

# BURNFOOT FLOOD RELIEF SCHEME

## Natura Impact Statement (NIS)



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19 May 2026

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# 1. INTRODUCTION

## 1.1 Background

This report has been prepared by RPS on behalf of Donegal County Council (DCC). This report will assist the Competent Authority in fulfilling its duties in accordance with European Communities (Natural Habitats) Regulations (S.I. No. 94 of 1997) under Regulation 31 (Annex 1.2).

This report has been prepared to accompany an application by DCC to An Comisiún Pleanála under Part XAB of the Planning and Development Act (as amended). The report provides an examination of whether, in view of best scientific knowledge and applying the precautionary principle, the proposed development, either individually or in combination with other plans or projects, may adversely affect the integrity of any European site(s). The assessment will be carried out in accordance with the legal context outlined in **Section 1.2**.

With the introduction of the Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora) came the obligation to establish the Natura 2000 network of Sites of Community Interest (SCIs), comprising a network of areas of highest biodiversity importance for rare and threatened habitats and species across the European Union (EU).

The Natura 2000 network of sites comprises Special Areas of Conservation (SACs, including candidate SACs) designated under legislation transposing the obligations under Directive 92/43/EEC, and Special Protection Areas (SPAs, including proposed SPAs) classified under the Birds Directive (Directive 2009/147/EC on the conservation of wild birds) and designated under Irish legislation. SACs and SPAs make up the pan-European network of Natura 2000 sites in Ireland and they are referred to as European sites.

SACs are designated for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are designated for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is designated correspond to the Qualifying Interests (QIs) of the sites in the case of SACs and Special Conservation Interests (SCIs) of the sites in the case of SPAs. From these qualifying features, the Conservation Objectives (COs) of the site are derived.

## 1.2 Legislation and the HRA procedure

### 1.2.1 The Habitats Directive

Article 6(3) of the Habitats Directive requires that–

“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and if appropriate, after having obtained the opinion of the general public.”

For the purposes of Article 6(3) the approach to assessment:

- involves a screening for Appropriate Assessment (AA); and
- where, having screened in the proposed development, the competent authority must then carry out that appropriate assessment.

## 1.2.2 National Context

In the context of the proposed development, the requirement (to screen) for AA under the Habitats Directive is transposed by the Planning and Development Acts (as amended); ‘the Planning Acts’, and the Planning and Development Regulations (as amended).

Under Part XAB of the Planning and Development Act and Part 20, Article 249 of the Planning And Development Regulations where a Natura Impact Statement has been prepared the Local Authority shall apply to the Coimisiún for approval and the provisions of Part XAB shall apply to the carrying out of the appropriate assessment. An AA of a proposed development is required if it cannot be excluded [emphasis added], on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site(s).

Under Part XAB of the Act the Coimisiún shall take into account each of the following matters in their AA determination of the likely effects on the environment of the proposed development, the likely consequences for the proper planning and sustainable development in the area in which it is proposed, and the likely significant effects of the proposed development on a European site:

- a. The NIS (defined below);
- b. Any submissions or observations made in accordance with subsection 4 of Section 177AE (submissions from public and prescribed bodies);
- c. If appropriate, any additional information sought by the Coimisiún and furnished by the applicant in relation to a NIS under subsection 5;
- d. Any other relevant information.

Under the Planning Acts (177T), an NIS is defined as

*“a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites”.*

The NIS must

*“include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for one or more than one European site in view of the conservation objectives of the site or sites”.*

## 1.2.3 Screening for appropriate assessment

Section 177U of the PDA requires inter alia that a screening for appropriate assessment of an application for consent for proposed development shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that proposed development, individually or in combination with other plans or projects is likely to have a significant effect on a European site.

While the provisions of section 177U adopt the terminology used in Article 6(3) of the Habitats Directive in terms of the test for screening, section 177U expands on this in light of the interpretation given in decisions of the Court of Justice of the European Union.

Thus, section 177U gives effect to the requirement to screen an application for development consent for appropriate assessment by assessing whether the proposed development is likely to have a significant effect on a European site by considering whether such a significant effect can or cannot be excluded.

## 1.2.4 Appropriate Assessment (AA)

Section 177V of the PDA requires inter alia that an appropriate assessment carried out by the competent authority shall include a determination under Article 6(3) of the Habitats Directive as to whether or not a proposed development would adversely affect the integrity of a European site and an appropriate assessment shall be carried out by the competent authority where it has made a determination under section 177U(4) that an appropriate assessment is required, before consent is given for the proposed development.

## 1.2.5 Step-wise procedure

According to European Commission guidance documents 'Assessment of plans and projects significantly affecting Natura 2000 sites' (EC, 2021) and the 'Managing Natura 2000 sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC' (EC, 2019), the obligations arising under Article 6 establish a step-wise procedure for Habitats Regulations Appraisal as follows, and as illustrated in Figure 1.1.

The first part of this procedure consists of a pre-assessment stage ('screening') to determine whether, firstly, a plan or project is directly connected with or necessary to the management of the site, and secondly, whether it is likely to have a significant effect on the site either alone or in combination with other plans or projects; it is governed by the first sentence of Article 6(3).

The second part of the procedure, governed by the second sentence of Article 6(3), relates to the appropriate assessment and the decision of the competent national authorities.

A third part of the procedure (governed by Article 6(4)) comes into play if, despite a negative assessment, it is proposed not to reject a plan or project but to give it further consideration. In this case Article 6(4) allows for derogations from Article 6(3) under certain conditions.

The extent to which the sequential steps of Article 6(3) apply to a given plan or project depends on several factors, and in the sequence of steps, each step is influenced by the previous step. The order in which the steps are followed is therefore essential for the correct application of Article 6(3).

Each step determines whether a further step in the process is required. If, for example, the conclusion at the end of a Stage 1 screening appraisal is that significant effects on European sites can be excluded, there is no requirement to proceed to the next step.

## 1.3 Document Structure

This report is structured as follows:

- Section 2: Methodology and Guidance - This section sets out the methodology followed and guidance documents used in conducting a Stage 1 screening appraisal of the implications of the proposed development on European sites;
- Section 3: the Proposed Development - This section describes the Proposed Development, and is the basis of the subsequent Stage 1 screening appraisal that follows; and
- Section 4: Stage 1 Screening Appraisal - This section contains a summary of the previously produced AA Screening Report which included a preliminary examination and analysis to understand whether or not the Proposed Development is likely to have a significant effect on any European site.
- Section 5: Stage 2 Appropriate Assessment - Section 5 of the report contains a more detailed examination and analysis of the implications of the proposed development on the Conservation Objectives of those European sites where the possibility of Likely Significant Effects (LSEs) could not be excluded at the screening stage in the absence of further evaluation and analysis, including mitigation measures.

- Section 6: Provides the mitigation measure which are considered to be ‘those measures which aim to minimise, or even cancel, the negative impacts on a site that are likely to arise as a result of the implementation of a plan or project.

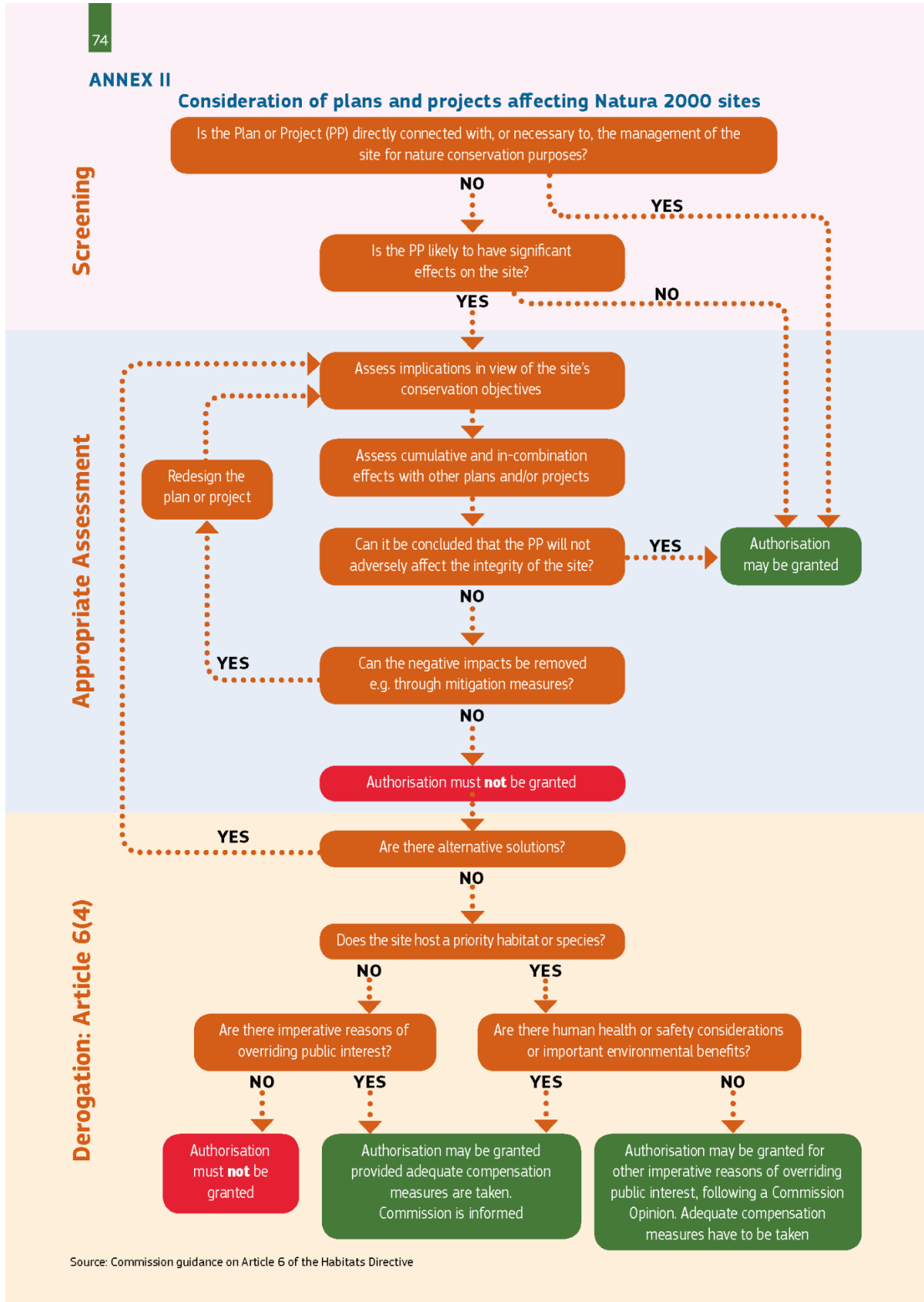


Figure 1.1: Step-wise procedure of Article 6 of the Habitats Directive

## 2. METHODOLOGY

### 2.1 Published guidance on AA

Appropriate Assessment Guidelines for Planning Authorities have been published by the Department of the Environment, Heritage and Local Government (DEHLG, 2010a). In addition to the advice available from the Department, the European Commission has published a number of documents which provide a significant body of guidance on the requirements of Appropriate Assessment, most notably including, 'Assessment of Plans and Projects Significantly Affecting Natura 2000 sites - Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC' (EC, 2021), which sets out the principles of how to approach decision making during the process.

These principal national and European guidelines have been followed in the preparation of this report. The following list identifies these and other pertinent guidance documents:

- Communication from the Commission on the Precautionary Principle., Office for Official Publications of the European Communities, Luxembourg (EC, 2000);
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels (EC, 2001);
- Estuaries and Coastal Zones within the Context of the Birds and Habitats Directives - Technical Supporting Document on their Dual Roles as Natura 2000 Sites and as Waterways and Locations for Ports. European Commission (EC, 2009);
- Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, Dublin (DEHLG, 2010a);
- Department of Environment Heritage and Local Government Circular NPW 1/10 and PSSP 2/10 on Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities (DEHLG, 2010b);
- Guidance document on the implementation of the birds and habitats directive in estuaries and coastal zones with particular attention to port development and dredging. European Commission (EC, 2011a);
- European Commission Staff Working Document 'Integrating biodiversity and nature protection into port development' (EC, 2011b);
- European Commission Notice C(2018) 7621 'Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg (EC, 2019);
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels (EC, 2001).

### 2.2 Likely Significant Effect

The Commission's 2018 Notice (EC, 2019) advises that the appropriate assessment procedure under Article 6(3) is triggered not by the certainty but by the likelihood of significant effects, arising from plans or projects regardless of their location inside or outside a protected site. Such likelihood exists if significant effects on the site cannot be excluded. The significance of effects should be determined in relation to the specific features and environmental conditions of the site concerned by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics.

The requirement that the effect in question be 'significant' exists in order to lay down a *de minimis* threshold – thus, plans or projects that have no appreciable effect on the site are thereby excluded. A likely significant effect is triggered when:

- there is a probability or a risk of a plan or project having a significant effect on a European site;
- the plan is likely to undermine the site's conservation objectives; and
- a significant effect cannot be excluded on the basis of objective information.

EC (2020) advises that an assessment of significance must apply the principle of proportionality, be compatible with the precautionary principle and take into account:

- the nature, size and complexity of the plan or project;
- the expected effects, and
- the vulnerability and irreplaceability of the affected EU-protected habitats and species.

## 2.3 Mitigation Measures

In determining whether or not likely significant effects will occur or can be excluded in the Stage 1 appraisal, measures intended to avoid or reduce the harmful effects of the proposed development on European sites, (i.e. "mitigation measures") have not been taken into account in this screening stage appraisal. This approach is consistent with EU guidance and the case law of the Court of Justice of the European Union (CJEU):

EC (2001) states that "project and plan proponents are often encouraged to design mitigation measures into their proposals at the outset. However, it is important to recognise that the screening assessment should be carried out in the absence of any consideration of mitigation measures that form part of a project or plan and are designed to avoid or reduce the impact of a project or plan on a Natura 2000 site". This direction in the European Commission's guidance document is unambiguous in that it does not permit the inclusion of mitigation at screening stage.

In April 2018, the Court of Justice of the European Union issued a ruling in case C-323/17 *People Over Wind & Peter Sweetman v Coillte Teoranta* ("People Over Wind") that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site.

The judgment in *People Over Wind* is further reinforced in EC (2019) which refers to CJEU Case C-323/17, and more recently in EC (2020) in relation to guidance on wind energy developments and EU nature legislation.

## 2.4 Consideration of ex-situ effects

EC (2019) advises that Member States, both in their legislation and in their practice, allow for the Article 6(3) safeguards to be applied to any development pressures, including those which are external to European sites but which are likely to have significant effects on any of them.

The CJEU developed this point when it issued a ruling in case C-461/17 ("*Brian Holohan and Others v An Bord Pleanála*") that determined *inter alia* that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that an appropriate assessment must on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site.

In that regard, consideration has been given in this Habitats Directive appraisal to implications for habitats and species located both inside and outside of the European sites considered in the screening appraisal with reference to those sites' Conservation Objectives where effects upon those habitats and/or species are liable to affect the conservation objectives of the sites concerned.

## 2.5 Conservation Objectives

The conservation objectives (“COs”) for each European site are to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the site has been selected.

The favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing;
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- the conservation status of its typical species is favourable.

The favourable conservation status (or condition, at a site level) of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The COs of European sites published by the National Parks and Wildlife Service (NPWS) in Ireland note that an appropriate assessment based on the most up to date conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out (e.g. Conservation Objectives: Lough Swilly SAC 002287 / Lough Swilly SPA 004075, version 1 (NPWS, 2011a)).

The most up-to-date COs for the European sites being considered have been used in this appraisal. Details in relation to the Qualifying Interests (“QIs”) of SACs is based on publicly available data sourced from the NPWS website in March 2023.

## 2.6 In-combination effects

Article 6(3) of the Habitats Directive requires that in-combination effects with other plans or projects are also considered. As set out in the Commission’s 2018 Notice (EC, 2019), significance will vary depending on factors such as magnitude of impact, type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned.

In addition, other plans or projects which are completed, approved but uncompleted, or proposed have been considered. EC (2019) specifically advises that “as regards other proposed plans or projects (i.e. other projects not proposed by the Applicant), on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those which have been actually proposed, i.e. for which an application for approval or consent has been introduced”.

## 2.7 Ecological Data

### 2.7.1 Desk Study

A desk study was completed to assess the potential for all QIs and SCIs of European sites to occur, given their ecological requirements identified by Balmer *et al.* (2013) for SCIs, and the National Parks and Wildlife Service (NPWS) for QIs (NPWS, 2013a,b,c).

SCI Birds and mobile QI species can travel many kilometres from their core areas, and desktop surveys assessed the potential presence of such species beyond the European sites for which they are QIs/SCIs.

Desktop studies had particular regard for the following sources:

- EPA online interactive mapping tools;
- Tabulated lists for all European sites in Ireland of SCIs and QIs, obtained through a data request to the NPWS;
- Information on ranges of mobile QI populations in Volume 1 of NPWS' Status of EU Protected
- Habitats and Species in Ireland (NPWS, 2013a), and associated digital shapefiles obtained from the NPWS Research Branch;
- Information on ranges of mobile SCIs bird populations from Bird Atlas 2007–11 (Balmer *et al.*, 2013), excluding birds of prey whose ranges were determined with reference to Hardey *et al.* (2013);
- Mapping of European site boundaries and Conservation Objectives for relevant sites in County Donegal and beyond, as relevant, available online from the NPWS;
- Distribution records for QI and SCI species of European sites held online by the National Biodiversity Data Centre (NBDC);
- Data including surface and ground water quality status, and river catchment boundaries available from the online database of the Environmental Protection Agency (EPA);
- National and regional surveys of semi-natural habitats, including grasslands (O'Neill *et al.*, 2013), saltmarsh (McCorry and Ryle, 2009; Devaney and Perrin, 2015), and woodland (Perrin *et al.*, 2008);
- Boundaries for catchments with confirmed or potential freshwater pearl mussel (FWPM) *Margaritifera margaritifera* populations in GIS format available online from the NPWS.

### 2.7.2 Field Study

This report was informed by a habitat and protected species surveys of the proposed development site undertaken by an RPS ecologist in 2020, 2021, 2022, 2023 and 2024. The survey assessed the potential for all QIs/SCIs of European sites and third schedule invasive species to occur, given their ecological requirements identified by Balmer *et al.* (2013) for birds, and the NBDC and NPWS for all other species/habitats. The survey included checks of suitable habitats for all highly mobile QI/SCI species potentially occurring. For instance, the adjacent areas of the Lough Swilly SPA were subject to bird surveys to ascertain their relative importance for the associated wintering bird populations, while areas of watercourse within and adjacent to the site were searched for potential breeding or resting sites of otter *Lutra lutra*. Numerous non-breeding SCI bird species travel many kilometres from their core areas, and surveys also assessed potential presence of roosting or feeding sites of such species. Species survey had regard for relevant guidance (e.g. NRA, 2009).

## 3. THE PROPOSED DEVELOPMENT

### 3.1 Summary of Proposed Scheme

Donegal County Council (on behalf of the Office of Public Works), wishes to undertake flood relief works in Burnfoot, following on from the North-western and Neagh Bann Catchment Flood Risk Assessment and Management (NWNB CFRAM), and North Western Flood Risk Management Plan<sup>1</sup>.

The Burnfoot Flood Relief Scheme has undertaken an optioneering assessment and multi-criteria analysis for a number of options which achieve the standard of protection required for the Burnfoot Scheme Area. The preferred option involves, demolition and replacement of the R238 road bridge and the implementation of hard defences to protect against the 0.5% Annual Exceedance Probability (AEP) fluvial event in addition to the associated removal of existing flood embankments along the Burnfoot and Skeoge Rivers, downstream of Burnfoot village, to provide for attenuation of floodwaters through the reconnection of these rivers with their floodplain.

### 3.2 Location

The proposed Scheme is located within Burnfoot, Co. Donegal, as shown in Figure 3.1.

The Burnfoot River flows from east to west draining a narrow valley before flowing under the R238 and through the village. It meets the Skeoge River to the west of the village and flows into a lagoon impounded by the causeways serving Inch Island before draining out to Lough Swilly via one way flow gates under the southern causeway. The Skeoge River drains an area including the outskirts of Derry City and then flows in a north westerly direction, through Bridge End and past the south west of Burnfoot village to meet the Burnfoot River. The Burnfoot River is subject to flash flooding with the village at risk of fluvial flooding and the flat, reclaimed agricultural lands downstream subject to combined coastal and river flooding.

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<sup>1</sup> [www.floodinfo.ie](http://www.floodinfo.ie)

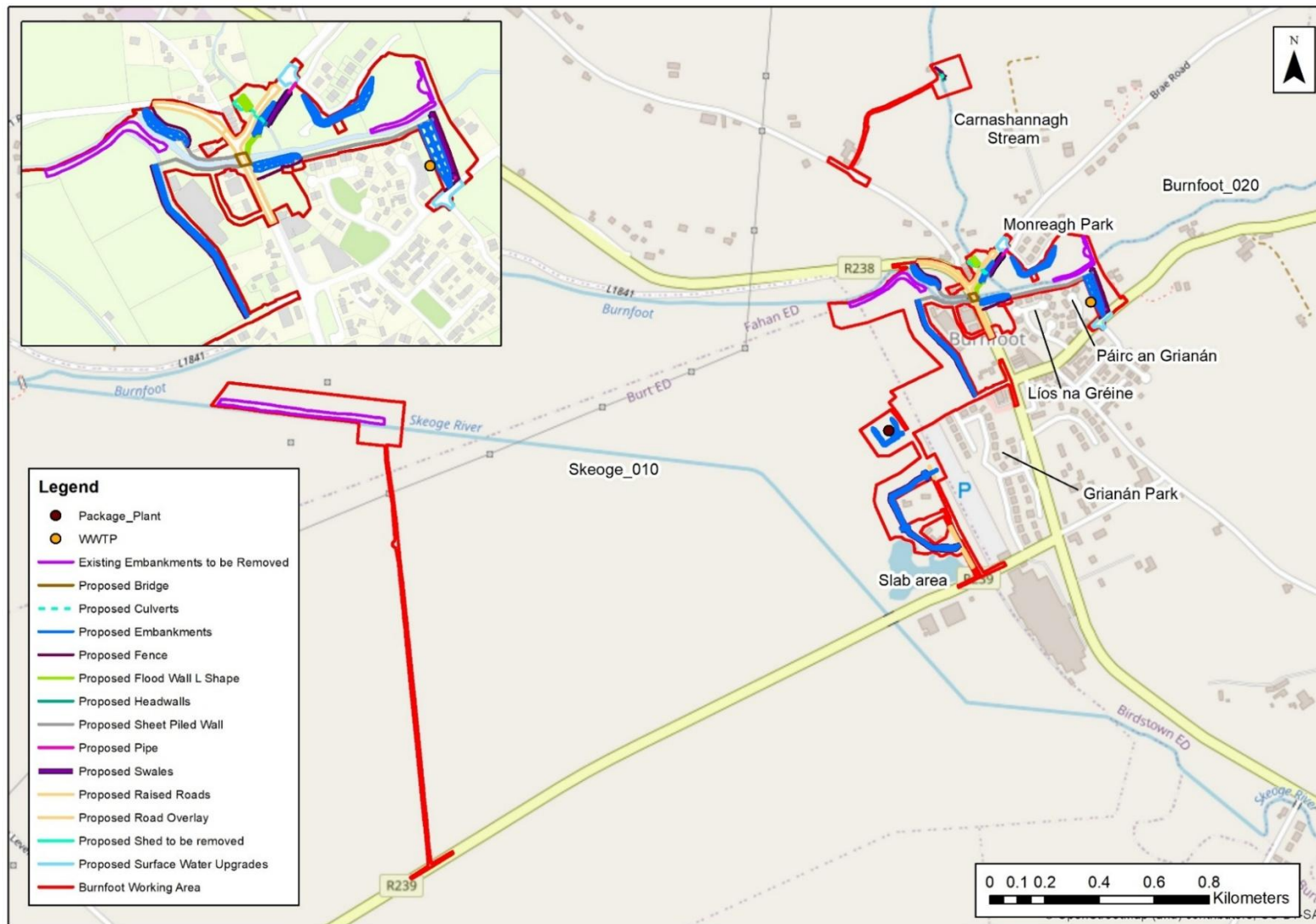


Figure 3.1: Outline of Preferred Scheme for Burnfoot

### 3.3 Project Description

The preferred option includes the following elements:

- Demolition and replacement of the existing R238 road bridge with a clear span structure and raising of the approach roads to the bridge to allow tie in with existing roads, designed to DMURS standard;
- Upgrade to existing culverts (2 no.) on the Carnashannagh Stream, a tributary of the Burnfoot River, which joins the main channel upstream of the existing R238 road bridge. These works consist of the construction of a new culvert inlet where the watercourse passes beneath Brae Road and a new culvert approximately 400m upstream;
- Upgrade of lower culvert on the Carnashannagh Stream to a box culvert (1.2m height x 2.4m width), sized for future climate change flood flows, under Brae Road extending beyond the proposed embankment, with new headwall structures and debris screens as required;
- Upgrade of upper culvert (box culvert of 1.2m height x 2.4m width), on the Carnashannagh Stream, sized for future climate change flood flows. To include new headwall structures and debris screens as required.
- 38m of reinforced concrete flood walls with foundations to accommodate future climate change flood scenarios on both banks of the Carnashannagh Stream upstream of the Brae Road, with a replacement shed to accommodate the construction.
- 315m of embankment, tying into raised laneways, around three properties to the south of the village near Slab Road (R239) with an average height of 0.79m.
- 630m of embankment along / adjacent to the Burnfoot River with an average defence height of 1.1m above ground level;
- 395 metres of sheet piled wall with an average height of 1.1 metres above existing ground adjacent to the Burnfoot River upstream and downstream of the R238 bridge;
- 35 metres of reinforced concrete flood walls with an average height of 1.1 metres above ground level upstream of the R238 road bridge. The foundations have been designed to accommodate future climate change flood scenarios;
- The first 183m of the Burnfoot/Skeoge Arterial Drainage Scheme embankment, downstream of Burnfoot, removed to provide short term storage on a recurring basis to reduce flood levels in the town centre by reconnecting the existing floodplain.
- The removal of 345m of embankment from the right bank of the Skeoge River as well as localised drainage amendment as required, to reconnect the existing floodplain.
- 120m of embankment with an average height of 0.8m around the existing sewerage treatment works to the west of Grianán Park estate
- 145m of embankment removed from the right-hand bank of the Burnfoot River, 168m upstream of the R238 bridge.
- Existing land on the right-hand bank of the Burnfoot River upstream of the R238 bridge, to be utilised for construction and safeguarding of existing floodplain within the settlement framework, will be landscaped.
- Surface water measures (road reprofiling / cambering, additional gullies and swale to discharge to watercourse) at:
  - R239 / Fairview Manor
  - L-1881 Brae Road
- Back drainage behind the proposed defences with associated outfalls;
- Land take to facilitate future operation and maintenance of flood embankments, including for embankment top ups and/or access to complete the same as well as general maintenance e.g. grass cutting and ad hoc repairs as necessary. Access to complete this work will be required on the defended

side of embankments which are on benefiting lands, at the embankment on the left-hand bank immediately upstream of the bridge and at the embankment on the right-hand bank downstream of the bridge.

- The construction of the Proposed Scheme will require additional working areas, construction compounds, haul routes and site access.

Figure 3.1 provides the proposed layout for the scheme with more detailed provided in the scheme planning drawings submitted with the application to ACP for consent.

### 3.4 Construction Methodology

The preferred Burnfoot scheme can be considered in a number of distinct elements which are listed below:

1. Utility diversions;
2. Site establishment and clearance;
3. Flood Embankments – these are generally constructed where there is adequate space to enable their construction but also with consideration of maintenance requirements during the design life of the scheme;
4. Flood Walls – Proposed where there is insufficient space for embankments. These are predominantly located adjacent to the Líos Na Greine and Páirc an Grianán residential developments and in the vicinity of the R238 bridge. Some walls have a steel sheet piled cut-off;
5. Installation of a temporary road bridge
6. Demolition and Replacement of the R238 bridge;
7. Culvert Improvements on the Carnashannagh Stream.
8. Alterations to the existing Arterial Drainage Scheme Embankments
9. Back Drainage; and
10. Reinstatement

A summary of each of these elements is included below.

#### 3.4.1 Utility Diversions

All major utility diversions ideally will be conducted in advance of construction works where possible, especially the ESB electrical poles which will require permanent relocation to enable the construction of the proposed defences. Other works involving drainage infrastructure are relatively minor and can be accommodated during the construction of the defences by the main contractor. Based on the information collated to date, there are no obvious conflicts between existing utilities and the Proposed Scheme that would require significant enabling works.

There are a number of services and utilities currently crossing the bridge. These include a fibre-optic telecommunications cable and watermain. The latter of these is currently strapped to the upstream parapet of the bridge. Liaison and subsequent approvals with all utility providers will be required but the intention would be to accommodate these within the proposed bridge deck.

#### 3.4.2 Site Establishment and Clearance

The Proposed Scheme will be constructed on previously undeveloped land. At these locations it will require:

- Initial clearing of vegetation and trees within a working strip up to 20m in width.

- Treatment of invasive species will be required in advance to avoid any spreading as a result of the works.
- Temporary fencing of the working area will be required for the duration of the construction works for security and health and safety purposes.
- A stoned haul road will be needed to enable the transportation of embankment material into the site and along the length of the proposed embankments downstream of the Burnfoot bridge. This will need to remain as a permanent feature for means of access for inspection and maintenance.
- Temporary occupation of part of the rear gardens of properties in Líos Na Gréine and Páirc an Ghrianáin.
- The proposed culvert upgrade on the Carnashannagh Stream will require the demolition of an existing stone outbuilding

### 3.4.3 Flood Embankment Construction

The construction of the flood embankments will involve the following construction methodology:

- Stripping and storage of topsoil within the working area for reuse.
- Import and storage of suitable clay material to form the core of the embankment by lorry and road.
- Excavation of a trench will be undertaken by an excavator to a suitable cut-off, and clay placed and compacted in layers until the defences have reached the necessary height.
- Embankment front and back slopes will be profiled to meet the required gradient of 1 in 3. The embankment will then be topsoiled with a suitable, biodegradable geotextile and sown in grass.
- Stockproof fencing will be required where embankments are to be located in agricultural land where grazing is likely.
- For the low bund embankments around the properties on Slab Road there will be localised raising of the access road where the embankments tie into it up to a maximum of 300mm.

The exact locations of the proposed flood embankments can be seen on the submitted Planning Drawings, Drawings IBE2204\_Bt\_101 and IBE2204\_Bt\_102 with typical cross sections shown from Drawing IBE2204\_Bt\_105 to Drawing IBE2204\_Bt\_113 and Drawing IBE2204\_Bt\_117.

### 3.4.4 Flood Wall Construction

#### Sheet Piled Wall

Based on Geotechnical assessment it is considered necessary to have sheet pile walls to the rear of Líos Na Gréine and Páirc an Ghrianáin and also on both banks downstream of the Burnfoot Bridge.

Sheet piles are not aesthetically attractive and require a capping beam which typically is 750-1000mm square formed along the top of the driven piles. For this reason, a design which terminates the piles and the subsequent capping beam at existing ground level with a cantilevered flood wall of width 250-300mm extending above ground to the required flood defence height is proposed.

The exact locations of the sheet piled wall can be seen in the submitted Planning Drawings, Drawing IBE2204\_Bt\_106 and Drawing IBE2204\_Bt\_110 along with typical cross sections.



**Figure 3.2: Rear of Líos Na Greíne and Páirc an Grianán**



**Figure 3.3: R238 Burnfoot Bridge and downstream banks**

## Reinforced Concrete Wall

There are a number of short sections of reinforced concrete wall which are proposed where insufficient space exists for the construction of a flood embankment. These are immediately upstream of the bridge to connect the earth embankments and the bridge parapets. There are also two short sections on both banks of the Carnashannagh Stream upstream of the Brae Road. The flood wall on the left bank at this location will tie into the shed which is required to be removed and rebuilt to facilitate construction of the flood wall. These will be constructed from cast in-situ reinforced concrete.

The exact locations of the proposed reinforced concrete wall can be seen in the submitted Planning Drawings, Drawings IBE2204\_Bt\_107, to IBE2204\_Bt\_109 along with typical cross sections.

### 3.4.5 R238 Bridge Replacement

The R238 bridge needs to be replaced as part of the scheme but it has a considerable number of vehicle movements per day. The R238 Annual Average Daily Traffic (AADT) flow through Burnfoot is 12,380. This will therefore require a methodology to account for demolition of the existing structure and construction of the new bridge while facilitating the traffic movements during this process.

The only feasible option to facilitate demolition of the existing R238 bridge and construction of a new bridge is to create a temporary bridge, immediately upstream of the existing structure. The residential and commercial properties downstream prevent this location from being an option. The temporary bridge will be constructed as a clear span structure, with a suitable road make-up to facilitate the traffic movements estimated for the duration of 4-6 months. The formation of the bridge would be a contractor-designed item and will be agreed with Donegal County Council roads section and/or Transport Infrastructure Ireland to ensure it met all safety requirements.

The existing bridge can then be demolished offline, and a new bridge constructed before removing the temporary structure and opening the new bridge to traffic. The R238 will need to be realigned onto the new Bridge and the only location where the temporary bridge can be located is in the fields upstream of the existing bridge. These are lower than the existing road, so suitable stone will need to be imported to facilitate the construction of a temporary road extending from Brae Road (L-1881) to the north to a suitable point just south of the river.

When the temporary bridge is in place the existing bridge will be demolished. This will need to be undertaken in stages removing the road surface and parapets and then carefully locating the services within the bridge to avoid damage. Temporary support for the services including a fibre optic cable and watermain will need to be provided and agreement sought with the utility providers before the remainder of the bridge is demolished and removed. A full structural survey will inform a suitable method for the demolition of the bridge. The new permanent bridge arrangement would be with precast pre-tensioned beams and infilled concrete deck making the total deck thickness of 750mm excluding the road surfacing. The deck would be made integral with the abutments.

The temporary bridge location and cross section is illustrated in Drawing IBE2204\_Bt\_201. The exact locations of the proposed permanent bridge can be seen in the submitted Planning Drawings, Drawings IBE2204\_Bt\_107 and IBE2204\_Bt\_110 with typical elevation and sections shown on Drawing IBE2204\_Bt\_202.

### 3.4.6 Culvert Improvements

On the Carnashannagh Stream, conveyance improvements are required in two locations. These works consist of the construction of a new culvert inlet where the watercourse passes beneath Brae Road/Monreagh Park and a new culvert approximately 400m upstream.

At the upstream location, the works will require the removal and disposal of the existing culvert using an excavator. A box culvert of 1.2m height x 2.4m width will then be installed on the Carnashannagh Stream, sized for future climate change flood flows. The reinforced concrete culvert will be laid upon imported granular subbase and the works will be completed with a suitable head wall and trash screen and tail wall. These will be precast reinforced concrete structures that can be purchased as standard and set into place.

At the lower location, a box culvert of 1.2m high x 2.4m wide will be required to accommodate future climate change scenario river flows. This culvert will be extended downstream from the Brae Road until it passes

beneath the proposed flood embankment from where it will continue in an open channel to the confluence with the Burnfoot river.

The works will be undertaken during a dry period to ensure low flows. This will facilitate the temporary damming of the river and diversion of the flow via temporary pipes over a short section where work is being undertaken. Consideration will be given to over-pumping to ensure the works remain dry for the placement of the concrete base for the structures.

The exact locations of the culvert improvements can be seen in the submitted Planning Drawings, Drawings IBE2204\_Bt\_108 and IBE2204\_Bt\_109 along with typical cross sections.

### 3.4.7 Alterations to Existing Embankments

The Proposed Scheme includes removal of two sections of embankment downstream of the town to allow floodplain reconnection. One of these, on the left bank of the Burnfoot River is part of an existing OPW maintained Arterial Drainage Scheme. The other, on the right bank of the River Skeoge, is a privately owned embankment. This will involve simple removal of the embankments using an excavator and dumper/lorry to remove the material from the site.

The locations of the embankment removal downstream can be seen in the submitted Planning Drawings, Drawings IBE2204\_Bt\_111 and IBE2204\_Bt\_115 along with typical cross sections.

There are also two embankments upstream of Burnfoot Bridge at Monreagh Park that are proposed to be removed to allow reconnection of the flood plain along this reach of the Burnfoot River. The locations of the embankment removal at Monreagh Park can be seen in the submitted Planning Drawings, Drawings IBE2204\_Bt\_114 and IBE2204\_Bt\_106 along with typical cross sections.

### 3.4.8 Back Drainage

With the construction of the new flood defences, each will have some degree of cut-off to prevent excessive flow beneath the embankments. Along with the above-ground barrier, this restricts the ability of the land behind the defences to drain post scheme. To facilitate this drainage, and ensure the land behind the defences does not become waterlogged, the construction of a series of land drains behind the defences will be required. This will consist of a series of perforated pipes bedded in no fines granular material and laid parallel to the defence line at the rear toe. Precast concrete manholes will be provided at regular intervals to facilitate access for maintenance or changes in direction.

The outfalls of the back drain will discharge to the river via precast concrete headwalls mounted with flap valves to prevent backflow. The outlet pipework will therefore have to pass either beneath embankments or through walls as applicable.

The exact locations of back drainage can be seen in the submitted Planning Drawings, Drawings IBE2204\_Bt\_107 and IBE2204\_Bt\_110 along with typical cross sections.

### 3.4.9 Reinstatement

Reinstatement will be undertaken to the entire working area on a like-for-like basis as far as is reasonably possible. Within areas of open space or agricultural fields, this will be limited to installing some localised lateral drainage to connect into the back drainage, re-grading of the ground, topsoiling and sowing in grass.

In residential properties, this may additionally involve the replacement of garden sheds, reinstatement of paving areas, replacement of property boundaries, fences and planting.

### 3.4.10 Landscaping proposals

The landscaping proposals are included in the submitted Planning Drawings, Drawing IBE2204\_Bt\_204 and include:

- Retention of existing vegetated areas, which are to be retained and protected in accordance with BS 5837;

- Proposed specimen tree planting, comprised of Heavy Standard Trees of locally appropriate native species;
- Proposed woodland planting areas comprised of locally appropriate native tree and shrub species;
- Proposed areas of grass seeding to proposed Swales;
- Proposed areas of low maintenance grass seeding to embankments;
- Proposed areas of low maintenance grass seeding to remaining areas;
- Pedestrian circulation route, surfaced in resin bound aggregate; and
- Street furniture elements comprised of bench seating and litter bins.

### 3.4.11 Description of Operational Phase

Given that the main elements of the Proposed Scheme are hard defences, culvert improvements and a bridge replacement there are no unusual or specialist maintenance or operational activities envisaged. A description of envisaged maintenance activities for each element of the Proposed Scheme is detailed below. Inspections, cleaning, and maintenance works including repairs, where necessary and in accordance with standard asset management procedures, will be the main operational activities.

- Defence walls (Piled and RC) – maintenance regarding these will be minimal. Inspections in accordance with standard asset management procedures are likely to be the main activities. Dealing with vandalism (graffiti or damage) to capping stones can be an issue. This will require access to private gardens and properties, especially at the rear of Líos Na Gréine and Páirc an Ghrianáin.
- Flood Embankments – these will need regular inspection and should be mowed at least twice annually to prevent growth of significant vegetation. Inspection activities will need to look for presences of animal burrowing or damage from livestock through fencing of the defences, where located within agricultural fields should prevent the latter. Access to embankments is easily achieved for both inspection and maintenance purposes. It is envisaged that embankments adjacent to the R238 bridge will be maintained by a ride on or pushed mower whereas the agricultural embankments may be cut by tractor mounted flail.
- Culverts – Inlet structures and screens will need regular inspection and cleaning. This is particularly important prior to and post significant rainfall events. The inlet structures will be designed to facilitate ease of access for cleaning and removal of debris.
- Drainage elements – Flap valves will need checked regularly to ensure they are working as they form a key aspect of Scheme function. These will be designed in such a way to provide safe access. This can be within a manhole on the defended side of the defences rather than at the point of outfall to the river. Back drainage will need to be checked for blockage and rodded if necessary. Manholes will be provided to enable this to happen. These manholes will be located on private property including residential gardens and agricultural land. Although potential road drainage improvements will only be confirmed at the design stage, their maintenance will be required for these elements. Swales will require little maintenance; however, it is important to inspect for any obstructions in the channel which may hinder flows or that may be conveyed into the Carnashannagh Stream / Burnfoot River, as well as management of vegetation growth within the channel.
- Bridge – The bridge will be maintained by Donegal Council Roads in accordance with their inspection and asset management procedures. Detailed design of the bridge will consider any requirements in this regard but there is not envisaged to be any unique challenges specific to Burnfoot.

### 3.4.12 Other related projects and potential for ex-situ effects

The proposed greenway is the only other known construction activity that may coincide with the construction of the FRS at this stage of the contract. This should not adversely affect the delivery of the Proposed Scheme and may compliment it by incorporating a walkway along the crest of the embankments. This will be reviewed as the development of the Proposed Scheme progresses. Any other further developments or proposed developments will be considered as they arise.

### 3.4.13 Construction Management and Constraints

#### Site Compound and Working Areas

To enable the storage of materials, accommodate welfare facilities and site offices it will be necessary to provide sufficient areas within the proximity of the proposed construction works. These would be preferably located adjacent to main work areas and must be able to be secured adequately. There are three locations proposed for the site compounds. Two areas upstream of the Burnfoot bridge - one on the left-hand bank in the fields adjacent to the Páirc an Grianán housing development accessed from the R239 and one on the right-hand bank adjacent to Líos na Greíne housing development accessed from the R238. A third site compound is proposed in the fields behind the mart accessed from an existing access from the R238 at Monreagh Park. The location of these is shown in the submitted Planning Drawing, Drawing IBE2204\_Bt101.

Working areas are required to ensure that the proposed scheme can be built safely with full consideration of the movement of plant and transportation of materials. This is an important consideration concerning the importation of embankment material and the need to stockpile it before use as well as the footprint of the proposed embankments. These can be considerable with a 1m high embankment having an overall footprint of 6-7m. Given these requirements, a general working area of 20m width has been allowed to facilitate this. Most of these working areas are greenfield areas and will need to be stripped of topsoil, stoned as necessary to facilitate plant movement and fenced off with Heras fencing, or similar, for the duration of the works. On completion of the works, it will be re-topsoiled and/or reinstated to the existing condition.

#### Access Routes for Construction

The Burnfoot Flood Relief Scheme requires several access points to enable the defences to be constructed on both sides of the river and upstream and downstream of the Burnfoot bridge. This will require plant movements on public roads for the duration of the works and therefore consideration must be given to this in the Contractor's traffic management plan. With appropriate controls and good contractor working practices, this can be achieved without significant risk but it must be thoroughly considered in terms of construction methodology, time frames and cost. The permitted access routes during construction are shown in the submitted Planning Drawing, Drawing IBE2204\_Bt103. The main access points for construction are described below:

**R238** - All plant and materials will be brought into Burnfoot via the R238 and this road will be the only means for plant crossing the Burnfoot River to gain access to both sides of the river. The R238 bridge will be replaced as part of the scheme and during this period a temporary bridge will need to be constructed upstream of the existing structure to allow its demolition and rebuild. This temporary bridge will be used by the public, pedestrians and site traffic.

The working area downstream of the Burnfoot Bridge on the right-hand bank will be accessed directly from the R238 at Carmel's Salon.

Opposite the R239 junction, immediately adjacent to the Service Station, there is a short section of roadway which leads to a residential property. This road will need to be used to access the working area behind the old mart and on the left-hand bank immediately downstream of the Burnfoot bridge for all construction materials and plant. The existing trees and vegetation at the end of this road will need to be cleared to permit access.

**R239** - Plant and materials will need to use R239 (Muff Road) from the junction of the R238 to the entrance to the working area adjacent to the Páirc An Grianán housing estate.

The R239 (Slab Road) will also be utilised to the west of the R238 to access the working area needed to remove the ADS and privately owned embankments. It will be utilised for a distance of approximately 1.2km west of Burnfoot where construction traffic will turn right onto an agricultural track which runs north for a distance of 500m to the working area. The track then crosses the Skeoge River via an agricultural standard bridge. While this bridge is used by agricultural vehicles it may need to be upgraded to carry the excavator and dumpers needed to undertake this work. It would be envisaged that any replacement would be a permanent replacement but of similar size and construction to the current structure. The appointed contractor will need to design this element to suit their construction methodology and proposed plant. For the purposes of the Appropriate Assessment it is assumed that the bridge will require replacement.

**Monreagh Park** – This road will be utilised to provide access to the right-hand bank of the Burnfoot river upstream of the Burnfoot bridge. Plant and materials will be brought in via this road to the working area and

to enable the construction of the defences in this area. This road will also be required to access the working area at the proposed new culvert inlet upgrade to the Carnashannagh Stream.

