditch, also found the water body to be unsuitable for bottle trapping or night torching surveys for smooth newts, due to the water depth, banks' height, and dense underwater vegetation. A specific Smooth newt eDNA survey is recommended instead, to be carried out at the appropriate time (mid-March to mid-June).
112. No active badger setts were found on site but a pre-commencement survey for badger should take place prior to clearance or construction work as a potential disused sett was identified in Hedge 11.
113. An INNS management plan should be drawn up for the Site prior to commencement of work or any clearance as the invasive species Himalayan balsam was found to be present.

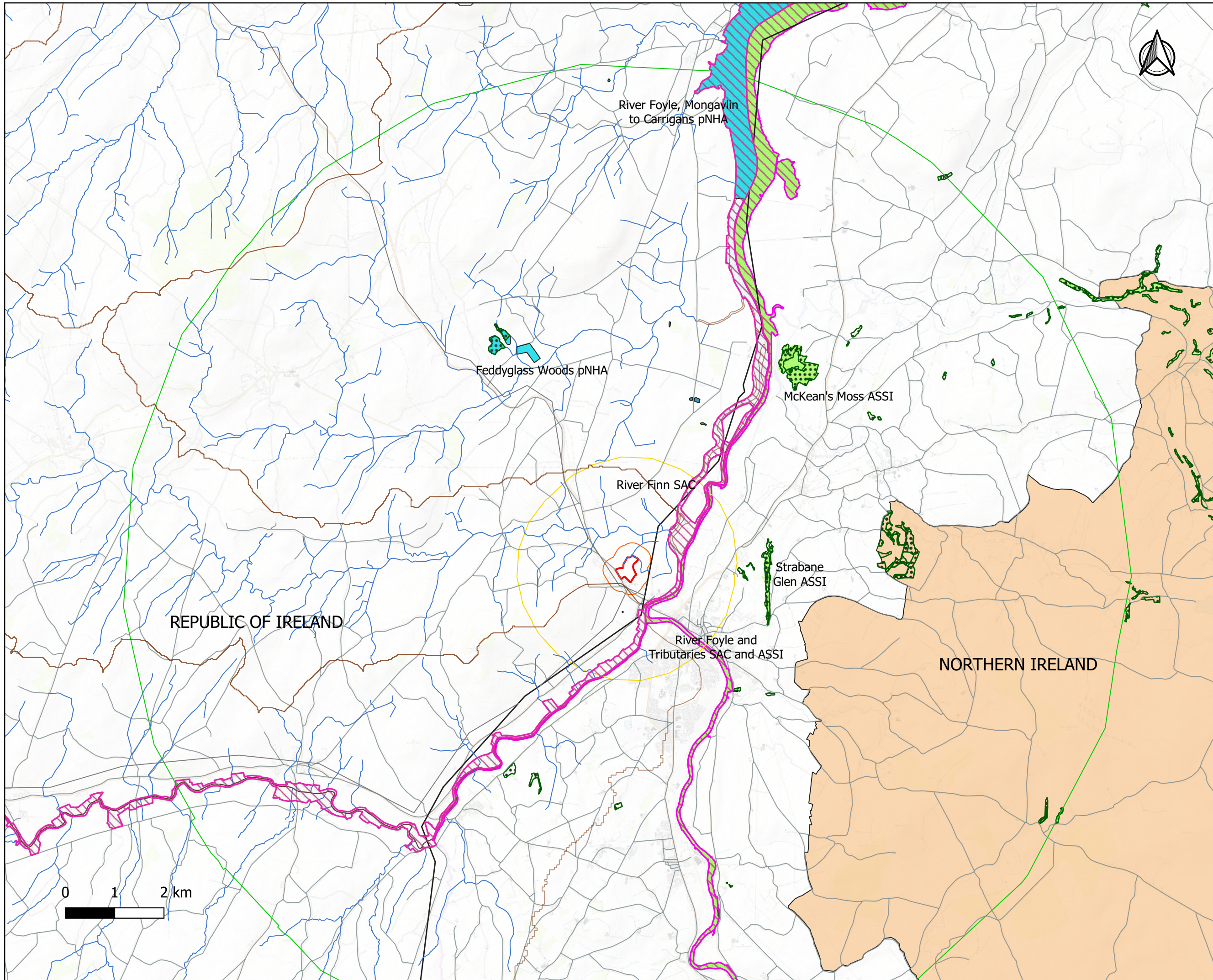
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- EC 2013: Interpretation Manual of European Habitats. EUR 28. European Commission, DG Environment, Brussels.

## Appendices

### Appendix 1

Site Maps [ \ ]



**KEY**

- Site outline
- 250 m buffer
- 2 km buffer
- 10 km buffer
- SAC
- Woodland Habitat
- pNHA
- ASSI
- AONB
- Subcatchment
- River
- Road
- National border

OpenTopoMap

**FIGURE 1 - DESIGNATED SITES MAP**

LAYOUT DWG: \_\_\_\_\_ LAYOUT NO.: \_\_\_\_\_

DRAWING NUMBER: \_\_\_\_\_

SCALE - 1: 70000 @ A3














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**LETTERKENNY ROAD,  
LIFFORD, CO. DONEGAL**  
**SITE PLANNING**

**KEY**

-  Target notes
-  Site boundary
-  25 m buffer
-  FW4 Drainage ditch
-  GA1 Improved grassland
-  GA2 Amenity grassland
-  GS3 Dry humid acid grassland
-  WL1 Hedgerows
-  WL2 Line of trees
-  WS1 Scrub
-  Watercourse
-  Tree with moderate BRP
-  Tree with low BRP

**FIGURE 2 - HABITAT SURVEY  
MAP**

\*\*DRAWING INDICATIVE ONLY AND NOT TO SCALE. HABITAT BOUNDARIES ARE ONLY REPRESENTATIVE DUE TO THE LACK OF IDENTIFIABLE FEATURES (I.E. FENCES) AGAINST WHICH TO MAP THE SITUATION ON THE GROUND.\*\*

LAYOUT DWG: \_\_\_\_\_ LAYOUT NO.: \_\_\_\_\_

DRAWING NUMBER: \_\_\_\_\_

SCALE - 1: 2000 @ A3

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## Appendix 2

### Target Notes

Target Note	Comments	Photographs
1	Improved agricultural grassland with cattle grazing but also signs of previous sheep grazing. The fields are hilly, surrounded by partially defunct hedgerows supplemented by fencing. There are some wet areas and narrow strips of semi-improved grassland. There is heavy poaching near field entrances.	1-2
2	Petrol station and shop.	
3	Drainage ditches which join to the north of the site. The western drain is lined by hedgerow and Himalayan balsam is frequent. The northern drain has steep banks lined by sparse scrub and aquatic plants including bull rush.	3-4
4	Area of converted peatland, now grazed grassland.	
5	Scattered gorse scrub.	
6	Line of planted trees on a strip of amenity grassland along the Letterkenny Road.	5
7	Overflowing water from manhole with tomato plants growing around it	6
8	Animal holes in hedge, most likely rabbit warren entrances but some in H11 possibly a disused badger sett.	7-8

## Appendix 3

### Photographs



Photograph 1: Improved agricultural grassland - Field 2. (TN 1)



Photograph 2: Strip of semi-improved grassland at the northern end of Field 5. (TN 1)



Photograph 3: Western drainage ditch, lined by hedgerow and frequent Himalayan balsam. (TN 3)



Photograph 4: Northern drainage ditch with steep banks lined by sparse scrub and aquatic plants including bull rush. (TN 3)



Photograph 5: Line of planted trees on a strip of amenity grassland right beside Hedge 1 along the Letterkenny Road. (TN 6)



Photograph 6: Overflowing manhole with tomato plants growing in seepage area. (TN7)



Photograph 7: Disused hole in Hedge 11. Dimensions: 30 cm wide x 15 cm high. Tunnel direction: S. Location: H 33141 98912. Compass width is 5 cm (TN10)



Photograph 8: Disused and overgrown hole in Hedge 11. Dimensions: 25 cm wide x 25 cm high. Tunnel direction: SE. Location: H 33141 98909. Compass width is 5 cm (TN10)



Photograph 9: Tree with moderate BRP in Hedge 1. Location: H 32759 99033.





Photograph 10: Tree with moderate BRP in Hedge 12. Location: H 33180 98952.