**Carnashannagh Road** – For the section of the culvert upgrade on the Carnashannagh stream access will be difficult. The most feasible route for construction traffic will be via the Carnashannagh Road and then a domestic laneway which leads for approximately 500m to the point where it crosses the Carnashannagh Stream. This is a narrow access road and therefore will limit the size of excavator, dumpers and any other plant needed to bring materials to this location and construct the new culvert. There are three domestic properties on this lane and their access must be maintained and traffic control measures put in place to avoid blocking the lane and ensure the risk of collision is minimised. The lane is not a through road and therefore despite its' narrowness it will be suitable for the intended purpose but its' usage will require liaison with the property owners.

## Management of Materials and Plant

Plant movement on public roads has been described in Section 3.4.13. Within the confines of the working areas, plant movements will be linear in nature. Materials including clay, sheet piles, reinforcement steel, concrete, pipework and topsoil will need transporting up and down these areas from the construction access points described in Section 3.4.13. This will require stoning of these areas to provide adequate haul roads during all weather conditions. Due to riverside working and proximity to properties, it will be necessary to ensure all machinery is in good condition and well maintained thus minimising oil leaks and so noise to the adjacent properties is reduced as far as possible.

There are two locations proposed for the storage of materials in the site compound areas. These will be used for storage of materials that may include topsoil, clay, reinforcement steel, drainage pipes and sheet piles until needed for construction. From there, materials will be transported to the relevant section of defence utilising a range of plant via the constructed haul roads and/or public roads.

In addition to these designated storage areas, it may be necessary to store materials within the working area immediately before using them for construction. The contractor may also wish to store stripped topsoil in these locations which would reduce the number of site movements associated with double-handling topsoil.

## Instream Works

The majority of the scheme consists of walls and embankments either located on top of the bank or set back from the river and will require no instream works. There are, however, three elements where instream works are unavoidable. Two of these are relatively minor and relate to the culvert upgrade and culvert inlet structure on the Carnashannagh stream but the third is the replacement of the Burnfoot Bridge. Furthermore there is a small section on the left bank downstream of Burnfoot Bridge where the installation of the sheet piled wall is spatially constrained and may require a temporary platform partially within the Burnfoot River to facilitate construction.

The works associated with the construction of the temporary bridge; demolition of the existing bridge and construction of the new bridge will require in-channel working. This will primarily involve the demolition of the existing bridge. The placement of new abutments and supports for both the temporary and permanent structures, which will be around or below bed level will occur from the banks as the both the temporary and permanent structures will be clear span. There is likely to be a risk of debris and dust during the demolition process getting into the river channel.

## 4. STAGE 1 SCREENING APPRAISAL

### 4.1 Screening for Appropriate Assessment

Under Part 20, Article 250 of the Planning and Development Regulations in order to ascertain whether an appropriate assessment is required in respect of a development which it proposes to carry out a local authority shall carry out a screening of the proposed development to assess in view of best scientific knowledge, if that proposed development, individually or in combination with other plans or projects, is likely to have a significant effect(s) on any European sites.

Where it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, would have a significant effect on a European site, the local authority shall determine that an appropriate assessment of the proposed development is required, shall prepare an NIS in respect of the proposed development and shall submit the proposed development to the Coimisiún for approval under Part XAB of the Planning and Development Act, as amended.

In order to comply with the requirements of Article 6(3) of the EU Habitats Directive and the Planning and Development Regulations (as amended), the process of Screening for AA was undertaken for the proposed development. A report to inform screening for AA was prepared on behalf of Donegal County Council (RPS, 2022) assessing the potential for the project to result in likely significant effects on any European sites, either alone or in combination with other plans or projects. A standalone AA Screening Report has been included in the planning submission for this application.

### 4.2 Potential for Likely Significant Effects (LSE's)

When considering whether a European site can be screened out, the competent authority cannot take into account any measures intended to avoid or reduce the harmful effects of the proposed development (i.e. mitigation measures).

The report to inform screening for AA (RPS, 2022) identified the potential for LSE to the Lough Swilly SAC and/or Lough Swilly SPA, resulting from:

- Water quality and habitat deterioration effects;
- Spread of scheduled invasive plants; and
- Aerial noise and visual disturbance.

### 4.3 Screening for Appropriate Assessment Conclusion

Through an assessment of the source-pathway-receptor model, which considered the Zone of Influence (Zol) of effects from the proposed development and the potential in-combination effects with other plans or projects, the following findings were reported by RPS (2022):

- In the absence of mitigation measures to control surface water pollution and sedimentation during construction of the proposed development, the potential for LSEs to the Lough Swilly SAC and Lough Swilly SPA cannot be ruled out;
- In the absence of mitigation measures to control the potential spread on invasive non-native species during construction of the proposed development the potential for LSEs to the Lough Swilly SAC and Lough Swilly SPA cannot be ruled out; and
- In the absence of mitigation measures to control the potential for aerial noise and visual during construction of the proposed development the potential for LSEs to the Lough Swilly SPA cannot be ruled out.

The Screening for Appropriate Assessment, undertaken on behalf of Donegal County Council, concluded that the potential for likely significant effects on Lough Swilly SAC and Lough Swilly SPA from the proposed development could not be ruled out; therefore, the AA process should proceed to Stage 2, the preparation of a NIS.

## 5. APPROPRIATE ASSESSMENT – STAGE 2: NATURA IMPACT STATEMENT

The requirement to carry out a NIS followed on from the conclusion of the Screening process (See Section 4 and RPS (2022)). In order to determine if the identified source-pathway-receptor linkages could give rise to Likely Significant Effects (LSE), the following steps are taken:

1. Identification of the information required, including the proposed development, linkages to European sites and descriptions of relevant European sites;
2. Examination of the site-specific conservation objectives and attributes of the QIs/SCIs of relevant European sites; and
3. Prediction of any LSE of the proposed development, including in-combination effects.

### 5.1 Required Information

#### 5.1.1 Proposed Development

The proposed development has been described in detail in Section 3 of this report.

#### 5.1.2 Linkages to European Sites

The connectivity between the proposed project and all European sites has been assessed. The Lough Swilly SAC and Lough Swilly SPA have been identified as the only relevant European sites for this NIS. The potential for LSE, based on the source-pathway-receptor model, for the proposed development is detailed in Table 5.1. Only relevant identified effects are brought forward to the next part of the NIS assessment.

Links to the various qualifying interest features of the Lough Swilly SAC and SPA are set out at Table 5.2 and Table 5.3 respectively.

**Table 5.1: Potential for LSE, based on Source-Pathway-Receptor Model, for the Proposed Development**

Source of Potential Effect	Description of Effect Pathway	Potential Zone of Influence of Effect	Potential Relevance of Effect to AA
Noise, vibration, lighting and human presence during movements of vehicles and staff associated with construction activities.	During construction noise or other construction-related disturbance could reduce the ability of populations of qualifying interest / special conservation interest species to forage, roost or breed in the European Sites.	Varies by species. Generally assessed to within 500m of the proposed development footprint for wintering birds (see Madsen, 1985; Smit & Visser, 1993; and Rees <i>et al.</i> , 2005). However distance may be significantly lower (e.g. 150m for otter underground sites (NRA 2006) or higher (e.g. hen harriers may take flight when nesting at up to 750m from disturbance (Whitfield <i>et al.</i> , 2008)).	<b>Relevant.</b> These effects are predicted to result in LSE as significant populations of QI or SCI species are present within the ZoI of the proposed project. The effects of noise, vibration, lighting and human presence are therefore considered further within the Stage 2 Appropriate Assessment.
Surface water run-off carrying suspended silt, sediments or contaminants into local watercourses.	Silt, hydrocarbons, and/or other contaminants (oils, fuels, etc.) may enter nearby watercourses through surface water run-off.	The zone of influence of effects from contaminated surface water is difficult to accurately estimate as it will depend on numerous factors including the type and concentration of pollutants, assimilative capacity of receiving waters, and time of year (related to water levels).  As a precautionary measure, a reasonable worst-case zone of influence for water pollution from the proposed development site is considered to be the downstream surface water catchment. In this report the surface water catchment is defined as watercourses which lie downstream of the proposed development in addition to Lough Swilly, into which they flow.	<b>Relevant.</b> It has been determined that silt, grit, fuels, oils or other pollutants could enter surface water during the construction of the proposed development. These effects are potentially amplified by the 'moderate' and 'poor' receiving water quality of the intervening waterbodies. In the absence of mitigation measures to control surface water pollution during construction of the proposed project, the potential for LSEs to the Lough Swilly SAC and Lough Swilly SPA cannot be ruled out.
Disturbance of invasive species during the construction of the proposed development.	Construction activities could lead to the dispersal of scheduled invasive species either via machinery, materials, clothing or wild animals.	The zone of influence of effects associated with the spread of invasive species is difficult to accurately estimate, as plant fragments may spread on tyre treads to distant unrelated sites. In relation to water-borne spread of vegetation, the zone of influence generally is restricted to the downstream surface water catchment.	<b>Relevant.</b> It has been determined that fragments of Japanese knotweed, capable of regenerating, could enter surface water during the construction of the proposed development. In the absence of mitigation measures to control invasive plant species during construction of the proposed project, the potential for LSE to the Lough Swilly SPA and Lough Swilly SAC cannot be ruled out.
Changes to flood flow conveyance.	Construction of the proposed hard defence measures along the Burnfoot River have potential to give rise to increased flood flow conveyance into Lough Swilly.	The zone of influence is considered to be limited to those areas within close proximity and downstream of the proposed development.	<b>Relevant.</b> It has been determined that the proposed flood defence measures has the potential to give rise to increased rate of flow conveyance from the Burnfoot River catchment to Lough Swilly. This has potential to give rise to flooding of known tern nesting sites within Lough Swilly, downstream of the proposed development. An issue which has affected the tern colony under the existing conditions, for example in 2017.
Habitat Fragmentation	Proposed new bridge replacement structures would have potential to give rise to ongoing fragmentation of watercourse habitat by omission of suitable opportunities for passage by otter.	The zone of influence is considered to be local, affecting only those otter populations within close proximity to the proposed development based on the known territorial ranges of otter.	<b>Relevant.</b> It has been determined that the design of the proposed replacement bridge structure has potential to result in the ongoing fragmentation of the landscape for otter populations associated with the Lough Swilly SAC through the omission of structures offering migration opportunities for this species during times of high-water.

**Table 5.2: Proposed Development Link(s) with Lough Swilly SAC**

Qualifying Interest (priority habitat indicated with asterisk)	Relevance to the Zone of Influence of Likely Significant Effects of the Proposed Development	Source-Pathway-Receptor link(s)
[1130] Estuaries	Estuaries habitat has been mapped within the conservation objectives document (see Appendix A) and is hydrologically linked to the proposed development via the Burnfoot and Skeoge Rivers. The closest aspect of the proposed development lies 950m upstream of this habitat.	<p><b>Link(s) Identified.</b> There is potential for Estuaries to be affected by silt, oils, grit, or other potential contaminants generated during the construction of proposed development.</p>
[1150] Coastal lagoons*	Coastal Lagoons habitat has been mapped within the conservation objectives document (Appendix A) and is hydrologically linked to the proposed development via the Burnfoot and Skeoge Rivers. The closest aspect of the proposed development lies 950m upstream of this habitat.	<p><b>Link(s) Identified.</b> There is potential for Coastal lagoons to be affected by silt, oils, grit, or other potential contaminants generated during the construction of proposed development.</p>
[1330] Atlantic salt meadows ( <i>Glaucopuccinellietalia maritima</i> )	Atlantic salt meadows habitat is present around the shoreline of Lough Swilly however the closest area of this habitat lies 6.5km from the proposed development, via the supported hydrological pathway. This habitat is also partially intertidal and only occasionally inundated with the estuarine waters of Lough Swilly. As such it is not considered that a pathway for significant effects is supported.	<p><b>No Link(s) identified.</b></p>
[6410] Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> )	The extent of this habitat within the Lough Swilly SAC is not mapped within the sites conservation objectives document however as it is a terrestrial habitat which is supratidal and as such is not hydrologically linked to the proposals. It is not considered that there is any potential for significant effects.	<p><b>No Link(s) identified.</b></p>
[91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	The extent of this habitat within the Lough Swilly SAC is mapped within the sites conservation objectives document (Appendix A) however as it is a terrestrial habitat which is supratidal and as such is not hydrologically linked to the proposals it is not considered that there is any potential for significant effects.	<p><b>No Link(s) identified.</b></p>
[1355] Otter ( <i>Lutra lutra</i> )	Areas of the Lough Swilly SAC which are of importance for otter are not mapped within the sites conservation objectives document however it is assumed that the vast majority of the coastline is utilised and of importance to this species. Otter surveys found no evidence of otters in the Burnfoot River within the works area, however based on the precautionary approach, it is assumed otters are using the river corridor. Furthermore, the Burnfoot and Skeoge Rivers are likely to be utilised by populations of the species associated with the SAC.	<p><b>Link(s) Identified.</b> There is potential for Otter habitats within the proposed development area and downstream, to be affected by silt, oils, grit, or other potential contaminants generated during the construction of proposed development.</p> <p>The proposed development also has limited potential to give rise to direct aerial noise and visual disturbance to otter.</p> <p>Habitat fragmentation through inappropriate bridge design may also occur.</p>

**Table 5.3: Proposed Development Link(s) with Lough Swilly SPA**

Special Conservation Interest	Relevance to the Zone of Influence of Likely Significant Effects of the Proposed Development	Source-Pathway-Receptor link(s)
Wintering Bird SCIs.: <ul style="list-style-type: none"> <li>• Great Crested Grebe (<i>Podiceps cristatus</i>) [A005]</li> <li>• Grey Heron (<i>Ardea cinerea</i>) [A028]</li> <li>• Whooper Swan (<i>Cygnus cygnus</i>) [A038]</li> <li>• Greylag Goose (<i>Anser anser</i>) [A043]</li> <li>• Shelduck (<i>Tadorna tadorna</i>) [A048]</li> <li>• Wigeon (<i>Anas penelope</i>) [A050]</li> <li>• Teal (<i>Anas crecca</i>) [A052]</li> <li>• Mallard (<i>Anas platyrhynchos</i>) [A053]</li> <li>• Shoveler (<i>Anas clypeata</i>) [A056]</li> <li>• Scaup (<i>Aythya marila</i>) [A062]</li> <li>• Goldeneye (<i>Bucephala clangula</i>) [A067]</li> <li>• Red-breasted Merganser (<i>Mergus serrator</i>) [A069]</li> <li>• Coot (<i>Fulica atra</i>) [A125]</li> <li>• Oystercatcher (<i>Haematopus ostralegus</i>) [A130]</li> <li>• Knot (<i>Calidris canutus</i>) [A143]</li> <li>• Dunlin (<i>Calidris alpina</i>) [A149]</li> <li>• Curlew (<i>Numenius arquata</i>) [A160]</li> <li>• Redshank (<i>Tringa totanus</i>) [A162]</li> <li>• Greenshank (<i>Tringa nebularia</i>) [A164]</li> <li>• Common Gull (<i>Larus canus</i>) [A182]</li> <li>• Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]</li> </ul>	<p>Estuarine and lagoon habitats, of value for wintering waterbirds have been mapped as part of the conservation objectives monitoring and is hydrologically linked to the proposed development via the Burnfoot and Skeoge Rivers. The closest aspect of the proposed development lies 950m upstream of this habitat.</p> <p>Areas of agricultural grassland within immediate proximity to aspects of the proposed development have been recorded to support significant numbers of foraging and loafing waterbirds associated with the Lough Swilly SPA during surveys undertaken in 2020,2021 and 2022 by RPS.</p>	<p><b>Link(s) Identified.</b> There is potential for</p> <p>habitats of value for wintering waterbirds within the SPA to be affected by silt, oils, grit, or other potential contaminants generated during the construction of proposed development.</p> <p>There is also significant potential for the proposed development to give rise to direct aerial noise and visual disturbance to foraging and loafing wintering bird populations within areas of grassland adjacent to the proposed development.</p>
Breeding Bird SCIs: <ul style="list-style-type: none"> <li>• Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]</li> <li>• Sandwich Tern (<i>Sterna sandvicensis</i>) [A191]</li> <li>• Common Tern (<i>Sterna hirundo</i>) [A193]</li> </ul>	<p>Estuarine and lagoon habitats, of value for breeding bird SCIs have been mapped as part of the conservation objectives monitoring and is hydrologically linked to the proposed development via the Burnfoot and Skeoge Rivers. The closest aspect of the proposed development lies 950m upstream of this habitat.</p> <p>Areas of agricultural land and other habitats within and adjacent to the proposed development area are unlikely to offer any suitable opportunities for these species.</p>	<p><b>Link(s) Identified.</b> There is potential for</p> <p>habitats of value for wintering waterbirds within the SPA to be affected by silt, oils, grit, or other potential contaminants generated during the construction of proposed development.</p>
<p>Proposed flood defence measures have potential to increase the speed at which flood flows are conveyed from upstream of Burnfoot to the Lough Swilly SPA. As such there is some limited potential for such altered flood flow conveyance to result in flooding of breeding tern nest sites within Lough Swilly. A known issue which has previously occurred, most recently in 2017.</p>	<p>Impacts may also arise through alteration of flood flow conveyance and subsequent flooding of islands within Lough Swilly SPA which are utilised by breeding terns. Information from the NPWS identified the impact of floodwaters on ground nesting terns during the flooding of 2017.</p>	<p>Impacts may also arise through alteration of flood flow conveyance and subsequent flooding of islands within Lough Swilly SPA which are utilised by breeding terns. Information from the NPWS identified the impact of floodwaters on ground nesting terns during the flooding of 2017.</p>
Wetland and Waterbirds [A999]	<p>Estuarine and lagoon habitats, comprising wetland habitats of value for breeding bird SCIs have been mapped as part of the conservation objectives monitoring and is hydrologically linked to the proposed development via the Burnfoot and Skeoge Rivers. The</p>	<p><b>Link(s) Identified.</b> There is potential for</p> <p>Wetland habitats of value for wintering waterbirds within the SPA to be affected by silt, oils,</p>

Special Conservation Interest	Relevance to the Zone of Influence of Likely Significant Effects of the Proposed Development	Source-Pathway-Receptor link(s)
	<p>closest aspect of the proposed development lies 950m upstream of this habitat.</p> <p>Further areas of wet agricultural grassland within the proposed development area boundary are also likely to comprise wetland habitats forming a qualifying interest of the SPA and regularly used by wintering waterbirds.</p>	grit, or other potential contaminants generated during the construction of proposed development.

## 5.2 Conservation Objectives

### 5.2.1 Lough Swilly SAC and SPA

The Lough Swilly SAC/SPA is a large site, situated in the northern part of Co. Donegal and comprises the inner part of Lough Swilly. It extends from below Letterkenny to just north of Buncrana. Lough Swilly is a long sea lough, cutting through a variety of metamorphic rocks on the west side of Inishowen. The main rivers flowing into the site are the Swilly, Leannan and Crana. At low tide, extensive sand and mudflats are exposed, especially at the mouths of the Swilly and Leannan rivers. The site is estuarine in character, with shallow water and intertidal sand and mudflats being the dominant habitats.

Site specific Conservation Objectives for the Lough Swilly SAC and Lough Swilly SPA are available (NPWS, 2011) and are included in Appendix A. Table 5.4 identifies the Conservation Objective attributes which could be adversely affected by the proposed development, for 'relevant' QIs scoped into the assessment.

**Table 5.4: Conservation Objective Attributes for the Lough Swilly SAC**

Relevant Qualifying Interests	Site Specific Conservation Objective (NPWS, 2011; Version 1)	Site Specific Attributes Potentially Affected by the Proposed Development (NPWS, 2011: Version 1)
[1130] Estuaries	To maintain the favourable conservation condition.	Community distribution
[1150] Coastal lagoons*	To restore the favourable conservation condition.	Water quality: Chlorophyll a  Water quality: Molybdate Reactive Phosphorus (MRP)  Water quality: Dissolved Inorganic Nitrogen (DIN)  Typical plant species  Typical invertebrate species
[1355] Otter ( <i>Lutra lutra</i> )	To restore the favourable conservation condition.	Fish biomass available  Barriers to connectivity
Wintering Bird SCIs	To maintain the favourable conservation condition.	Population trend Distribution

Relevant Qualifying Interests	Site Specific Conservation Objective (NPWS, 2011; Version 1)	Site Specific Attributes Potentially Affected by the Proposed Development (NPWS, 2011: Version 1)
Breeding Bird SCIs	To maintain the favourable conservation condition.	Breeding population abundance: apparently occupied nests (AONs)  Productivity rate: fledged young per breeding pair  Distribution: breeding colonies
Wetland and Waterbirds	To maintain the favourable conservation condition.	Habitat area

## 5.3 Predicted Effects

### 5.3.1 Water Quality and Habitat Deterioration Effects

Various aspects of the proposed works have significant potential to give rise to water quality and associated habitat deterioration effects including the removal of existing flood embankments along the Burnfoot and Skeoge Rivers, the replacement of the R238 Bridge in Burnfoot (including the installation of the temporary bridge), proposed culvert replacement works, the construction of flood walls, embankments and associated ancillary works. The ancillary works include the potential requirement for a small temporary platform in the Burnfoot River on the left bank downstream of the existing Burnfoot Bridge where there is a small section of the sheet piled flood wall that is constrained by the presence of an existing building.

These works will give rise to the potential for inadvertent release of sediments or pollutants into the aquatic freshwater environment within the Burnfoot and Skeoge Rivers and associated minor watercourses.

All such works will take place upstream of estuary and coastal lagoon habitats within the Lough Swilly SAC, which also qualify as wetlands designated as part of the Lough Swilly SPA. These habitats are not known to be particularly sensitive to the effects of sedimentation given that the Lough already drains a large terrestrial catchment with an associated sediment burden. It is noted however that no scientific information on the lack of potential impacts arising through sedimentation as a result of the proposals is currently available and as such it is considered that there remains potential for localised adverse effects upon the habitat distribution within the SAC.

The potential inadvertent release of pollutants including petro-chemical fuels, into the aquatic environment arising as a result of the proposed development would be limited given the scale of the works. Furthermore significant dilution of such inputs would occur within the downstream watercourses and within Lough Swilly itself. It is considered however that there is still potential for localised adverse effects upon water quality and habitat distribution within the SAC which could lead to LSE on the qualifying interests.

Furthermore both sedimentation and pollution effects arising to downstream watercourses would have potential to give rise to adverse effects upon salmonids and other fish species which are prey species for the qualifying Annex II species, otter, and waterbird SCI species of the Lough Swilly SPA.

### 5.3.2 Aerial Noise and Visual Disturbance

Aspects of the proposed works, including the removal of existing flood embankments along the Burnfoot and Skeoge Rivers in addition to the creation of new flood embankments and flood walls along the western boundary of existing development in Burnfoot will take place in close proximity to or within areas of agricultural grassland which are a part of the Lough Swilly SPA.

These areas of agricultural land have been subject to wintering bird surveys in the winters of 2020/2021, 2021/2022 and 2023/2024. The methodology and findings of these surveys have been set out within the Bird Survey Report which form an appendix to the Biodiversity chapter of the accompanying EIAR and are included as Appendix B of this NIS. These surveys recorded a number of SCI bird species of the Lough Swilly SPA including common gull, whooper swan, greylag goose, dunlin, lapwing and redshank in large numbers within the fields within and adjacent to the areas proposed for works.

In the absence of mitigation measures the identified aspects of the proposed development would have potential to give rise to significant adverse aerial noise and visual disturbance effects upon these SCI bird populations associated with the Lough Swilly SPA during construction phase.

In addition to SCI bird populations of Lough Swilly SPA, the proposed works areas have been subject to survey for otter and have been recorded to support this species with numerous signs of their

presence recorded in the downstream area including the small lake adjacent to the Slab Road close to where an earthen flood embankment is proposed to provide flood protection to three properties and also in the downstream reaches of the Burnfoot River outside of the works area. As such all aspects of the proposed development, which will take place within proximity to water bodies utilised by the species, have potential to give rise to disturbance to low numbers of otter which are likely to represent a portion of populations from within the Lough Swilly SAC. Such impacts include lighting effects outside of daylight hours and disturbance to otter during various aspects of the construction. It is noted however that such impacts are considered likely to affect only commuting, migrating, and foraging adult otters as no holts or other signs indicating the presence of breeding otter within 150m of the proposed development were recorded during field surveys.

### 5.3.3 Spread of Invasive Non-Native Species

The proposed development will involve some works within 7m of recorded stands of Invasive non-native Japanese knotweed.

Excavation works within this 7m zone, the accepted maximum root spread of the species around the above ground growth, has potential to give rise to adverse impacts to areas of terrestrial habitat lying downstream of the proposed works including wet grassland habitats forming a part of the Lough Swilly SPA in addition to riparian habitats along the Burnfoot and Skeoge Rivers which are likely to be of value for otter.

### 5.3.4 Changes to Flood Flow Conveyance

Proposed flood defence measures have potential to increase the velocity at which flood flows are conveyed from upstream of Burnfoot to the Lough Swilly SPA. As such there is some limited potential for such altered flood flow conveyance to result in increased flood risk of breeding tern nest sites within Lough Swilly. A known issue which has previously occurred, most recently in 2017.

### 5.3.5 Habitat Fragmentation

Potential habitat fragmentation effects are considered to be limited to impacts to foraging, migrating, and commuting otter along the Burnfoot River arising as a result of the proposed bridge design which would, in the absence of the inclusion of appropriate design features, give rise to ongoing impassability of the R238 Bridge in Burnfoot during periods of high-water forcing migrating otter to cross the R238 road. This is based on the protected species surveys that were undertaken as part of the scheme assessment which identified the existing bridge as a constraint to longitudinal commuting during high flows.

The proposed development represents an opportunity to improve the bridge structure for otter populations and in the absence of such improvements would maintain the current situation.

## 5.4 In-Combination Effects

Article 6(3) of the Habitats Directive requires that in-combination effects with other plans or projects are also considered. As set out in the Commission's 2018 Notice (EC, 2019), significance of effect will vary depending on factors such as magnitude of impact, type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned. The significance of any identified combined effects of the proposed scheme alongside other past, present or reasonably foreseeable future plans or projects must be evaluated.

In that context, plans or projects which are completed, approved but uncompleted, or proposed have been considered. EC (2019) specifically advises that "as regards other proposed plans or projects, on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those which have been actually proposed, i.e. for which an application for approval or consent has been introduced".

Having consulted the Donegal County Council Planning Portal, there are no additional projects for which planning permission is sought which will be considered for their potential in-combination effects.

**Table 5.5: In-combination impacts with other plans, programmes and projects.**

Plan/Project	Key Policies/Objectives/Issues	Assessment of In-Combination Effects
<b>National Plans and Programmes</b>		
National Planning Framework (NPF)	The NPF provides a long-term strategic plan for spatial development, guiding growth and investment across Ireland up to 2040. It focuses on sustainable development, balanced regional growth, and supports housing, infrastructure, economic development, and environmental protection.	<p>The NOS examined potential impacts from land use changes, infrastructure development, housing growth, and economic activities promoted by the NPF and concluded that, with the proposed mitigation measures and adherence to best practices, the NPF is not likely to have significant adverse effects on the integrity of any Natura 2000 sites.</p> <p>The Framework supports Ireland’s environmental commitments and promotes sustainable development in line with EU directives and therefore there is no potential for in-combination effects.</p>
River Basin Management Plan For Ireland 2022 – 2027	<p>The Third Cycle River Basin Management Plan 2022-2027 has been published.</p> <p>The document (Chapter 2) sets out the current condition of waters in Ireland and a summary of status for all monitored waters in the 2016 – 2021 period, including a description of the changes since 2010 – 2015 and 2013-2018. A large number of river waterbodies are still declining and unless this is addressed, sustained and progressive improvements in water quality will be difficult to achieve. Overall, 54% of surface waters are in good or high ecological status while the remaining 46% are in unsatisfactory ecological status. For groundwater bodies, 91% are in good chemical and quantitative status.</p>	<p>The objectives of the RBMP are to</p> <ul style="list-style-type: none"> <li>Prevent deterioration;</li> <li>Restore good status;</li> <li>Reduce chemical pollution; and</li> <li>Achieve water related protected areas objectives</li> </ul> <p>The implementation of the RBMP seeks compliance with the environmental objectives set under the plan, which will be documented for each water body. This includes compliance with the European Communities (Surface Waters) Regulations S.I. No. 272 of 2009 (as amended). The implementation of this plan will have a positive impact on biodiversity and the Proposed Scheme will not affect the achievement of the RBMP objectives given the detailed assessment of the effects in the Water Quality Section of the EIA and Water Status Impact Assessment. There is therefore no potential for in-combination effects.</p>
Foodwise 2025	Foodwise 2025 strategy identifies significant growth opportunities across all subsectors of the Irish agri-food industry. Growth Projection includes increasing the value added in the agri-food, fisheries and wood	Foodwise 2025 was subject to its own NIS <sup>2</sup> and AA Determination <sup>3</sup> .

<sup>2</sup> [www.gov.ie/pdf/?file=https://assets.gov.ie/109100/9ff68032-4f71-4d95-9fed-ec52da1bc950.pdf#page=null](https://assets.gov.ie/109100/9ff68032-4f71-4d95-9fed-ec52da1bc950.pdf#page=null)

<sup>3</sup> [www.gov.ie/pdf/?file=https://assets.gov.ie/109101/2df1f3f3-1263-426c-97cf-414422a2bc34.pdf#page=null](https://assets.gov.ie/109101/2df1f3f3-1263-426c-97cf-414422a2bc34.pdf#page=null)

Plan/Project	Key Policies/Objectives/Issues	Assessment of In-Combination Effects
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	<p>products sector by 70% to in excess of €13 billion</p>	<p>Growth is to be achieved through sustainable intensification to maximise production efficiency whilst minimising the effects on the environment however there is increased risk of nutrient discharge to receiving waters and in turn a potential risk to biodiversity and Europe Sites if not controlled. With the required mitigation in the Food Wise Plan, no significant in-combination impacts are predicted. Mitigation measures included cross compliance with 13 Statutory Management Requirements, EIA Agricultural Regulations 2011, GLAS, and AA Screening of licencing and permitting in the forestry and seafood sectors.</p>
<p>Our Rural Future: Rural Development Policy 2021-2025</p>	<p>Our Rural Future represents the Irish Government's blueprint for a post-COVID-19 recovery and development of rural Ireland over the next 5 years. It provides the framework to achieve the vision of transforming the quality of life and opportunity for people living in rural areas</p>	<p>The RDP for 2021-2025 has been subject to SEA<sup>4</sup>, and AA<sup>5</sup>. The AA Screening concluded that, whilst there is a possibility that the proposed Rural Development Policy could impact upon European sites, appropriate safeguards, mechanisms and conditions have been designed as an integral part of the Policy in order to safeguard European sites.</p> <p>The principal reason for reaching this conclusion is that in many cases Measures or their frameworks for delivery have already been subject to AA, such assessments are foreseen, or are already underway. Other Measures will, in due course, be subject to Screening for AA based on detailed operational plans and programmes based on accurate geographic information which is currently unavailable. Individual policies, strategies and plans for, or related to, the implementation of any Policy Measure contained in Our Rural Future must be considered on their own merits under the AA process at the appropriate level of governance control.</p> <p>Additionally, an explicit Environmental Commitment contained in the Policy, which will assist in guiding oversight mechanisms, emphasises that any Measures giving rise to, or potentially giving rise to environmental impacts will be subject to screening and further consideration under AA, if not already complete. Therefore there is no potential for in-combination effects.</p>
<p>EU Nitrates Directive (91/676/EEC) Nitrates Action Programme</p>	<p>Ireland has published the Sixth Nitrates Action Programme. The Programme sets out new measures that have been introduced since the Fifth Programme. This iteration of the NAP is developed in the context of significantly greater environmental ambition in the Programme for Government and at EU level. The key objective is to ensure that agricultural practices do not contribute to the</p>	<p>The NIS for the NAP concluded that</p> <ul style="list-style-type: none"> <li>• The 6th NAP is not likely to have significant adverse effects on the integrity of Natura 2000 sites.</li> <li>• The Plan's measures reduce nitrate pollution risks, thereby supporting conservation objectives.</li> </ul>

<sup>4</sup>[www.gov.ie/pdf/?file=https://assets.gov.ie/128910/d7f87d7f-642b-47ec-8cae-f92484a7e046.pdf#page=null](https://assets.gov.ie/128910/d7f87d7f-642b-47ec-8cae-f92484a7e046.pdf#page=null)

<sup>5</sup>[www.gov.ie/pdf/?file=https://assets.gov.ie/128907/343c327c-53cf-42a6-b020-9b410e8b63f9.pdf#page=null](https://assets.gov.ie/128907/343c327c-53cf-42a6-b020-9b410e8b63f9.pdf#page=null)

Plan/Project	Key Policies/Objectives/Issues	Assessment of In-Combination Effects
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	<p>deterioration of water quality, specifically to prevent nitrate pollution in waters designated as Nitrate Vulnerable Zones (NVZs) The key measures to achieve this objective considered in the sixth iteration of the NAP include:</p> <ul style="list-style-type: none"> <li>• Regulation of the timing and amount of fertilizer application.</li> <li>• Limits on livestock manure spreading.</li> <li>• Protection of watercourses via buffer zones.</li> <li>• Requirements for storage of organic manure.</li> <li>• Monitoring and reporting obligations</li> </ul>	<ul style="list-style-type: none"> <li>• Any potential impacts are mitigated through the Plan's provisions and enforcement.</li> </ul> <p>On this basis there is no potential for in-combination effects</p>
National Biodiversity Plan 2023-2030	<p>The Plan is designed primarily to enhance biodiversity, thus positively contributing to the conservation status of habitats and species within Natura 2000 sites.</p> <p>Potential risks of disturbance or degradation are identified primarily in relation to specific activities such as habitat management interventions or public engagement actions.</p> <p>These risks are considered low and manageable with appropriate safeguards</p>	<p>The NIS concluded that:</p> <ul style="list-style-type: none"> <li>• The National Biodiversity Plan 2023–2030 will not adversely affect the integrity of any Natura 2000 sites.</li> <li>• The Plan supports Ireland's commitments to EU biodiversity directives and contributes to reversing biodiversity loss.</li> <li>• Continuous monitoring and periodic review are recommended to ensure ongoing protection and effectiveness.</li> </ul> <p>Therefore there is no potential for in-combination effects.</p>
NPWS Conservation Plans and Conservation Objectives	<p>Conservation plans have been drawn up for a number of sites. Such plans include descriptive information and a management framework section that outlines objectives and strategies. However, these objectives may have been superseded by the site's Conservation Objectives.</p>	<p>The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. Generic and site-specific conservation objectives aim to define favourable conservation condition for a particular habitat or species at that site to ensure the ecological integrity of these sites is maintained or restored. The resultant effects of conservation objectives are a net positive and there is no potential for adverse in-combination effects on European Sites.</p>
Inland Fisheries Ireland (IFI) Corporate Plan 2021-2025	<p>The main objectives of the IFI Corporate Plan 2016-2020 are as follows:</p> <ul style="list-style-type: none"> <li>• To improve the protection and conservation of the resource.</li> <li>• To develop and improve wild fish populations.</li> <li>• To increase the number of anglers.</li> <li>• To generate a better return for Ireland from the resource</li> </ul>	<p>Implementation and compliance with the goals of the IFI corporate plan will result in net positive in-combination effects to European sites.</p>
Catchment Flood Risk Assessment	<p>Catchment Flood Risk Assessment and Management (CFRAM) Studies and their product – Flood Risk Management Plans</p>	<p>The programme of measures resulting from the CFRAM study may perpetuate significant effects on European sites in view of their conservation objectives. However,</p>

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<p>and Management Study</p>	<p>(FRMPs) – are at the core of the national policy for flood risk management and the strategy for its implementation. The aim of the CFRAM Studies is to:</p> <ul style="list-style-type: none"> <li>▪ assess flood risk, through the identification of flood hazard areas and the associated impacts of flooding;</li> <li>▪ identify viable structural and non-structural measures and options for managing the flood risks for localised high-risk areas and within the catchment as a whole; and</li> <li>▪ prepare a strategic Flood Risk Management Plan (FRMP) and associated Strategic Environmental Assessment (SEA) that sets out the measures and policies that should be pursued to achieve the most cost effective and sustainable management of flood risk.</li> </ul>	<p>the overarching policies and objectives of the landuse plans include the requirement for any development taking place to undergo Screening for Appropriate Assessment and/or Habitats Directive Assessment where necessary. No negative in-combination effects to European sites are expected.</p>
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**Regional Plans and Programmes**

<p>County Donegal Development Plan 2024-2030</p>	<p>The Donegal County Development Plan (2024-2030) sets out a framework for the sustainable physical development of the county while considering the conservation and protection of the built and natural environment. The legal basis for the plans is set out in the Planning and Development Acts 2000, as amended.</p>	<ul style="list-style-type: none"> <li>• of the NIS for the County Donegal Development Plan includes the following mitigation measures: Implementation of site-specific management strategies to protect vulnerable habitats.</li> <li>• Enforcement of development restrictions and environmental safeguards within and adjacent to Natura 2000 sites.</li> <li>• Monitoring and adaptive management to address any emerging risks or impacts.</li> <li>• Integration of best practice guidelines for construction, drainage, and pollution control.</li> </ul> <p>The NIS concludes that with the proposed mitigation and management measures, the Donegal County Development Plan 2024–2030 will not adversely affect the integrity of any Natura 2000 sites.</p> <p>The Plan supports the conservation objectives of these sites while facilitating sustainable growth and development in the county. There is therefore no potential for adverse in- combination effects on European Sites with the proposed project.</p>
<p>Planning Applications</p>	<p>There are no planning applications approved or pending in close proximity to the proposed development, however there are a number of planning applications approved or pending within the sub-catchment in which the proposed development is located. The applications are for the extension, renovation and construction of dwellings, in addition to other agricultural permissions.</p>	<p>Adherence to the overarching policies and objectives of the Donegal County Development Plan 2024-2030 will ensure that local planning applications and subsequent grant of planning will comply with the requirements of relevant environmental legislation including the WFD and Habitats Directive and therefore there is no potential for in-combination effects.</p>

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<p>Integrated Pollution Control (IPC) and Industrial Emissions Directive Licensing (IED)</p>	<p>A search was undertaken of Integrated Pollution Control and Industrial Emissions licences within Donegal. There is one IED licence for Veritiv for the tinning plant associated with their facility in Burnfoot, which is adjacent to the Skeoge River upstream of the Proposed Scheme.</p>	<p>The EPA is responsible for monitoring emissions and dealing with any infringements on IPC licences. All emissions must be within set limits which must not be contravened. The IED application was accompanied by AA and subject to the application of mitigation measures including the use of an air scrubber for emissions to air and a completely closed wastewater treatment system with no emissions to water, should not give rise to any adverse effects to any European sites. On this basis it is not considered that there is potential for in-combination effects with the proposed development.</p>
<p>Wind Farm Developments</p>	<p>A search was undertaken to establish the locations of other windfarms within the wider Zol of the proposed development. There are at least 26 windfarms in Donegal, with further windfarms in the neighbouring counties.</p>	<p>Each of these wind farm developments has been assessed in light of their potential to give rise to significant impacts upon birds associated with SPAs within their respective Zols. Given the findings of bird surveys undertaken in association with the proposed development and the resultant rationale given at section 5.3.4 of this document, it is considered that there is no potential for in-combination effects when considered alongside other wind farm projects in the Zol and beyond.</p>
<p>Active Quarries</p>	<p>There are no active quarries within proximity to the proposed development or within the catchments of the Zol of the proposed development.</p>	<p>It is not considered that the proposals have any potential to act in combination with any active quarries.</p>
<p>Forestry Operations</p>	<p>The proposed development lies in proximity to a number of areas of plantation forestry furthermore the catchment supports significant areas of both private and public forestry throughout.</p>	<p>Coillte, who manage public commercial forestry on behalf of the state, outline within their North-West business unit Area Strategic Plan 2021-2024 (Coillte 2021)(which covers the relevant catchments and the whole of Donegal), a range of considerations which will be taken into account to address the potential for effects upon European sites arising as a result of any proposed forestry operations. Measures to reduce or remove the potential for impacts to watercourses include the use of buffer zones around watercourses, and the use of sensitive drainage and cultivation practises. Forestry operations which are to take place within Natura 2000 sites will be subject to a Habitats Regulations Assessment, prior to being carried out. Such measures are likely to eliminate the potential for significant adverse effects to arise upon nearby Natura 2000 sites.</p> <p>The majority of significant felling operations, whether associated with public or private forests, require a felling license granted by the Forest Service of the Department of Agriculture, Food and the Marine. Such felling licenses are subject to a screening for appropriate assessment where relevant and, where potential for a likely significant effect exists, a Natura Impact Statement assessment. These assessments should identify any potential adverse effects which may arise as a result of the proposals and provide details on any prescribed mitigation to ensure that the proposals will not lead to a significant adverse effect upon any Natura 2000 site.</p> <p>It is considered that there remains potential for minor in-combination effects through small scale felling and</p>

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Plan/Project	Key Policies/Objectives/Issues	Assessment of In-Combination Effects
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		associated sedimentation across the relevant catchments.
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## 6. MITIGATION MEASURES

For the purposes of this assessment the term “mitigation measures” are considered to be ‘those measures which aim to minimise, or even cancel, the negative impacts on a site that are likely to arise as a result of the implementation of a plan or project. These measures are an integral part of the specifications of a plan or project’ (Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC, January 2007).

Based on the Appropriate Assessment carried out in Section 5, the mitigation will focus on the following potential pathways:

- Surface water pollution;
- Aerial noise and visual disturbance;
- Spread of scheduled invasive species;
- Changes to flood flow conveyance; and
- Habitat fragmentation.

Donegal County Council, and any contractor appointed by the council, shall be required to comply with, and implement, the requirements and mitigation measures as set out here. It is required that these measures be incorporated, in full, into a Construction and Environmental Management Plan (CEMP) implemented throughout the construction stage.

### 6.1 Surface Water Pollution

The construction works shall be undertaken within a framework of environmental protection practices defined and co-ordinated via a CEMP. The CEMP shall provide measures that meet legislative requirements, and key regulatory guidance that define good working practices during construction, most notably the CIRIA guidance for the ‘Control of Water Pollution from Construction Sites’ (CIRIA, 2001).

The following measures in respect to the management of surface waters and water quality will be implemented.

#### 6.1.1 Suspended Sediment and Sedimentation

- Drainage and measures to control run-off will be employed to manage sediments prior to any works to be undertaken at the site, i.e., arrangements for the treatment of dirty groundwater ingress from any excavations will be in place in advance of the dewatering to ensure it can be adequately managed on site;
- The site shall be surveyed to identify all existing drainage features and waterbodies.
- Silt fencing will be installed around the perimeter of the site. The location of the silt fencing will be determined in the construction stage CEMP and will be subject to a detailed assessment of the area or phase to be developed. The purpose of the silt fencing is to prevent silt laden water leaving the site and entering neighbouring land with the potential to impact nearby watercourses.
- Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland (IFI), the Environmental Protection Agency (EPA) and the National Parks and Wildlife Service (NPWS) will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident;
- Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same;
- The site manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of the works, and a record of these inspections will be maintained;

- Any temporary storage of soil, hardcore, crushed concrete or similar material will be stored as far as possible from any surface water drains.
- There will also be a requirement to periodically pump water from excavations. All collected and pumped water will have to be treated prior to discharge. There can be no direct pumping of silty water from the works directly to any watercourse. All water from excavations must be treated by infiltration over lands, where suitable areas can be identified, or via appropriately sized settlement areas or silt busters;
- There is a possibility that more severe flooding could occur during the construction period, emergency measures are therefore required. The following control measures will be required:
  - Silt fencing shall be placed above the 10-year flood level, and where that is not possible at the highest level possible within the site. Trapped silt shall be removed from silt fencing at regular intervals;
  - Settlement ponds shall be placed above the 10-year flood level;
  - Met Éireann provide a weather warnings alert service which is available on the Met Éireann app or through its website <https://www.met.ie/>. These warnings can be used during construction to manage the risk of flooding to the works from extreme events.
  - Stockpiles of soil shall be kept out of the 10-year flood plain. This will not be possible at the northern extent of the site; additional measures will be incorporated at this location including the covering of the stockpiles and the use of silt fencing around the perimeter of any stockpiles.
- Earthworks shall be exposed for the minimum time possible. Earthworks formations shall be protected by a layer of imported granular left fill.
- Landscaping and seeding of the perimeter embankments and retaining structures shall be carried out as early as possible.
- The establishment of a stable working platform from which the piling rig can operate for the sheet pile to the rear of Líos Na Greine and Páirc an Ghrianán and also on both banks downstream of the Burnfoot Bridge will be required. This can be located on top of the bank; however, a working platform may need to be created partially within the Burnfoot River. Any working platform will be constructed from clean stone to minimise sediment. It may be necessary to provide pipes located within the clean stone to help convey river flows.
- An Emergency Response plan (ERP) shall be developed for the site to mitigate against stockpiles or exposed earth that are at risk from flood waters.
- Spillage and blow-off of debris, aggregates and fine material onto public roads will be reduced to a minimum by employing the following measures:
- Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered at all times to restrict the escape of dust;
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only;
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate;
- Road sweepers will be employed to clean the site access route as required.
- Existing surface water drainage infrastructure (e.g., gullies) will be 'plugged' to prevent contaminated surface water entering the relevant watercourses, via drainage;
- Waste materials shall be stored in designated areas that are isolated from surface water drains.
- Skips will be closed or covered to prevent materials being blown or washed away and to reduce the likelihood of contaminated water leakage;
- No harmful materials shall be deposited into nearby watercourses, including drainage ditches/pipes, on or adjacent to the site.