## Appendix 4

### Plant Species List

Scientific Name	English Name	Scientific Name	English Name
<b>Trees and shrubs</b>		<i>Galium palustre</i>	Marsh bedstraw
<i>Acer pseudoplatanus</i>	Sycamore	<i>Geranium robertianum</i>	Herb Robert
<i>Aesculus hippocastanum</i>	Horse-chestnut	<i>Gnaphalium uliginosum</i>	Marsh cudweed
<i>Alnus glutinosa</i>	Alder	<i>Hedera helix</i>	Ivy
<i>Betula pubescens</i>	Downy birch	<i>Heracleum sphondylium</i>	Hogweed
<i>Crataegus monogyna</i>	Hawthorn	<i>Lapsana communis</i>	Nipplewort
<i>Fagus sylvatica</i>	Common beech	<i>Lonicera periclymenum</i>	Honeysuckle
<i>Fraxinus excelsior</i>	Common ash	<i>Lotus pedunculatus</i>	Greater bird's-foot-trefoil
<i>Ilex aquifolium</i>	Holly	<i>Persicaria maculosa</i>	Redshank
<i>Populus nigra</i>	Black poplar	<i>Plantago lanceolata</i>	Ribwort plantain
<i>Populus tremula</i>	Aspen	<i>Polygonum aviculare</i>	Knotgrass
<i>Prunus domestica</i>	Damson	<i>Potamogeton polygonifolius</i>	Bog pondweed
<i>Prunus spinosa</i>	Blackthorn	<i>Ranunculus repens</i>	Creeping buttercup
<i>Salix caprea</i>	Goat willow	<i>Rosa canina</i>	Dog rose
<i>Salix cinerea</i>	Grey willow	<i>Rubus fruticosus agg</i>	Brambles
<i>Sambucus nigra</i>	Elder	<i>Rumex crispus</i>	Curled dock
<i>Taxus baccata</i>	Yew	<i>Rumex obtusifolius</i>	Broadleaved dock
<i>Ulex europaeus</i>	Common gorse	<i>Rumex sanguineus</i>	Wood dock
<b>Grasses</b>		<i>Scrophularia nodosa</i>	Common figwort
<i>Agrostis capillaris</i>	Common bent	<i>Senecio jacobaea</i>	Ragwort
<i>Agrostis canina</i>	Velvet bent	<i>Stellaria media</i>	Chickweed
<i>Agrostis stolonifera</i>	Creeping bent	<i>Stellaria palustris</i>	Marsh stitchwort
<i>Dactylis glomerata</i>	Cock's foot	<i>Taraxacum officinale</i>	Dandelion
<i>Deschampsia cespitosa</i>	Tufted hair-grass	<i>Trifolium repens</i>	White clover
<i>Glyceria fluitans</i>	Floating sweet-grass	<i>Umbilicus rupestris</i>	Navelwort
<i>Holcus lanatus</i>	Yorkshire fog	<i>Veronica beccabunga</i>	Brooklime
<i>Lolium perenne</i>	Perennial ryegrass	<i>Viola reichenbachiana</i>	Wood dog violet
<i>Typha latifolia</i>	Bull rush	<b>Rushes and sedges</b>	
<i>Phalaris arundinacea</i>	Reed canary-grass	<i>Carex remota</i>	Remote sedge
<i>Poa annua</i>	Annual meadow-grass	<i>Juncus effusus</i>	Soft rush
<b>Herbs</b>		<b>Ferns</b>	
<i>Aegopodium podagraria</i>	Ground elder	<i>Asplenium scolopendrium</i>	Hart's tongue fern
<i>Alisma plantago-aquatica</i>	Water plantain	<i>Athyrium filix-femina</i>	Lady fern
<i>Angelica sylvestris</i>	Angelica	<i>Dryopteris affinis</i>	Golden-scaled male fern
<i>Calystegia sepium</i>	Hedge bindweed	<i>Dryopteris filix-mas</i>	Male fern

<i>Cardamine hirsuta</i>	Hairy bittercress	<i>Polypodium vulgare</i>	Common polypody
<i>Cerastium fontanum</i>	Mouse-ear chickweed	<b>Mosses</b>	
<i>Cirsium vulgare</i>	Spear thistle	<i>Rhytidiadelphus squarrosus</i>	Springy turf-moss
<i>Digitalis purpurea</i>	Foxglove	<b>Invasives</b>	
<i>Epilobium palustre</i>	Marsh willowherb	<i>Impatiens glandulifera</i>	Himalayan balsam
<i>Equisetum fluviatile</i>	Water horsetail		

## Appendix 5

### National Biodiversity Data Centre Records

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
bird	<i>Barn Swallow (Hirundo rustica)</i>	3	15/04/2016	Birds of Ireland	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	<i>Black-billed Magpie (Pica pica)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>Blackcap (Sylvia atricapilla)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>Black-headed Gull (Larus ridibundus)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	<i>Blue Tit (Cyanistes caeruleus)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>Chaffinch (Fringilla coelebs)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>Common Blackbird (Turdus merula)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>Common Wood Pigeon (Columba palumbus)</i>	2	05/06/2016	Birds of Ireland	Protected Species: Wildlife Acts    Protected Species: EU Birds Directive    Protected Species: EU Birds Directive >> Annex II, Section I Bird Species    Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	<i>Eurasian Collared Dove (Streptopelia decaocto)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>Eurasian Jackdaw (Corvus monedula)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>European Goldfinch (Carduelis carduelis)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	