### 6.1.2 Concrete and Cement Pollution

The impacts in relation to cement and concrete for the Proposed Scheme are, for the most part (but not limited to) the installation of the concrete structures (to be poured in-situ).

The use of concrete in close proximity to water bodies requires a great deal of care. Fresh concrete and cement are very alkaline and corrosive and can cause serious pollution in water bodies. It is essential to ensure that the use of wet concrete and cement in or close to any water course is carefully controlled so as to minimise the risk of any material entering the water, particularly from shuttered structures or the washing of equipment. The following measures will be undertaken to mitigate against possible pollution:

- On completion of the pile driving process for the sheet piled walls, excavation around the top of the pile will be undertaken to facilitate the construction of a capping beam. A binding layer of site concrete will be formed, capping beam reinforcement will be tied and the erection of formwork and pouring of in-situ concrete, with the careful placement of concrete to ensure containment within the formwork, will bring the flood wall up to existing ground level with starter bars protruding to extend into the cantilevered, above-ground, wall.
- The steel reinforcement for the above-ground concrete wall can then be fixed, shuttering work erected, and in-situ concrete poured again with careful placement to ensure full containment of concrete within the shuttering.
- The walls can either be a patterned concrete finish, formed by fixing a mould to the inside of the shuttering or stone-faced once the wall has cured.
- A pre-cast concrete coping will be fixed to the top of the wall rather than poured insitu.
- The reinforced concrete walls required immediately upstream of the bridge to connect the earth embankments and the bridge parapets will also be subject to in-situ concrete pours using the same controls as the for the sheet piled walls.
- The Carnashannagh is a small watercourse and therefore it is likely that the culvert replacement works will be undertaken during a dry period to ensure low flows. This will facilitate the temporary damming of the river and diversion of the flow via temporary pipes over a short section where work is being undertaken and will ensure the use of concrete in the blinding and construction of the headwalls will be undertaken in dry conditions.
- Construction of the new inlet and outlet structures at Monreagh Park on the Carnashannagh Stream will follow a similar methodology to the upstream Carnashannagh Stream culvert, with damming of the stream and over-pumping to ensure the works remain dry for the placement of the concrete base for the new headwalls.
- Plant operating close to water shall be given special consideration in relation to the transport of concrete from the point of discharge from the truck-mixer to final discharge into the delivery pipe (tremie). Care should be exercised when slewing concrete skips or mobile concrete pump booms over open water.
- A concrete washdown area will be provided on site for trucks to use after delivery of concrete or on return to the batching plant. This area will be adequately bunded to mitigate the risk of contaminated runoff discharge to the water bodies. Concrete trucks are to be washed down within the concrete truck washdown area after delivery of concrete, prior to exiting the site. Washdown runoff will be appropriately treated prior to discharge.
- Wash-out areas on site will be properly designed with an impermeable line to contain all cement laden water. No wash-out of ready-mix concrete vehicles shall be located within 10 metres of any temporary or permanent drainage features. Signage shall be erected to clearly identify the wash-out areas. Sufficient wash-out areas shall be provided to cater for all vehicles at peak delivery times.
- On-site batching of concrete is not envisaged, but ready to use mortar silos are often used. These systems involve the delivery and storage of dry cement and aggregates in silos, water is added at

the point of delivery to make mortar or plaster. The following controls shall be put in place for the on-site batching of concrete, mortar and render:

- The plant shall be maintained in good condition.
- Delivery of cement shall be means of a sealed system to prevent escape of cement.
- The plant shall be situated on a paved area at least 20m from any temporary or permanent drainage features.
- Emergency procedures shall be in place to deal with accidental spillages of cement or mortar.

### 6.1.3 General Construction Works

The risk of water quality impacts associated with works machinery, infrastructure and on-land operations (for example leakages/spillages of fuels, oils, other chemicals and waste water) will be controlled through good site management and the adherence to codes and practices which limit the risk to within acceptable levels. The following measures will be implemented during construction:

- A detailed works specific CEMP will be prepared during the planning submission and will be developed and implemented by the contractor and will include detail in respect of every aspect of the works in order to minimise potential impacts and maximise potential benefits associated with the works.
- Management and auditing procedures, including tool box talks to personnel, will be put in place to ensure that any works which have the potential to impact on the aquatic environment are being carried out in accordance with the contractors environmental controls, which will be consistent with an approved CEMP and any planning conditions.
- Existing surface water drainage and discharge points will be mapped on the Drainage layout. These will be noted on construction site plans and protected accordingly to ensure water bodies are not impacted from sediment and other pollutants using measures to intercept the pathway for such pollutants.
- Welfare facilities (canteens, toilets etc.) will be available within the construction compound and this will remain in place for the construction of the Proposed Scheme. The offices and site amenities will be required to have their own foul water collection.
- The use of oils and chemicals on-site requires significant care and attention. The following procedures will be followed to reduce the potential risk from oils and chemicals:
  - New metal gerry cans with proper pouring nozzles will be used to move fuel around the site for the purposes of refuelling items of small plant on site. Metal gerry cans and any other items of fuel containers will be stored in certified metal bunded cabinets.
  - Drip trays will be used under items of small plant at all times. Any waste oils etc. contained in the drip trays or the bunded area will be emptied into a waste oil drum, which will be stored within the bund.
  - Any gas bottles will be stored in a caged area at a secure location on the site. All will be properly secured at point of work.
  - No bulk chemicals will be stored within the active construction areas. Temporary oil and fuel storage tanks may be kept in the material storage area in suitable containers and will be stored on appropriately bunded spill pallets as required. Any fuel and oil stored onsite shall be stored on bunded spill pallets approved under BS EN 1992-3:2006). All bunds will be impermeable and capable of retaining a volume of equal to or greater than 1.1 times (>10%) capacity of the containers stored on them. In the event of a filling spillage excess oil or fuel will be collected in the bund.

- Refuelling of vehicles and the addition of hydraulic oils or lubricants to vehicles will be undertaken offsite where possible. Where this is not possible, filling and maintenance will take place in a designated material storage compound, which is located at least 10 metres from any temporary or permanent drainage features. Spill protection equipment such as absorbent mats, socks and sand will be available to be used in the event of an accidental release. Training will be given to appropriate site workers in how to manage a spill event. A certified double skinned metal fuel tank will be situated in this secure bunded area on the construction site if applicable. This tank will be certified for lifting when full.
- Spill protection equipment such as absorbent mats, socks and sand will be available to be used in the event of an accidental release during refuelling. Training will be given to appropriate site workers in how to manage a spill event. A hazardous bin will also be available to contain any spent sand or soak pads.
- Contingency Planning: A project specific Pollution Incident Response Plan will be prepared by the contractor and will refer to PPG 21 Pollution Incident Response Planning. The contractor's Environmental Manager will be notified in a timely manner of all incidents where there has been a breach in agreed environmental management procedures. Suitable training will be provided by the contractor to relevant personnel detailed within the Pollution Incident Response Plan to ensure that appropriate and timely actions is taken.

Avoidance of in-stream works between 1st October and 30th April will provide some mitigation. Where there is a need to install temporary culvert to enable site access over watercourses, or for the installation of more permanent culverts and bridges, the design and siting within the channel should follow the UK's CIRIA guidelines for maintaining passage at culverts (see Balkham et al. 2010) and IFI guidance for fisheries protection during development works (IFI, 2016); the following key points are relevant to maintaining fish passage;

- The avoidance of a significant drop in water level at the inlet or outlet;
- Provision of adequate flow depth for fish passage;
- Provision of a natural bed;
- The avoidance of a local increase in flow velocities;
- Therefore, any temporary structure should be installed so that gradient, water depth and flow velocities are as similar as possible to the original channel, as agreed with the relevant fisheries jurisdiction (i.e. IFI).

## 6.2 Aerial Noise and Visual Disturbance

Given the importance of areas of agricultural land to the west of Burnfoot for wintering waterbird populations associated with the Lough Swilly SPA it is considered that aspects of the proposals within or in proximity to this area should be undertaken outside of the wintering bird season. Given legislative requirements for habitat clearance works to avoid impacts to nesting birds (whether associated with the SPA or not) vegetation clearance will take place between late-August and late-October. The other works proposed within the working area to the west of Burnfoot will be undertaken outside of the wintering bird season, i.e. April to late October.

The aspects of the works to which this proposed restriction relates include:

- Removal of existing flood protection embankments along the Burnfoot and Skeoge Rivers to the west of Burnfoot;
- Proposed new embankment and flood walls to the west of Burnfoot; and
- Proposed new embankment around residential properties and wastewater treatment package plant off the R239 Road to the south-west of Burnfoot.

Subject to these works being undertaken outside of the wintering bird season it is considered that any potential aerial noise or visual disturbance effects upon SCI bird species of the Lough Swilly SPA would be fully mitigated.

In order to effectively mitigate for the potential of the proposed development to give rise to impacts to otter, works will take place within daylight hours only. No artificial lighting which gives rise to increased light levels along the Burnfoot or Skeoge Rivers will be utilised within the proposed scheme design.

### 6.3 Spread of Scheduled Invasive Species

In order to prevent the proposed development giving rise to the inadvertent spread of the recorded non-native invasive species, Japanese knotweed, it is proposed that all aspects of the proposed development will be undertaken in accordance with the project specific Invasive Species Management Plan included in Appendix C.

The implementation of the ISMP which includes for a range of measures to prevent the spread of Japanese knotweed will ensure that the proposed project does not give rise to the spread of this species into the freshwater environment and consequently any European site. Measures in the ISMP include:

- Appropriate fencing and signage of Japanese knotweed to prevent the inadvertent spread of the plant during construction;
- That all machinery entering the site during construction activities shall be free from contamination with scheduled invasive plants. This will be achieved through cleaning and disinfecting all plant and machinery before entering the site and in a controlled wash down area before leaving site;
- That materials which are introduced to the site during the construction shall be free from scheduled invasive species, with certification of such; and
- Options for treatment or eradication of the existing stands as appropriate, in-keeping with current guidance and legislation.

### 6.4 Reconnection of the floodplain

The proposed development, at the design phase, has incorporated measures to alleviate the effects of flooding within Burnfoot, these include the removal of lengths of existing flood embankments along the Burnfoot and Skeoge Rivers to establish reconnection of the floodplain in this area. This work will allow for the flooding of areas of adjacent agricultural grassland and the associated attenuation of floodwaters from both these watercourses.

It is considered that this embankment removal will reduce the impact of flooding in the downstream SPA by allowing additional flood storage on these agricultural lands. This will reduce the potential for any increased flow rates arising as a result of the proposed scheme and furthermore will represent an improvement over the existing situation reducing the potential flood risk to tern nesting sites within the Lough Swilly SPA.

### 6.5 Habitat Fragmentation

Given that the existing Burnfoot Bridge structure is to be demolished and rebuilt it is considered that there is an opportunity to incorporate design features which allow for the safe dry passage of otter along the Burnfoot River during all flow conditions. Should the design of the structure not incorporate these measures it is considered that the proposals would contribute to habitat fragmentation for the species as during periods of high flow they would be required to cross the R238 Road in Burnfoot.

It is therefore recommended that the proposed bridge design incorporates a full span, with areas of dry habitat present on either side of the watercourse during periods of typical or low flow and that a suitable shelf, culvert or platform is incorporated into the bridge design which will accommodate the passage of otter along during relatively high flows. While it may not be possible to deliver a solution which would preserve safe passage for otter during all conditions, due to the extent of flash flooding

which occurs within the watercourse, accommodation for otter passage in most conditions will represent a significant improvement for the connectivity habitat for otter over the existing situation.

With the incorporation of such design features as proposed, any predicted habitat fragmentation effects envisaged as a result of the proposed development will be fully mitigated and furthermore a significant enhancement for otter will be delivered within the proposed project.

## 6.6 Summary of mitigation measures

A summary of the mitigation measures provided in Table 6.1.

**Table 6.1: Summary of Proposed Mitigation**

Potential Impact	Summary of Proposed Mitigation Measures
Surface water pollution	<p>The implementation of a CEMP will ensure good construction practises to prevent contaminants from entering surface waters. In addition, the following mitigation measures will be applied:</p> <p><b>Suspended Sediment and Sedimentation</b></p> <ul style="list-style-type: none"> <li>Preventing run-off is an effective method of preventing sediment pollution in the water environment. Therefore, adoption of appropriate erosion and sediment controls to manage run-off during construction is essential to prevent sediment pollution.</li> <li>Mitigation measures to address the potential impact from suspended solids will be carried out in accordance with a site-specific CEMP. The measures will be employed prior to the commencement and during construction and will include those measures outlined in 6.1.1.</li> </ul> <p><b>Concrete and Cement</b></p> <ul style="list-style-type: none"> <li>The impacts in relation to cement and concrete for the Proposed Scheme are, for the most part (but not limited to) the installation of the concrete structures (to be poured in-situ).</li> <li>Full containment of concrete within the shuttering for insitu concrete pouring.</li> <li>Culvert replacement will be in dry conditions through damming of the water course and the use of over pumping. The will be undertaken during low flow conditions</li> <li>Appropriately located concrete wash down areas with full containment.</li> <li>On-site batching of concrete is not envisaged however if it is required the delivery of cement shall be means of a sealed system to prevent escape and the plant shall be situated on a paved area at least 20m from any temporary or permanent drainage features.</li> </ul> <p><b>General Construction</b></p> <ul style="list-style-type: none"> <li>A detailed works specific CEMP will be prepared during the planning submission and will be developed and implemented by the contractor;</li> <li>Management and auditing procedures, including tool box talks to personnel, will be put in place to ensure works are being undertaken in accordance with the planning conditions and CEMP.</li> <li>Existing surface water drainage and discharge points will be mapped on the Drainage layout.</li> </ul>

Potential Impact	Summary of Proposed Mitigation Measures
	<ul style="list-style-type: none"> <li>Welfare facilities (canteens, toilets etc.) will be required to have their own foul water collection.</li> <li>The use of oils and chemicals on-site requires significant care and attention. Strict controls procedures will be followed to reduce the potential risk from oils and chemicals from refuelling and storage of oils and chemicals.</li> <li>A project specific Pollution Incident Response Plan will be prepared by the contractor</li> </ul>
Aerial noise and visual disturbance	<p>Given legislative requirements for habitat clearance works to avoid impacts to nesting birds (whether associated with the SPA or not) these works will take place between late-August and late-October. The aspects of the works to which this proposed restriction relates include:</p> <ul style="list-style-type: none"> <li>Removal of existing flood protection embankments along the Burnfoot and Skeoge Rivers to the west of Burnfoot;</li> <li>Proposed new embankment and path to the west of Burnfoot; and</li> <li>Proposed new embankment around residential properties off the R239 Road to the south-west of Burnfoot.</li> <li>Works will take place within daylight hours only. No artificial lighting which gives rise to increased light levels along the Burnfoot or Skeoge Rivers will be utilised within the proposed scheme design.</li> </ul>
Spread of Scheduled Invasive Species	<p>The implementation of the ISMP will include the following:</p> <ul style="list-style-type: none"> <li>Appropriate fencing and signage of Japanese knotweed to prevent the inadvertent spread of the plant during construction;</li> <li>All machinery entering the site during construction activities shall be free from contamination with scheduled invasive plants. This will be achieved through cleaning and disinfecting all plant and machinery before entering the site and in a controlled wash down area before leaving site;</li> <li>Materials which are introduced to the site during the construction shall be free from scheduled invasive species, with certification of such; and</li> <li>Options for treatment or eradication of the existing stands as appropriate, in-keeping with current guidance and legislation.</li> </ul>
Changes to flood conveyance	<p>The removal of lengths of existing flood embankments along the Burnfoot and Skeoge Rivers will establish reconnection of the floodplain in this area. This work will allow for the flooding of areas of adjacent agricultural grassland and the associated attenuation of floodwaters from both these watercourses.</p> <p>It is considered that this embankment removal will reduce the impact of flooding in the downstream SPA by allowing additional flood storage on these agricultural lands. This will reduce the potential for any increased flow rates arising as a result of the proposed scheme and furthermore will represent an improvement over the existing situation reducing the potential flood risk to tern nesting sites within the Lough Swilly SPA.</p>
Habitat Fragmentation	<p>the proposed bridge design incorporates a full span, with areas of dry habitat present on either side of the watercourse during periods of typical or low flow and that a suitable shelf, culvert or platform is incorporated into the bridge design which will accommodate the passage of otter along during relatively high flows.</p>

## 7. CONCLUSION OF THE APPROPRIATE ASSESSMENT

The construction and operation of the proposed development has been detailed in (**Section 3**).

Lough Swilly SAC and Lough Swilly SPA have been identified within the Zol of the proposed development via the following pathways likely to give rise to potential significant effects (**Section 5**):

- Surface water pollution;
- Aerial noise and visual disturbance;
- Spread of Invasive Species;
- Changes to flood flow conveyance; and
- Habitat fragmentation.

Likely significant effects, or adverse impacts upon the integrity of the Lough Swilly SAC and Lough Swilly SPA are predicted to arise as a result of the proposed development via the above pathways at the screening stage of assessment.

To minimise or entirely mitigate the potential negative impacts on these European sites, , mitigation measures are proposed (**Section 6**).

These mitigation measures included proposals for surface water and water quality management, invasive species management during construction of the proposed development, in addition to proposed design features to alleviate the potential for increased flood flows within the Lough Swilly SPA and aspects of the proposed bridge design which will allow for safe passage of otter along the Burnfoot River.

With the full implementation of mitigation measures t, it is concluded that there will be no significant effects on the integrity of any European site.

In summary , in view of best scientific knowledge and applying the precautionary principle, and in light of the conservation objectives of the relevant European sites, the proposed development, either individually or in combination with other plans or projects, will not have adverse effect on the integrity of any European site(s), given the implementation of mitigation measures outlined.

## REFERENCES

CIRIA (2001). Control of water pollution from construction sites. Guidance for consultants and contractors.

Council Directive 79/409 EEC on the Conservation of Wild Birds

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora

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European Commission (2007) *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission*, Office for Official Publications of the European Communities, Luxembourg.

European Commission (2013) *Interpretation Manual of European Union Habitats*. Version EUR 28. Office for Official Publications of the European Communities, Brussels

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NPWS (2010) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. National Parks and Wildlife Service, Dublin.

NPWS (2011a) Conservation Objectives: Lough Swilly SAC 002287 and Lough Swilly SPA 004075. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2011b) *Lough Swilly SAC (site code 002287) Conservation objectives supporting document – marine habitats*. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2014) Site Synopsis: Lough Swilly SPA 004075. National Parks and Wildlife Service, Department of Arts, Heritage, and the Gaeltacht.

NPWS (2016) Site Synopsis: Lough Swilly SAC 002287. National Parks and Wildlife Service, Department of Arts, Heritage, and the Gaeltacht.

NPWS (2017a) Natura Standard Data Form: Lough Swilly SPA 004075. National Parks and Wildlife Service, Department of Arts, Heritage, and the Gaeltacht.

NPWS (2017b) Natura Standard Data Form: Lough Swilly SAC 002287. National Parks and Wildlife Service, Department of Arts, Heritage, and the Gaeltacht.

Scott Wilson, Levett-Therivel Sustainability Consultants, Treweek Environmental Consultants and Land Use Consultants (2006). Appropriate Assessment of Plans.

NPWS (2017) Conservation objectives: River Finn SAC 002301. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

# APPENDICES

# APPENDIX A – CONSERVATION OBJECTIVES

# National Parks and Wildlife Service

## Conservation Objectives

Lough Swilly SAC 002287

Lough Swilly SPA 004075



*An Roinn  
Ealaíon, Oidhreachta agus Gaeltachta*  
*Department of  
Arts, Heritage and the Gaeltacht*

## Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

### Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

## Qualifying Interests

\* indicates a priority habitat under the Habitats Directive

### 002287 Lough Swilly SAC

QI	Description
1130	Estuaries
1150	* Coastal lagoons
1330	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> )
1355	Otter <i>Lutra lutra</i>
91A0	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles

### 004075 Lough Swilly SPA

QI	Description	
A005	Great Crested Grebe <i>Podiceps cristatus</i>	wintering
A028	Grey Heron <i>Ardea cinerea</i>	wintering
A038	Whooper Swan <i>Cygnus cygnus</i>	wintering
A043	Greylag Goose <i>Anser anser</i>	wintering
A048	Shelduck <i>Tadorna tadorna</i>	wintering
A050	Wigeon <i>Anas penelope</i>	wintering
A052	Teal <i>Anas crecca</i>	wintering
A053	Mallard <i>Anas platyrhynchos</i>	wintering
A056	Shoveler <i>Anas clypeata</i>	wintering
A062	Scaup <i>Aythya marila</i>	wintering
A067	Goldeneye <i>Bucephala clangula</i>	wintering
A069	Red-breasted Merganser <i>Mergus serrator</i>	wintering
A125	Coot <i>Fulica atra</i>	wintering
A130	Oystercatcher <i>Haematopus ostralegus</i>	wintering
A143	Knot <i>Calidris canutus</i>	wintering
A149	Dunlin <i>Calidris alpina</i>	wintering
A160	Curlew <i>Numenius arquata</i>	wintering
A162	Redshank <i>Tringa totanus</i>	wintering
A164	Greenshank <i>Tringa nebularia</i>	wintering
A179	Black-headed Gull <i>Chroicocephalus ridibundus</i>	breeding
A182	Common Gull <i>Larus canus</i>	wintering
A191	Sandwich Tern <i>Sterna sandvicensis</i>	breeding
A193	Common Tern <i>Sterna hirundo</i>	breeding
A395	Greenland White-fronted goose <i>Anser albifrons flavirostris</i>	wintering
A999	Wetlands & Waterbirds	

## Supporting documents, relevant reports & publications (listed by date)

Supporting documents, NPWS reports and publications are available for download from: [www.npws.ie/Publications](http://www.npws.ie/Publications)

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**Title:** Seabird Monitoring Programme (SMP) Database

**Year:** 2011

**Author:** JNCC

**Series:** <http://jncc.defra.gov.uk/smp/Default.aspx>

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**Title:** Lough Swilly SAC (002287): Conservation objectives supporting document - coastal habitats [Version 1]

**Year:** 2011

**Author:** NPWS

**Series:** Unpublished Report to NPWS

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**Title:** Lough Swilly SPA (004075): Conservation objectives supporting document [Version 1]

**Year:** 2011

**Author:** NPWS

**Series:** Unpublished Report to NPWS

---

**Title:** Lough Swilly SAC (002287): Conservation objectives supporting document - marine habitats [Version 1]

**Year:** 2011

**Author:** NPWS

**Series:** Unpublished Report to NPWS

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**Title:** Otter tracking study of Roaringwater Bay

**Year:** 2010

**Author:** De Jongh, A.; O'Neill, L.

**Series:** Unpublished Draft Report to NPWS

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**Title:** A provisional inventory of ancient and long-established woodland in Ireland

**Year:** 2010

**Author:** Perrin, P.M.; Daly, O.H.

**Series:** Irish Wildlife Manuals No. 46

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**Title:** Saltmarsh Monitoring Report 2007-2008

**Year:** 2009

**Author:** McCorry, M.; Ryle, T.

**Series:** Unpublished Report to NPWS

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**Title:** National Survey of Native Woodlands 2003-2008

**Year:** 2008

**Author:** Perrin, P.; Martin, J.; Barron, S.; O'Neill, F.; McNutt, K.; Delaney, A.

**Series:** Unpublished Report to NPWS

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**Title:** Saltmarsh Monitoring Report 2006

**Year:** 2007

**Author:** McCorry, M.

**Series:** Unpublished Report to NPWS

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- 
- Title:** Supporting documentation for the Habitats Directive Conservation Status Assessment - backing documents, Article 17 forms and supporting maps
- Year:** 2007
- Author:** NPWS
- Series:** Unpublished Report to NPWS
- 
- Title:** Inventory of Irish coastal lagoons
- Year:** 2007
- Author:** Oliver, G.
- Series:** Unpublished Report to NPWS
- 
- Title:** Otter Survey of Ireland 2004/2005
- Year:** 2006
- Author:** Bailey, M.; Rochford, J.
- Series:** Irish Wildlife Manuals No. 23
- 
- Title:** Otters - ecology, behaviour and conservation
- Year:** 2006
- Author:** Kruuk, H.
- Series:** Oxford University Press
- 
- Title:** Seabird Populations of Britain and Ireland
- Year:** 2004
- Author:** Mitchell, P.I.; Newton, S.F.; Ratcliffe, N.; Dunn, T.E.
- Series:** Poyser, London
- 
- Title:** Reversing the habitat fragmentation of British woodlands
- Year:** 2002
- Author:** Peterken, G.
- Series:** WWF-UK, London
- 
- Title:** Diet of Otters *Lutra lutra* on Inishmore, Aran Islands, west coast of Ireland
- Year:** 1999
- Author:** Kingston, S.; O'Connell, M.; Fairley, J.S.
- Series:** Biol & Environ Proc R Ir Acad B 99B:173–182
- 
- Title:** Seabird monitoring handbook for Britain and Ireland: a compilation of methods for survey and monitoring of breeding seabirds.
- Year:** 1995
- Author:** Walsh, P.; Halley, D.J.; Harris, M.P.; del Nevo, A.; Sim, I.M.W.; Tasker, M.L.
- Series:** JNCC, Peterborough
- 
- Title:** The spatial organization of otters (*Lutra lutra*) in Shetland
- Year:** 1991
- Author:** Kruuk, H.; Moorhouse, A.
- Series:** J. Zool, 224: 41-57
- 
- Title:** Otter survey of Ireland
- Year:** 1982
- Author:** Chapman, P.J.; Chapman, L.L.
- Series:** Unpublished Report to Vincent Wildlife Trust
-

## Spatial data sources

<b>Year:</b>	2010
<b>Title:</b>	EPA transitional waterbody data
<b>GIS operations:</b>	Clipped to SAC boundary
<b>Used for:</b>	1130 (map 2)
<b>Year:</b>	2005
<b>Title:</b>	OSi Discovery series vector data
<b>GIS operations:</b>	High water mark (HWM) and low water mark (LWM) polyline feature classes converted into polygon feature classes and combined; Saltmarsh and Sand Dune datasets erased out
<b>Used for:</b>	Marine community types base data (map 3)
<b>Year:</b>	Interpolated 2011
<b>Title:</b>	Intertidal/subtidal surveys 2009, 2010
<b>GIS operations:</b>	Polygon feature classes from marine community types base data sub-divided based on interpolation of marine survey data
<b>Used for:</b>	Marine community types (map 3)
<b>Year:</b>	Revision 2011
<b>Title:</b>	Inventory of Irish Coastal Lagoons. Version 3
<b>GIS operations:</b>	Clipped to SAC boundary
<b>Used for:</b>	1150 (map 4)
<b>Year:</b>	Revision 2010
<b>Title:</b>	Saltmarsh Monitoring Project 2007-2008. Version 1
<b>GIS operations:</b>	QI selected; clipped to SAC boundary
<b>Used for:</b>	1330 (map 5)
<b>Year:</b>	Revision 2010
<b>Title:</b>	National Survey of Native Woodlands 2003-2008. Version 1
<b>GIS operations:</b>	QIs selected; clipped to SAC boundary
<b>Used for:</b>	91A0 (map 6)
<b>Year:</b>	2005
<b>Title:</b>	OSi Discovery series vector data
<b>GIS operations:</b>	High water mark (HWM) and low water mark (LWM) polyline feature classes converted into polygon feature classes and combined; saltmarsh data for site combined to HWM and LWM polygon feature class; resulting polygon feature class unioned with SPA boundary; resulting polygon feature class clipped to SPA boundary; bird use zone attributes assigned to each polygon
<b>Used for:</b>	Bird use zones (map 7)

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<b>Year:</b>	2005
<b>Title:</b>	OSi Discovery series vector data
<b>GIS operations:</b>	Creation of an 80m buffer on the marine side of the high water mark (HWM); creation of a 10m buffer on the terrestrial side of the HWM; combination of 80m and 10m HWM buffer datasets; creation of a 10m buffer on the landward side of the river banks data; creation of a 20m buffer applied to river centerline and stream data; combination of 10m river banks and 20m river and stream centerline buffer datasets; combined river and stream buffer dataset clipped to HWM; combination of HWM buffer dataset with river and stream buffer dataset; overlapping regions investigated and resolved; resulting dataset clipped to SAC boundary
<b>Used for:</b>	1355 (no map)

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## Conservation objectives for: Lough Swilly SAC [002287]

### 1130 Estuaries

To maintain the favourable conservation condition of Estuaries in Lough Swilly SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes. See map 2	Habitat area was estimated at 6118ha using OSI data and the defined Transitional Water Body area under the Water Framework Directive. See marine habitats supporting document for further information
Community distribution	Hectares	The following communities should be conserved in a natural condition: Fine sand community complex; Intertidal mixed sediment with polychaetes; Subtidal mixed sediment with polychaetes and bivalves; Muddy fine sand with <i>Thyasira flexuosa</i> ; Mud community complex and <i>Ostrea edulis</i> dominated community. See map 3	The communities were derived from the 2009 and 2010 intertidal survey and 2009 subtidal survey. See marine habitats supporting document for further information

1150 \* Coastal lagoons

To restore the favourable conservation condition of Lagoons in Lough Swilly SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable, subject to slight natural variation. Favourable reference area 206ha- Inch Lough 176ha; Blanket Nook 30ha. See map 4	Areas calculated from spatial data derived from Oliver, 2007. Two lagoons are identified
Salinity regime	Practical salinity units (psu)	Maintain median annual salinity within natural ranges: Inch 0.1 - 3.0psu; Blanket Nook 10 - 20psu	Inch is one of the largest oligohaline (low salinity) lagoons in Ireland and most of the waterbody should have a salinity of 0.5 to 3.0 for most of the time but locally, fresh water may occur and at depth salinities of over 20 psu have been recorded. Blanket Nook is a mesohaline (medium salinity) lagoon. See Oliver (2007) for further information
Hydrological regime	Metres	Maintain current annual water level fluctuations and minima	Both lagoons are shallow- Inch only 2m and Blanket Nook 1m deep (Oliver, 2007). Small changes in summer levels would result in major losses of lagoonal area. Need to investigate normal fluctuations and set specific targets
Barrier	Sluice function	Maintain permeability, including appropriate management of sluices	Both lagoons are artificial with embankment barriers containing sluices. Need to identify main saline inputs and ensure that they, or equivalent, saline inputs are retained
Water quality: Chlorophyll a	µg/L	Reduce annual median chlorophyll a to less than 2.5µg/L at Inch; less than 5µg/L at Blanket Nook	These limits are needed to ensure that excessive shading from phytoplankton does not restrict macrophytes colonisation in the lagoons (J. Ryan, pers comm)
Water quality: Molybdate Reactive Phosphorus (MRP)	mg/L	Reduce annual median MRP to less than 0.01mg/L at Inch; less than 0.02mg/L at Blanket Nook	These limits are needed to ensure that excessive shading from phytoplankton does not restrict macrophytes colonisation in the lagoons (J. Ryan, pers comm)
Water quality: Dissolved Inorganic Nitrogen (DIN)	mg/L	Reduce annual median DIN to less than 0.15mg/L at Inch; less than 0.4mg/L at Blanket Nook	These limits are needed to ensure that excessive shading from phytoplankton does not restrict macrophytes colonisation in the lagoons (J. Ryan, pers comm)
Depth of macrophyte colonisation	Metres	Increase colonisation to maximum depth of both lagoons	Increased depth of colonisation increases both the extent and diversity of submergent macrophytes. This is especially important in Inch where, as well as being of major interest in their own right, the presence of a healthy submerged macrophyte sward is also important for the achievement of the SPA objectives
Typical plant species	Number and m <sup>2</sup>	Maintain number and extent of listed lagoonal specialists, subject to natural variation	Species listed in Oliver (2007), especially <i>Chara canescens</i> , <i>Ruppia</i> spp. and <i>Zannichellia palustris</i> in Inch

1150 \* Coastal lagoons

To restore the favourable conservation condition of Lagoons in Lough Swilly SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Typical invertebrate species	Number	Maintain listed lagoon specialists, subject to natural variation	Species listed in Oliver (2007), especially <i>Jaera ischiosetosa</i> (an isopod crustacean) in Blanket Nook
Negative indicator species	Number and % cover	Negative indicator species absent or under control	Because of eutrophication and the shallowness of both lagoons there is a danger that the cover of emergents and/or floating algal mats might increase at the expense of submerged macrophytes

**1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)**

To restore the favourable conservation condition of Atlantic salt meadows in Lough Swilly SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Fahan - 7.29ha, Green Hill - 2.02ha, Lower Lough Swilly - 8.44ha, Rathmelton - 10.01ha, Ray - 0.05ha. See map 5	Based on data from the Saltmarsh Monitoring Project (McCorry, 2007; McCorry and Ryle, 2009). Five sub-sites were mapped and additional areas of potential saltmarsh were identified from an examination of aerial photographs, giving a total estimated area of Atlantic salt meadow of 38.98ha. NB further unsurveyed areas maybe present within the site. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline, subject to natural processes. See map 5 for known distribution	See coastal habitats supporting document for further details
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions	See coastal habitats supporting document for further details
Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession	Based on data from McCorry (2007) and McCorry and Ryle (2009). Creek and pan structure is well developed at Rathmelton, but poorly developed or absent at all other sub-sites. Significant drainage has occurred at Green Hill. See coastal habitats supporting document for further details
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession. See map 5	Based on data from McCorry (2007) and McCorry and Ryle (2009). Most of the saltmarsh habitat in Lough Swilly is Atlantic salt meadow, although <i>Salicornia</i> mudflats have been recorded at Lower Lough Swilly and Rathmelton. Mediterranean salt meadow has also been recorded at Rathmelton. See coastal habitats supporting document for further details
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	Based on data from McCorry (2007) and McCorry and Ryle (2009). See coastal habitats supporting document for further details
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated	Based on data from the Saltmarsh Monitoring Project (McCorry, 2007; McCorry and Ryle, 2009). See coastal habitats supporting document for further details

**1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)**

To restore the favourable conservation condition of Atlantic salt meadows in Lough Swilly SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub-communities with characteristic species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009)	See coastal habitats supporting document for further details
Vegetation composition: negative indicator species - <i>Spartina anglica</i>	Hectares	No significant expansion of <i>Spartina</i> . No new sites for this species and an annual spread of less than 1% where it is already known to occur	Based on data from McCorry (2007) and McCorry and Ryle (2009). Significantly large stands of <i>Spartina</i> have been recorded at Rathmelton, Lower Lough Swilly and Green Hill. The evidence suggests that there has been recent spread of <i>Spartina</i> at Green Hill and parts of Rathmelton, while it may have been planted at Lower Lough Swilly. See coastal habitats supporting document for further details

1355 Otter *Lutra lutra*

To restore the favourable conservation condition of Otter in Lough Swilly SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. FCS target, based on 1980/81 survey findings, is 88% in SACs. Current range in north-west estimated at 65% (Bailey and Rochford, 2006)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 95.7ha above high water mark (HWM); 44.0ha along river banks/ around pools	No field survey. Areas mapped to include 10m terrestrial buffer along shoreline (above HWM and along river banks) identified as critical for otters (NPWS, 2007)
Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 839.5ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (HWM) (NPWS, 2007; Kruuk, 2006)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 15.5km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake/lagoon) habitat	Hectares	No significant decline. Area mapped and calculated as 83.7ha	No field survey. Lagoons have been included with other freshwater habitat as they are low/medium salinity. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk, 2006; Kruuk and Moorhouse, 1991)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006) and wrasse and rockling in coastal waters (Kingston et al., 1999)
Barriers to connectivity	Number	No significant increase	Otters will regularly commute across stretches of open water up to 500m. e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed

91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

To restore the favourable conservation condition of Old oak woodland with *Ilex* and *Blechnum* in Lough Swilly SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, at least 58.68ha for sub-sites surveyed: Rathmullen wood - 26.00ha; Salt Pans wood - 13.47ha; Ballynarry wood - 15.61ha; Carrow Cashel wood - 3.60ha. See map 6	Area based on Perrin et al. (2008) - site codes 1420, 1430, 1434 and 1695 and internal NPWS reports. NB further unsurveyed areas maybe present within the site
Habitat distribution	Occurrence	No decline. Surveyed locations shown on map 6	Distribution based on Perrin et al. (2008) - site codes 1420, 1430, 1434 and 1695 and internal NPWS reports. NB further unsurveyed areas maybe present within the site
Woodland size	Hectares	Large woods at least 25ha in size and "small" woods at least 3ha in size	The sizes of at least some of the existing woodlands need to be increased in order to reduce habitat fragmentation and benefit those species requiring 'deep' woodland conditions (Peterken, 2002). Topographical constraints may restrict expansion
Woodland structure: cover and height	Percentage and metres	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi-mature trees and shrubs; and well-developed herb layer	Described in Perrin et al. (2008) - site codes 1420, 1430, 1434 and 1695 and internal NPWS reports
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types, including oak-ash; alder-ash in seepage areas and alongside streams; oak-birch; willow-alder-ash	Described in Perrin et al. (2008) - site codes 1420, 1430, 1434 and 1695 and internal NPWS reports
Woodland structure: natural regeneration	Seedling:sapling:pole ratio	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	Oak regenerates poorly. In suitable sites ash can regenerate in large numbers although few seedlings reach pole size
Woodland structure: dead wood	m <sup>3</sup> per hectare; number per hectare	At least 30m <sup>3</sup> /ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter	Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem
Woodland structure: veteran trees	Number per hectare	No decline	Mature and veteran trees are important habitats for bryophytes, lichens, saproxylic organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources

**91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles**

To restore the favourable conservation condition of Old oak woodland with *Ilex* and *Blechnum* in Lough Swilly SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Woodland structure: indicators of local distinctiveness	Occurrence	No decline	Includes ancient or long-established (i.e. pre-1840s) woodlands, archaeological and geological features as well as red-listed and other rare or localised species. Perrin and Daly (2010) list Rathmullen wood, Salt pans wood and Ballynarry wood as potential ancient/long established woodlands
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover not less than 95%	Species reported in Perrin et al. (2008) - site codes 1420, 1430, 1434 and 1695 and internal NPWS reports
Vegetation composition: typical species	Occurrence	A variety of typical native species present, depending on woodland type, including oak ( <i>Quercus petraea</i> ) and birch ( <i>Betula pubescens</i> )	Species listed in Perrin et al. (2008)
Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control	Species reported in Perrin et al. (2008) - site codes 1420, 1430, 1434 and 1695 and internal NPWS reports

**A005 Great Crested Grebe *Podiceps cristatus***

To maintain the favourable conservation condition of Great Crested Grebe in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A028 Grey Heron *Ardea cinerea***

To maintain the favourable conservation condition of Grey Heron in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A038 Whooper Swan *Cygnus cygnus***

To maintain the favourable conservation condition of Whooper Swan in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A043 Greylag Goose *Anser anser***

To maintain the favourable conservation condition of Greylag Goose in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A048**     **Shelduck** *Tadorna tadorna*

To maintain the favourable conservation condition of Shelduck in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A050 Wigeon *Anas penelope***

To maintain the favourable conservation condition of Wigeon in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A052 Teal *Anas crecca***

To maintain the favourable conservation condition of Teal in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A053 Mallard *Anas platyrhynchos***

To maintain the favourable conservation condition of Mallard in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A056 Shoveler *Anas clypeata***

**To maintain the favourable conservation condition of Shoveler in Lough Swilly SPA, which is defined by the following list of attributes and targets:**

<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	<b>Notes</b>
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A062 Scaup *Aythya marila***

**To maintain the favourable conservation condition of Scaup in Lough Swilly SPA, which is defined by the following list of attributes and targets:**

<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	<b>Notes</b>
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A067 Goldeneye *Bucephala clangula***

To maintain the favourable conservation condition of Goldeneye in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A069 Red-breasted Merganser *Mergus serrator***

To maintain the favourable conservation condition of Red-breasted Merganser in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A125 Coot *Fulica atra***

To maintain the favourable conservation condition of Coot in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A130 Oystercatcher *Haematopus ostralegus***

To maintain the favourable conservation condition of Oystercatcher in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A143 Knot *Calidris canutus***

To maintain the favourable conservation condition of Knot in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A149 Dunlin *Calidris alpina***

To maintain the favourable conservation condition of Dunlin in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A160 Curlew *Numenius arquata***

To maintain the favourable conservation condition of Curlew in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A162 Redshank *Tringa totanus***

To maintain the favourable conservation condition of Redshank in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A164 Greenshank *Tringa nebularia***

To maintain the favourable conservation condition of Greenshank in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A179 Black-headed Gull *Chroicocephalus ridibundus***

**To maintain the favourable conservation condition of Black-headed Gull in Lough Swilly SPA, which is defined by the following list of attributes and targets:**

<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	<b>Notes</b>
Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline	Measure based on standard gull survey methods (see Walsh et al., 1995). Mitchell et al. (2004) provides summary population information. The Seabird Monitoring Programme (CMP) also provides background data (JNCC, 2011)
Productivity rate: fledged young per breeding pair	Mean number	No significant decline	Measure based on standard gull survey methods (see Walsh et al., 1995).
Distribution: breeding colonies	Number; location; area (Hectares)	No significant decline	

**A182 Common Gull *Larus canus***

To maintain the favourable conservation condition of Common Gull in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment using (Generalised Additive Modelling (GAM)) could not be undertaken for this species due to an incomplete dataset. A measure of population change was calculated using the 'generic threshold' method. See Section 4 of the SPA conservation objectives supporting document for more details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A191 Sandwich Tern *Sterna sandvicensis***

To maintain the favourable conservation condition of Sandwich Tern in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline	Measure based on standard tern survey methods (see Walsh et al., 1995). Mitchell et al. (2004) provides summary population information. The Seabird Monitoring Programme (CMP) also provides background data (JNCC, 2011)
Productivity rate: fledged young per breeding pair	Mean number	No significant decline	Measure based on standard tern survey methods (see Walsh et al., 1995)
Distribution: breeding colonies	Number; location; area (Hectares)	No significant decline	The only known breeding site is on Inch Island

**A193 Common Tern *Sterna hirundo***

To maintain the favourable conservation condition of Common Tern in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline	Measure based on standard tern survey methods (see Walsh et al., 1995). Mitchell et al. (2004) provides summary population information. The Seabird Monitoring Programme (CMP) also provides background data (JNCC, 2011)
Productivity rate: fledged young per breeding pair	Mean number	No significant decline	Measure based on standard tern survey methods (see Walsh et al., 1995)
Distribution: breeding colonies	Number; location; area (Hectares)	No significant decline	

**A395 Greenland White-fronted goose *Anser albifrons flavirostris***

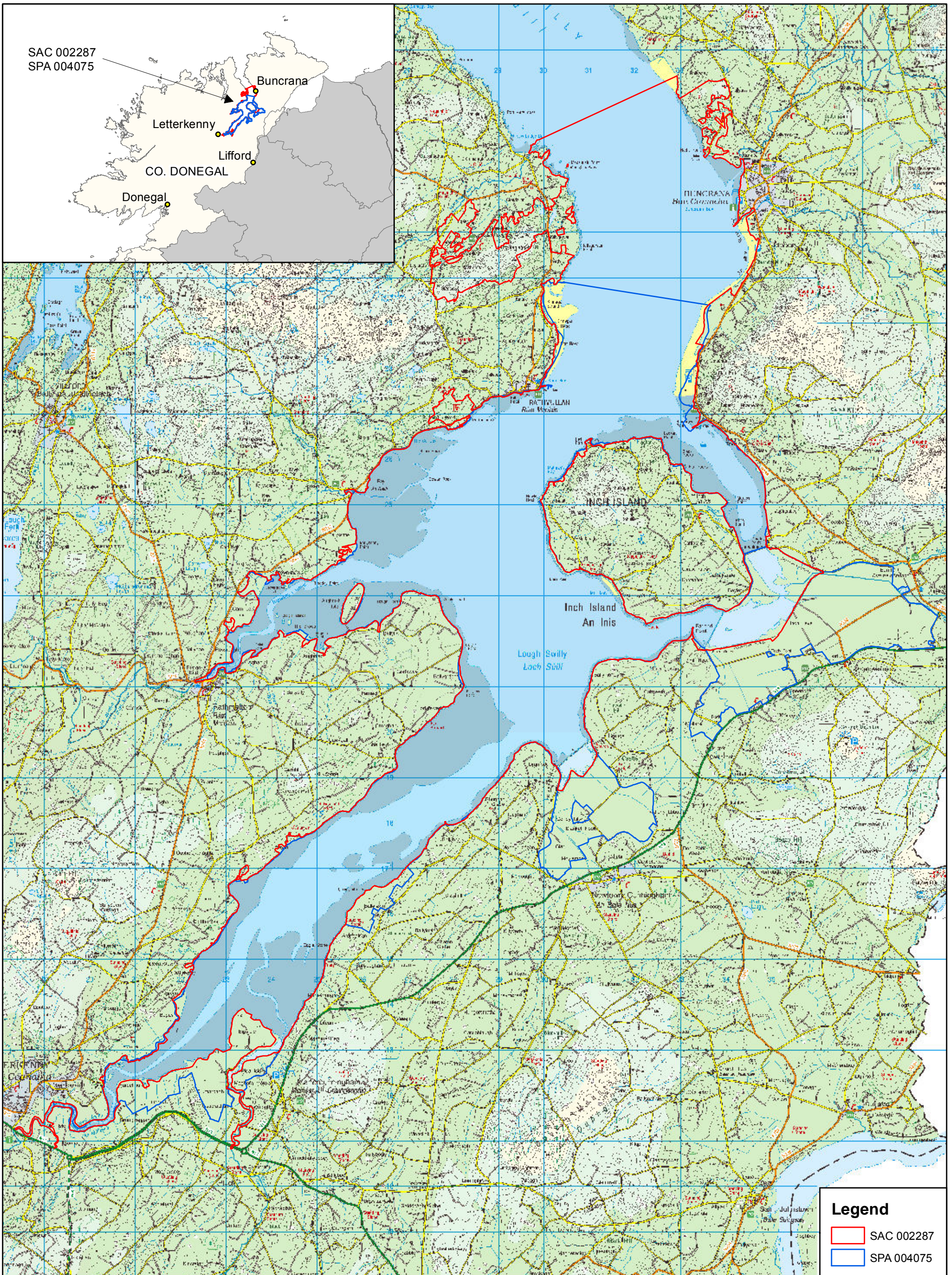
To maintain the favourable conservation condition of Greenland White-fronted Goose in Lough Swilly SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the the SPA conservation objectives supporting document for further details
Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in Section 5 of the SPA conservation objectives supporting document

**A999 Wetlands & Waterbirds**

**To maintain the favourable conservation condition of the wetland habitat in Lough Swilly SPA as a resource for the regularly-occurring migratory waterbirds that utilise it. This is defined by the following attributes and targets:**

<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	<b>Notes</b>
Habitat area	Hectares	The permanent area occupied by the wetland habitat is stable and not significantly less than the areas of 4,162, 2,419, 201 and 317 hectares for subtidal, intertidal, supratidal and lagoon (and associated) habitats respectively, other than that occurring from natural patterns of variation. See map 7	Wetland areas defined as follows: subtidal- seaward extent of SPA boundary up to MLWM; intertidal- MLWM to MHWM; supratidal- MHWM to SPA boundary minus the area of terrestrial habitat; lagoon (and associated) habitats- lagoon extent and adjacent wetland habitat as defined by embankments

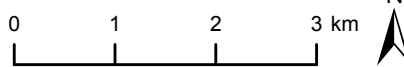


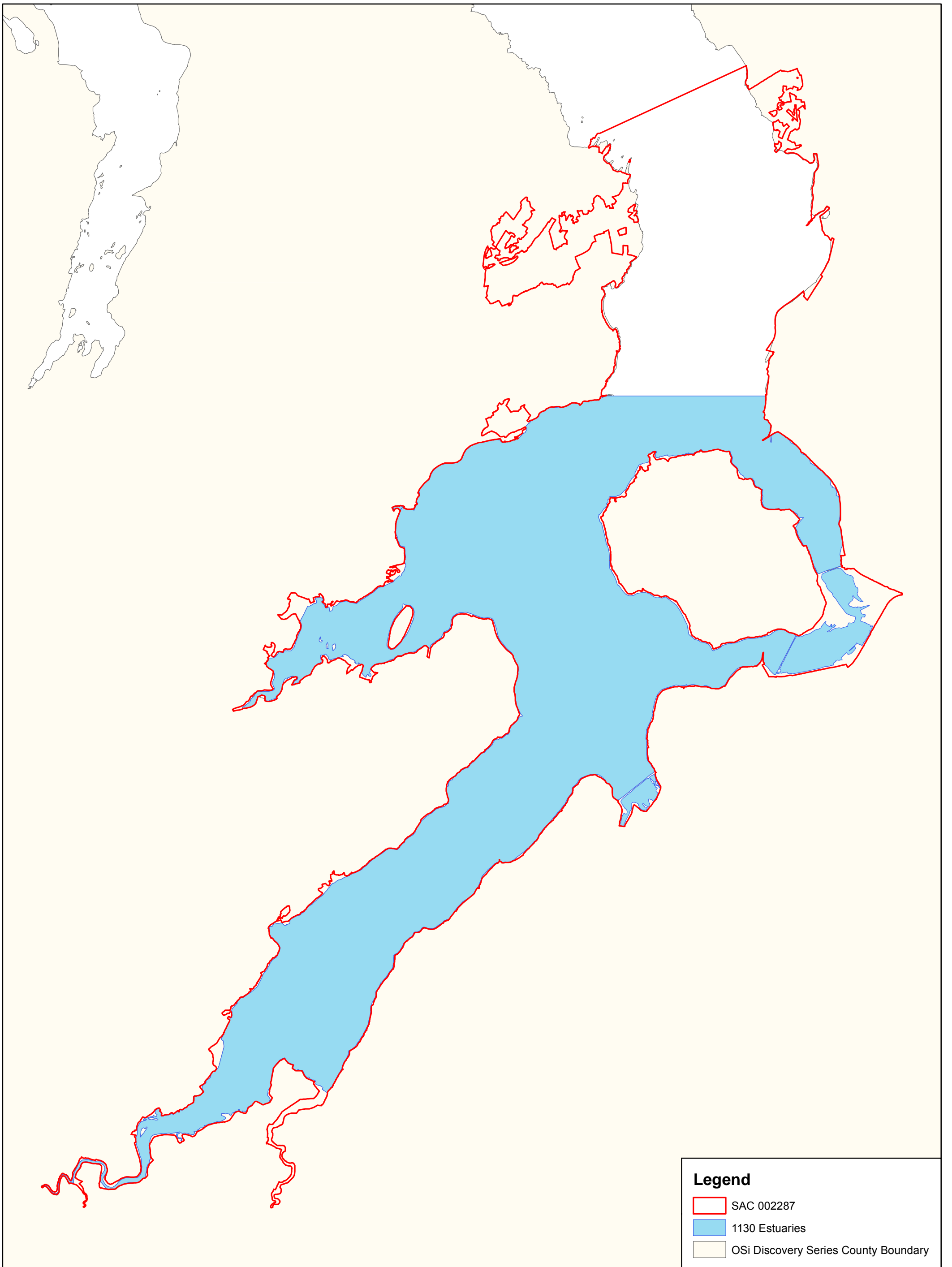
SAC 002287  
SPA 004075

Buncrana  
Letterkenny  
Lifford  
CO. DONEGAL  
Donegal

**Legend**

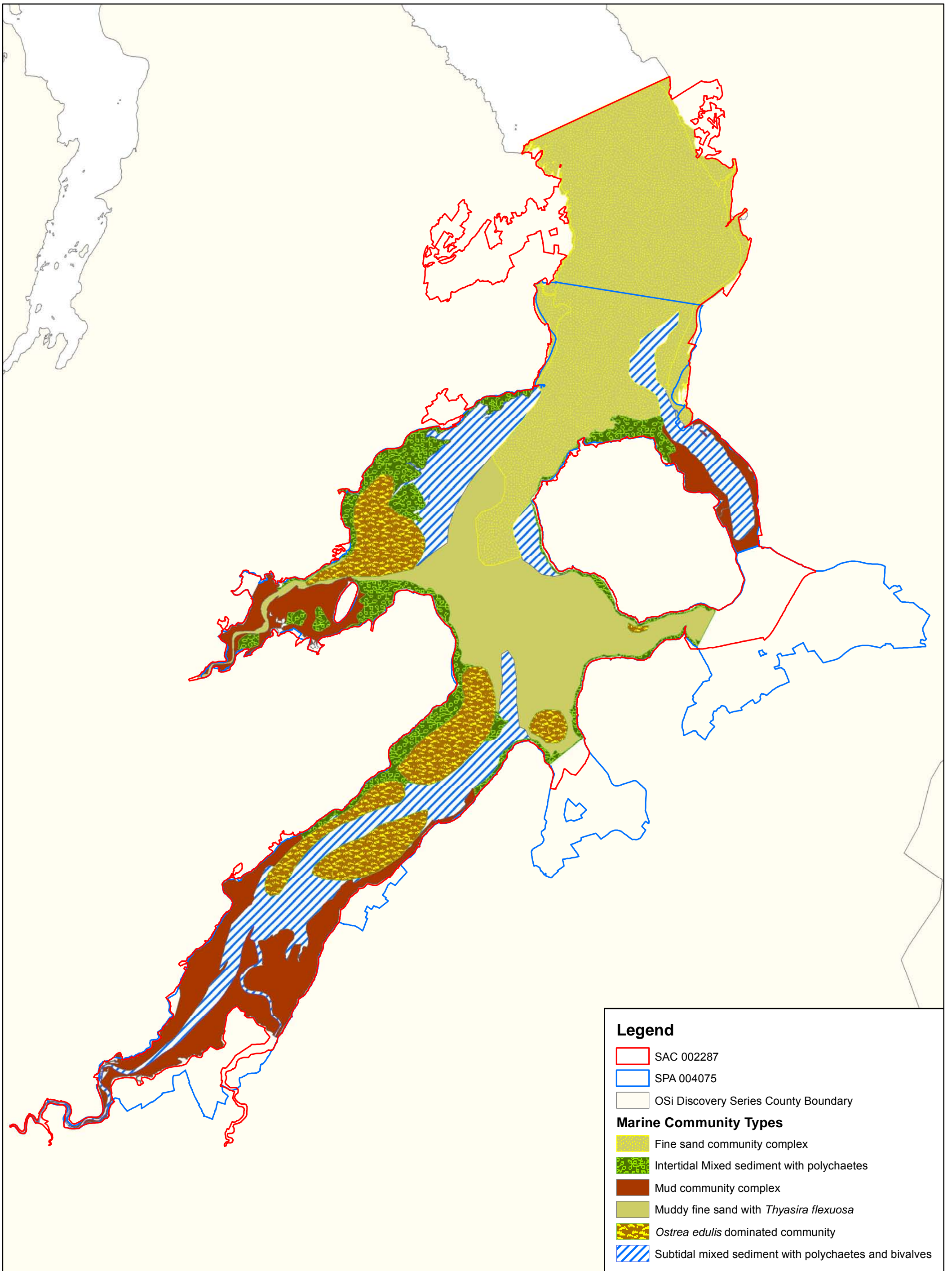
- SAC 002287
- SPA 004075





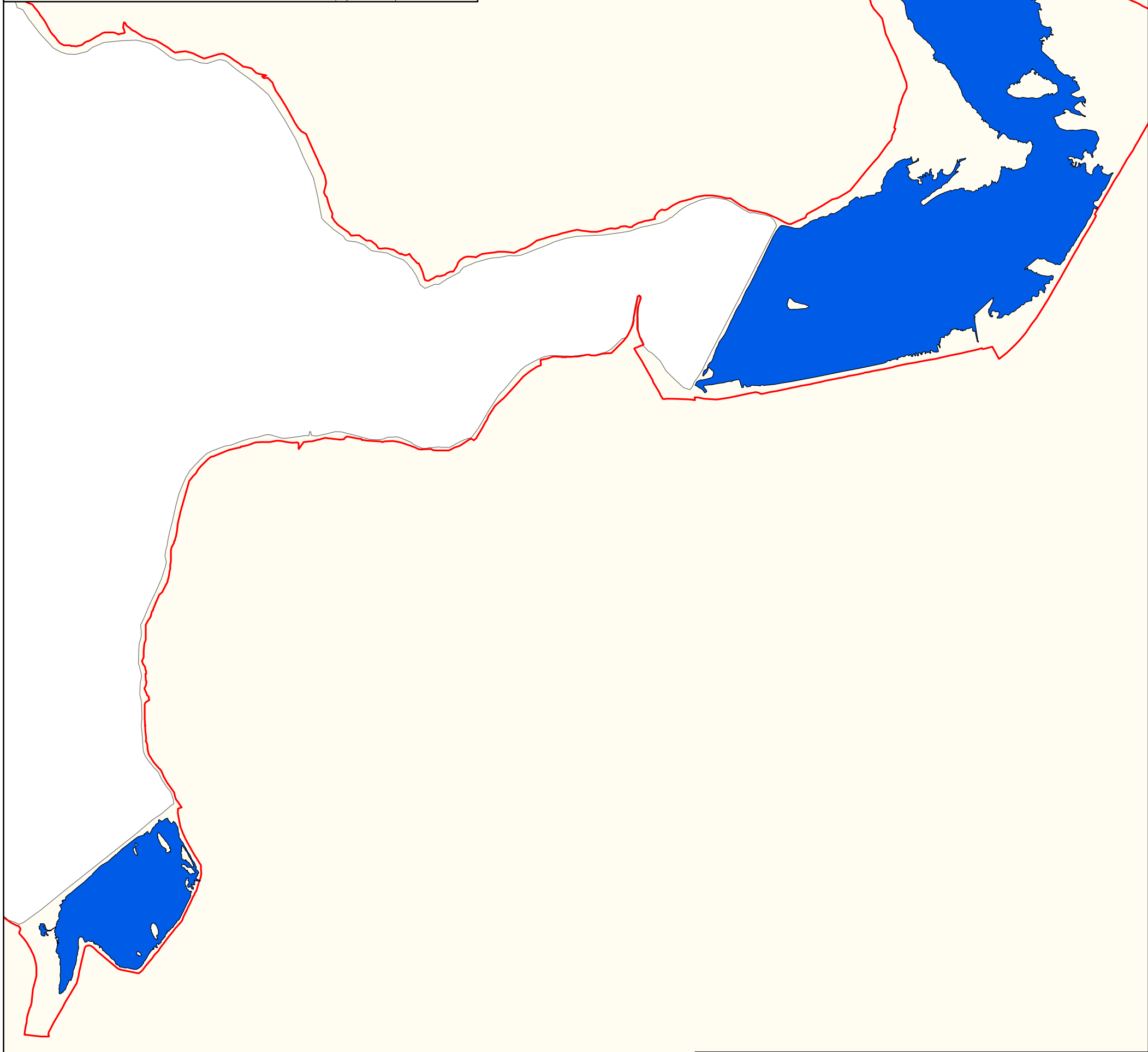
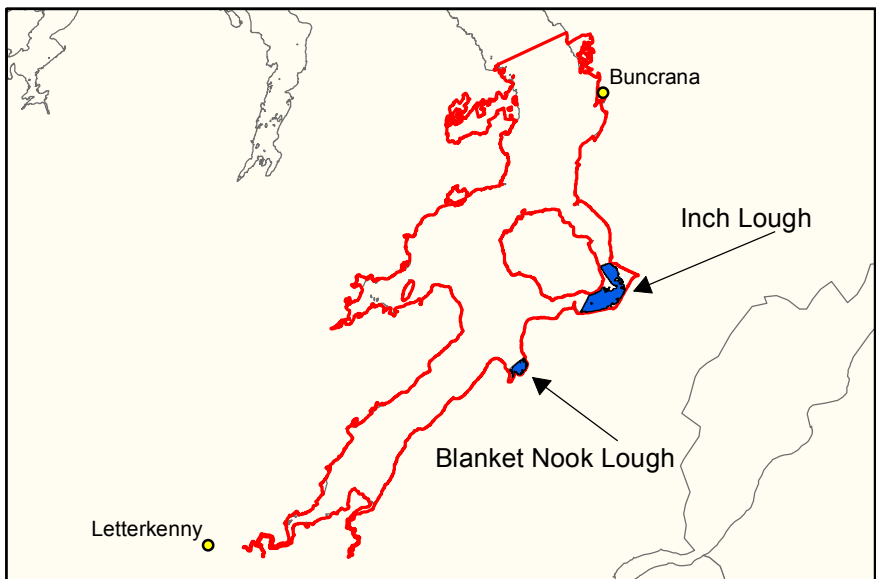
**Legend**

- SAC 002287
- 1130 Estuaries
- OSi Discovery Series County Boundary


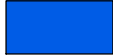



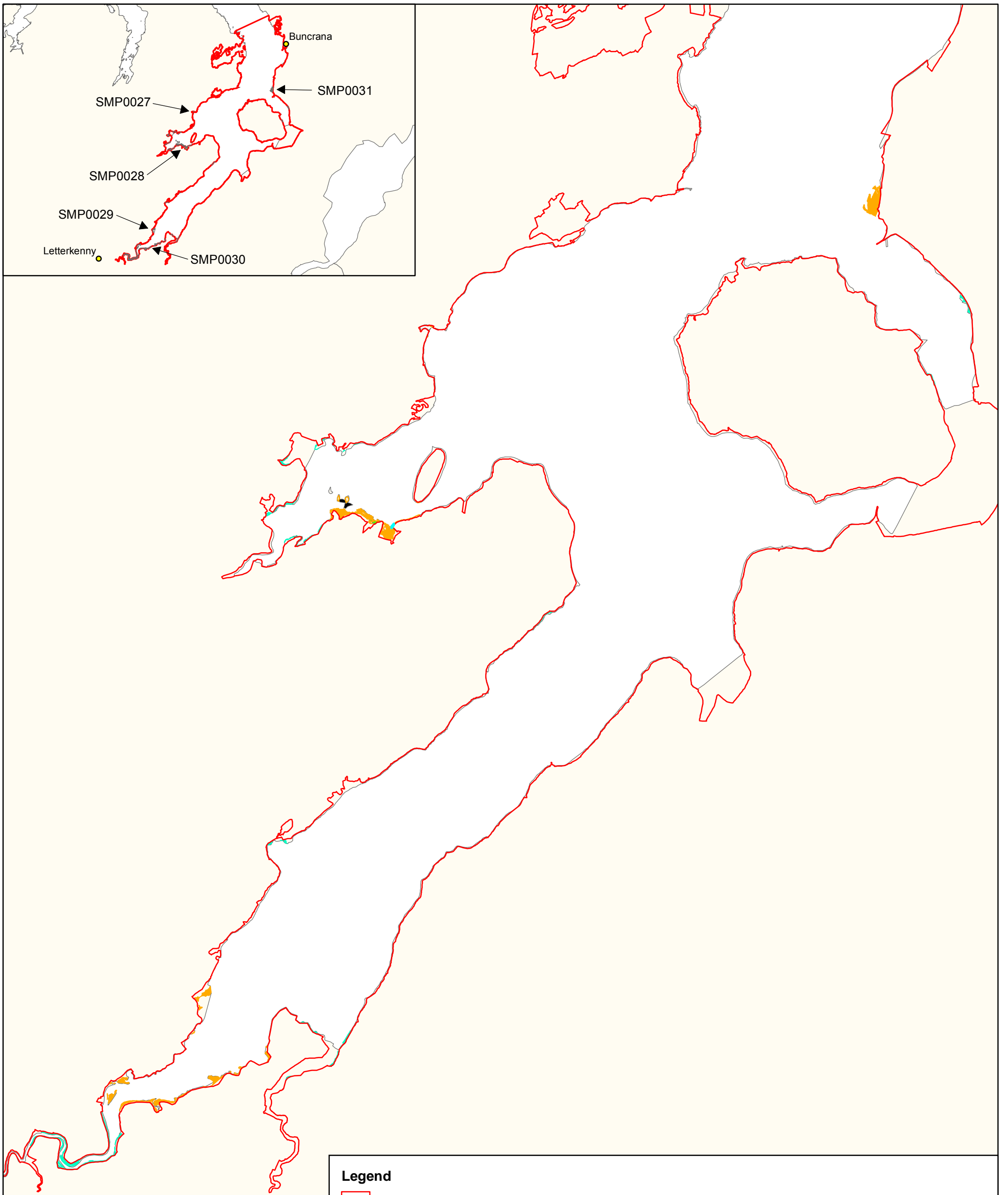
**Legend**

- SAC 002287
- SPA 004075
- OSi Discovery Series County Boundary
- Marine Community Types**
- Fine sand community complex
- Intertidal Mixed sediment with polychaetes
- Mud community complex
- Muddy fine sand with *Thyasira flexuosa*
- Ostrea edulis* dominated community
- Subtidal mixed sediment with polychaetes and bivalves



**Legend**

-  SAC 002287
-  1150 \* Coastal Lagoons
-  OSi Discovery Series County Boundary



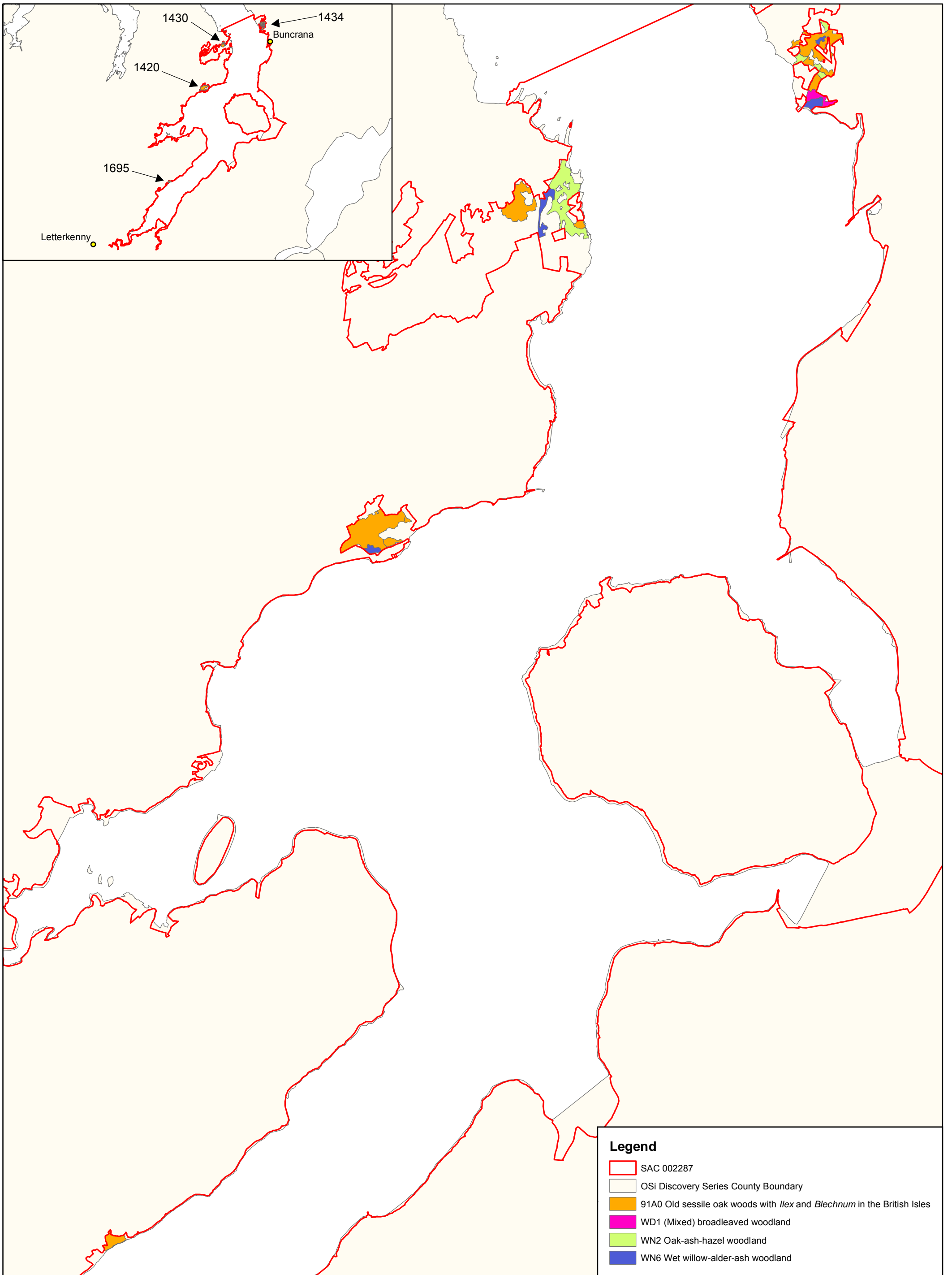
**Legend**

- SAC 002287
- OSi Discovery Series County Boundary

**Saltmarsh Habitats**

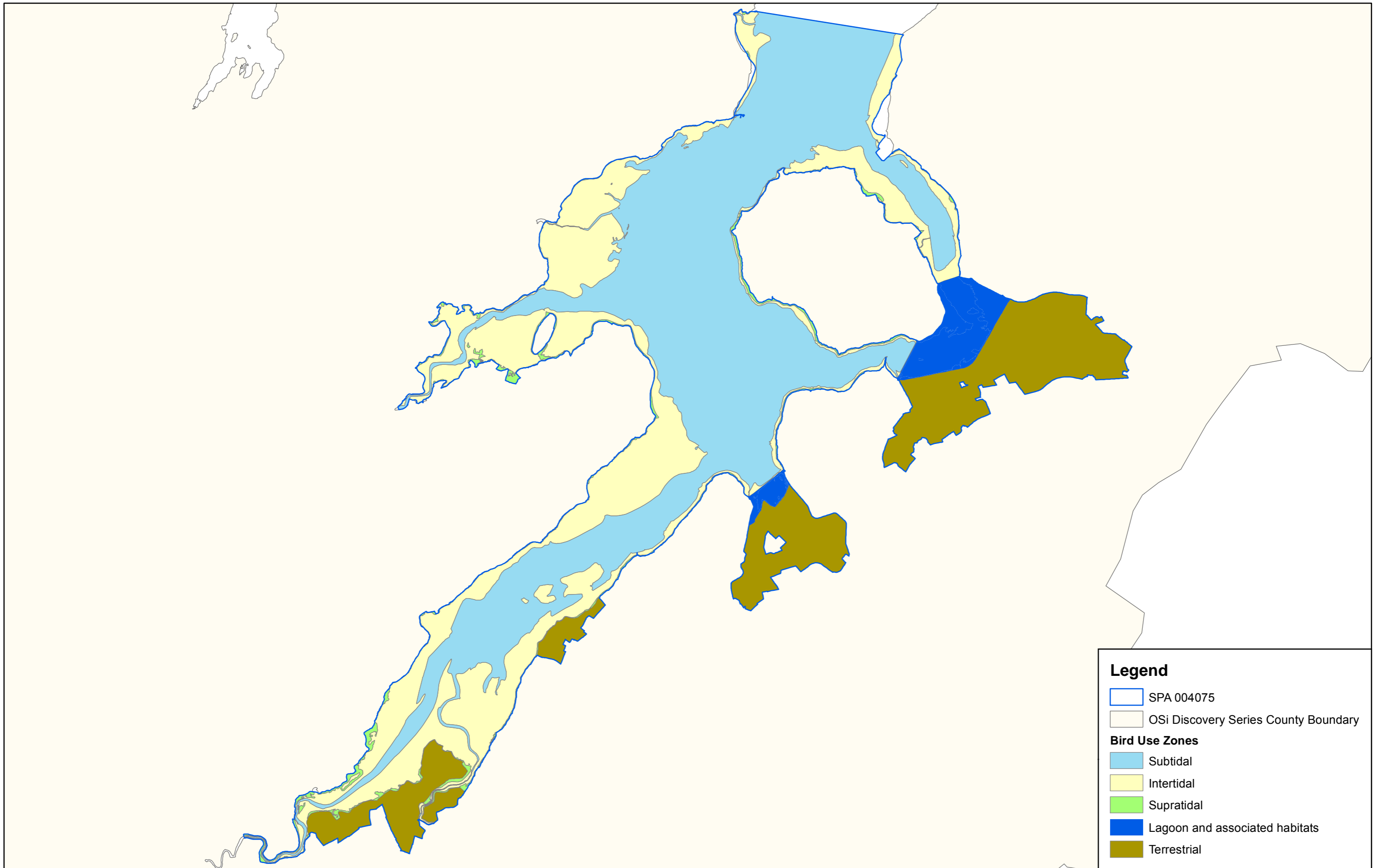
- 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) Qualifying Interest
- 1330 / 1410 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) Qualifying Interest / Mediterranean salt meadows (*Juncetalia maritimi*)
- Potential 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) Qualifying Interest
- 1310 *Salicornia* and other annuals colonising mud and sand
- 1410 Mediterranean salt meadows (*Juncetalia maritimi*)





**Legend**

- SAC 002287
- OSi Discovery Series County Boundary
- 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
- WD1 (Mixed) broadleaved woodland
- WN2 Oak-ash-hazel woodland
- WN6 Wet willow-alder-ash woodland



**Legend**

- SPA 004075
- OSi Discovery Series County Boundary
- Bird Use Zones**
- Subtidal
- Intertidal
- Supratidal
- Lagoon and associated habitats
- Terrestrial



***An Roinn***  
***Ealaíon, Oidhreacht agus Gaeltachta***  

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***Department of***  
***Arts, Heritage and the Gaeltacht***

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# APPENDIX B – BIRD SURVEY REPORT

# ECOLOGICAL SURVEY FOR BIRDS

Overwintering Wetland Bird Survey, Burnfoot and Inch Levels



NI2258 Donegal Flood Relief  
Ecology  
ESB  
D01  
September 2025

Document Status					
Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
D01	Planning	A. McClure	S. O'Hara	J. McCrory	28.09.25

Approval for issue		
James McCrory CEcol CEnv MCIEEM CBiol MRSB		2025-09-28

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Prepared by:

Prepared for:

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# 1 INTRODUCTION

RPS was commissioned by Donegal County Council (DCC) to undertake an Ecological Survey for Birds at lands by Burnfoot. DCC propose to develop flood relief works at this site.

## 1.1 Ecological Survey for Birds

The Ecological Survey Report has been written in accordance with the Chartered Institute of Ecological and Environmental Management (CIEEM) *Guidelines for Ecological Report Writing* (CIEEM 2017). The aim of the report is to provide a description of the bird survey methods used; to provide the detailed results of bird surveys; and to provide an interpretation of the results. The Ecological Survey for Birds is used to inform the Ecological Impact Assessment (EclA).

## 1.2 Legislation

The conservation status of bird species in the Republic of Ireland can be assigned in relation to a species inclusion on various schedules or annexes of Irish or European legislation or on relevant conservation lists.

Ireland is internationally important for its waterfowl and seabird populations. Swans, geese, ducks and waders occur in internationally important numbers in winter on coastal and freshwater wetlands. Breeding waders and wildfowl occur in globally significant numbers on wetlands and coastal areas and islands support breeding seabird colonies.

The EU Directive 2009/147/EC on the conservation of wild birds, often referred to as the 'Birds Directive', recognised that bird conservation needed to be addressed at an international scale. Member States are obliged to take special action for a range of rare or vulnerable species, which are listed on Annex 1 of the Directive, and for regularly occurring migratory species (Article 4.2). Article 3 requires Member States to preserve, maintain and re-establish sufficient diversity and area of habitats for all wild birds. This should primarily (but not exclusively) involve the creation of Special Protected Areas (SPAs) and recognising the historic losses of wildlife. Article 3 also calls for the appropriate management of habitats both inside and outside protected areas, the re-establishment of destroyed habitats, as well as the creation of new habitats (Williams *et al.*, 2005). The Birds directive also prohibits the pollution of and/ or destruction of habitats that birds depend on, as well as prohibiting disturbance to birds using those habitats.

All wild birds in the Republic of Ireland are afforded protected status under the Wildlife Act, 1976, which states that:

*Wild birds and their nests and eggs, other than wild birds of the species mentioned in the Third Schedule to this Act, shall be protected.*

However, for the purposes of reporting and considering their conservation status, a species is considered to be of "conservation concern" if it is included on one or more of the following:

- Annex 1 of the EU Birds Directive;
- Part 1 of the Fourth Schedule of the Wildlife Act, 1976 (as amended);
- Birds of Conservation Concern in Ireland (BoCCI) red list (Gilbert *et al.*, 2021); and
- BoCCI amber list (Gilbert *et al.*, 2021).

## 2 METHODOLOGY

### 2.1 Statement of Authority

The ornithological surveyor and author, Adam McClure, is a Senior Ecologist with RPS and holds a BSc (Hons) in Palaeoecology and Archaeology with over 15 years of experience in field of ornithology. Adam has extensive expertise in breeding bird surveys, vantage point surveys, wetland bird surveys, wintering bird surveys and is a licensed bird ringer. He is the County Antrim Regional Representative for the British Trust for Ornithology (BTO) and is an active member of the Northern Ireland Raptor Study Group (NIRSG), Copeland Bird Observatory (CBO) and the Irish Whale and Dolphin Group (IWDG). Adam is also a Full member CIEEM and is currently a member of the CIEEM Irish Section Committee.

The information prepared and provided is true and accurate at the time of issue of this report and has been prepared and provided in accordance with the CIEEM Code of Professional Conduct (CIEEM 2019). We confirm that the professional judgement expressed herein is the true and bona fide opinion of our professional ecologists.

### 2.2 Consultation

Consultation was undertaken with the National Biodiversity Data Centre (NBDC) in order to identify the existence of any historic records of within 1km of the proposed site.

National Parks and Wildlife Service (NPWS) database of protected sites was consulted to identify sites which may be impacted by the proposed works. Given the location and nature of the Proposed Development, a distance of 15 km radius has been selected to ensure that features of European sites that can potentially be affected at this distance are not automatically excluded by selecting a narrower range of sites to scope. The radius of 15 km is the distance currently recommended in NPWS guidance (NPWS, 2010).

### 2.3 Wetland Bird Survey

The methodology employed was based on the Birdwatch Ireland's Irish Wetland Bird Survey (I-WeBS) Core Counts which use the so-called 'look-see' method (Bibby *et al.*, 2000), whereby the observer, familiar with the species involved, surveys the whole of a predefined area. The survey area, for the purposes of this study, extended out to include suitable habitat within c.2km from the proposed development, where there is the potential for disturbance as a result of the proposed works.

The survey area is shown in Figure 1.0.

Target species for the purposes of this survey included divers, grebes, cormorants, herons, swans, geese, ducks, rails, cranes, waders and Kingfisher. Gulls, which are optional in I-WeBS counts, were also noted. All birds were recorded using standard British Trust for Ornithology (BTO) species codes (Appendix.1).

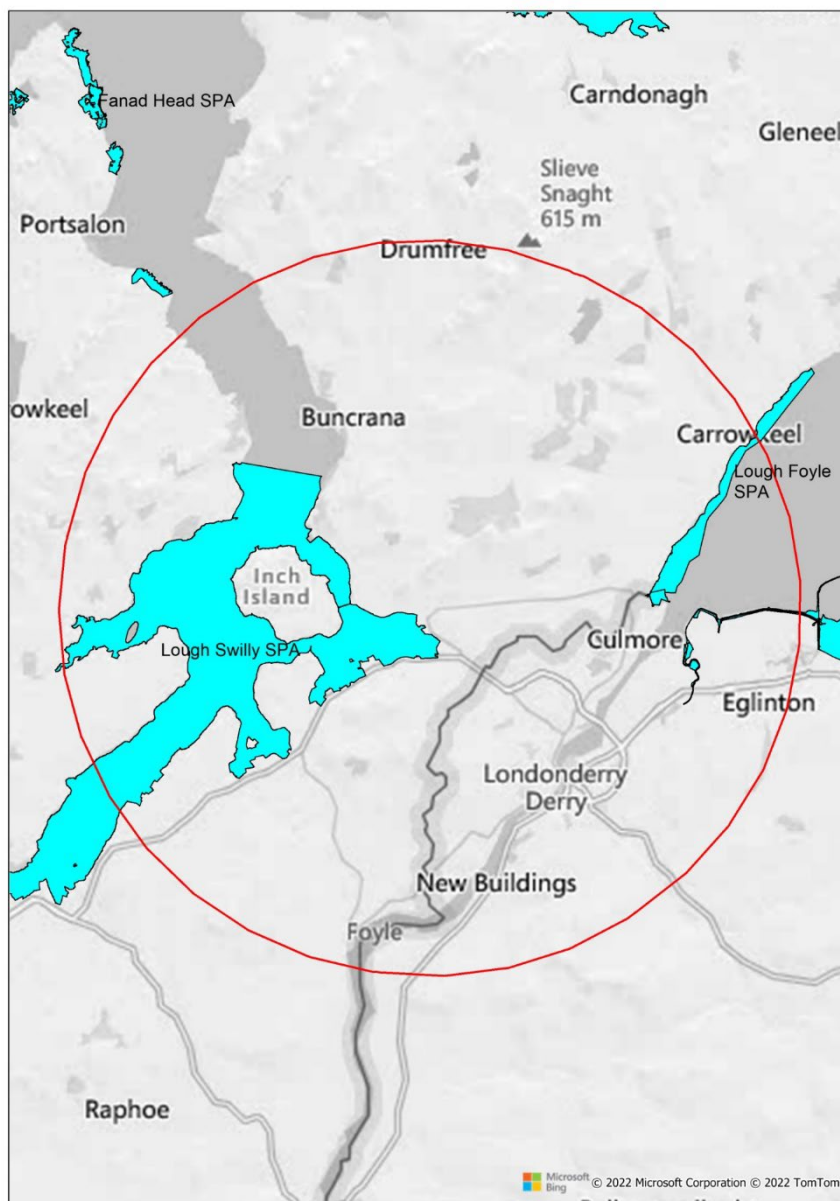


### 3 RESULTS

#### 3.1 Consultation

Consultation with National Biodiversity Data Centre identified three historical bird records within 1 km of the site. The records indicate the presence of a Bittern in January 1900, two Whooper Swan in October 2019 and three Yellowhammer in April 2021.

Consultation of the NPWS Protected Species viewer shows three SPAs within the 15km of the proposed development, see Figure 3.1 below.



**Figure 3.1: SPAs within 15km of the Proposed Development**

A Screening for Appropriate Assessment concluded that there was no likely significant effect on Qualifying Interest (QI) Species of Lough Foyle SPA (NI or RoI) but, in the absence of mitigation, Annex IV Species may be disturbed by the presence and movement of personnel and machinery and aerial noise from construction activities during construction.

Consultation of the NPWS Protected Species viewer shows that aspects of the proposed development lie within the Lough Swilly Special Protection Area (SPA). Qualifying Interest species of Lough Swilly SPA include:

- Great Crested Grebe *Podiceps cristatus*
- Grey Heron *Ardea cinerea*
- Whooper Swan *Cygnus cygnus*
- Greylag Goose *Anser anser*
- Shelduck *Tadorna tadorna*
- Wigeon *Anas penelope*
- Teal *Anas crecca*
- Mallard *Anas platyrhynchos*
- Shoveler *Anas clypeata*
- Scaup *Aythya marila*
- Goldeneye *Bucephala clangula*
- Red-breasted Merganser *Mergus serrator*
- Coot *Fulica atra*
- Oystercatcher *Haematopus ostralegus*
- Knot *Calidris canutus*
- Dunlin *Calidris alpina*
- Curlew (*Numenius arquata*)
- Redshank *Tringa totanus*
- Greenshank *Tringa nebularia*
- Black-headed Gull *Chroicocephalus ridibundus*
- Common Gull *Larus canus*
- Sandwich Tern *Sterna sandvicensis*
- Common Tern *Sterna hirundo*
- Greenland White-fronted Goose *Anser albifrons flavirost*

## 3.2 Wetland Bird Survey

A total of sixteen monthly visits were made across three winter seasons: November 2020 to March 2021, October 2021 to March 2022 and November 2023 to March 2024. Dates and weather conditions of surveys undertaken of the site are set out within Table 3.1, below.

Results of these surveys are set out within Table 3.2, below.

**Table 3.1: Weather Conditions during Wetland Bird Survey**

Date	Cloud (Oktas)	Visibility	Wind (Beaufort)	Temp. (°C)	Precipitation
26-Nov-20	4	>10km	SW2	7	Light rain showers
22-Dec-20	2	>10km	0	0	Dry
19-Jan-21	8	1-3km	SE2	5	Rain
23-Feb-21	8	>5km	S5	11	Heavy showers
23-Mar-21	7	>10km	4	10	Dry
14-Oct-21	4	>10km	SW4	13	Dry
27-Nov-21	8	>10km	N4	4	Light rain showers
23-Dec-21	7	>10km	Variable	12	Dry
21-Jan-22	7	>10km	SW2	7	Dry
22-Feb-22	8	>10km	W4	7	Wintery showers
24-Mar-22	6	>10km	E2	13	Dry
30-Nov-23	3	>10km	NE1	Minus 1 to +3	None
15-Dec-23	6	>10km	S3	7	None
04-Jan-24	8	>10km	SW2	7	Rain showers last hour
14-Feb-24	8	>5km	SSE1	8	Light drizzle showers in morning
07-Mar-24	2	>10km	SE4	7	None

REPORT



**Table 3.2: Results of Wetland Bird Survey 2020-21, 2021-22, 2023-24**

Species	SPA QI	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21		Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22		Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Peak	Mean
Barnacle goose	X	0	0	0	7	0		0	1	0	7	0	0		0	0	0	0	0	7	1
<b>Black-headed gull</b>	✓	<b>420</b>	<b>1270</b>	<b>724</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>300</b>	<b>1</b>	<b>0</b>	<b>400</b>	<b>765</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>4</b>	<b>1270</b>	<b>244</b>
Black-tailed godwit	X	0	0	0	0	0		0	42	0	0	0	0		0	0	0	0	0	42	3
Black swan	X	1	1	0	0	0		0	0	0	0	0	0		0	0	0	0	0	1	0
Buzzard	X	0	0	0	0	0		0	0	0	0	0	0		1	0	1	0	0	1	0
<b>Common gull</b>	✓	<b>50</b>	<b>50</b>	<b>174</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>351</b>	<b>5</b>	<b>351</b>	<b>39</b>
Cormorant	X	0	0	0	0	1		0	0	0	0	1	0		0	1	3	6	4	6	1
Dunlin	✓	0	0	0	0	0		0	0	0	0	0	0		0	0	0	<b>219</b>	<b>300</b>	<b>300</b>	<b>32</b>
Great black-backed gull	X	3	0	0	2	2		0	0	0	1	2	0		0	3	3	8	2	8	2
<b>Greenland White-fronted goose</b>	✓	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>		<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>12</b>	<b>2</b>
<b>Grey heron</b>	✓	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>		<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>6</b>	<b>1</b>
<b>Greylag goose</b>	✓	<b>1164</b>	<b>1725</b>	<b>91</b>	<b>652</b>	<b>718</b>		<b>0</b>	<b>208</b>	<b>994</b>	<b>882</b>	<b>245</b>	<b>435</b>		<b>544</b>	<b>437</b>	<b>790</b>	<b>359</b>	<b>820</b>	<b>1725</b>	<b>629</b>
Herring gull	X	0	8	0	1	1		0	0	0	0	0	0		0	0	0	0	0	8	1
Kingfisher	X	0	0	0	0	0		0	0	0	0	0	1		0	0	0	0	0	1	0
<b>Mallard</b>	✓	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>6</b>		<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>2</b>		<b>0</b>	<b>7</b>	<b>12</b>	<b>19</b>	<b>20</b>	<b>20</b>	<b>4</b>
Lapwing	X	0	240	0	7	2		0	0	0	0	0	2		189	0	0	46	91	240	36
Moorhen	X	0	0	0	0	1		1	1	0	0	0	0		1	2	1	0	7	7	1
Mute swan	X	7	0	0	14	0		1	0	0	1	20	2		1	2	7	10	4	20	4
Redshank	✓	0	0	0	0	0		0	0	0	0	0	0		0	0	0	103	4	103	7
<b>Teal</b>	✓	<b>0</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>2</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>2</b>	<b>0</b>		<b>0</b>	<b>11</b>	<b>10</b>	<b>23</b>	<b>13</b>	<b>23</b>	<b>5</b>
<b>Whooper swan</b>	✓	<b>347</b>	<b>120</b>	<b>86</b>	<b>370</b>	<b>609</b>		<b>0</b>	<b>374</b>	<b>323</b>	<b>71</b>	<b>91</b>	<b>64</b>		<b>21</b>	<b>51</b>	<b>13</b>	<b>187</b>	<b>307</b>	<b>609</b>	<b>190</b>
<b>Wigeon</b>	✓	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
<b>Total</b>		<b>1994</b>	<b>3414</b>	<b>1079</b>	<b>1056</b>	<b>1355</b>		<b>2</b>	<b>927</b>	<b>1320</b>	<b>980</b>	<b>761</b>	<b>1274</b>		<b>758</b>	<b>514</b>	<b>851</b>	<b>1351</b>	<b>1587</b>		

## 4 DISCUSSION & ANALYSIS OF RESULTS

Lough Swilly SPA supports internationally important numbers of Whooper Swan, Greenland White-fronted Goose and Greylag Goose. The main areas of the site used by these species are at Big Isle, Farsetmore, Blanket Nook, Ballylawn and Inch Levels.