bird	<i>European Greenfinch (Carduelis chloris)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>European Robin (Erithacus rubecula)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>Grey Heron (Ardea cinerea)</i>	2	05/06/2016	Birds of Ireland	
bird	<i>Long-tailed Tit (Aegithalos caudatus)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>Mistle Thrush (Turdus viscivorus)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>Rook (Corvus frugilegus)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>Sand Martin (Riparia riparia)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts    Threatened Species: Birds of Conservation Concern    Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	<i>Song Thrush (Turdus philomelos)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>Willow Warbler (Phylloscopus trochilus)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
bird	<i>Winter Wren (Troglodytes troglodytes)</i>	1	31/12/2011	Bird Atlas 2007 - 2011	
flowering plant	<i>Alsike Clover (Trifolium hybridum)</i>	1	31/12/2010	BSBI tetrad data for Ireland	
flowering plant	<i>Black Medick (Medicago lupulina)</i>	1	31/12/2010	BSBI tetrad data for Ireland	
flowering plant	<i>Chicory (Cichorium intybus)</i>	1	17/07/2019	Irish Vascular Plant Data - Robert Northridge	
flowering plant	<i>Dipsacus fullonum sensu lato</i>	1	31/12/1929	BSBI tetrad data for Ireland	
flowering plant	<i>Giant Hogweed (Heracleum mantegazzianum)</i>	6	24/01/2018	National Invasive Species Database	Invasive Species: Invasive Species    Invasive Species: Invasive Species >> High Impact Invasive Species    Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)

flowering plant	<i>Indian Balsam (Impatiens glandulifera)</i>	1	26/09/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species    Invasive Species: Invasive Species >> High Impact Invasive Species    Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
flowering plant	<i>Japanese Knotweed (Fallopia japonica)</i>	1	14/05/2017	National Invasive Species Database	Invasive Species: Invasive Species    Invasive Species: Invasive Species >> High Impact Invasive Species    Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
flowering plant	<i>Large Bitter-cress (Cardamine amara)</i>	1	31/12/1929	BSBI tetrad data for Ireland	Threatened Species: Vulnerable
flowering plant	<i>Lesser Celandine (Ranunculus ficaria)</i>	2	23/03/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
flowering plant	<i>Perfoliate Pondweed (Potamogeton perfoliatus)</i>	1	31/12/2010	BSBI tetrad data for Ireland	
flowering plant	<i>Petty Spurge (Euphorbia peplus)</i>	1	31/12/2010	BSBI tetrad data for Ireland	
flowering plant	<i>Water Figwort (Scrophularia auriculata)</i>	1	31/12/2010	BSBI tetrad data for Ireland	
flowering plant	<i>Wood Club-rush (Scirpus sylvaticus)</i>	1	31/12/1929	BSBI tetrad data for Ireland	
insect - beetle (Coleoptera)	<i>7-spot Ladybird (Coccinella septempunctata)</i>	1	22/04/2019	Ladybirds of Ireland	
insect - beetle (Coleoptera)	<i>Elmis aenea</i>	1	31/12/1990	Water Beetles of Ireland	
insect - beetle (Coleoptera)	<i>Oreodytes sanmarkii</i>	1	31/12/1990	Water Beetles of Ireland	
insect - beetle (Coleoptera)	<i>Oulimnius tuberculatus</i>	1	31/12/1990	Water Beetles of Ireland	
insect - flea (Siphonaptera)	<i>Hen Flea (Ceratophyllus gallinae)</i>	2	31/05/1983	Fleas (Siphonaptera) of Ireland	
insect - hymenopteran	<i>Bombus lucorum agg.</i>	1	19/07/2013	Bees of Ireland	
marine mammal	<i>Common Porpoise (Phocoena phocoena)</i>	1	20/07/2014	IWDG Casual Cetacean Sightings	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex II    Protected Species: EU