All three species listed above were recorded during surveys, in addition to eight other QI species of Lough Swilly SPA; Black-headed gull, Common gull, Dunlin, Grey heron, Mallard, Redshank, Teal and Wigeon.

Peak and mean counts of each species and the percentage of the SPA population the mean count represents are presented below (see Table 4.1) and the distribution of each species is illustrated in Appendix.2.

**Table 4.1: SPA QI species recorded during surveys**

Species	SPA QI	Peak count	Mean count	Mean as % of SPA population
Black-headed Gull	✓	1270	244	26.38%
Common Gull	✓	351	39	2.56%
Dunlin	✓	300	32	0.46%
Greenland White-fronted Goose	✓	12	2	0.16%
Grey Heron	✓	6	1	1.75%
Greylag Goose	✓	1725	629	74.26%
Mallard	✓	20	4	0.34%
Redshank	✓	103	7	0.53%
Teal	✓	23	5	0.32%
Whooper Swan	✓	609	223	13.33%
Wigeon	✓	1	0	0.00%

In addition, four species recorded during surveys; Dunlin, Kingfisher, Greenland White-fronted Goose and Whooper Swan are listed on Annex I of the E.U. Birds Directive.

### 4.1 Construction

During construction, overwintering waterbirds may be disturbed by the presence and movement of personnel and machinery and aerial noise from construction activities in and around Inch Levels.

Table 4.1 above illustrates that, during survey across winter 2020-21, 2021-22 and 2023-24 the survey area supported significant percentage of the SPA population of Black-headed gull, Greylag goose and Whooper swan.

Study of human disturbance on wintering Whooper swans in Scotland has shown that disturbance, in response to human activity, decreased as the flock size and distance to nearest road or track increased (Rees et al, 2005).

Disturbance also decreased with the number of previous disturbance incidents, indicating that swans can become habituated to human activity and less sensitive to disturbance events if daily disturbance frequency is high.

The study also showed that the presence of pedestrians caused higher disturbance rates than vehicles (Rees et al, 2005).

## 4.2 Operation

During operation, activities would be considered to be similar to those already occurring at Burnfoot and would not likely give rise to increased disturbance as a result.

Proposed removal of existing flood defence infrastructure along the Burnfoot River is likely to provide increased opportunities for foraging waterfowl populations associated with the Lough Swilly SPA through an increase in areas inundated by flood waters.

## 5 REFERENCES

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# Appendices

## Appendix 1 - BTO Species Codes

### BTO SPECIES CODES

AC	Arctic Skua	GA	Gadwall	LE	Long-eared Owl	SM	Sand Martin
AE	Arctic Tern	GX	Gannet	LT	Long-tailed Tit	SS	Sanderling
AV	Avocet	GW	Garden Warbler	MG	Magpie	TE	Sandwich Tern
BO	Barn Owl	GY	Garganey	MA	Mallard	VI	Savi's Warbler
BY	Barnacle Goose	GC	Goldcrest	MN	Mandarin Duck	SQ	Scarlet Rosefinch
BA	Bar-tailed Godwit	EA	Golden Eagle	MX	Manx Shearwater	SP	Scaup
BR	Bearded Tit	OL	Golden Oriole	MR	Marsh Harrier	CY	Scottish Crossbill
BS	Berwick's Swan	GF	Golden Pheasant	MT	Marsh Tit	SW	Sedge Warbler
BI	Bittern	GP	Golden Plover	MW	Marsh Warbler	NS	Serin
BK	Black Grouse	GN	Goldeneye	MP	Meadow Pipit	SA	Shag
TY	Black Guillemot	GO	Goldfinch	MU	Mediterranean Gull	SU	Shelduck
BX	Black Redstart	GD	Goosander	ML	Merlin	SX	Shorelark
BJ	Black Tern	GI	Goshawk	M.	Mistle Thrush	SE	Short-eared Owl
B.	Blackbird	GH	Grasshopper Warbler	MO	Montagu's Harrier	SV	Shoveler
BC	Blackcap	GB	Great Black-backed Gull	MH	Moorhen	SK	Siskin
BH	Black-headed Gull	GG	Great Crested Grebe	MS	Mute Swan	S.	Skylark
BN	Black-necked Grebe	ND	Great Northern Diver	N.	Nightingale	SZ	Slavonian Grebe
BW	Black-tailed Godwit	NX	Great Skua	NJ	Nightjar	SN	Snipe
BV	Black-throated Diver	GS	Great Spotted Woodpecker	NH	Nuthatch	SB	Snow Bunting
BT	Blue Tit	GT	Great Tit	OP	Osprey	ST	Song Thrush
BU	Bluethroat	GE	Green Sandpiper	OC	Oystercatcher	SH	Sparrowhawk
BL	Brambling	G.	Green Woodpecker	PX	Peafowl/Peacock	AK	Spotted Crake
BG	Brent Goose	GR	Greenfinch	PE	Peregrine	SF	Spotted Flycatcher
BF	Bullfinch	GK	Greenshank	PH	Pheasant	DR	Spotted Redshank
BZ	Buzzard	H.	Grey Heron	PF	Pied Flycatcher	SG	Starling
CG	Canada Goose	P.	Grey Partridge	PW	Pied Wagtail	SD	Stock Dove
CP	Capercaillie	GV	Grey Plover	PG	Pink-footed Goose	SC	Stonechat
C.	Carriion Crow	GL	Grey Wagtail	PT	Pintail	TN	Stone-curlew
CW	Cetti's Warbler	GJ	Greylag Goose	PO	Pochard	TM	Storm Petrel
CH	Chaffinch	GU	Guillemot	PM	Ptarmigan	SL	Swallow
CC	Chiffchaff	FW	Guineafowl (Helmeted)	PU	Puffin	SI	Swift
CF	Chough	HF	Hawfinch	PS	Purple Sandpiper	TO	Tawny Owl
CL	Cirl Bunting	HH	Hen Harrier	Q.	Quail	T.	Teal
CT	Coal Tit	HG	Herring Gull	RN	Raven	TK	Temminck's Stint
CD	Collared Dove	HY	Hobby	RA	Razorbill	TP	Tree Pipit
CM	Common Gull	HZ	Honey Buzzard	RG	Red Grouse	TS	Tree Sparrow
CS	Common Sandpiper	HC	Hooded Crow	KT	Red Kite	TC	Treecreeper
CX	Common Scoter	HP	Hoopoe	ED	Red-backed Shrike	TU	Tufted Duck
CN	Common Tern	HM	House Martin	RM	Red-breasted Merganser	TT	Turnstone
CO	Coot	HS	House Sparrow	RQ	Red-crested Pochard	TD	Turtle Dove
CA	Cormorant	JD	Jackdaw	FV	Red-footed Falcon	TW	Twite
CB	Corn Bunting	J.	Jay	RL	Red-legged Partridge	WA	Water Rail
CE	Corncrake	K.	Kestrel	NK	Red-necked Phalarope	W.	Wheatear
CI	Crested Tit	KF	Kingfisher	LR	Redpoll (Lesser)	WM	Whimbrel
CR	Crossbill (Common)	KI	Kittiwake	RK	Redshank	WC	Whinchat
CK	Cuckoo	KN	Knot	RT	Redstart	WG	White-fronted Goose
CU	Curlew	LM	Lady Amherst's Pheasant	RH	Red-throated Diver	WH	Whitethroat
DW	Dartford Warbler	LA	Lapland Bunting	RE	Redwing	WS	Whooper Swan
DI	Dipper	L.	Lapwing	RB	Reed Bunting	WN	Wigeon
DO	Dotterel	TL	Leach's Petrel	RW	Reed Warbler	WT	Willow Tit
DN	Dunlin	LB	Lesser Black-backed Gull	RZ	Ring Ouzel	WW	Willow Warbler
D.	Duncock	LS	Lesser Spotted Woodpecker	RP	Ringed Plover	OD	Wood Sandpiper
EG	Egyptian Goose	LW	Lesser Whitethroat	RI	Ring-necked Parakeet	WO	Wood Warbler
E.	Eider	LI	Linnet	R.	Robin	WK	Woodcock
FP	Feral Pigeon	ET	Little Egret	DV	Rock Dove (not feral)	WL	Woodlark
ZL	Feral/hybrid goose	LG	Little Grebe	RC	Rock Pipit	WP	Woodpigeon
ZF	Feral/hybrid mallard type	LU	Little Gull	RO	Rook	WR	Wren
FF	Fieldfare	LO	Little Owl	RS	Roseate Tern	WY	Wryneck
FC	Firecrest	LP	Little Ringed Plover	RY	Ruddy Duck	YW	Yellow Wagtail
F.	Fulmar	AF	Little Tern	RU	Ruff	Y.	Yellowhammer

## Appendix 2 – SPA Qualifying Species Distribution Maps





Survey Boundary  
**Month**  
 Nov  
 Dec  
 Feb  
 Mar

Elmwood House T +44(0) 28 90 607914  
 74 Boucher Road F +44(0) 28 90 60286  
 Belfast W www.rpsgroup.com/ireland  
 BT11 7BNZ E ireland@rpsgroup.com

CLIENT: Donegal County Council

PROJECT: NI 2258

TITLE: Designated Species Survey  
Black-headed Gull  
Year 2

FIGURE: 2.1

Drawn by KA	Revision D01	Project Number NI 2258
Date 20.03.23		













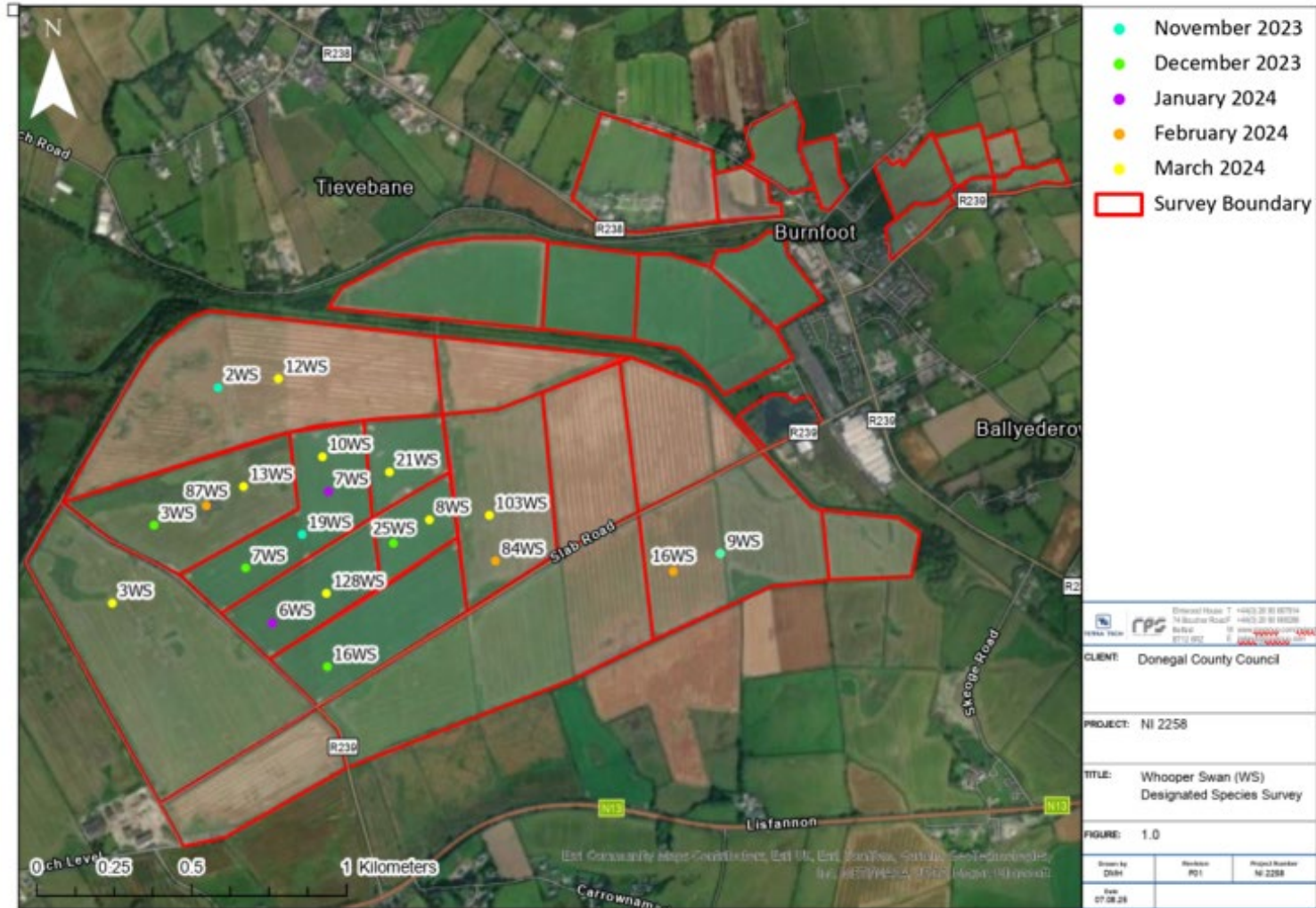


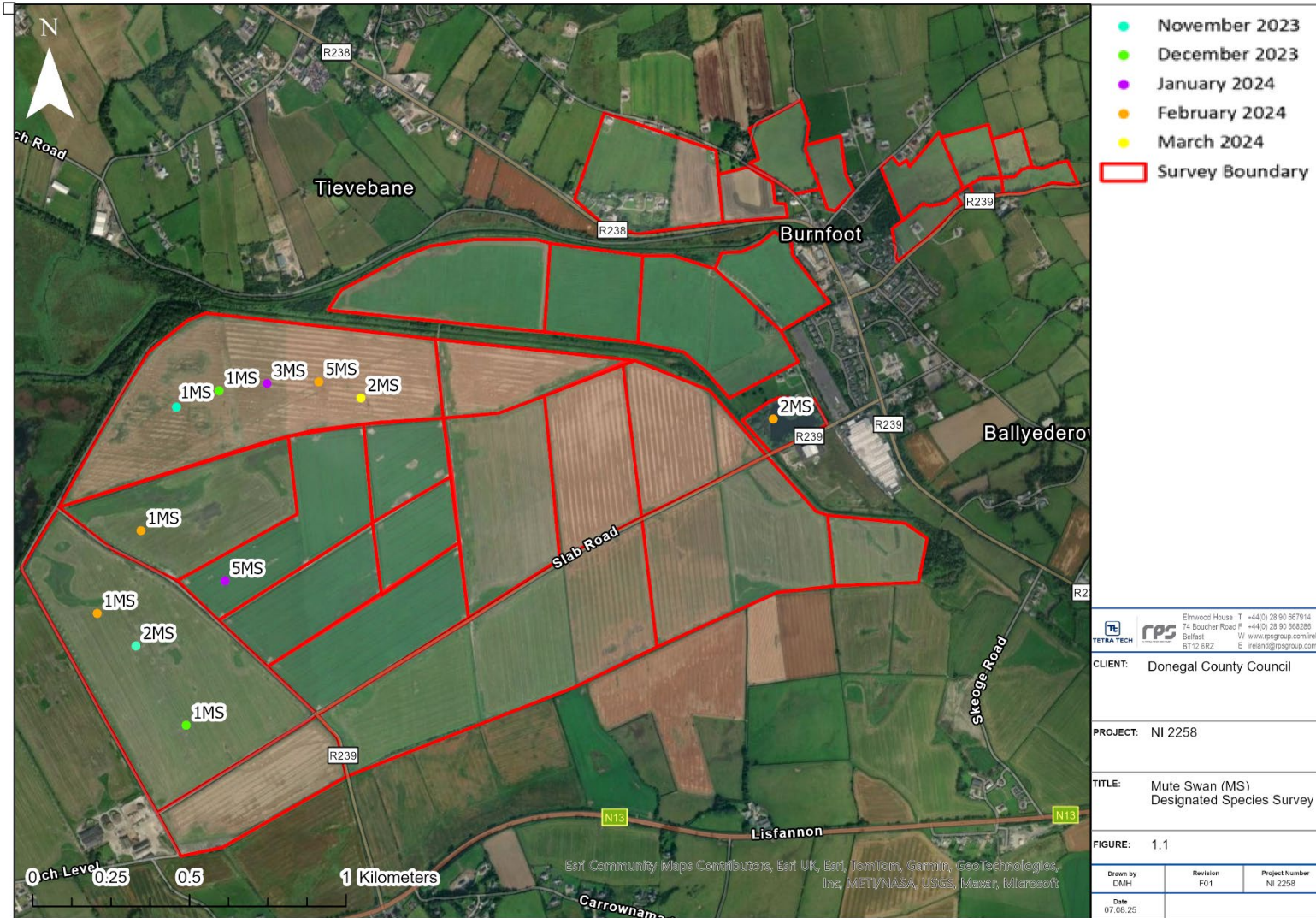


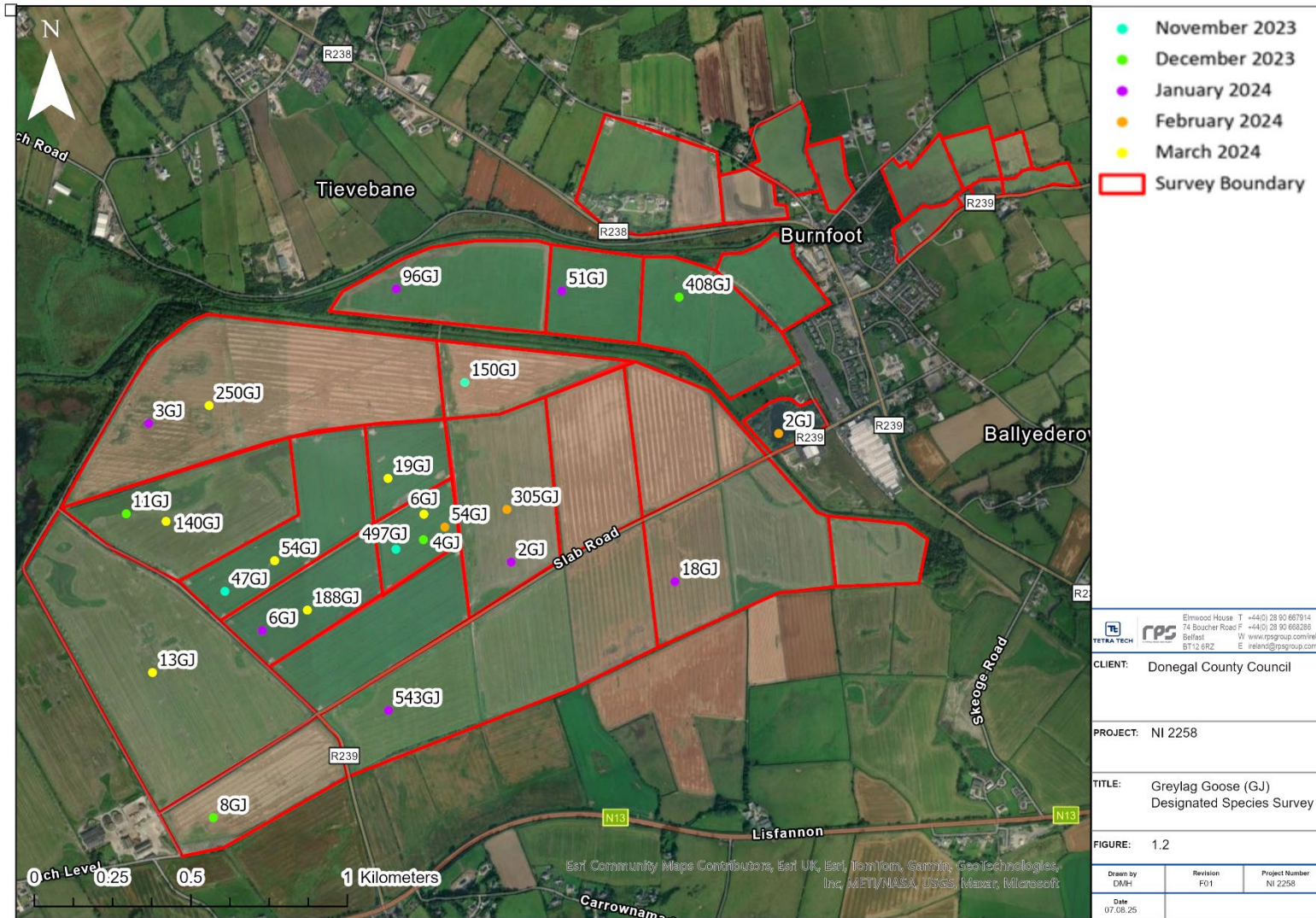


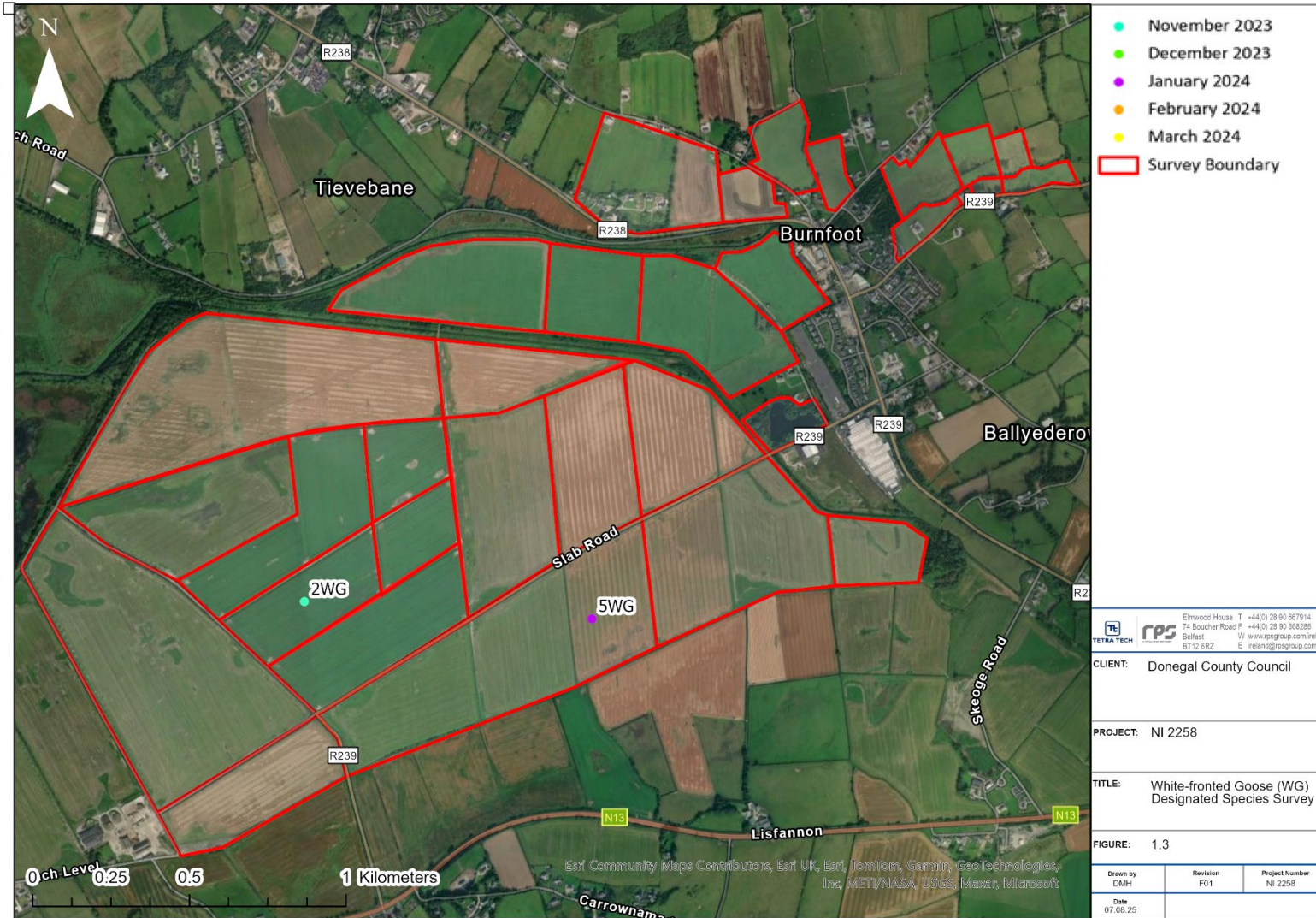


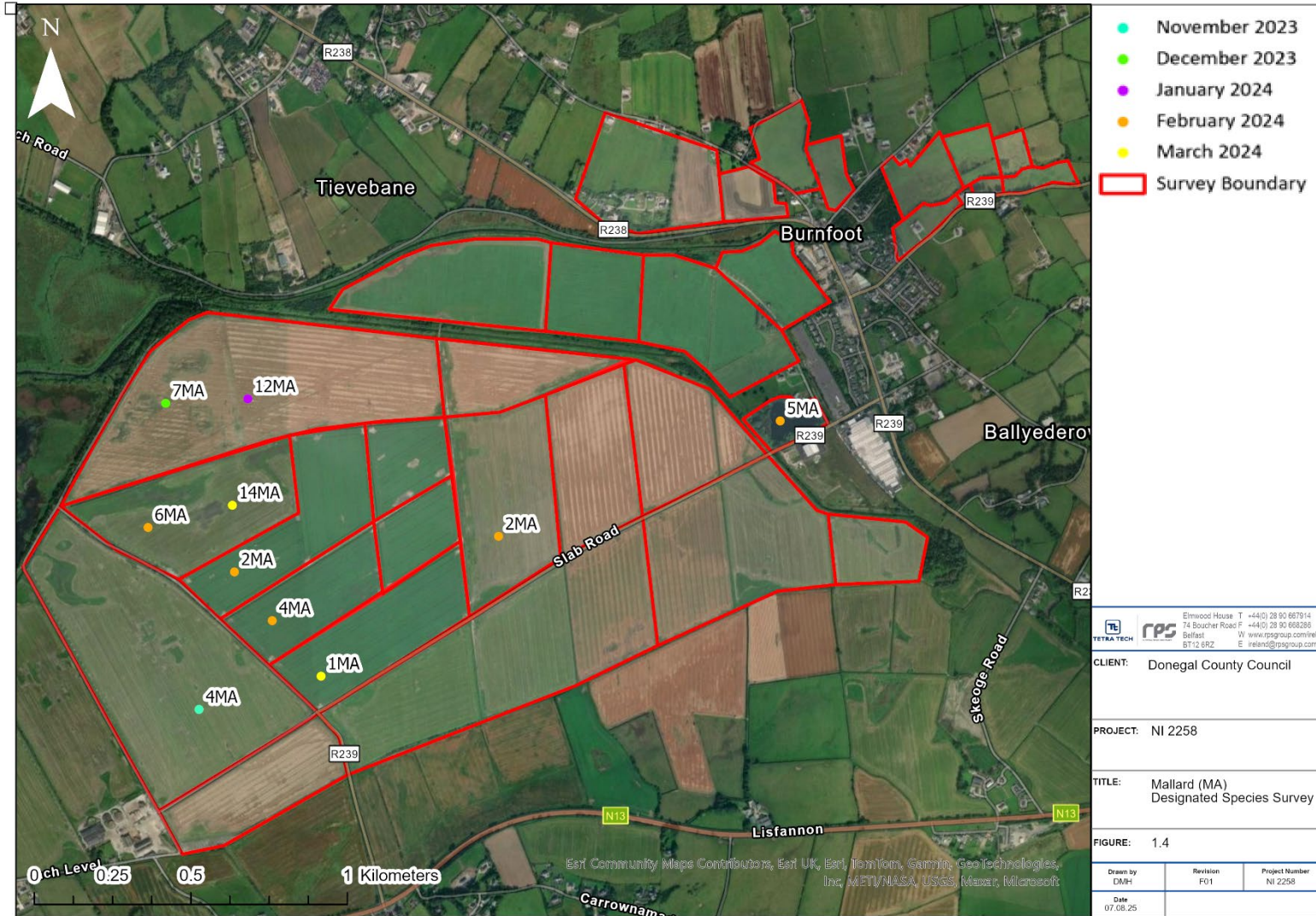






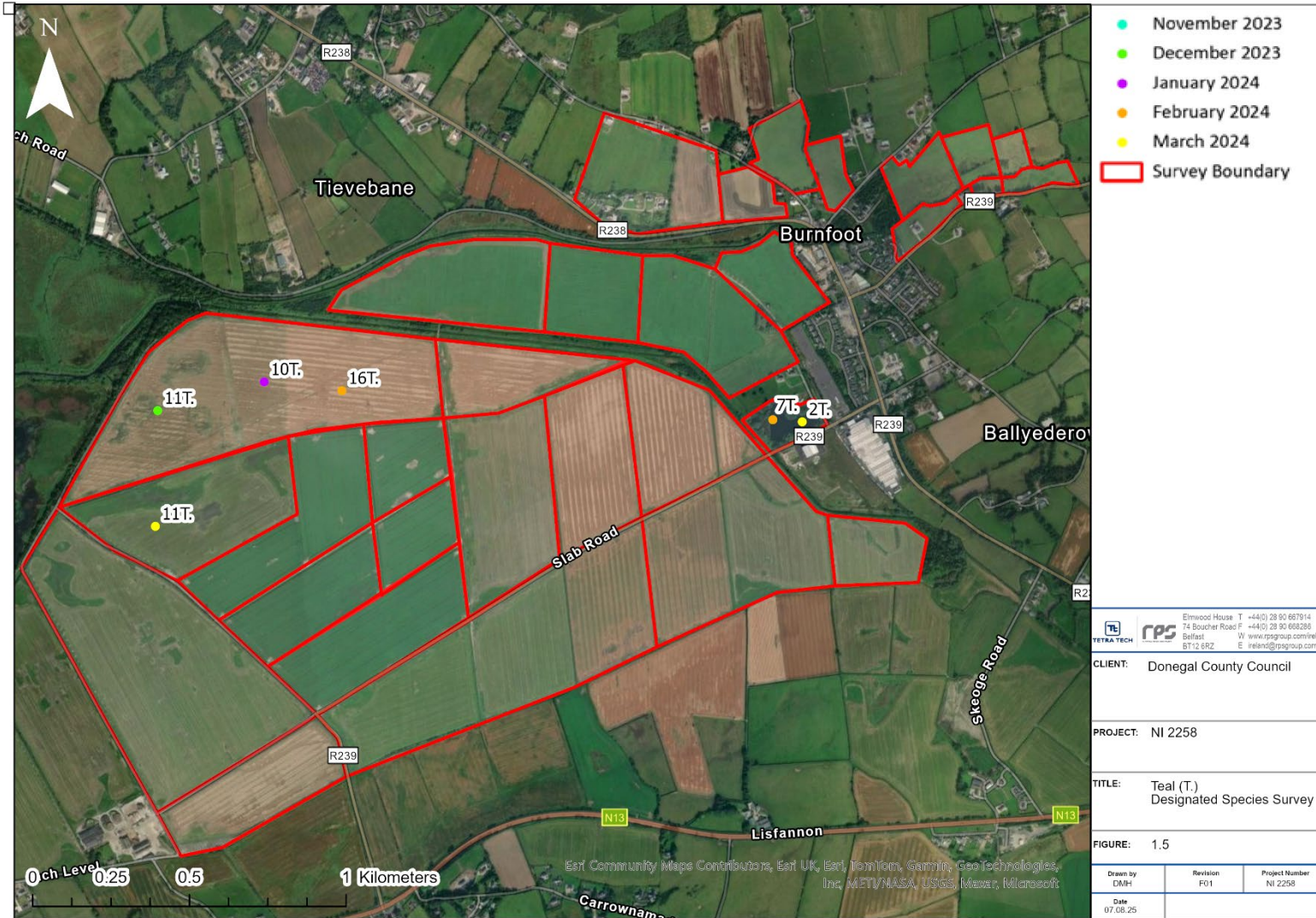


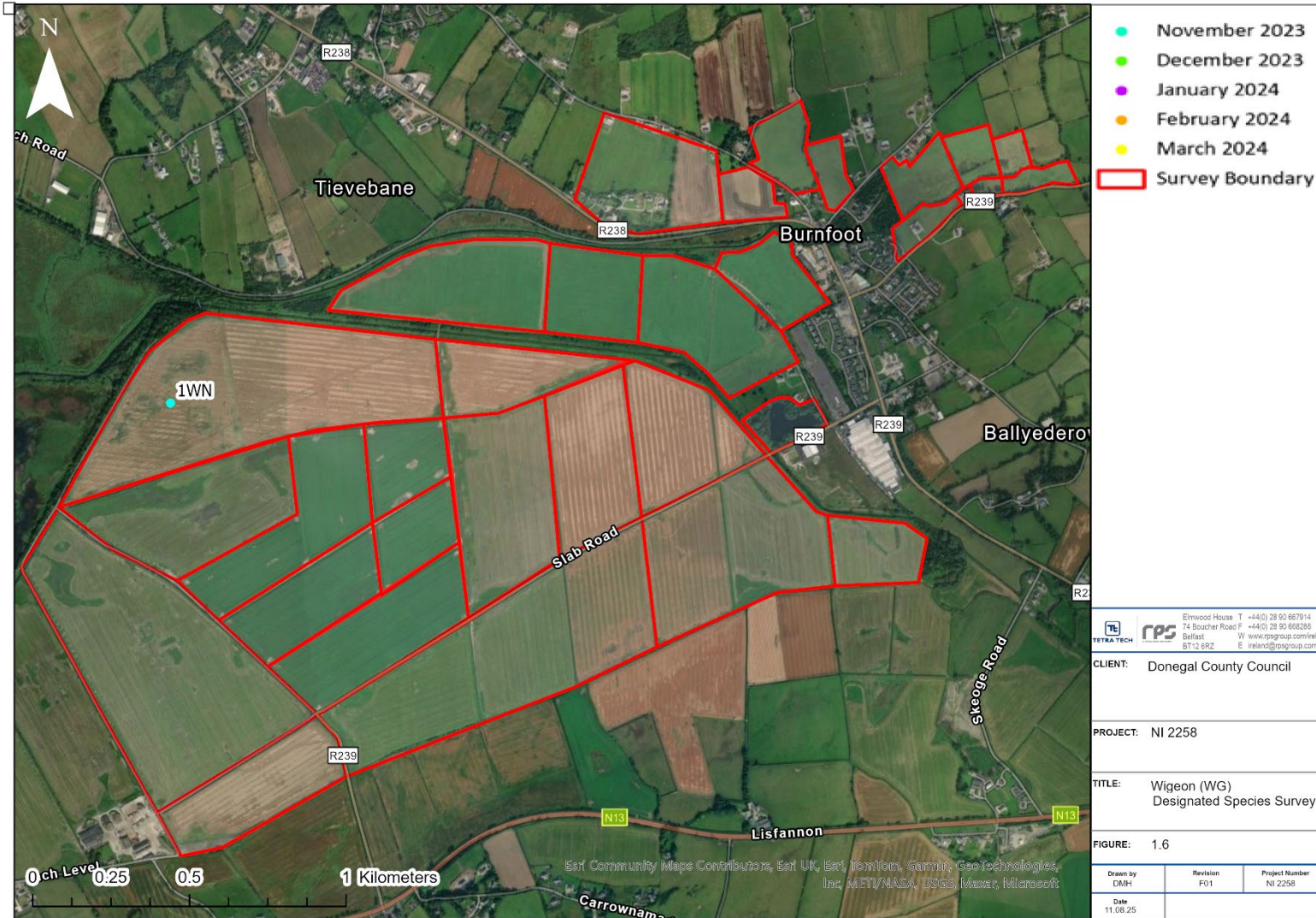


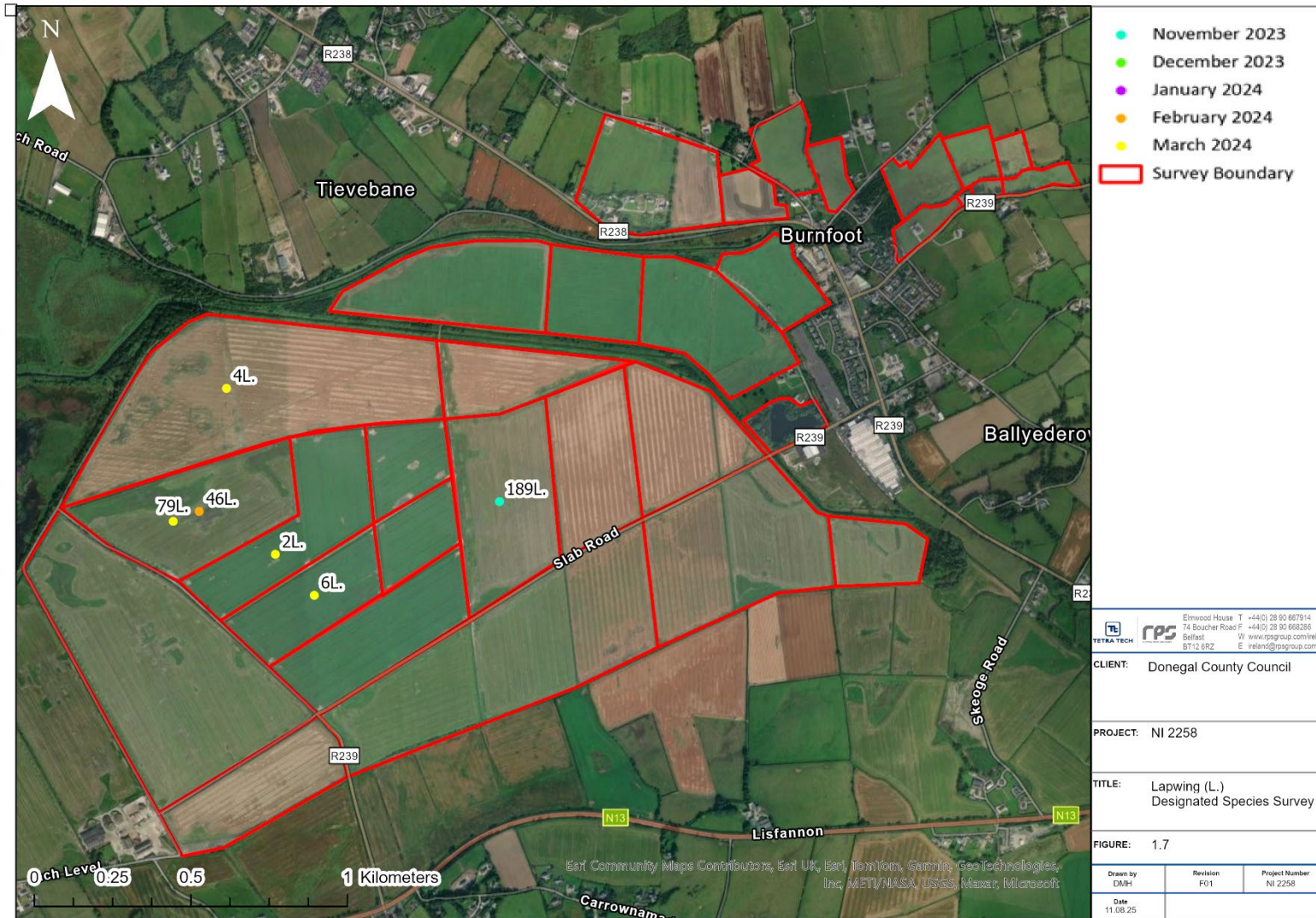


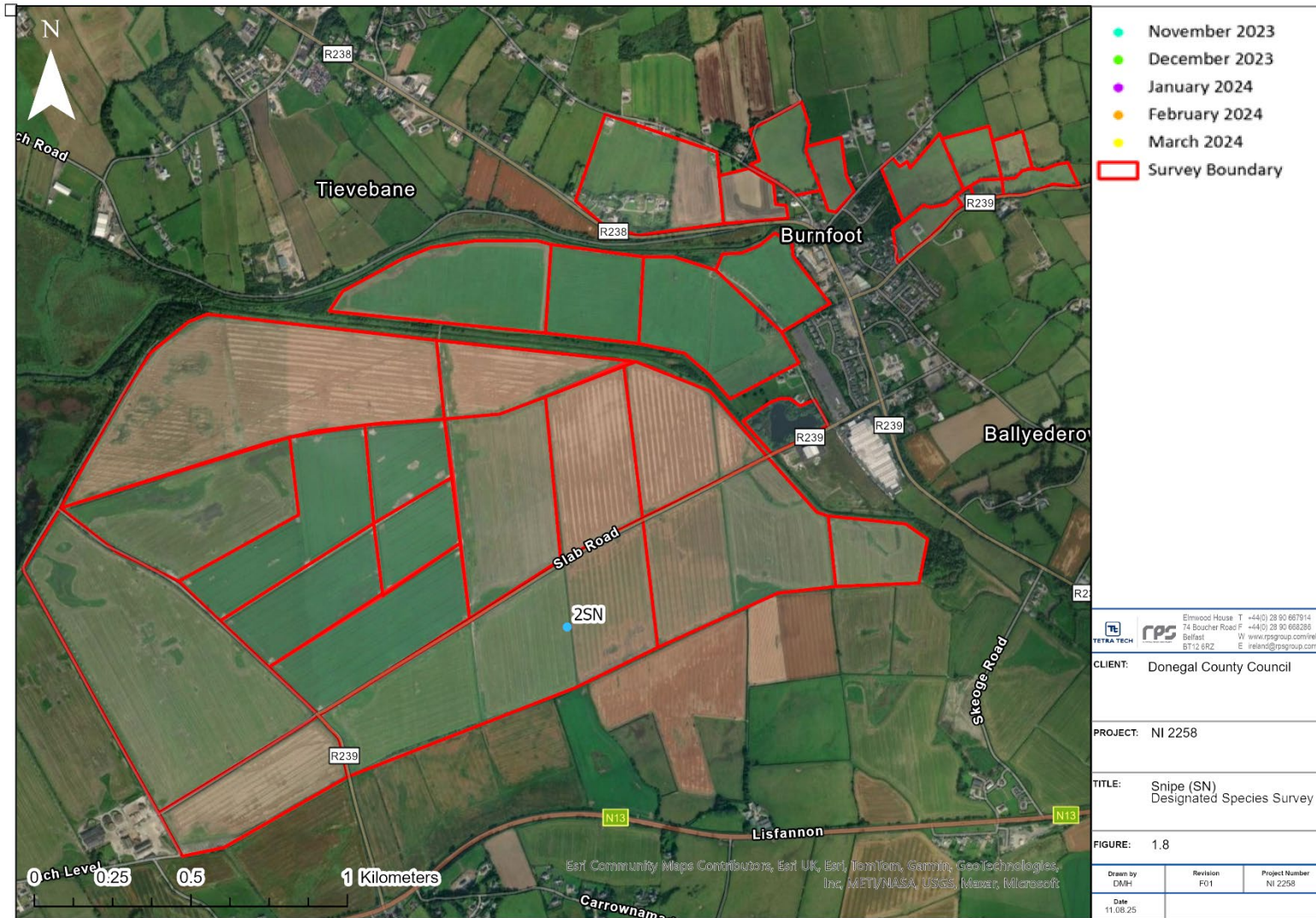
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- January 2024
- February 2024
- March 2024
- Survey Boundary

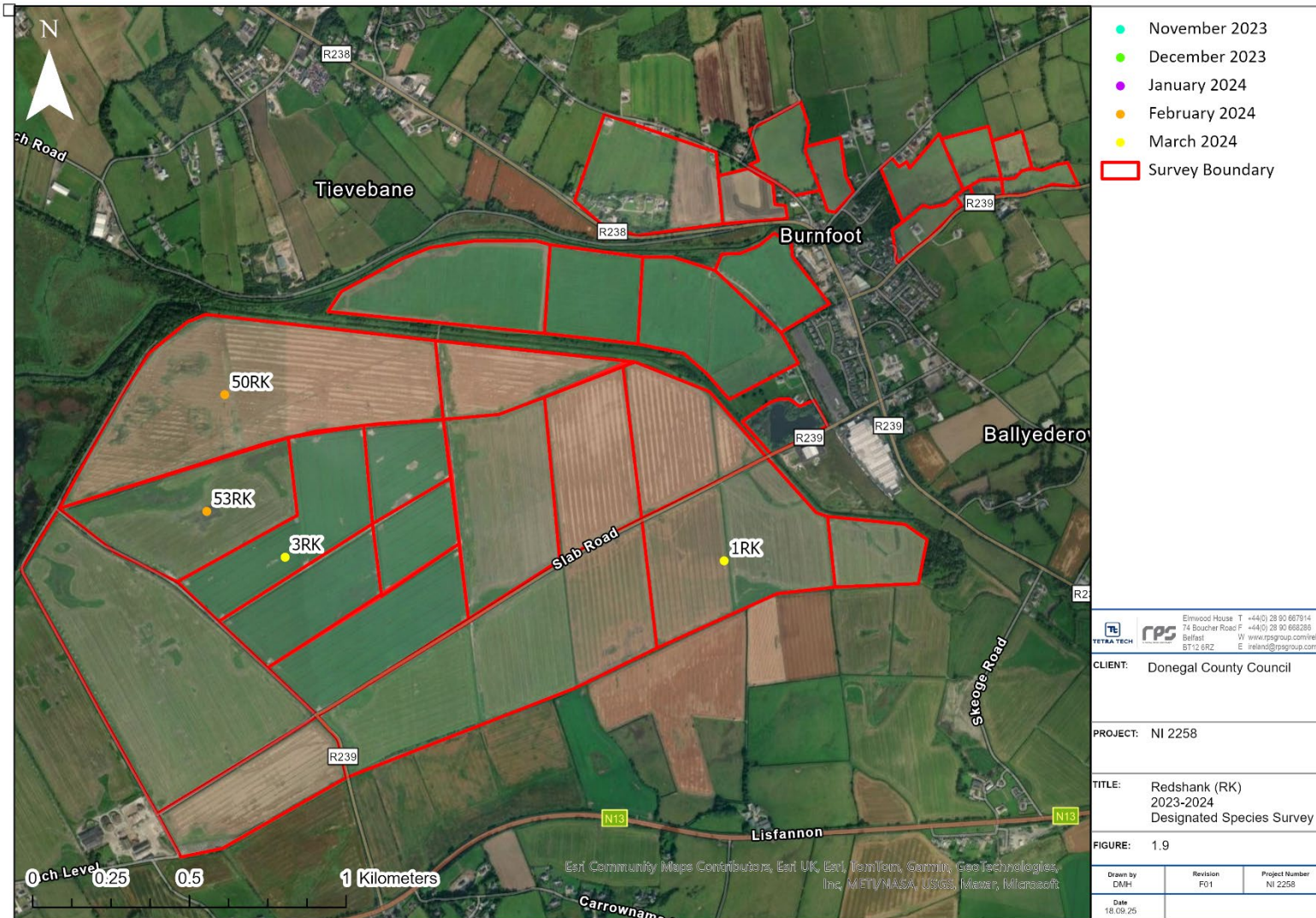
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CLIENT:	Donegal County Council	
PROJECT:	NI 2258	
TITLE:	Mallard (MA) Designated Species Survey	
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Drawn by	Revision	Project Number
DMH	F01	NI 2258
Date	07.08.25	

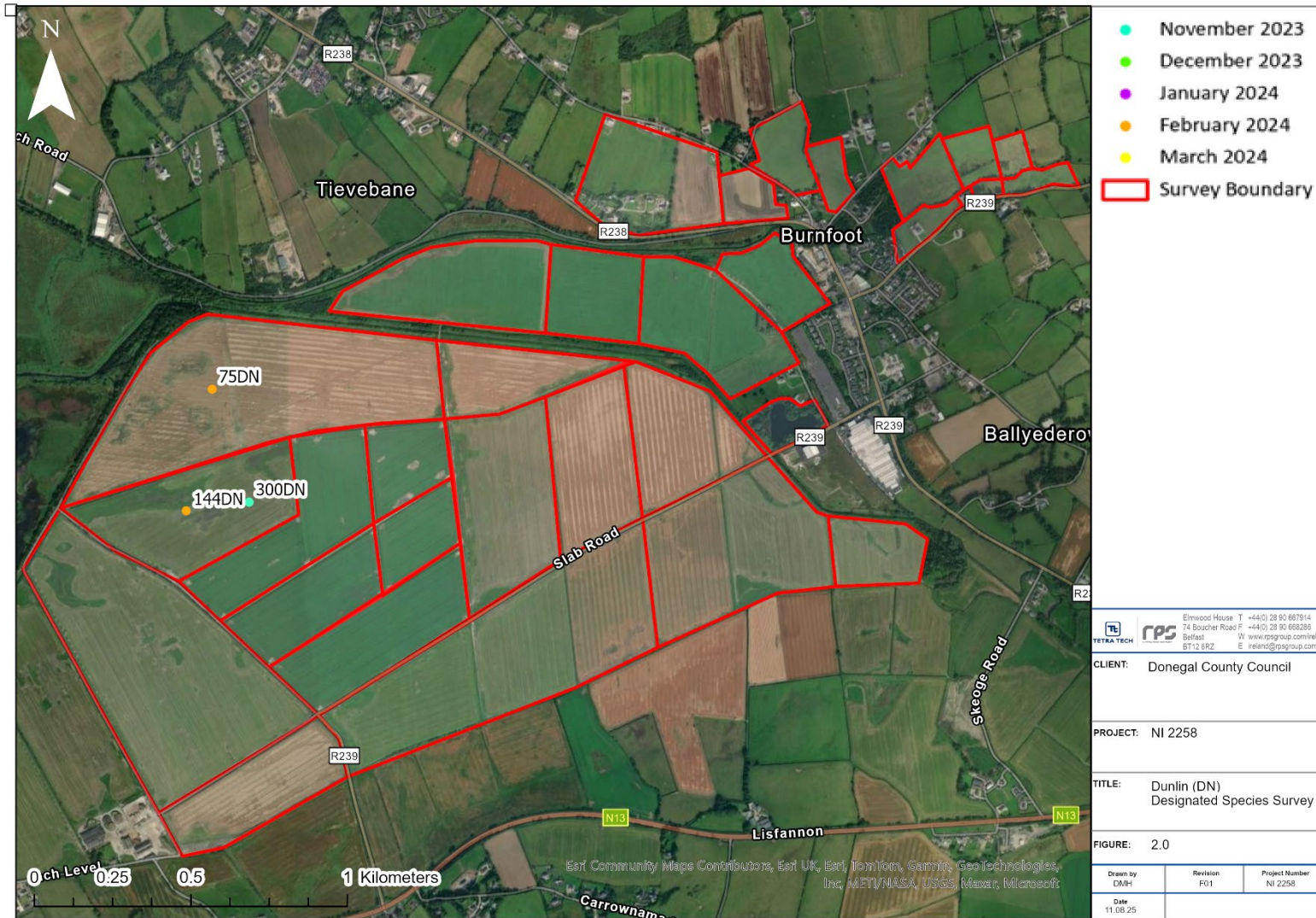


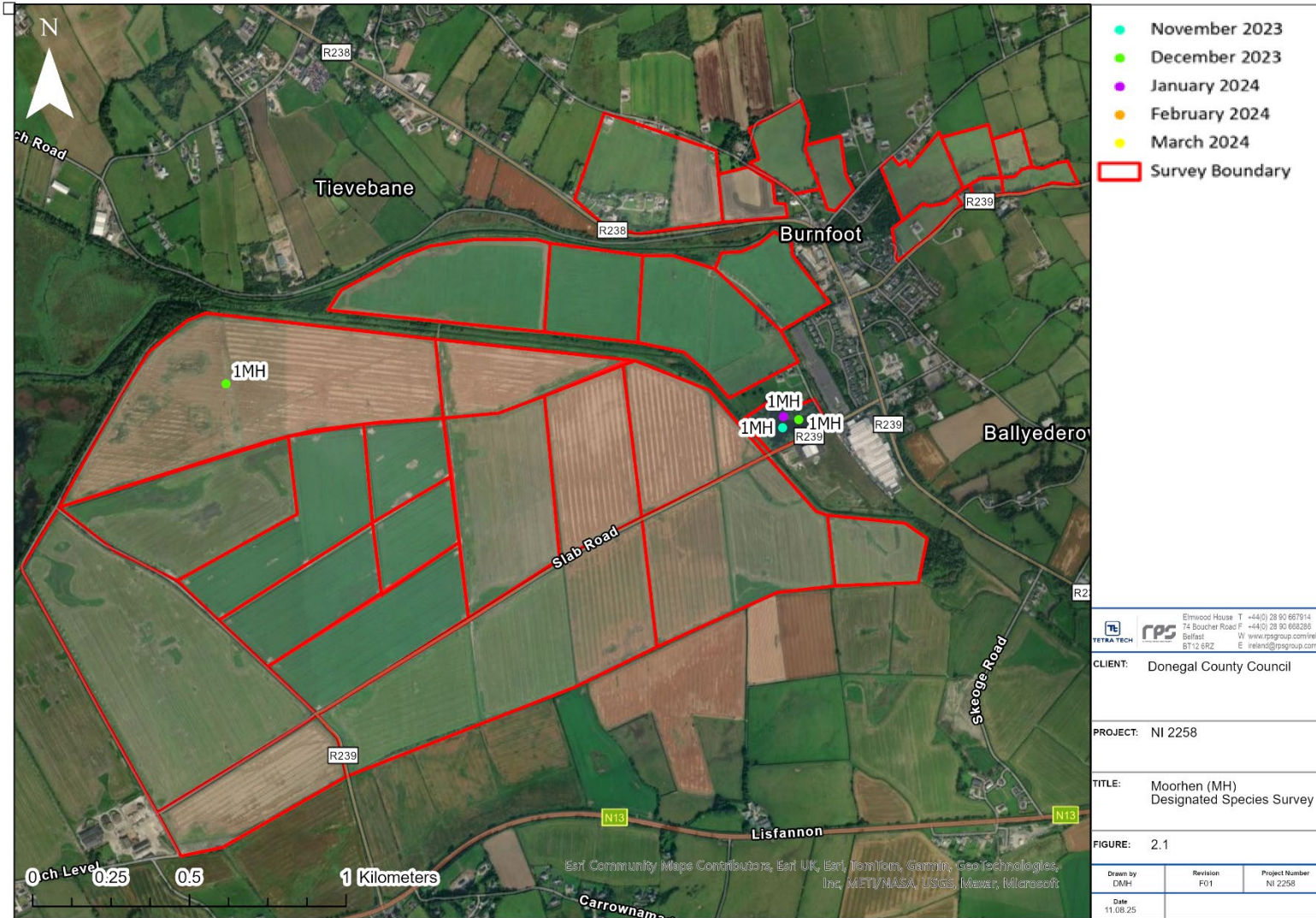


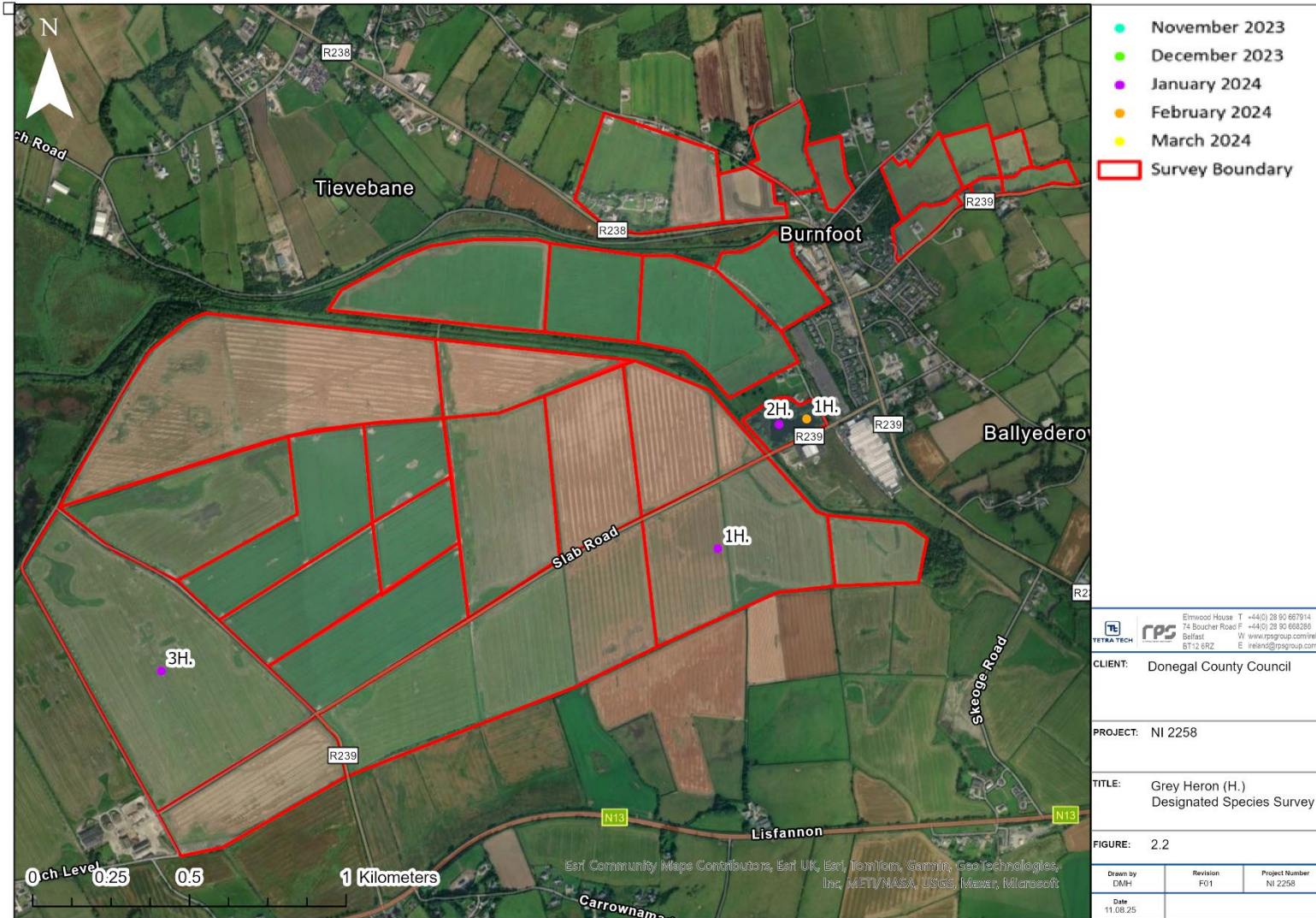


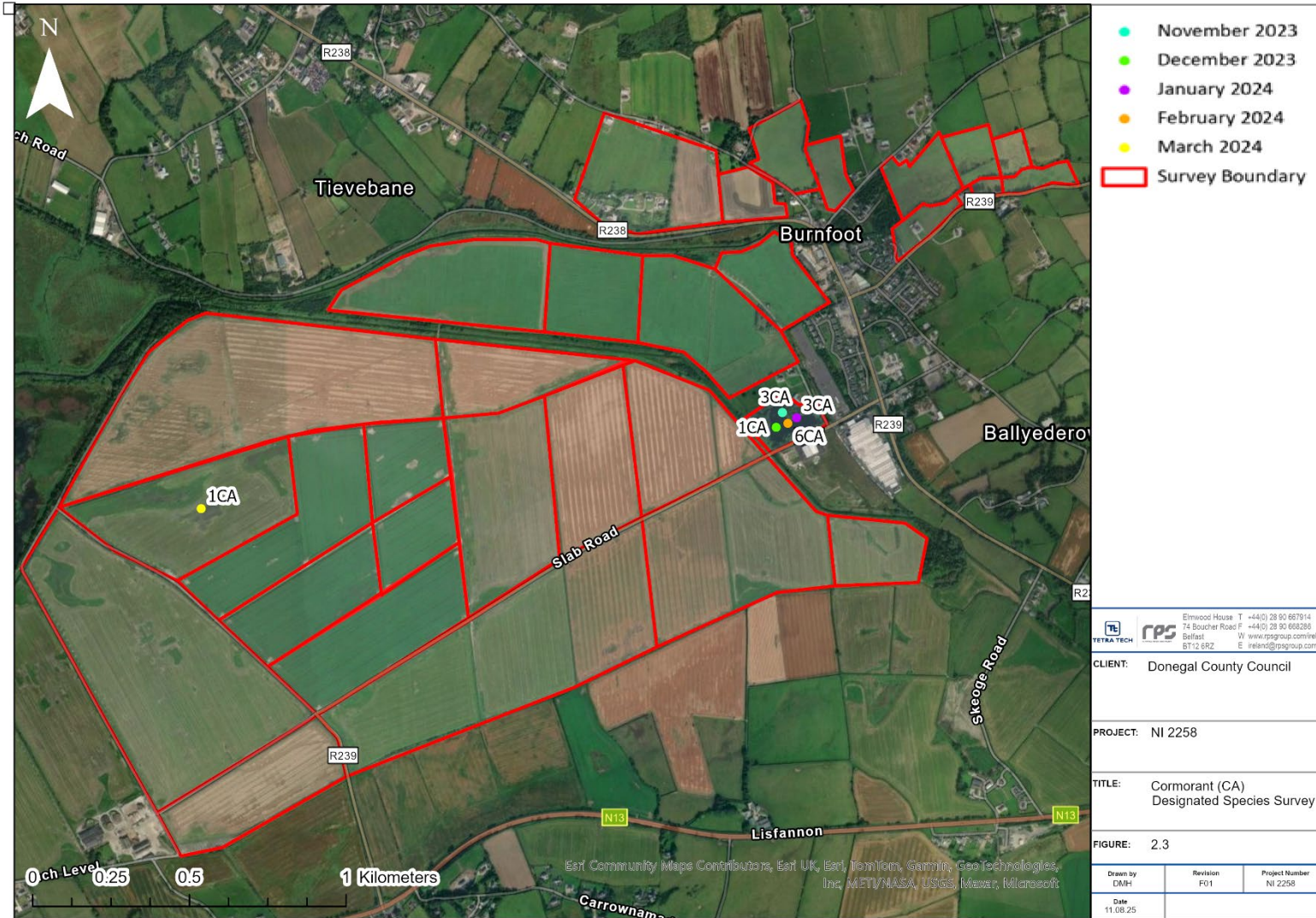


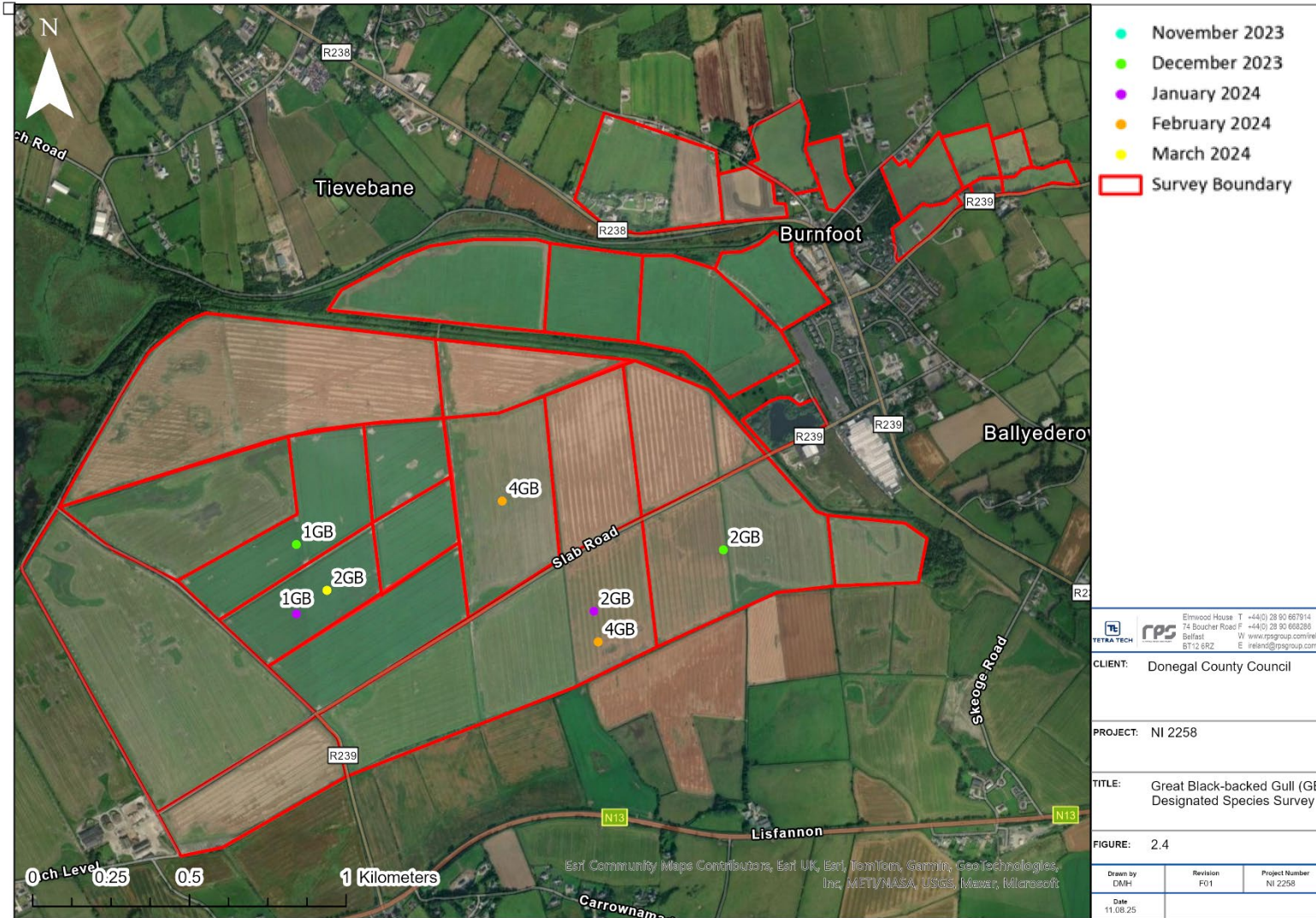






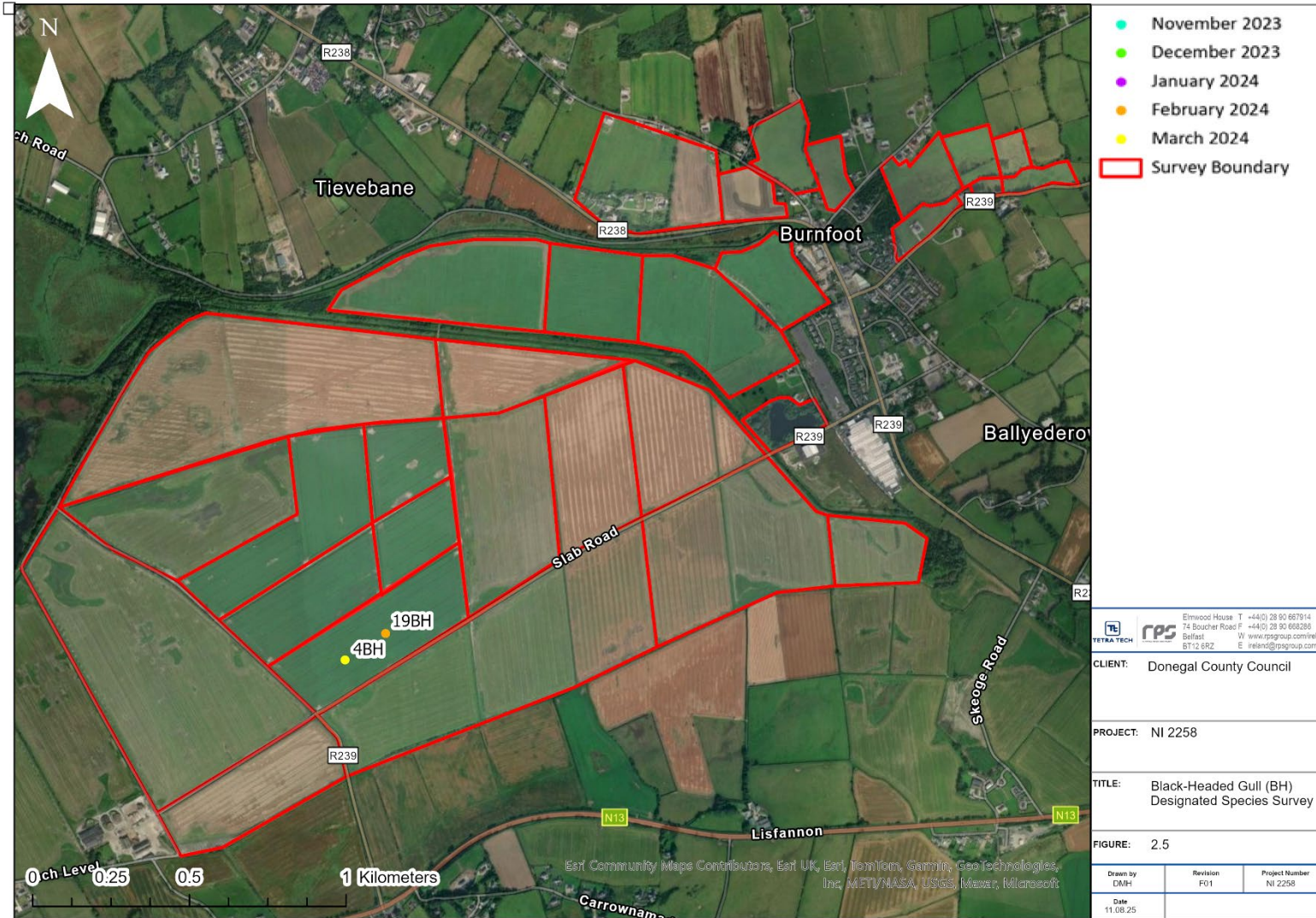


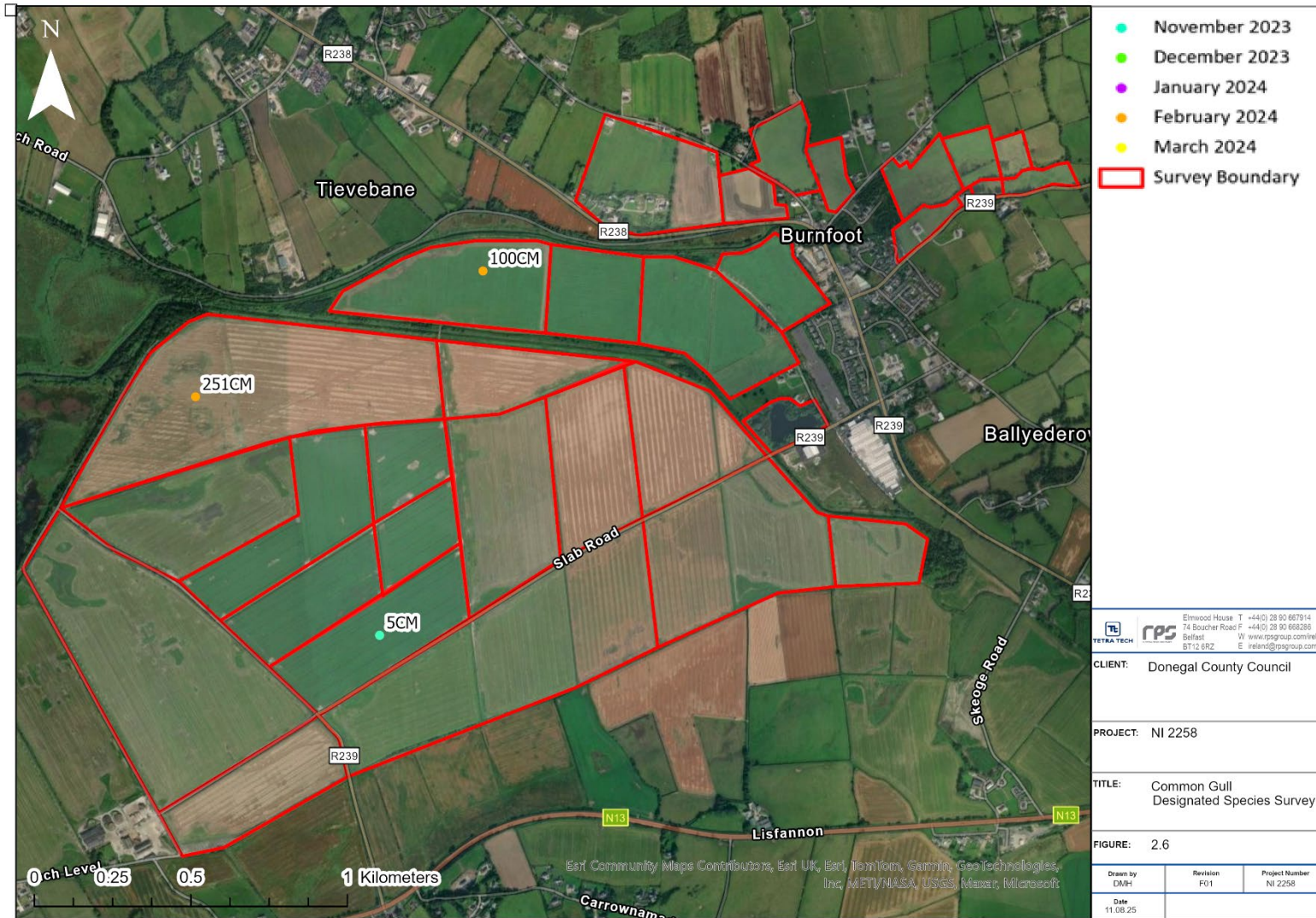


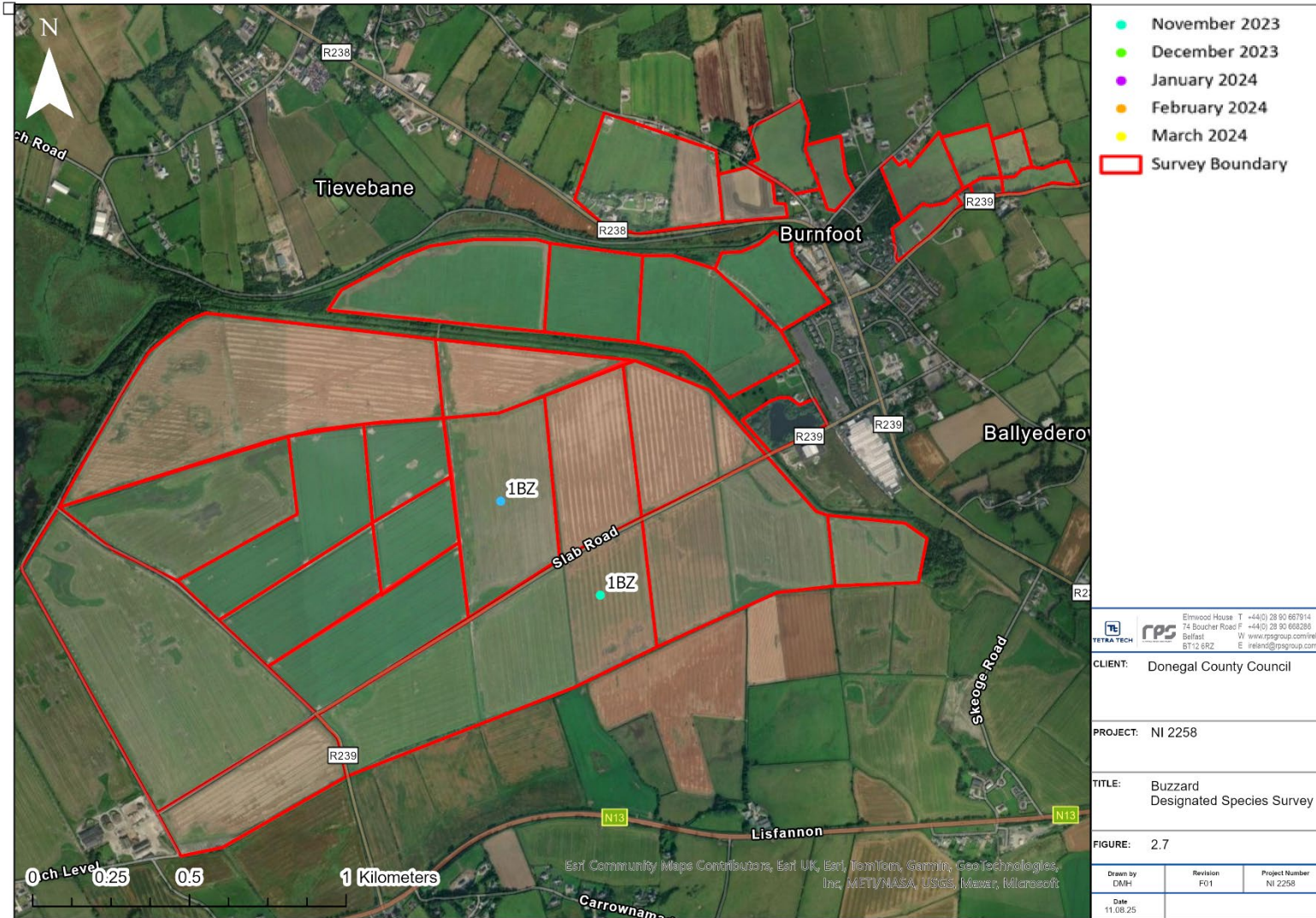


- November 2023
- December 2023
- January 2024
- February 2024
- March 2024
- Survey Boundary

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CLIENT:	Donegal County Council	
PROJECT:	NI 2258	
TITLE:	Great Black-backed Gull (GB) Designated Species Survey	
FIGURE:	2.4	
Drawn by	Revision	Project Number
DMH	F01	NI 2258
Date	11.08.25	







## APPENDIX C – INVASIVE SPECIES MANAGEMENT PLAN

# OUTLINE INVASIVE SPECIES MANAGEMENT PLAN

DB1 Donegal Flood Relief Scheme

NI 2258 DB1 Donegal Flood  
Relief Scheme  
Ecology  
OISMP  
F03  
February 2023

## OUTLINE ISMP

### Document Status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
F01	OISMP	S. O'Hara	S. Lowry	R. Holbeach	07/10/20
F02	OISMP	S. O'Hara	S. Lowry	R. Holbeach	01/12/20
F03	OISMP	S. O'Hara	S. Lowry	R. Holbeach	20/02/23

### Approval for issue

S. Lowry	<i>S. Lowry</i>	20/02/23
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# 1 INTRODUCTION

## 1.1 Introduction

RPS was commissioned by Donegal County Council to produce an Outline Invasive Species Management Plan (OISMP) for lands at Burnfoot, Castlefinn, Downings and Glenties in association with the proposed DB1 Donegal Flood Relief Scheme.

## 1.2 Statement of Authority

The author and surveyor, Samuel O'Hara, is a Senior Ecologist with RPS and holds a BSc (Hons) in Ecology and has over six years of experience in the field of ecology. Samuel has extensive experience of ecological field survey including habitat, mammal and bird survey and is a protected species license holder. Samuel is an Associate member of the CIEEM.

A further surveyor, Adam McClure, is a Senior Ecologist with RPS and holds a BSc (Hons) in Palaeoecology and Archaeology with over 10 years of experience in field of ornithology and ecology. Adam is also a Full member of CIEEM and is currently a member of the CIEEM Irish Section Committee.

We confirm that the professional judgement expressed herein is the true and bona fide opinion of our professional ecologists. The information prepared and provided is accurate at the time of issue of this report and has been prepared and provided in accordance with the CIEEM Code of Professional Conduct (CIEEM 2019).

## 1.3 Proposed Project

The proposed project is a flood relief scheme, with measures proposed in the towns of Burnfoot, Castlefinn, Downings and Glenties. While detailed flood relief measures are yet to be finalised, it is envisaged that such measures will involve the construction of hard engineered flood defence measures along watercourses among other potential options.

## 1.4 Site Description

The sites surveyed for invasive species and subject to the recommendations within this document consist of large areas of urban lands, in addition to adjacent agricultural and amenity lands, comprising a proportion of the town centres of Burnfoot, Castlefinn, Downings and Glenties. These sites were subject to survey on the basis of forthcoming proposed works, in respect of flood mitigation measures, which have potential to give rise to disturbance and spread of invasive species within these areas.

The sites consist of a range of largely urban habitats including buildings, hardstanding, amenity grassland, scrub and recolonising vegetation in addition to surrounding areas of agricultural land and woodlands.

The areas subject to survey are illustrated on the accompanying Figures 1.1-1.4, which show each of the four survey areas within Burnfoot, Castlefinn, Downings and Glenties respectively. In several locations invasive species outside of these boundaries were also noted, where these were recorded during survey works within the survey boundary.

All sites subject to survey, with the exception of Downings, were recorded to support invasive non-native species.

## 1.5 Invasive Species

Invasive non-native species are defined as those that have been introduced, either intentionally or unintentionally, outside of their natural range and that present a threat to biodiversity. They can have a wide range of impacts on ecology, the environment and the economy. Once established they can be extremely difficult to control and costly to eradicate. It is also an offence to plant or otherwise cause to grow in the wild any plant listed on Part 1 of SI. No. 477 of 2011, European Communities (Birds and Natural Habitats) Regulations 2011.

Invasive non-native species listed on Part 1 of SI. No. 477 of 2011, European Communities (Birds and Natural Habitats) Regulations 2011 and recorded within the survey sites include giant hogweed *Heracleum mantegazzianum*, Himalayan balsam *Impatiens glandulifera*, Himalayan knotweed *Persicaria wallichii*, Japanese knotweed *Fallopia japonica* and rhododendron *Rhododendron ponticum*.

Giant rhubarb *Gunnera tinctoria* was also recorded outside of the survey site boundary.

## 2 LEGISLATION & PLANNING POLICY

The principal legislation in Ireland relating to invasive non-native species and relevant to the proposed development are set out below.

### 2.1 European Communities (Birds and Natural Habitats) Regulations 2011 [SI. 477]

It is an offence under Article 49 (2) of the European Communities (Birds and Natural Habitats) Regulations 2011 for any person to plant, disperse, allow to grow or cause to disperse, spread or otherwise cause to grow throughout the state any plant included in Part 1 of the Third Schedule. Giant hogweed, Himalayan balsam, Himalayan knotweed, Japanese knotweed and rhododendron are included on the Third Schedule of the Regulations.

### 2.2 European Regulations

Regulation (EU) 1143/2014 on invasive alien species (the IAS Regulation) entered into force on 1 January 2015, fulfilling Action 16 of Target 5 of the EU 2020 Biodiversity Strategy, as well as Aichi Target 9 of the Strategic Plan for Biodiversity 2011-2020 under the Convention of Biological Diversity.

The core of the IAS Regulation is the list of Invasive Alien Species of Union concern (“the Union list”).

The IAS Regulation provides for a set of measures to be taken across the EU in relation to invasive alien species included on the Union list. Three distinct types of measures are envisaged, which follow an internationally agreed hierarchical approach to combatting IAS:

**Prevention:** a number of robust measures aimed at preventing the intentional or unintentional introduction of IAS of Union concern into the EU.

**Early detection and rapid eradication:** Member States must put in place a surveillance system to detect the presence of IAS of Union concern as early as possible and take rapid eradication measures to prevent them from establishing.

**Management:** some IAS of Union concern are already established in certain Member States. Concerted management action is needed to prevent them from spreading any further and to minimize the harm they cause.

### 3 INVASIVE SPECIES SURVEY RESULTS

Invasive species survey findings are described below in respect of each of the four relevant sites, illustrated on the accompanying Figures 3.1-3.4 and listed within the appended Invasive Species Recording Sheets.

#### 3.1 Burnfoot

Invasive species survey at Burnfoot was undertaken by RPS on 16<sup>th</sup> September 2020. Invasive species recorded within the site include Japanese knotweed and rhododendron.

The locations of these species within the survey area are illustrated on the accompanying Figure 3.1 and included below within Table 3.1. Plates illustrating the stands, taken during site survey by RPS are included at Appendix IV and cross-referenced with the site references included at Table 3.1.

Japanese knotweed was recorded in four separate stands within the Burnfoot survey area, including a large stand (c.30m<sup>2</sup>) on rough ground on the eastern bank of a small tributary of the Burnfoot River; a large stand (c.50m<sup>2</sup>), mostly on rough ground on the eastern bank of a small tributary of the Burnfoot River, although some was also located on the western bank outside the fence line of the improved field; and a small stand (c.5m<sup>2</sup>) on a bank to the rear of a house in Lios Na Greine on the southern side of the Burnfoot River.

Rhododendron was recorded in two locations including a single rhododendron plant on the northern bank of the Burnfoot River and a single rhododendron plant in a treeline east of the gate entrance to the farm-yard on southern side of R239.

**Table 3.1: Details of Invasive Species Stands Recorded in Burnfoot**

Site Reference	Species	Grid Reference	Average Height of Stem (cm)	Vegetation Composition	Adjacent to Water	Slope	Approximate Area (m <sup>2</sup> )
BJK01	Japanese knotweed	C38072372	1.2	Other species present	No	No	30
BJK02	Japanese knotweed	C38082371	1.2	Other species present	Yes	Yes	50
BJK03	Japanese knotweed	C38152370	1.2	Other species present	Yes	Yes	5
BJK04	Japanese knotweed	C 38032309	1.8	Other species present	No	Yes	28
BR01	Rhododendron	C38432382	1.5	Rhododendron only	Yes	Yes	1
BR02	Rhododendron	C38592383	2	Other species present	No	No	1

#### 3.2 Castlefinn

Invasive species survey at Castlefinn was undertaken by RPS on the 9<sup>th</sup> and 10<sup>th</sup> of September 2020. Invasive species recorded within the site include giant hogweed, Himalayan balsam, Himalayan knotweed and Japanese knotweed.

The locations of these species within the survey area are illustrated on the accompanying Figure 3.2 and included below within Table 3.2. It is noted that Himalayan Balsam, given the number of stands recorded, has been omitted from Table 3.2, however details on the recorded locations are included within the

appended Invasive Species Recording Sheets. Plates illustrating the stands, taken during site survey by RPS are included at Appendix V and cross-referenced with the site references included at Table 3.2. It is noted that only a small number of photos of Himalayan Balsam are included given the number of small stands of similar character recorded within the study area.

Giant hogweed was recorded in four separate locations within the Castlefinn survey area including a stand of several plants which spans a number of unmanaged gardens to the southwest of the town; a stand of plants along a minor watercourse in proximity to and north of Chapel Street; a single plant located to the north of Chapel Street within an area of young alder scrub; and a single immature plant located along the southern slope off Chapel Street within an area of woodland.

Himalayan Balsam is present across much of Castlefinn, particularly in proximity to watercourses and across the flood plain. It is considered likely that the distribution of this species is resultant from the deposition of seeds in floodwaters and via typical flows along the River Finn. Stands and scattered plants were recorded throughout the survey area.

Himalayan knotweed was recorded in three locations within the survey area, including a large stand (c. 120m<sup>2</sup>) within an area of dumped spoil, which appears to have been subject to fencing and treatment, and a two-part linear stand (c. 98m<sup>2</sup>) along the southern margin of a water treatment works. These stands are in the south-western area of the town.

Japanese knotweed was recorded in numerous locations from within the survey area. This include stands within areas of dumped spoil to the south-west of the tow; a single stand in proximity to residential gardens at Grahamsland Estate; a number of stands within unmanaged lands to the north of Chapel Street, in addition to a number of stands along both the north and south shoulders of Chapel Street itself. A further number of stands are located along a minor watercourse to the north of the N15. Stands are of variable size and density, a number of the stands, particularly those along Chapel Street, appearing to be regenerating from previous treatment.