					Habitats Directive >> Annex IV    Protected Species: Wildlife Acts    Threatened Species: OSPAR Convention
springtail (Collembola)	<i>Mesaphorura krausbaueri</i>	2	31/12/1912	Collembola of Ireland	
springtail (Collembola)	<i>Onychiurus ambulans</i>	2	31/12/1912	Collembola of Ireland	
springtail (Collembola)	<i>Protaphorura armata</i>	2	31/12/1912	Collembola of Ireland	
terrestrial mammal	<i>European Otter (Lutra lutra)</i>	1	30/06/2009	Northern Ireland Mammal Database	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex II    Protected Species: EU Habitats Directive >> Annex IV    Protected Species: Wildlife Acts
terrestrial mammal	<i>Irish Hare (Lepus timidus subsp. hibernicus)</i>	1	11/10/2018	Mammals of Ireland 2016-2025	
terrestrial mammal	<i>West European Hedgehog (Erinaceus europaeus)</i>	1	13/07/2020	Hedgehogs of Ireland	Protected Species: Wildlife Acts

## Appendix 6

### Closer inspection of trees with moderate BRP features (photographs)



Photograph 1: Tree climber getting into position on tree no.1 (Ash; location: H1; H 32759 99033).

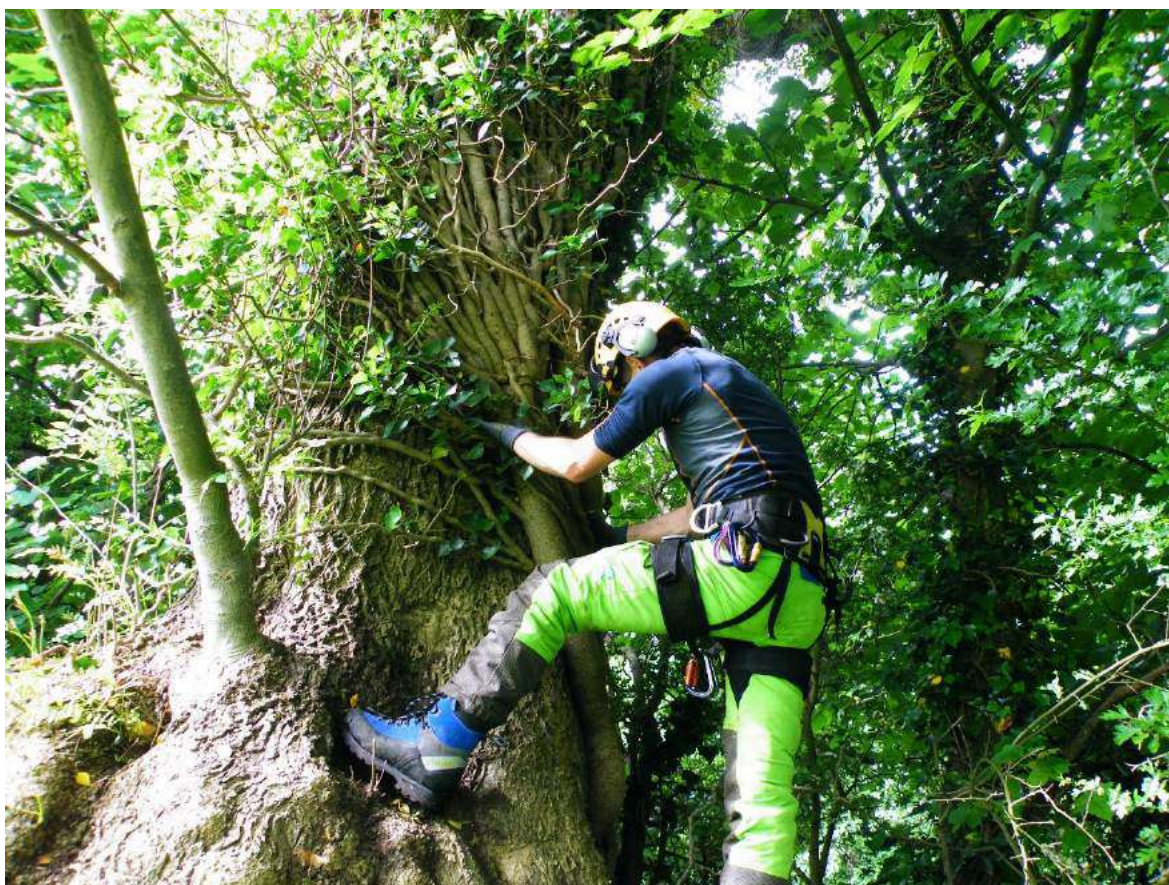


Photograph 2: Checking cavities on broken limb.





Photograph 3: Checking spaces under exfoliating bark and behind ivy coverage.



Photograph 4: Checking spaces between ivy coverage and main trunk.



Photograph 5: Tree climber getting into position on tree no.2 (Ash; location: H12; H 33180 98952).



Photograph 6: Checking cavities on rotten main trunk.



Photograph 7: Checking split on a broken branch.



Photograph 8: Checking spaces behind exfoliating bark.