**Table 3.2: Details of Invasive Species Stands Recorded in Castlefinn**

Site Reference	Species	Grid Reference	Average Height of Stem (cm)	Vegetation Composition	Adjacent to Water	Slope	Approximate Area (m <sup>2</sup> )
CGH01	Giant hogweed	H26169483	3	Other species present	No	No	2
CGH02	Giant hogweed	H26169482	3	Other species present	No	No	2
CGH03	Giant hogweed	H26169481	3	Other species present	No	No	2
CGH04	Giant hogweed	H26169481	3	Other species present	No	No	1
CGH05	Giant hogweed	H26179481	3	Other species present	No	No	1
CGH06	Giant hogweed	H26579491	3	Other species present	Yes	Yes	5
CGH07	Giant hogweed	H26599490	3	Other species present	Yes	No	1
CGH08	Giant hogweed	H26629487	0.5	Other species present	No	Yes	1

CHK01	Himalayan knotweed	H26099478	1.2	HK only	No	Yes	120
CHK02	Himalayan knotweed	H26069481	1.2	HK only	Yes	Yes	8
CHK03	Himalayan knotweed	H26089480	1.2	HK only	Yes	Yes	90
CJK01	Japanese knotweed	H26169478	1.6	Other species present	No	Yes	30
CJK02	Japanese knotweed	H26789486	0.5	Other species present	No	Yes	1
CJK03	Japanese knotweed	H26769486	0.6	Other species present	No	Yes	2
CJK04	Japanese knotweed	H26759486	0.5	Other species present	No	Yes	2
CJK05	Japanese knotweed	H26749487	0.2	Other species present	No	No	25
CJK06	Japanese knotweed	H26759487	0.1	Other species present	No	No	3
CJK07	Japanese knotweed	H26749488	1.5	Other species present	No	Yes	1
CJK08	Japanese knotweed	H26739487	0.1	Other species present	No	No	2
CJK09	Japanese knotweed	H26769488	1.3	Other species present	No	No	2
CJK10	Japanese knotweed	H26119476	0.2	JK Only	No	No	3
CJK11	Japanese knotweed	H26099476	1.8	JK only	No	Yes	160
CJK12	Japanese knotweed	H25969496	1.7	JK only	No	Yes	20
CJK13	Japanese knotweed	H26649478	1.8	Other species present	No	Yes	1
CJK14	Japanese knotweed	H26259481	1.5	Other species present	No	No	19
CJK15	Japanese knotweed	H26239510	0.3	Other species present	Yes	No	2
CJK16	Japanese knotweed	H26249511	2	JK only	Yes	No	50
CJK17	Japanese knotweed	H26299515	0.2	Other species present	Yes	No	60

### 3.3 Downings

Invasive species survey at Downings was undertaken by RPS on 9<sup>th</sup> and 23<sup>rd</sup> September 2020. There were no invasive species recorded within the survey area during these surveys.

### 3.4 Glenties

Invasive species survey at Glenties was undertaken by RPS on the 15<sup>th</sup> September 2020. Invasive species recorded within the survey area include Himalayan knotweed, Japanese knotweed and rhododendron. Giant rhubarb was also recorded outside of the survey area boundary.

The locations of these species within the survey area are illustrated on the accompanying Figure 3.3 and included below within Table 3.3. Plates illustrating the stands, taken during site survey by RPS are included at Appendix VI and cross-referenced with the site references included at Table 3.3.

Himalayan knotweed was recorded in two stands, one large (c. 150m<sup>2</sup>) located to the east of the Glenties Church of Ireland, within an area of sloped woodland in proximity to the Owenea River, in addition to a small stand (c. 2m<sup>2</sup>) on the banks of the Owenea to the south-east of this larger stand.

Japanese knotweed was recorded in two large stands, within unmanaged areas to the rear of properties, to the west of the N56 and to the south of Church Road. These stands are approximately 240m<sup>2</sup> and 300m<sup>2</sup> respectively and include narrow portions which surround buildings and walls within unmanaged areas of gardens and adjacent woodland.

Rhododendron was recorded in several locations within the survey area including within a hedgerow in the western portion of the survey area, which supported a number of scattered plants; within the adjacent area of raised bog which supported a few scattered plants; and within the Church of Ireland churchyard, which supports a number of large and mature amenity plants.

A single stand of giant rhubarb was recorded within an area of woodland to the east of the Owenea River and to the west of the Courthouse of Glenties historic site. As this lay outside of the survey area it was not subject to detailed assessment, but it appears to comprise a stand of around 10m<sup>2</sup>.

**Table 3.3: Details of Invasive Species Stands Recorded in Glenties**

Site Reference	Species	Grid Reference	Average Height of Stem (cm)	Vegetation Composition	Adjacent to Water	Slope	Approximate Area (m <sup>2</sup> )
GGR01	giant-rhubarb	G81859420	2.5	GR only	Yes	No	10
GHK01	Himalayan knotweed	G81829427	1	Other species present	Yes	No	2
GHK02	Himalayan knotweed	G81819431	1	HK only	Yes	Yes	150
GJK01	Japanese knotweed	G81759437	2	Other species present	No	No	300
GJK02	Japanese knotweed	G81739439	2	Other species present	No	No	240
GR01	rhododendron	G81149430	1.2	Rhododendron and other species	No	No	2
GR02	rhododendron	G81159430	1.3	Other species present	No	No	2
GR03	rhododendron	G81159430	1.3	Other species present	No	No	1
GR04	rhododendron	G81169429	1.4	Other species present	No	No	2

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GR05	rhododendron	G81779430	2.5	Other species present	No	No	40
GR06	rhododendron	G81789428	2.5	Other species present	No	No	10

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## 4 OUTLINE MANAGEMENT PLAN

### 4.1 Responsibility

The OISMP has been drafted prior to procurement of a Contractor by Donegal County Council. The person responsible for the management of invasive non-native species on site and the implementation of the ISMP has therefore yet to be appointed. Once procured the Contractor will appoint an Environmental Manager (EM) and Ecological Clerk of Works (ECoW).

The EM will be responsible for the implementation and sign-off of the ISMP, liaison with the ECoW, ensuring that all contractors, sub-contractors and site personnel are aware of the plan and that provisions are made for avoiding any further contamination of the site. The EM will also be responsible for ensuring that the ISMP is updated and revised in light of any emerging civil engineering design and in advance of management works.

The ECoW will be a person with the qualifications, training, skills and relevant experience to undertake appropriate survey and monitoring and to provide specialist advice in relation to invasive non-native species to site personnel on the necessary working practices required to safeguard the site and to aid compliance with relevant legislation. The ECoW will be responsible for survey and identification of invasive non-native species; supervising management works where necessary and monitoring.

The ISMP is a working document, its appendices and any revisions will be kept for future site owners.

### 4.2 Site Management Objectives

The main management objective is to manage and/or eradicate invasive non-native species including Japanese knotweed, Himalayan knotweed, Himalayan balsam, giant hogweed and rhododendron located within the survey areas and other areas which may be proposed for flood relief works, prior to commencement of initial site preparation works and any resulting construction contract.

Where flood relief measures will involve excavation or other works within areas supporting invasive non-native species it is envisaged that more rapid techniques for eradication will likely be required to ensure the future integrity of any constructed features and to prevent spread of the species during construction.

Where stands of invasive species will not be directly affected by the proposals it is considered that a more long-term approach may be more appropriate, involving management rather than eradication, to reduce expenses associated with large and unnecessary excavations, as may be required.

In respect of Himalayan balsam, measures have been included which if applied to the entire survey area and its surrounds would likely manage the extent of the areas which support this species. It is likely however that seed will be reintroduced to the site on a periodic basis through deposits arising from upstream floodwaters of the River Finn. As such eradication of this species from the site is considered unlikely and would also entail extremely high treatment costs.

### 4.3 Japanese Knotweed

Japanese knotweed is an invasive non-native species in Ireland originating from Japan and northern China. It is a perennial plant with vigorous growth and consists of dense stands with extensive underground root systems known as rhizomes. These rhizomes, which can grow up to 7m from the parent plant and 3m below the ground and are responsible for the spread of the plant. If left unchecked the plant can cause

considerable damage to biodiversity, buildings, hard surfaces and infrastructure. Japanese knotweed does not spread from seed. It is entirely spread by the movement of plant material or the movement of contaminated soil containing fragments of rhizome.

Japanese knotweed was recorded within survey areas at Burnfoot, Castlefinn and Glenties.

### 4.3.1 Management Options

There are a number management options for the control of knotweed these include:

- Excavation & Removal Off Site
- Excavation & Burial On Site
- Bund Method (excavation & stockpiling for future treatment)
- In-situ Herbicide Treatment (stem injection or folia application)
- Combined Method (combined treatment of digging & herbicide)
- Use of MeshTech control technique, potentially in combination with other approaches.

It is not an acceptable option to consider doing nothing.

Given the timescales involved, in respect of stands of vegetation which will be directly affected by proposed flood relief works, it is considered that the only feasible management options would be excavation and either removal off site to appropriate landfill or burial on site.

Stands of Japanese knotweed located outside of the site boundary or within areas not directly affected by the proposals should be managed via in-situ herbicide treatment or potentially using the MeshTech control technique. Such treatment options will result in medium to long-term control of these stands but are unlikely to result in eradication.

It is noted that the construction phase of the proposed flood relief works will proceed up to several years in the future as such, treatment will be implemented where possible prior to works taking place. Where treatment is to be undertaken in the intervening period this should comprise steps suggested in order to prevent further spread below (4.3.2), including the setting up of contamination zones and associated signs and the use of in-situ herbicide treatment or potentially using the MeshTech control technique.

Treatment options as discussed below are prescribed on the basis of the approach being utilised for each site, Burnfoot, Castlefinn and Glenties respectively, on an individual basis.

### 4.3.2 Preventing Further Spread

- Immediate priority should be given to setting up a Contamination Zone around each stand of Japanese knotweed which will be directly affected by the proposed flood relief works and otherwise, where appropriate. The Contamination Zone should extend 7m laterally from visible plant growth and hi-visibility hazard tape or barrier fencing mesh and signs should be erected warning of the presence of invasive non-native species. The Contamination Zone will demarcate the area of soil likely to be contaminated by the underground rhizome system of Japanese knotweed. No access should be allowed within the Contamination Zones.
- At construction stage, all contractors, sub-contractors and site personnel should be briefed on the presence and location of invasive non-native species; the site practices put in place to avoid further

spread and contamination; and receive training in the identification of Japanese knotweed. A poster or leaflet highlighting the key features of the plant will be displayed in all communal areas. Signs should be erected in Contamination Zones. These measures will help to avoid the potential spread of invasive non-native species either around the site or off site.

#### 4.3.3 Option 1: Excavation, Cell Formation & Burial on Site

- Stands of Japanese knotweed which are likely to be subject to direct disturbance to facilitate the proposals will be treated with herbicide immediately prior to excavation using stem injection and/or foliar application and left in-situ for a period of two weeks. Herbicide must be applied by a '*Suitable Qualified and Fully Trained Operative*'. It is recommended that glyphosate is used to treat the knotweed. It should be noted however that glyphosate is a non-selective broad-spectrum systemic herbicide. Care should therefore be taken when using it around mature trees and desirable vegetation. Herbicide Records including details of herbicides used, dose rate, application rates and dates applied should be kept in Appendix I.
- All contractors, sub-contractors and site personnel working on site should first be briefed on the presence and location of Japanese knotweed on site. They should receive a tool box talk in the identification of this invasive non-native species and the site practices put in place to avoid committing an offence under relevant legislation. A poster or leaflet illustrating and highlighting the key features of the plant will be given to all contractors, sub-contractors and site personnel. These measures will help avoid the unintentional spread of invasive species either within the site or off site.
- Eradication works should avoid the use of machinery and tracked vehicles where possible. Materials leaving or brought onto site should be checked to ensure that invasive non-native species do not leave or enter the site via this route.
- A Cell Formation Area will be identified and prepared prior to the excavation of all stands of Japanese knotweed. Cell formation will involve excavation of a pit to the required dimensions; installation of root barrier membrane to completely encapsulate the contaminated knotweed material; layering of sand to protect the membrane; insertion of contaminated knotweed material and all other contaminated material; adequate sealing of the root barrier membrane in accordance with manufacturer's instructions and finally capping off of the cell formation area to at least 2m deep.
- A haulage route and decontamination area, protected with a root barrier membrane, will be set up and isolated by exclusion fencing and signs erected to indicate Japanese knotweed contamination. The route barrier membrane will be protected from damage by a 100mm layer of sand above and below the membrane, topped with a layer of hardcore or other suitable material. All of this material will be removed off-site along with the last load of contaminated soil. The haulage route will be limited to machinery and vehicles involved in the transport of contaminated soil only. The location of the haulage route and decontamination area will be sited in consultation with the ECoW.
- Where ground conditions allow knotweed stands should be excavated to the recommended minimum depth of 3m below ground level and within a perimeter of 7m from the plant growth area. It is possible that the volume may be reduced through the presence of the ECoW who would identify the rhizome during excavation. A single excavator with the sole purpose of excavating contaminated soil will be used throughout the entire excavation to reduce the risk of further contamination.
- All machinery used in the excavation and transport of contaminated material must be brushed down in the decontamination area and then pressure washed immediately prior to leaving the site. Care

must be taken to clean off all infective plant and soil material. All other equipment used on site including clothes and boots must also be cleaned. All machinery and vehicles will be inspected by the ECoW or contractor/subcontractor who has attended a relevant toolbox talk, before being used for other work or taken off site. The decontamination area must be designed to collect and contain all contaminated material including soil, water and silt left behind after machinery and vehicles have been pressure washed. The discarded contaminated material should be disposed of in the Cell Formation Area and will not be allowed to contaminate drains, ditches or watercourses.

- Care must be taken to ensure that all equipment used on site is cleaned and free from knotweed material before leaving the site to avoid committing an offence.
- The appointed Contractor should provide a site plan indicating the location of the cell formation area, haulage routes & decontamination areas; a technical specification drawing for cell formation taking into account existing site conditions and underground services; and method statements detailing the procedures for Japanese knotweed eradication.
- The Contractor should provide method statements detailing the procedures for Japanese knotweed eradication including:
  - Method Statement for Application of Herbicide to Japanese Knotweed
  - Method Statement for Cell Formation
  - Method Statement for Excavation of Japanese Knotweed
  - Method Statement for Loading & Transporting Japanese Knotweed
- Full details of the ISMP and the location of the cell formation area should be kept for future site owners and/or Donegal County Council.
- The following risks remain with Excavation, Cell Formation & Burial On Site; limitations to future construction works within the location of the cell formation area; limitations to construction of new services or maintenance of existing services; risk of re-establishment of Japanese knotweed if the root barrier membranes is incorrectly sealed or if the integrity of the membrane is breached.

#### 4.3.4 Option 2: Excavation & Removal Off-Site to Landfill

- Excavation and removal off-site to landfill should take place prior to the commencement of initial site preparation works and the main construction contract.
- Stands of Japanese knotweed which are to be subject to direct disturbance within the proposals, should be treated with herbicide immediately prior to commencement of excavation using stem injection and/or folia application and left in-situ for a period of two weeks. Herbicide must be applied by a '*Suitable Qualified and Fully Trained Operative*'. Herbicide Records including details of herbicides used, dose rate, application rates and dates applied should be kept in Appendix I. It is recommended that glyphosate is used to treat the knotweed. It should be noted however that glyphosate is a non-selective broad-spectrum systemic herbicide. Care should therefore be taken when using it around mature trees and desirable vegetation.
- All contractors, sub-contractors and site personnel working on site should first be briefed on the presence and location of Japanese knotweed on the site. They should receive a tool box talk in the identification of this invasive species and the site practices put in place to avoid committing an offence under relevant legislation. A poster or leaflet illustrating and highlighting the key features of the plant

will be given to all contractors, sub-contractors and site personnel. These measures will help avoid the unintentional spread of invasive species either within the site or off site.

- Eradication works should avoid the use of machinery and tracked vehicles where possible. Materials leaving or brought onto site should be checked to ensure that invasive non-native species do not leave or enter the site via this route.
- A haulage route, transfer site and decontamination area, protected with a root barrier membrane, will be set up and isolated by exclusion fencing and signs erected to indicate Japanese knotweed contamination. The route barrier membrane will be protected from damage by a 100 mm layer of sand above and below the membrane, topped with a layer of hardcore or other suitable material. All of this material will be removed off-site along with the last load of contaminated soil. The haulage route will be limited to machinery and vehicles involved in the transport of contaminated soil only. The location of the haulage route, transfer site and decontamination area will be sited in consultation with the ECoW.
- Where conditions allow knotweed stands should be excavated to the recommended minimum depth of 3m below ground level and within a perimeter of 7m from the knotweed growth area. It is possible that the volume may be reduced by the presence of the ECoW who would identify the rhizome during excavation. A single excavator with the sole purpose of excavating contaminated soil will be used throughout the entire excavation to reduce the risk of further contamination.
- The excavated soil will be transferred directly into a tipper truck within the transfer site. The truck will be filled to a maximum of 20cm from the top and securely covered to prevent any loss of material during transportation. The truck will then proceed to the decontamination area prior to leaving the site for a licence waste management facility. The EM will be responsible for ensuring all waste transfer documentation is in place in accordance with relevant legislation. Waste records should be kept in Appendix II.
- All machinery used in the excavation and transport of contaminated material must be brushed down in the decontamination area and then pressure washed immediately prior to leaving the site. Care must be taken to clean off all infective plant and soil material. All other equipment used on site including clothes and boots must also be cleaned. All machinery and vehicles will be inspected by the ECoW or contractor/subcontractor who has attended a relevant toolbox talk, before being used for other work or taken off site. The decontamination area must be designed to collect and contain all contaminated material including soil, water and silt left behind after machinery and vehicles have been pressure washed. The discarded contaminated material should be disposed of in the Cell Formation Area and will not be allowed to contaminate drains, ditches or watercourses.
- Care must be taken to ensure that all equipment used on site is cleaned and free from knotweed material before leaving the site to avoid committing an offence under the European Communities Regulations 2011.
- The Contractor should provide a site plan indicating the location haulage routes & decontamination areas and method statements detailing the procedures for Japanese knotweed eradication.
- The Contractor should provide method statements detailing the procedures for Japanese knotweed eradication including:
  - Method Statement for Application of Herbicide to Japanese Knotweed
  - Method Statement for Excavation of Japanese Knotweed

- Method Statement for Loading & Transporting Japanese Knotweed
- The Contractor should liaise with the relevant authorities to ensure compliance with all legislation, licence and permit requirements.

### 4.3.5 Option 3: Bund Method

- The bund method and pre-excitation herbicide treatment should take place immediately prior to the commencement of any initial site preparation, pre-construction or construction works.
- Stands of Japanese knotweed which are to be subject to direct disturbance, should be treated with herbicide immediately prior to commencement of excavation using stem injection and/or folia application and left in-situ for a period of two weeks. Herbicide must be applied by a '*Suitable Qualified and Fully Trained Operative*'. Herbicide Records including details of herbicides used, dose rate, application rates and dates applied should be kept in Appendix I. It is recommended that glyphosate is used to treat the knotweed. It should be noted however that glyphosate is a non-selective broad-spectrum systemic herbicide. Care should therefore be taken when using it around mature trees and desirable vegetation.
- All contractors working within the contaminated areas must first be briefed on the presence, identification and location of the invasive species Japanese knotweed. They should receive a tool box talk in the identification of the species to avoid inadvertently committing an offence under relevant legislation. A poster or leaflet illustrating and highlighting the key features of the plant should be given to all contractors. These measures will help avoid the unintentional spread of invasive species within or outside of the site.
- An area suitable for bund construction should be provisionally marked out on the ground in an area free of knotweed.
- Once the herbicide has taken effect the bund area should be cleared of any dead material. The bund area will be created by laying down root barrier membrane of adequate size to accommodate the anticipated volume of excavated material. The dead knotweed material from within the construction footprint should be cleanly cut at ground level using a cutter, hook or scythe, but should not be strimmed or flailed, and transported to the designated bund area. The designated bund area should remain free from disturbance during construction works.
- Eradication works should avoid the use of machinery and tracked vehicles where possible. Materials leaving or brought onto site should be checked to ensure that invasive non-native species do not leave or enter the site via this route.
- A haulage route and decontamination area, protected with a root barrier membrane, will be set up and isolated by exclusion fencing and signs erected to indicate Japanese knotweed contamination. The haulage route will be limited to machinery and vehicles involved in the transport of contaminated soil only. The location of the haulage route and decontamination area will be sited in consultation with the ECoW.
- Where ground conditions allow knotweed stands should be excavated to the recommended minimum depth of 3m below ground level and within a perimeter of 7m from the plant growth area. It is possible that the volume may be reduced through the presence of the ECoW who would identify the rhizome during excavation. A single excavator with the sole purpose of excavating contaminated soil will be used throughout the entire excavation to reduce the risk of further contamination.

- Excavated knotweed from within the construction footprint should be stockpiled evenly on the root barrier membrane to a maximum height of 1m above ground level. The bund area should be fenced and signs erected to indicate the presence of knotweed. Any re-growth should be sprayed with herbicide in the growing season, in line with the methodology outlined below in Section 4.3.6.
- All machinery used in the excavation and transport of contaminated material must be brushed down in the decontamination area and then pressure washed immediately prior to leaving the site. Care must be taken to clean off all infective plant and soil material. All other equipment used on site including clothes and boots must also be cleaned. All machinery and vehicles will be inspected by the ECoW or contractor/subcontractor who has attended a relevant toolbox talk, before being used for other work or taken off site. The decontamination area must be designed to collect and contain all contaminated material including soil, water and silt left behind after machinery and vehicles have been pressure washed. The discarded contaminated material should be disposed of in the Cell Formation Area and will not be allowed to contaminate drains, ditches or watercourses.
- Care must be taken to ensure that all equipment used on site is cleaned and free from knotweed material before leaving the site to avoid committing an offence.
- The appointed Contractor should provide a site plan indicating the location of the bund formation area, haulage routes & decontamination areas; a technical specification drawing for bund formation taking into account existing site conditions and underground services; and method statements detailing the procedures for Japanese knotweed eradication.
- The Contractor should provide method statements detailing the procedures for Japanese knotweed eradication including:
  - Method Statement for Application of Herbicide to Japanese Knotweed
  - Method Statement for Bund Formation
  - Method Statement for Excavation of Japanese Knotweed
  - Method Statement for Loading & Transporting Japanese Knotweed
- Full details of the ISMP and the location of the cell formation area should be kept for future site owners and/or Donegal County Council.
- The following risks remain with excavation, bund formation & subsequent treatment; limitations to future construction works within the location of the bund formation area; limitations to construction of new services or maintenance of existing services; re-establishment of Japanese knotweed within the bund.

#### 4.3.6 Option 4: Herbicide Treatment

- Japanese knotweed stands which are not to be directly affected by the proposed flood relief works should be managed using in-situ herbicide treatment or via another long term control measure. Herbicide must be applied by a *'Suitable Qualified and Fully Trained Operative'*. It is recommended that glyphosate is used to treat knotweed growth. It should be noted however that glyphosate is a non-selective broad-spectrum systemic herbicide. Care should therefore be taken when using it around mature trees and desirable vegetation.
- Herbicide should be applied in dry weather conditions (no rain for 24 hours). Spraying should not be carried out in wind speeds above Force 2 on the Beaufort scale to avoid spray drift.

- Stem Injection is considered the most effective solution for eradication of knotweed. Herbicide is injected into the stem of the plant and is directly absorbed into the rhizome at a faster absorbency rate than folia spraying. Results can be seen within two weeks. Can be used on stands of knotweed within close proximity to desirable vegetation or near water. Treatment is not affected by weather conditions. Stem injection can be undertaken at any time during the growing season.
- Details of all herbicide applications should be recorded and documented in Appendix I. Details should include the name of personnel, date, knotweed stands treated, herbicide brand name, active ingredient, amount used and weather conditions.
- The stands of knotweed should be monitored to check for re-growth throughout the growing season and herbicide treatment carried out twice a year in spring and autumn.
- It is noted that treatment via this method will control the vigour of the plant and reduce the potential for further spread, likely leading to dormancy of the plant in the long-term. Such a solution therefore is unlikely to eradicate the stand and will require persistent and long-term assessment and re-treatment.

#### 4.3.7 Option 5: MeshTech Control Technique

- Japanese knotweed stands which are not to be directly affected by the proposed flood relief works should be managed via a long-term control measure, to limit spread. MeshTech, a treatment method patented by Japanese Knotweed Solutions, must be undertaken by a '*Suitable Qualified and Fully Trained Operative*', to both avoid inadvertent spread of the plant and to ensure that potential damage to the surrounding ecosystem is minimised.
- MeshTech is a fine mesh applied to the surface of areas which have been colonised by knotweed. The mesh restricts the plants growth and kills mature stems leading to depletion of the resources stored by the plant roots and subsequent dormancy. It is claimed that the mesh will lead to a significant reduction in plant vigour in one year but control of the plant may take over five years.
- Surface growth from the previous year is cut and cleared with MeshTech applied over the top of the surface growth and rhizome area.
- Stem growth occurs through the mesh leading to death of stems throughout the growing season.
- Growth should be monitored throughout the growing season with mesh extended as required to cover new growth. Details of the monitoring and further application of mesh should be recorded and documented in Appendix I. Details should include the name of personnel, date and information on recorded growth of the plant stands.
- The mesh is left in situ until the plant enters a period of dormancy after a period of up to and over five years.
- The method is suited to treatment of stands which are in close proximity to sensitive habitats due to the lack of chemical inputs entailed.
- It is noted that treatment via this method will control the vigour of the plant and reduce the potential for further spread, likely leading to dormancy of the plant in the long-term. Such a solution therefore is unlikely to eradicate the stand and will require persistent and long-term assessment and re-treatment.

### 4.3.8 Ongoing Management

Maintenance of the proposed project will typically include the spraying or cutting of any proposed amenity grassland or vegetation to maintain proposed areas of hardstanding and public open space. As part of operational phase landscape management, periodic inspection for Japanese knotweed should be undertaken.

## 4.4 Himalayan Knotweed

Himalayan knotweed is an invasive non-native species in Ireland originating from Asia. It is a robust perennial plant with vigorous growth and consists of dense stands with extensive underground root systems known as rhizomes. These rhizomes are responsible for the spread of the plant. If left unchecked the plant can cause considerable damage to biodiversity, buildings, hard surfaces and infrastructure. Himalayan knotweed does not spread from seed. It is entirely spread by the movement of plant material or the movement of contaminated soil containing fragments of rhizome.

Himalayan knotweed was recorded within survey areas at Castlefinn and Glenties.

### 4.4.1 Management Options

There are a number management options for the control of knotweed these include:

- Excavation & Removal Off Site
- Excavation & Burial On Site
- Bund Method (excavation & stockpiling for future treatment)
- In-situ Herbicide Treatment (stem injection or folia application)
- Combined Method (combined treatment of digging & herbicide)

It is not an acceptable option to consider doing nothing.

Given the timescales involved, in respect of stands of vegetation which will be directly affected by proposed flood relief works, it is considered that the only feasible management options would be excavation and either removal off site to appropriate landfill or burial on site.

Stands of Himalayan knotweed located outside of the site boundary or within areas not subject to direct disturbance, should be managed via in-situ herbicide treatment. This treatment will result in medium to long-term control of these stands but are unlikely to result in eradication.

It is noted that the construction phase of the proposed flood relief works will proceed up to several years in the future as such, treatment will be implemented where possible prior to works taking place. Where treatment is to be undertaken in the intervening period this should comprise steps suggested in order to prevent further spread below (4.4.2), including the setting up of contamination zones and associated signs and the use of in-situ herbicide treatment. Such works should in such cases proceed as soon as possible to achieve control and in advance of the proposed works.

Treatment options as discussed below are prescribed on the basis of the approach being utilised for each site Castlefinn and Glenties respectively, on an individual basis.

## 4.4.2 Preventing Further Spread

- Immediate priority should be given to setting up a Contamination Zone around each stand of Himalayan knotweed to be directly affected by the proposals and elsewhere where possible. The Contamination Zone should extend 7m laterally from visible plant growth and hi-visibility hazard tape or barrier fencing mesh and signs should be erected warning of the presence of invasive non-native species. The Contamination Zone will demarcate the area of soil likely to be contaminated by the underground rhizome system of Himalayan knotweed. No access should be allowed within the Contamination Zones.
- At construction stage, all contractors, sub-contractors and site personnel should be briefed on the presence and location of invasive non-native species; the site practices put in place to avoid further spread and contamination; and receive training in the identification of Himalayan knotweed. A poster or leaflet highlighting the key features of the plant will be displayed in all communal areas. Signs should be erected in Contamination Zones. These measures will help to avoid the potential spread of invasive non-native species either around the site or off site.

## 4.4.3 Option 1: Excavation, Cell Formation & Burial on Site

- Stands of Himalayan knotweed which are likely to be subject to direct disturbance to facilitate the proposals will be treated with herbicide immediately prior to excavation using stem injection and/or foliar application and left in-situ for a period of two weeks. Herbicide must be applied by a '*Suitable Qualified and Fully Trained Operative*'. It is recommended that glyphosate is used to treat the knotweed. It should be noted however that glyphosate is a non-selective broad-spectrum systemic herbicide. Care should therefore be taken when using it around mature trees and desirable vegetation. Herbicide Records including details of herbicides used, dose rate, application rates and dates applied should be kept in Appendix I.
- All contractors, sub-contractors and site personnel working on site should first be briefed on the presence and location of Himalayan knotweed on site. They should receive a tool box talk in the identification of this invasive non-native species and the site practices put in place to avoid committing an offence under relevant legislation. A poster or leaflet illustrating and highlighting the key features of the plant will be given to all contractors, sub-contractors and site personnel. These measures will help avoid the unintentional spread of invasive species either within the site or off site.
- Eradication works should avoid the use of machinery and tracked vehicles where possible. Materials leaving or brought onto site should be checked to ensure that invasive non-native species do not leave or enter the site via this route.
- A Cell Formation Area will be identified and prepared prior to the excavation of all stands of Himalayan knotweed. Cell formation will involve excavation of a pit to the required dimensions; installation of root barrier membrane to completely encapsulate the contaminated knotweed material; layering of sand to protect the membrane; insertion of contaminated knotweed material and all other contaminated material; adequate sealing of the root barrier membrane in accordance with manufacturer's instructions and finally capping off of the cell formation area to at least 2m deep.
- A haulage route and decontamination area, protected with a root barrier membrane, will be set up and isolated by exclusion fencing and signs erected to indicate Himalayan knotweed contamination. The route barrier membrane will be protected from damage by a 100mm layer of sand above and below the membrane, topped with a layer of hardcore or other suitable material. All of this material will be

removed off-site along with the last load of contaminated soil. The haulage route will be limited to machinery and vehicles involved in the transport of contaminated soil only. The location of the haulage route and decontamination area will be sited in consultation with the ECoW.

- Where ground conditions allow knotweed stands should be excavated to the recommended minimum depth of 3m below ground level and within a perimeter of 7m from the plant growth area. It is possible that the volume may be reduced through the presence of the ECoW who would identify the rhizome during excavation. A single excavator with the sole purpose of excavating contaminated soil will be used throughout the entire excavation to reduce the risk of further contamination.
- All machinery used in the excavation and transport of contaminated material must be brushed down in the decontamination area and then pressure washed immediately prior to leaving the site. Care must be taken to clean off all infective plant and soil material. All other equipment used on site including clothes and boots must also be cleaned. All machinery and vehicles will be inspected by the ECoW or contractor/subcontractor who has attended a relevant toolbox talk, before being used for other work or taken off site. The decontamination area must be designed to collect and contain all contaminated material including soil, water and silt left behind after machinery and vehicles have been pressure washed. The discarded contaminated material should be disposed of in the Cell Formation Area and will not be allowed to contaminate drains, ditches or watercourses.
- Care must be taken to ensure that all equipment used on site is cleaned and free from knotweed material before leaving the site to avoid committing an offence.
- The appointed Contractor should provide a site plan indicating the location of the cell formation area, haulage routes & decontamination areas; a technical specification drawing for cell formation taking into account existing site conditions and underground services; and method statements detailing the procedures for Himalayan knotweed eradication.
- The Contractor should provide method statements detailing the procedures for Himalayan knotweed eradication including:
  - Method Statement for Application of Herbicide to Himalayan Knotweed
  - Method Statement for Cell Formation
  - Method Statement for Excavation of Himalayan Knotweed
  - Method Statement for Loading & Transporting Himalayan Knotweed
- Full details of the ISMP and the location of the cell formation area should be kept for future site owners and/or Donegal County Council.
- The following risks remain with Excavation, Cell Formation & Burial On Site; limitations to future construction works within the location of the cell formation area; limitations to construction of new services or maintenance of existing services; risk of re-establishment of Himalayan knotweed if the root barrier membranes is incorrectly sealed or if the integrity of the membrane is breached.

#### 4.4.4 Option 2: Excavation & Removal Off-Site to Landfill

- Excavation and removal off-site to landfill should take place prior to the commencement of initial site preparation works and the main construction contract.

- Stands of Himalayan knotweed which are to be subject to direct disturbance within the proposals, should be treated with herbicide immediately prior to commencement of excavation using stem injection and/or folia application and left in-situ for a period of two weeks. Herbicide must be applied by a 'Suitable Qualified and Fully Trained Operative'. Herbicide Records including details of herbicides used, dose rate, application rates and dates applied should be kept in Appendix I. It is recommended that glyphosate is used to treat the knotweed. It should be noted however that glyphosate is a non-selective broad-spectrum systemic herbicide. Care should therefore be taken when using it around mature trees and desirable vegetation.
- All contractors, sub-contractors and site personnel working on site should first be briefed on the presence and location of Himalayan knotweed on the site. They should receive a tool box talk in the identification of this invasive species and the site practices put in place to avoid committing an offence under relevant legislation. A poster or leaflet illustrating and highlighting the key features of the plant will be given to all contractors, sub-contractors and site personnel. These measures will help avoid the unintentional spread of invasive species either within the site or off site.
- Eradication works should avoid the use of machinery and tracked vehicles where possible. Materials leaving or brought onto site should be checked to ensure that invasive non-native species do not leave or enter the site via this route.
- A haulage route, transfer site and decontamination area, protected with a root barrier membrane, will be set up and isolated by exclusion fencing and signs erected to indicate Himalayan knotweed contamination. The route barrier membrane will be protected from damage by a 100 mm layer of sand above and below the membrane, topped with a layer of hardcore or other suitable material. All of this material will be removed off-site along with the last load of contaminated soil. The haulage route will be limited to machinery and vehicles involved in the transport of contaminated soil only. The location of the haulage route, transfer site and decontamination area will be sited in consultation with the ECoW.
- Where conditions allow knotweed stands should be excavated to the recommended minimum depth of 3m below ground level and within a perimeter of 7m from the knotweed growth area. It is possible that the volume may be reduced by the presence of the ECoW who would identify the rhizome during excavation. A single excavator with the sole purpose of excavating contaminated soil will be used throughout the entire excavation to reduce the risk of further contamination.
- The excavated soil will be transferred directly into a tipper truck within the transfer site. The truck will be filled to a maximum of 20cm from the top and securely covered to prevent any loss of material during transportation. The truck will then proceed to the decontamination area prior to leaving the site for a licence waste management facility. The EM will be responsible for ensuring all waste transfer documentation is in place in accordance with relevant legislation. Waste records should be kept in Appendix II.
- All machinery used in the excavation and transport of contaminated material must be brushed down in the decontamination area and then pressure washed immediately prior to leaving the site. Care must be taken to clean off all infective plant and soil material. All other equipment used on site including clothes and boots must also be cleaned. All machinery and vehicles will be inspected by the ECoW or contractor/subcontractor who has attended a relevant toolbox talk, before being used for other work or taken off site. The decontamination area must be designed to collect and contain all contaminated material including soil, water and silt left behind after machinery and vehicles have been

pressure washed. The discarded contaminated material should be disposed of in the Cell Formation Area and will not be allowed to contaminate drains, ditches or watercourses.

- Care must be taken to ensure that all equipment used on site is cleaned and free from knotweed material before leaving the site to avoid committing an offence under the European Communities Regulations 2011.
- The Contractor should provide a site plan indicating the location haulage routes & decontamination areas and method statements detailing the procedures for Himalayan knotweed eradication.
- The Contractor should provide method statements detailing the procedures for Himalayan knotweed eradication including:
  - Method Statement for Application of Herbicide to Himalayan Knotweed
  - Method Statement for Excavation of Himalayan Knotweed
  - Method Statement for Loading & Transporting Himalayan Knotweed
- The Contractor should liaise with the relevant authorities to ensure compliance with all legislation, licence and permit requirements.

#### 4.4.5 Option 3: Bund Method

- The bund method and pre-excavation herbicide treatment should take place immediately prior to the commencement of any initial site preparation, pre-construction or construction works.
- Stands of Himalayan knotweed which are to be subject to direct disturbance within the proposals, should be treated with herbicide immediately prior to commencement of excavation using stem injection and/or folia application and left in-situ for a period of two weeks. Herbicide must be applied by a '*Suitable Qualified and Fully Trained Operative*'. Herbicide Records including details of herbicides used, dose rate, application rates and dates applied should be kept in Appendix I. It is recommended that glyphosate is used to treat the knotweed. It should be noted however that glyphosate is a non-selective broad-spectrum systemic herbicide. Care should therefore be taken when using it around mature trees and desirable vegetation.
- All contractors working within the contaminated areas must first be briefed on the presence, identification and location of the invasive species Himalayan knotweed. They should receive a tool box talk in the identification of the species to avoid inadvertently committing an offence under relevant legislation. A poster or leaflet illustrating and highlighting the key features of the plant should be given to all contractors. These measures will help avoid the unintentional spread of invasive species within or outside of the site.
- An area suitable for bund construction should be provisionally marked out on the ground in an area free of knotweed.
- Once the herbicide has taken effect the bund area should be cleared of any dead material. The bund area will be created by laying down root barrier membrane of adequate size to accommodate the anticipated volume of excavated material. The dead knotweed material from within the construction footprint should be cleanly cut at ground level using a cutter, hook or scythe, but should not be strimmed or flailed, and transported to the designated bund area. The designated bund area should remain free from disturbance during construction works.

- Eradication works should avoid the use of machinery and tracked vehicles where possible. Materials leaving or brought onto site should be checked to ensure that invasive non-native species do not leave or enter the site via this route.
- A haulage route and decontamination area, protected with a root barrier membrane, will be set up and isolated by exclusion fencing and signs erected to indicate Himalayan knotweed contamination. The haulage route will be limited to machinery and vehicles involved in the transport of contaminated soil only. The location of the haulage route and decontamination area will be sited in consultation with the ECoW.
- Where ground conditions allow knotweed stands should be excavated to the recommended minimum depth of 3m below ground level and within a perimeter of 7m from the plant growth area. It is possible that the volume may be reduced through the presence of the ECoW who would identify the rhizome during excavation. A single excavator with the sole purpose of excavating contaminated soil will be used throughout the entire excavation to reduce the risk of further contamination.
- Excavated knotweed from within the construction footprint should be stockpiled evenly on the root barrier membrane to a maximum height of 1m above ground level. The bund area should be fenced and signs erected to indicate the presence of knotweed. Any re-growth should be sprayed with herbicide in the growing season, in line with the methodology outlined below in Section 4.3.6.
- All machinery used in the excavation and transport of contaminated material must be brushed down in the decontamination area and then pressure washed immediately prior to leaving the site. Care must be taken to clean off all infective plant and soil material. All other equipment used on site including clothes and boots must also be cleaned. All machinery and vehicles will be inspected by the ECoW or contractor/subcontractor who has attended a relevant toolbox talk, before being used for other work or taken off site. The decontamination area must be designed to collect and contain all contaminated material including soil, water and silt left behind after machinery and vehicles have been pressure washed. The discarded contaminated material should be disposed of in the Cell Formation Area and will not be allowed to contaminate drains, ditches or watercourses.
- Care must be taken to ensure that all equipment used on site is cleaned and free from knotweed material before leaving the site to avoid committing an offence.
- The appointed Contractor should provide a site plan indicating the location of the bund formation area, haulage routes & decontamination areas; a technical specification drawing for bund formation taking into account existing site conditions and underground services; and method statements detailing the procedures for Himalayan knotweed eradication.
- The Contractor should provide method statements detailing the procedures for Himalayan knotweed eradication including:
  - Method Statement for Application of Herbicide to Himalayan Knotweed
  - Method Statement for Bund Formation
  - Method Statement for Excavation of Himalayan Knotweed
  - Method Statement for Loading & Transporting Himalayan Knotweed
- Full details of the ISMP and the location of the cell formation area should be kept for future site owners and/or Donegal County Council.

- The following risks remain with excavation, bund formation & subsequent treatment; limitations to future construction works within the location of the bund formation area; limitations to construction of new services or maintenance of existing services; re-establishment of Himalayan knotweed within the bund.

#### 4.4.6 Option 4: Herbicide Treatment

- Himalayan knotweed stands which are not to be directly affected by the proposed flood relief works should be managed using in-situ herbicide treatment or via another long-term control measure. Herbicide must be applied by a '*Suitable Qualified and Fully Trained Operative*'. It is recommended that glyphosate is used to treat knotweed growth. It should be noted however that glyphosate is a non-selective broad-spectrum systemic herbicide. Care should therefore be taken when using it around mature trees and desirable vegetation.
- Herbicide should be applied in dry weather conditions (no rain for 24 hours). Spraying should not be carried out in wind speeds above Force 2 on the Beaufort scale to avoid spray drift.
- Stem Injection is considered the most effective solution for eradication of knotweed. Herbicide is injected into the stem of the plant and is directly absorbed into the rhizome at a faster absorbency rate than folia spraying. Results can be seen within two weeks. Can be used on stands of knotweed within close proximity to desirable vegetation or near water. Treatment is not affected by weather conditions. Stem injection can be undertaken at any time during the growing season.
- Details of all herbicide applications should be recorded and documented in Appendix I. Details should include the name of personnel, date, knotweed stands treated, herbicide brand name, active ingredient, amount used and weather conditions.
- The stands of knotweed should be monitored to check for re-growth throughout the growing season and herbicide treatment carried out twice a year in spring and autumn.
- It is noted that treatment via this method will control the vigour of the plant and reduce the potential for further spread, likely leading to dormancy of the plant in the long-term. Such a solution therefore is unlikely to eradicate the stand and will require persistent and long-term assessment and re-treatment.

### 4.5 Himalayan Balsam

Himalayan balsam is an invasive non-native species in Ireland originating from the Himalayas. It is an annual plant that completes its life cycle in one growing season and reproduces from seed. Each plant can produce over 800 seeds which remain viable in the soil for up to two years. The mature seed capsules explode at the slightest touch and can scatter seeds up to 7 m from the parent plant. It can be spread by the movement of contaminated soil containing seeds and by transport of seed by water when located next to watercourses.

Himalayan balsam was recorded at Castlefinn only.

#### 4.5.1 Management Options

There are a number management options for the control of balsam these include:

- Excavation & Removal of the Seed Bank Off Site
- Excavation of the Seed Bank, Cell Formation & Burial On Site

- In-situ Herbicide Treatment (folia application)
- Manual removal (pulling or cutting)
- Combined Method (combined treatment of cutting & herbicide)

It is not an acceptable option to consider doing nothing.

Given the timescales involved in the project there a number of years available for treatment prior to construction of flood relief works. It is considered that the widespread distribution of the species within the Castletinn survey area, would require extensive excavations in order to remove the seedbank, on this basis it is proposed that feasible management options are limited to in-situ herbicide treatment or combined methods of cutting, removal and herbicide treatment. Such treatment can proceed as early as possible and in advance of proposed flood relief works.

Stands of Himalayan balsam located outside of the site boundary or within areas not subject to direct disturbance, should be managed via in-situ herbicide treatment. This treatment will result in the eradication of the treated plants however treatment is likely to be required on a repeated basis over a number of years to exhaust the seed bank. Eradication of the species from the entire Castletinn survey area is considered unlikely due to the potential for seed deposition within flood waters of the River Finn.

## 4.5.2 Preventing Further Spread

- At construction stage, all contractors, sub-contractors and site personnel should be briefed on the presence and location of invasive non-native species; the site practices put in place to avoid further spread and contamination; and receive training in the identification of Himalayan balsam. A poster or leaflet highlighting the key features of the plant will be displayed in all communal areas. Signs should be erected in relevant areas including those proposed for works in associated with the proposals, where the species is present. These measures will help to avoid the potential spread of invasive non-native species either around the site or off site.
- It is considered that the setting up of contamination zones around each Himalayan balsam plant or stand is unlikely to be practically feasible given the proliferations of the species across the survey area. Control of further spread will therefore be achieved through treatment as discussed below.

## 4.5.3 Option 1: In-Situ Herbicide Treatment (Folia Application)

- Himalayan balsam stands managed using in-situ herbicide treatment. Herbicide must be applied by a *'Suitable Qualified and Fully Trained Operative'*. It is recommended that glyphosate is used to treat balsam growth. It should be noted however that glyphosate is a non-selective broad-spectrum systemic herbicide. Care should therefore be taken when using it around mature trees and desirable vegetation.
- Herbicide should be applied in late-spring in dry weather conditions (no rain for 24 hours). Spraying should not be carried out in wind speeds above Force 2 on the Beaufort scale to avoid spray drift.
- Details of all herbicide applications should be recorded and documented in Appendix I. Details should include the name of personnel, date, balsam stands treated, herbicide brand name, active ingredient, amount used and weather conditions.
- The treated stand should be monitored to check for new growth throughout the growing season and herbicide treatment carried out once a year in late-spring, prior to the plant setting seed.

- Herbicide treatment will kill each individual plant, however repeated treatment over a number of years will be required given the presence of a seed bank within the areas in which the plant is supported, as new growth from the seed bank arises.

#### 4.5.4 Option 2: Manual Removal

- Himalayan balsam stands managed using manual removal. This methodology will involve the cutting of plants in the growing season before the plant has set seed. It is therefore recommended that such works would not take place when pods are visible on plants.
- Plants should be cut manually and cleanly using a cutter, hook or scythe. Plants should be cut below the lowest node of the plant to prevent regenerative growth. Cutting should be undertaken in late-spring before the plant sets seed.
- Plants should not be cut, trimmed or flailed during the active seeding period (June-September) to prevent dispersal of seeds.
- Where cutting is undertaken prior to the plant setting seed the cut material can be left in-situ or removed from site.
- Where cutting is required within the late-summer and autumn, when the plant has set seed, it will be necessary for plants to be individually bagged and subsequently cut. Bags will be of appropriate size and care taken to prevent the accidental spread of seed during the process. It is recommended however that cutting or other treatment of the species during the late-summer and autumn is avoided where possible.
- Where small areas are to be cleared manual control can be achieved through the pulling up of plants. Again such plants can be left in-situ or removed from site and it is recommended that such works take place in the late-spring to avoid the potential for inadvertent spreading of seeds.
- Manual removal will eradicate individual plants, however repeated treatment over a number of years will be required given the presence of a seed bank within the areas in which the plant is supported, as new growth from the seed bank arises.

#### 4.5.5 Option 3: Combined Methodology

- A combined methodology can be utilised as required, including both the application of herbicide or cutting, where such solutions may complement each other and where one treatment option is not feasible.
- The methodology for such an approach is likely to be subject to tailoring by the contractor on the ground, but should be undertaken in line with the relevant information above in respect of the treatment options.

### 4.6 Giant Hogweed

Giant hogweed is an invasive non-native species in Ireland originating from Asia. It is a very large perennial plant which grows up to 5m tall. The plant produces large flower stems, up to 2.5m wide which can produce up to 50,000 seeds per plant per year. Seeds may remain viable for up to seven years within the seed bank.

Giant hogweed was recorded at Castlefinn only.

## 4.6.1 Management Options

There are a number management options for the control of balsam these include:

- Excavation & Removal of the Seed Bank off Site
- Excavation of the Seed Bank, Cell Formation & Burial On Site
- In-situ Herbicide Treatment (folia application)
- Manual Removal

It is not an acceptable option to consider doing nothing.

Given the timescales involved in the project there a number of years available for treatment prior to construction of flood relief works. It is considered that the distribution of the species within the Castletinn survey area, would require extensive excavations in order to remove the seedbank, on this basis it is proposed that feasible management options are limited to in-situ herbicide treatment or manual removal. Such treatment works should proceed as soon as possible to achieve control of the spread of the species and in advance of the proposed flood relief works.

It is considered that control of the species is achievable within a time period of 7 years in total, given the viability of the seed, however the species is likely to be largely controlled within a period of two years, with the majority of seed being unviable after this period.

## 4.6.2 Preventing Further Spread

- At construction stage, all contractors, sub-contractors and site personnel should be briefed on the presence and location of invasive non-native species; the site practices put in place to avoid further spread and contamination; and receive training in the identification of giant hogweed. A poster or leaflet highlighting the key features of the plant will be displayed in all communal areas. Signs should be erected in relevant areas including those proposed for works in associated with the proposals, where the species is present. These measures will help to avoid the potential spread of invasive non-native species either around the site or off site.
- Viable seed may occur in the soil. Where possible, eradication works should avoid the use of machinery and tracked vehicles, where possible. Care must be taken to clean off all soil. The machinery and vehicles will be inspected before being taken off site and used for other work. All other equipment used on site including clothes and boots that have come into contact with contaminated material must also be cleaned. Materials leaving or brought onto site should be checked to ensure that invasive non-native species do not leave or enter the site via this route
- At construction stage, all contractors, sub-contractors and site personnel should be briefed on the presence and location of invasive non-native species; the site practices put in place to avoid further spread and contamination; and receive training in the identification of giant hogweed. A poster or leaflet highlighting the key features of the plant will be displayed in all communal areas. Signs should be erected in Contamination Zones. These measures will help to avoid the potential spread of invasive non-native species either around the site or off site.

## 4.6.3 Option 1: In-Situ Herbicide Treatment (Folia Application)

- Giant hogweed stands which are not to be directly affected by the proposed flood relief works should be managed using in-situ herbicide treatment. Herbicide must be applied by a '*Suitable Qualified and*

*Fully Trained Operative*. It is recommended that glyphosate is used to treat knotweed growth. It should be noted however that glyphosate is a non-selective broad-spectrum systemic herbicide. Care should therefore be taken when using it around mature trees and desirable vegetation.

- Herbicide should be applied in late-spring, in dry weather conditions (no rain for 24 hours). Spraying should not be carried out in wind speeds above Force 2 on the Beaufort scale to avoid spray drift.
- Details of all herbicide applications should be recorded and documented in Appendix I. Details should include the name of personnel, date, hogweed stands treated, herbicide brand name, active ingredient, amount used and weather conditions.
- The treated stand should be monitored to check for new growth throughout the growing season and herbicide treatment carried out once a year in late-spring, prior to the plant setting seed.
- Herbicide treatment will kill each individual plant, however repeated treatment over a number of years will be required given the presence of a seed bank within the areas in which the plant is supported, as new growth from the seed bank arises.
- While treatment may be required for up to 7 years, it is likely that the majority of the seed bank will be exhausted by the end of year two of treatment.

#### 4.6.4 Option 2: Manual Removal

- Giant hogweed stands managed using manual removal. This methodology will involve the cutting of plants out at the root within the growing season before the plant has set seed.
- Manual removal should be undertaken by a *Suitable Qualified and Fully Trained Contractor* equipped with appropriate PPE to prevent contamination of the skin by the plants sap.
- Plants should be cut out at the root in April or May, prior to the plant setting seed, manually and cleanly using a spade at a 45 degree angle under the ground level to prevent regrowth from the root.
- Cut out plants should be left above ground to dry out before removal or immediately bagged and removed from site. With care taken to avoid potential skin contamination throughout this process.
- Manual removal will eradicate individual plants, however repeated treatment over a number of years will be required given the presence of a seed bank within the areas in which the plant is supported, as new growth from the seed bank arises.

## 4.7 Rhododendron

*Rhododendron ponticum* is a vigorous non-native shrub originating from Europe and Asia. Current populations of rhododendron in Ireland are thought to have been introduced from material taken from both the Iberian Peninsula populations and the Asian populations of this species. Natural dispersal is by seed and vegetative means. It has established in mixed deciduous forests, temperate heaths and raised and blanket bogs across Ireland. Capable of forming dense thickets, *R. ponticum* can out-compete native plants for space and resources, especially for sunlight. It can grow quite tall, regularly attaining heights of 8m. Its poisonous nature, vigorous reproductive strategy and affinity for acidic soils combine to make rhododendron a highly effective invader of natural habitats on acid soils.

Rhododendron was recorded at Burnfoot and Glenties.

It is noted that rhododendron stands within the churchyard of the Glenties Church of Ireland may not require treatment and it may be most practical for these to remain in-situ.

### 4.7.1 Management Options

There are a number management options for the control of Rhododendron these include:

- Digging out (manual or mechanical removal)
- Direct stump treatment (following cutting and removal)

It is not an acceptable option to consider doing nothing.

Given the limited nature of the distribution of the species within the survey areas at Burnfoot and Glenties, it is considered that either of these options would be potentially suitable, dependent upon the expense involved and the preferences of the contractor. This management could be undertaken prior to the proposed flood relief works, which will have a lead in time of a number of years, given the relatively small scale of the stands in question.

### 4.7.2 Preventing Further Spread

- Immediate priority should be given to setting up a Contamination Zone around each rhododendron. The Contamination Zone should extend 3m laterally from visible plant growth and hi-visibility hazard tape or barrier fencing mesh and signs should be erected warning of the presence of invasive non-native species.
- All of the plants identified along Section III appear to be of flowering age. As such, viable seed may occur in the soil. Where possible, eradication works should avoid the use of machinery and tracked vehicles, where possible. Care must be taken to clean off all soil. The machinery and vehicles will be inspected before being taken off site and used for other work. All other equipment used on site including clothes and boots that have come into contact with contaminated material must also be cleaned. Materials leaving or brought onto site should be checked to ensure that invasive non-native species do not leave or enter the site via this route.
- All contractors, sub-contractors and site personnel should be briefed on the presence and location of the species, and the site practices put in place to avoid further spread and contamination. Signs should be erected in Contamination Zones. These measures will help to avoid the potential spread of invasive non-native species either around the site or off site.

### 4.7.3 Option 1: Digging Out (Manual Removal)

- The most effective way of destroying the plant is by removing all viable roots. Digging out can be carried out manually or mechanically using a tractor and chain. However, it is critical to remove all of the root system otherwise regrowth may later undermine the path surface.
- To prevent regrowth, as much soil as possible should be knocked off the root system before piling material. Stumps should be turned upside down to expose the roots to the air and to allow the rain to wash off any remaining soil.
- Burning is a feasible means of disposing of this material, even when green. such methods should only be utilised under the supervision of persons with fire experience. Its location should not pose a threat to other vegetation.

#### 4.7.4 Option 2: Direct Stump Treatment

- The first action is to cut individual stems with hand or chainsaws. They should be cut as close to the ground as possible.
- The cut material will need to be removed from the area to allow for effective follow-up work.
- Freshly cut stumps are painted or spot sprayed with the herbicide solution. The product is applied immediately, within minutes of cutting. A vegetable dye is used to clearly identify which stumps have been treated. This should be carried out in dry weather to avoid the solution from being washed off. Herbicide application rate and timing should follow product recommendations.
- Alternatively, Barron (2006) lists a number of herbicides (including application rates, methods and timing) used in direct stump treatment.
- Herbicide should be applied in dry weather conditions (no rain for 24 hours). Spraying should not be carried out in wind speeds above Force 2 on the Beaufort scale to avoid spray drift.
- Details of all herbicide applications should be recorded and documented in Appendix I. Details should include the name of personnel, date, rhododendron stands treated, herbicide brand name, active ingredient, amount used and weather conditions.
- Whilst treatment can entirely kill off the plant, regrowth from the cut stumps can occur. This regrowth is usually slow and stunted. In these instances carefully timed foliar application of herbicide to the regrowth can fully kill off the plant.

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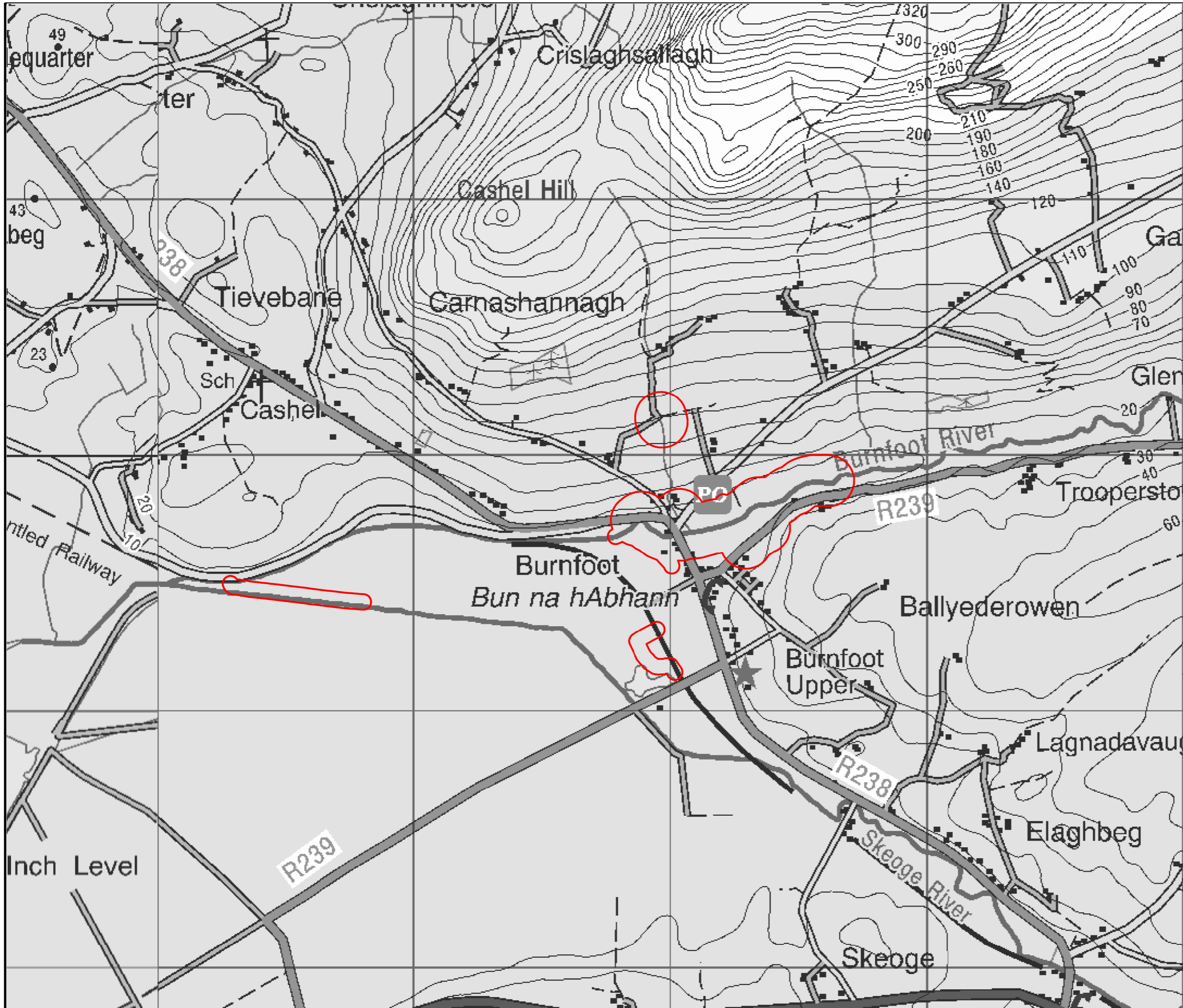
## 5 REFERENCES

Barron, C. (2006) *the Control of Rhododendron in Native Woodlands*, Native Woodland Scheme Information Note No. 3, Forest Service and Woodlands of Ireland: Co. Wicklow.

CIEEM (2019) *Code of Professional Conduct*, Chartered Institute of Ecology and Environmental Management, Winchester

## Figures

### Figure 1.1: Burnfoot Survey Area



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Legend

Invasive Species Survey Area

Rev	Description	By	Ckd	Date



Elmwood House, 74 Boucher Road,  
BELFAST, BT12 6RZ  
T: 028 9066 7914

Client : Donegal County Council

Project : DB1 Donegal Flood Relief

Burnfoot Survey Area

Figure Number 1.1

Status	Scale @ A3	Date
Preliminary	1:1250	20.02.23

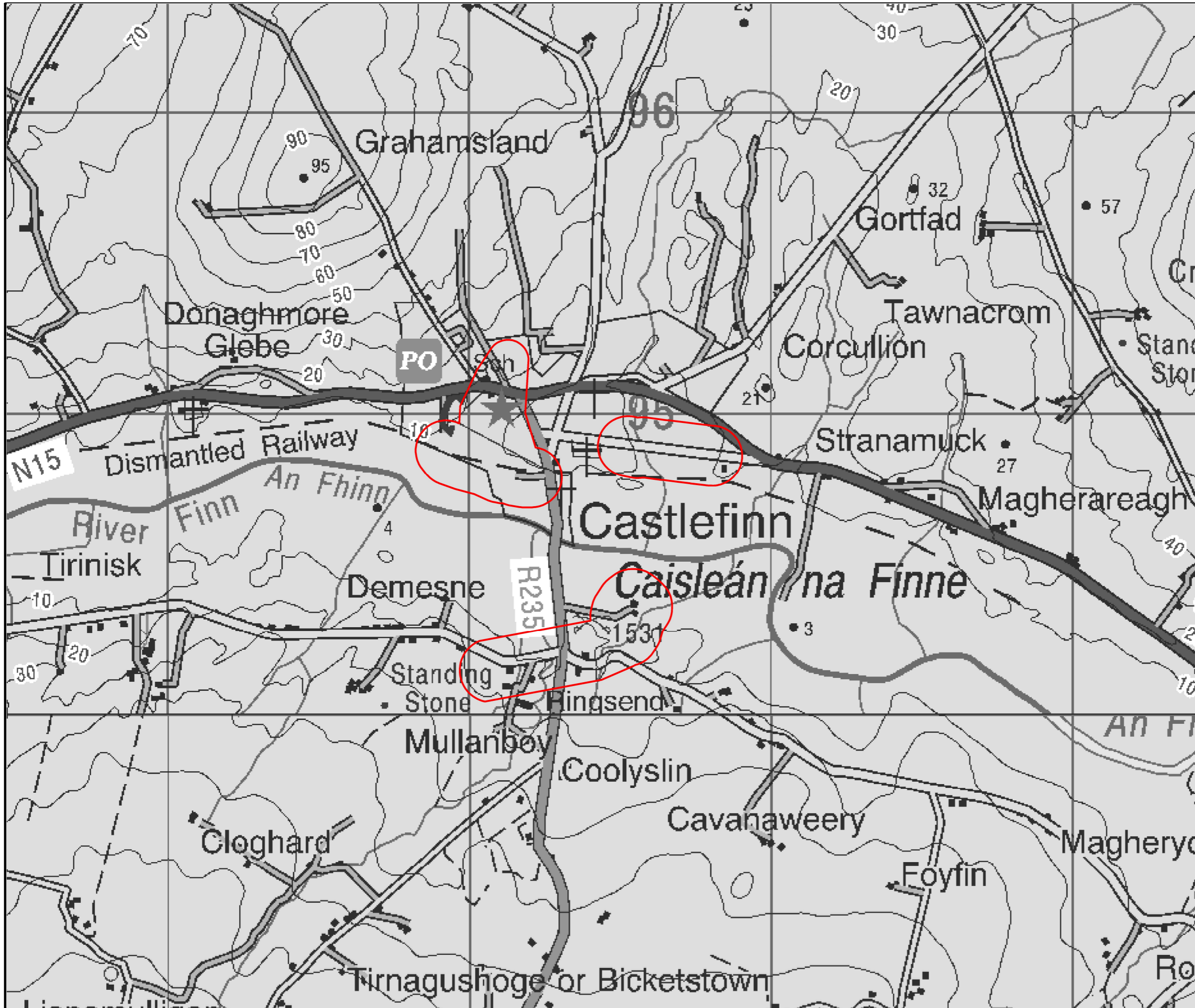
RPS Project Number	Revision
NI2258	--

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## Figure 1.2: Castlefinn Survey Area



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Legend

Invasive Species Survey Area

Rev	Description	By	Ckd	Date



Elmwood House, 74 Boucher Road,  
BELFAST, BT12 6RZ  
T: 028 9066 7914

Client : Donegal County Council

Project : DB1 Donegal Flood Relief

Castlefin Survey Area

Figure Number 1.2

Status	Scale @ A3	Date
Preliminary	1:1250	05.10.20

RPS Project Number	Revision
N12258	--

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## Figure 1.3: Downings Survey Area



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Legend

Invasive Species Survey Area

Rev	Description	By	Ckd	Date



Elmwood House, 74 Boucher Road,  
BELFAST, BT12 6RZ  
T: 028 9066 7914

Client : Donegal County Council

Project : DB1 Donegal Flood Relief

Downings Survey Area

Figure Number 1.3

Status	Scale @ A3	Date
Preliminary	1:1250	05.10.20

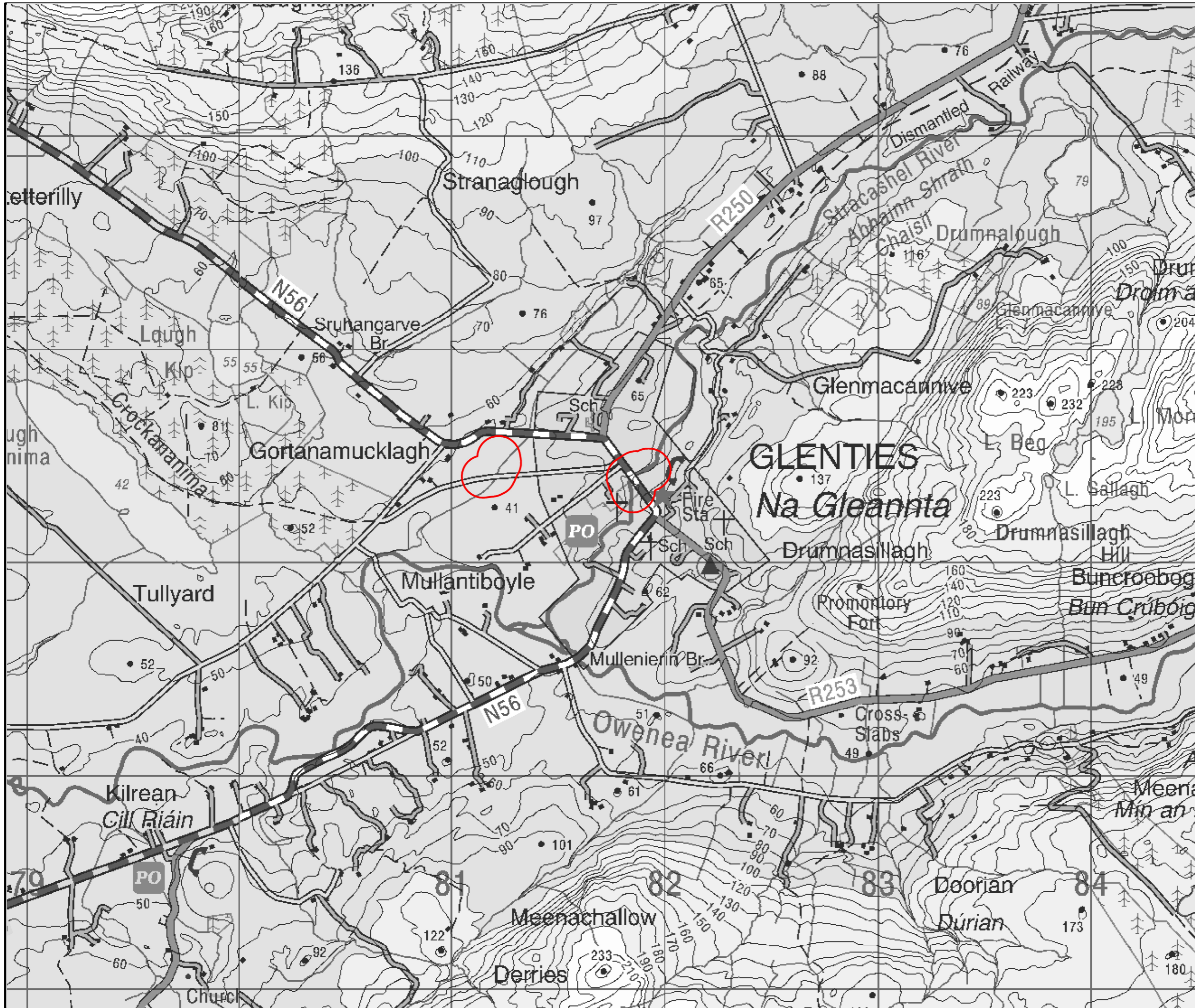
RPS Project Number	Revision
NI2258	--

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### Figure 1.4: Glenties Survey Area



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Legend

Invasive Species Survey Area

Rev	Description	By	Ckd	Date



Elmwood House, 74 Boucher Road,  
BELFAST, BT12 6RZ  
T: 028 9066 7914

Client : Donegal County Council

Project : DB1 Donegal Flood Relief

Glenties Survey Area

Figure Number 1.4

Status	Scale @ A3	Date
Preliminary	1:1250	05.10.20

RPS Project Number	Revision
NI2258	--

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## Figure 3.1: Burnfoot Invasive Species Plan



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Legend

- Invasive Species Survey Area
- Japanese Knotweed
- Rhododendron

Rev	Description	By	Ckd	Date



Elmwood House, 74 Boucher Road,  
BELFAST, BT12 6RZ  
T: 028 9066 7914

Client : Donegal County Council

Project : DB1 Donegal Flood Relief

Burnfoot Invasive Species Plan

Figure Number 3.1

Status	Scale @ A3	Date
<b>Preliminary</b>	<b>1:1250</b>	<b>20.02.23</b>

RPS Project Number	Revision
<b>NI2258</b>	--

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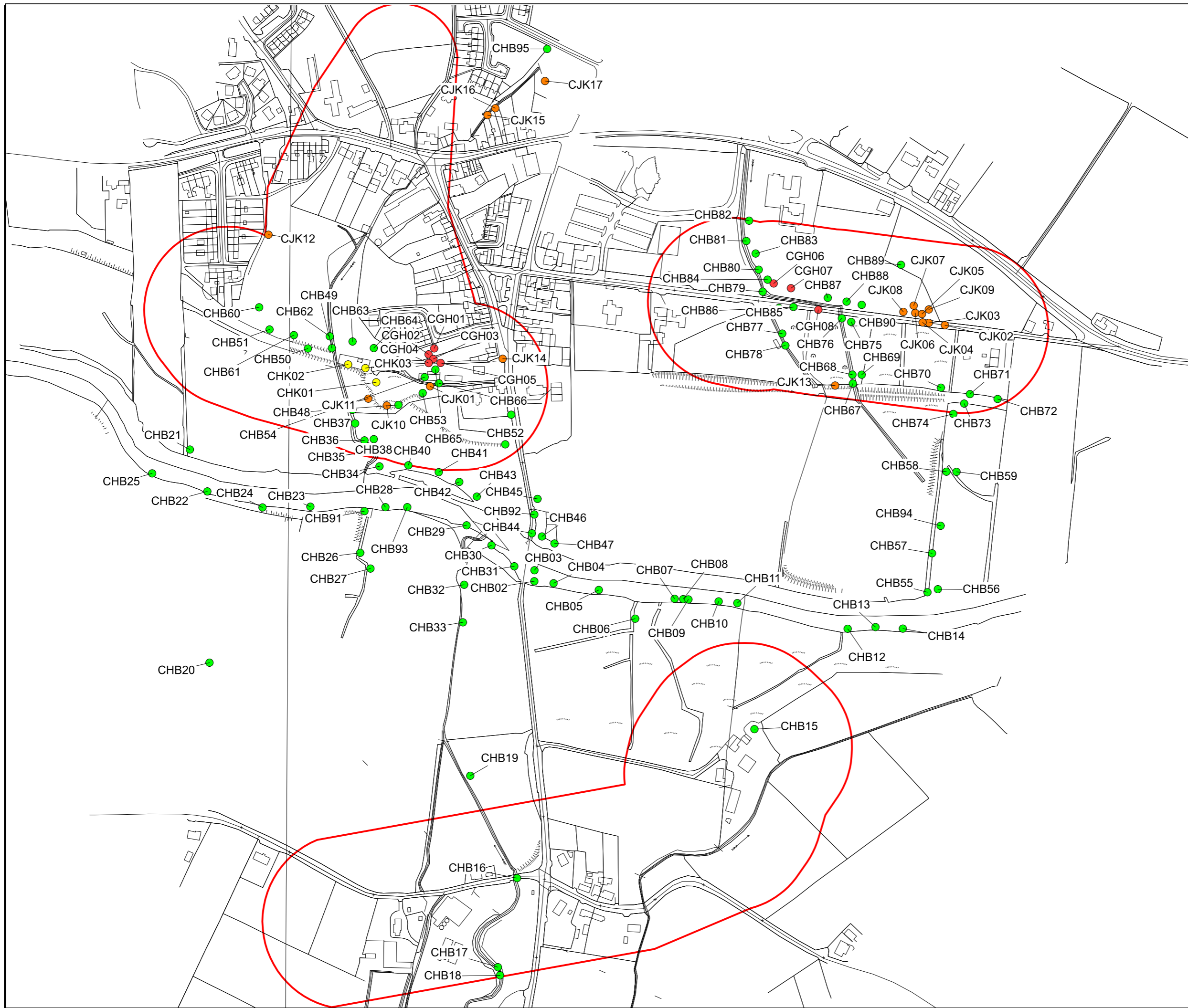
### Figure 3.2: Castlefinn Invasive Species Plan

Note

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Legend

- Invasive Species Survey Area
- Japanese Knotweed
- Himalayan Knotweed
- Giant Hogweed
- Himalayan Balsam



Rev	Description	By	Ckd	Date



Elmwood House, 74 Boucher Road,  
BELFAST, BT12 6RZ  
T: 028 9066 7914

Client : Donegal County Council

Project : DB1 Donegal Flood Relief

Castlefin Invasive Species Plan

Figure Number 3.2

Status	Scale @ A3	Date
<b>Preliminary</b>	<b>1:1250</b>	<b>05.10.20</b>

RPS Project Number	Revision
<b>NI2258</b>	--



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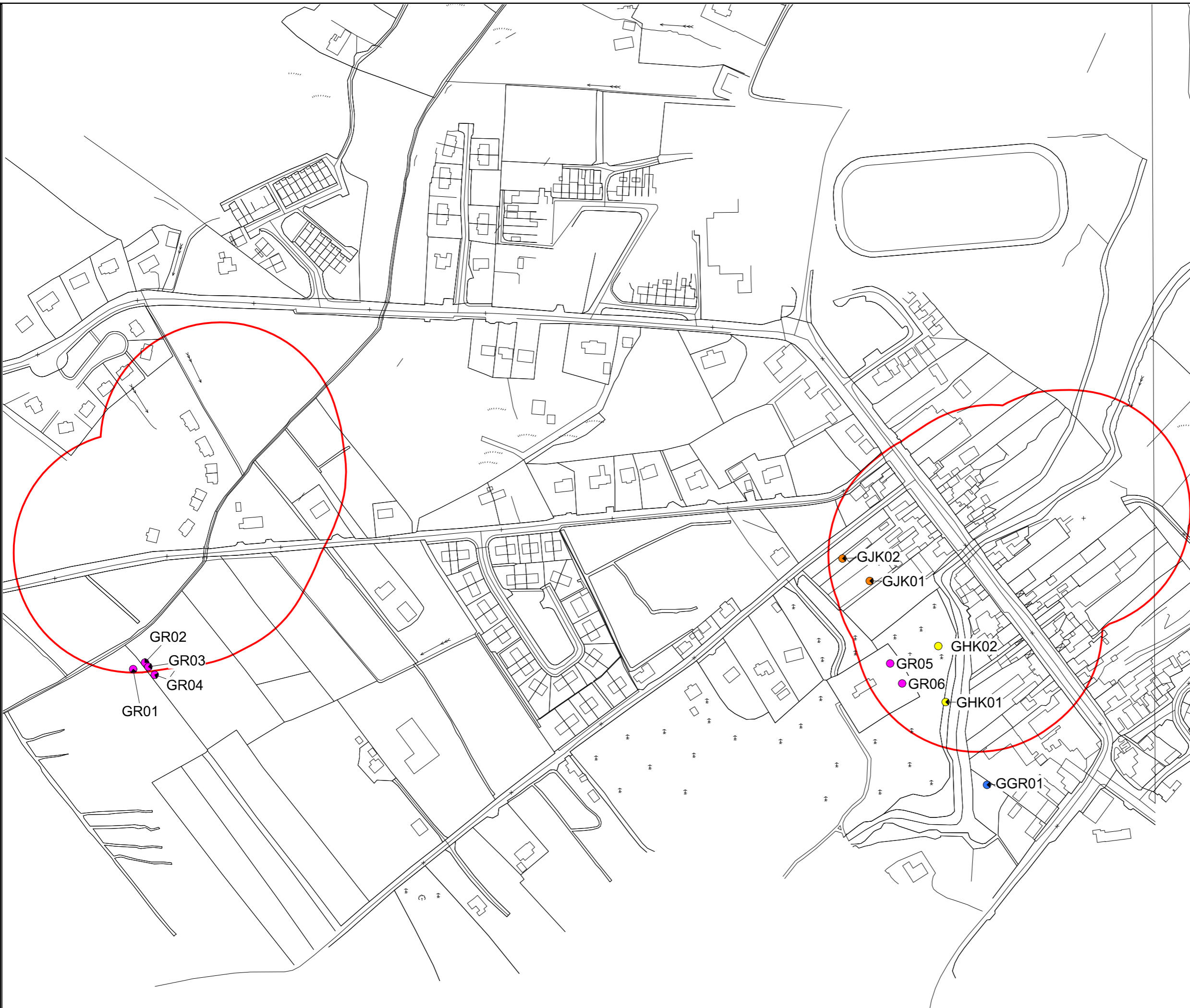
### Figure 3.3 Glenties Invasive Species Plan

Note

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3. This drawing should be read in conjunction with all other relevant drawings and specifications.

Legend

- Invasive Species Survey Area
- Japanese Knotweed
- Himalayan Knotweed
- Giant Rhubarb
- Rhododendron



Rev	Description	By	Ckd	Date



Elmwood House, 74 Boucher Road,  
BELFAST, BT12 6RZ  
T: 028 9066 7914

Client : Donegal County Council

Project : DB1 Donegal Flood Relief

Glenties Invasive Species Plan

Figure Number 3.3

Status	Scale @ A3	Date
<b>Preliminary</b>	<b>1:1250</b>	<b>05.10.20</b>

RPS Project Number	Revision
<b>NI2258</b>	--



## Appendix I

### Herbicide Records

Attach details of herbicides used, dose rate and application rates and dates applied.

## Appendix II

### Waste Records

Attach details of waste records for any material containing invasive non-native species taken off site.

## Appendix III

### Monitoring Records

Attach copies of data collection sheets.

Site	Site Reference	Species	Grid Reference	Average Height of Stem (m)	Vegetation Composition	Adjacent to Water	Slope	Area (m <sup>2</sup> )	Description
Burnfoot	BJK01	Japanese knotweed	C38072372	1.2	Other species present	no	No	30	Large stand (c.30m2) on rough ground on eastern bank of small tributary of Burnfoot River
Burnfoot	BJK02	Japanese knotweed	C38082371	1.2	Other species present	Yes	Yes	50	Large stand (c.50m2), mostly on rough ground on eastern bank of small tributary of Burnfoot River, although some on western bank outside fence line of improved field
Burnfoot	BJK03	Japanese knotweed	C38152370	1.2	Other species present	yes	yes	5	Small stand (c.5m2) on bank to rear of house in Lios Na Greine on southern side of Burnfoot River
Burnfoot	BJK04	Japanese knotweed	C38032309	1.8	Other species present	no	yes	28	Large stand (c.28m2) to the southwest of laneway
Burnfoot	BR01	rhododendron	C38432382	1.5	Rhododendron only	Yes	Yes	1	Single rhododendron plant on northern bank of Burnfoot River
Burnfoot	BR02	rhododendron	C38592383	2	Other species present	No	No	1	Single rhododendron plant in tree line east of gate entrance to farm-yard on southern side of R239
Castlefin	CGH01	giant hogweed	H26169483	3	Other species present	No	No	2	one of a number of plants forming a loose block across several unmanaged gardens
Castlefin	CGH02	giant hogweed	H26169482	3	Other species present	No	No	2	one of a number of plants forming a loose block across several unmanaged gardens
Castlefin	CGH03	giant hogweed	H26169481	3	Other species present	No	No	2	one of a number of plants forming a loose block across several unmanaged gardens
Castlefin	CGH04	giant hogweed	H26169481	3	Other species present	No	No	1	one of a number of plants forming a loose block across several unmanaged gardens
Castlefin	CGH05	giant hogweed	H26179481	3	Other species present	No	No	1	one of a number of plants forming a loose block across several unmanaged gardens
Castlefin	CGH06	giant hogweed	H26579491	3	Other species present	Yes	Yes	5	three individual plants along watercourse
Castlefin	CGH07	giant hogweed	H26599490	3	Other species present	Yes	No	1	single plant to the rear of mens shed, within an area of alder scrub.
Castlefin	CGH08	giant hogweed	H26629487	0.5	Other species present	No	Yes	1	single plant on southern slope away from road
Castlefin	CHB01	Himalayan balsam	H26269475	0.5	Other species present	No	No	1	small stand adjacent to the road
Castlefin	CHB02	Himalayan balsam	H26299455	0.5	Other species present	Yes	No	3	stand along riverbank and below road bridge
Castlefin	CHB03	Himalayan balsam	H26299456	0.5	Other species present	Yes	No	2	stand on bridge footing within river channel

Site	Site Reference	Species	Grid Reference	Average Height of Stem (m)	Vegetation Composition	Adjacent to Water	Slope	Area (m <sup>2</sup> )	Description
Castlefin	CHB04	Himalayan balsam	H26319455	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB05	Himalayan balsam	H26369454	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB06	Himalayan balsam	H26419450	0.5	Other species present	Yes	No	1	single plant along drainage ditch
Castlefin	CHB07	Himalayan balsam	H26769458	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB08	Himalayan balsam	H26469453	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB09	Himalayan balsam	H26479453	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB10	Himalayan balsam	H26519452	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB11	Himalayan balsam	H26539452	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB12	Himalayan balsam	H26669449	0.5	Other species present	Yes	No	1	stand along river bank at drainage outfall
Castlefin	CHB13	Himalayan balsam	H26699450	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB14	Himalayan balsam	H26739449	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB15	Himalayan balsam	H26559437	0.5	Other species present	No	No	6	large stand to the sw of sand arena
Castlefin	CHB16	Himalayan balsam	H26279419	0.5	Other species present	Yes	No	1	small stand on watercourse bank
Castlefin	CHB17	Himalayan balsam	H26259408	0.5	Other species present	Yes	No	1	small stand on watercourse bank
Castlefin	CHB18	Himalayan balsam	H26259408	0.5	Other species present	Yes	No	1	small stand on watercourse bank
Castlefin	CHB19	Himalayan balsam	H26219431	0.5	Other species present	Yes	No	1	single plant along watercourse
Castlefin	CHB20	Himalayan balsam	H25909445	0.5	Other species present	Yes	No	1	single plant at the end of a drainage ditch

Site	Site Reference	Species	Grid Reference	Average Height of Stem (m)	Vegetation Composition	Adjacent to Water	Slope	Area (m <sup>2</sup> )	Description
Castlefin	CHB21	Himalayan balsam	H25879470	0.5	Other species present	Yes	No	1	small stand on riverbank
Castlefin	CHB22	Himalayan balsam	H25899465	0.5	Other species present	Yes	No	1	large stand along riverbank
Castlefin	CHB23	Himalayan balsam	H26029464	0.5	Other species present	Yes	Yes	1	large stand along riverbank
Castlefin	CHB24	Himalayan balsam	H25969463	0.5	Other species present	Yes	Yes	6	large stand along riverbank
Castlefin	CHB25	Himalayan balsam	H25839467	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB26	Himalayan balsam	H26089458	0.5	Other species present	Yes	Yes	1	stand along drainage channel
Castlefin	CHB27	Himalayan balsam	H26099456	0.5	Other species present	Yes	Yes	1	stand along drianage channel
Castlefin	CHB28	Himalayan balsam	H26119464	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB29	Himalayan balsam	H26209461	0.5	Other species present	Yes	No	1	large stand at drainage outlet
Castlefin	CHB30	Himalayan balsam	H26239459	0.5	Other species present	Yes	No	1	large stand at drainage outlet
Castlefin	CHB31	Himalayan balsam	H26269457	0.5	Other species present	Yes	No	3	large stand along riverbank
Castlefin	CHB32	Himalayan balsam	H26209454	0.5	Other species present	Yes	No	1	stand along drainage channel and hedgerow
Castlefin	CHB33	Himalayan balsam	H26209450	0.5	Other species present	Yes	No	1	stand along drainage channel and hedgerow
Castlefin	CHB34	Himalayan balsam	H26109468	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB35	Himalayan balsam	H26109470	0.5	Other species present	Yes	No	1	stand along drainage channel
Castlefin	CHB36	Himalayan balsam	H26089471	0.5	Other species present	Yes	No	1	stand along drainage channel
Castlefin	CHB37	Himalayan balsam	H26079474	0.5	Other species present	Yes	No	1	stand along drainage channel

Site	Site Reference	Species	Grid Reference	Average Height of Stem (m)	Vegetation Composition	Adjacent to Water	Slope	Area (m <sup>2</sup> )	Description
Castlefin	CHB38	Himalayan balsam	H26099472	0.5	Other species present	Yes	No	1	stand along drainage channel
Castlefin	CHB39	Himalayan balsam	H26079475	0.5	Other species present	Yes	No	1	stand along drainage channel
Castlefin	CHB40	Himalayan balsam	H26139469	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB41	Himalayan balsam	H26179468	0.5	Other species present	Yes	No	3	stand along riverbank
Castlefin	CHB42	Himalayan balsam	H26199467	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB43	Himalayan balsam	H26229465	0.5	Other species present	Yes	No	1	stand along riverbank
Castlefin	CHB44	Himalayan balsam	H26289461	0.5	Other species present	Yes	No	1	stand along the riverbank to the west of bridge
Castlefin	CHB45	Himalayan balsam	H26299465	0.5	Other species present	No	No	1	small stand adjacent to eastern side of road
Castlefin	CHB46	Himalayan balsam	H26299460	0.5	Other species present	Yes	Yes	10	large mown stand on riverbank
Castlefin	CHB47	Himalayan balsam	H26319459	0.5	Other species present	Yes	Yes	1	stand on riverbank
Castlefin	CHB48	Himalayan balsam	H26129476	0.5	Other species present	No	Yes	1	large stand along margins of an area of dumped spoil
Castlefin	CHB49	Himalayan balsam	H26049483	0.5	Other species present	Yes	No	1	scattered plants along footpath
Castlefin	CHB50	Himalayan balsam	H26019482	0.5	Other species present	Yes	No	1	scattered plants along footpath
Castlefin	CHB51	Himalayan balsam	H25979485	0.5	Other species present	Yes	Yes	1	scattered plants along footpath
Castlefin	CHB52	Himalayan balsam	H26259471	0.5	Other species present	No	Yes	1	stand along steep slope
Castlefin	CHB53	Himalayan balsam	H26159477	0.5	Other species present	No	Yes	1	large stand along slope of spoil heap
Castlefin	CHB54	Himalayan balsam	H26159479	0.5	Other species present	No	No	1	single plant at corner of building

Site	Site Reference	Species	Grid Reference	Average Height of Stem (m)	Vegetation Composition	Adjacent to Water	Slope	Area (m <sup>2</sup> )	Description
Castlefin	CHB55	Himalayan balsam	H26769454	0.5	Other species present	Yes	Yes	1	stand on riverbank at drainage outlet
Castlefin	CHB56	Himalayan balsam	H26779454	0.5	Other species present	Yes	No	1	stand on riverbank at drainage outlet
Castlefin	CHB57	Himalayan balsam	H26769458	0.5	Other species present	Yes	Yes	1	stand along hedgerow
Castlefin	CHB58	Himalayan balsam	H26789468	0.5	Other species present	Yes	No	1	stand along hdgerow and drainage channel
Castlefin	CHB59	Himalayan balsam	H26799468	0.5	Other species present	Yes	No	1	stand along drainage channel
Castlefin	CHB60	Himalayan balsam	H25959487	0.5	Other species present	No	Yes	1	scattered plants around the northern margin of an area of dumped spoil
Castlefin	CHB61	Himalayan balsam	H26009484	0.5	Other species present	No	Yes	1	scattered along slope adacent to footpath
Castlefin	CHB62	Himalayan balsam	H26049484	0.5	Other species present	Yes	No	1	stands within an area of swamp adjacent to drainage channel
Castlefin	CHB63	Himalayan balsam	H26079483	0.5	Other species present	Yes	No	4	stands within an area of swamp
Castlefin	CHB64	Himalayan balsam	H26099483	0.5	Other species present	No	No	1	stand adjacent to footpath
Castlefin	CHB65	Himalayan balsam	H26179480	0.5	Other species present	No	No	1	single plant under overhanging structure
Castlefin	CHB66	Himalayan balsam	H26179478	0.5	Other species present	No	No	1	stands along edge of spoil
Castlefin	CHB67	Himalayan balsam	H26679479	0.5	Other species present	Yes	No	1	stand adjacent to drainage channel
Castlefin	CHB68	Himalayan balsam	H26669480	0.5	Other species present	Yes	No	1	in swamp adjacent to drainage channel
Castlefin	CHB69	Himalayan balsam	H26689480	0.5	Other species present	Yes	No	1	in swamp adjacent to drainage channel
Castlefin	CHB70	Himalayan balsam	H26779478	0.5	Other species present	No	Yes	1	stands on top and sides of raised bund (old railway)
Castlefin	CHB71	Himalayan balsam	H26819477	0.5	Other species present	No	No	1	large dense stands between two hedgerows

Site	Site Reference	Species	Grid Reference	Average Height of Stem (m)	Vegetation Composition	Adjacent to Water	Slope	Area (m <sup>2</sup> )	Description
Castlefin	CHB72	Himalayan balsam	H26849477	0.5	Other species present	No	No	1	large dense stands between hedgerows
Castlefin	CHB73	Himalayan balsam	H26809476	0.5	Other species present	No	No	10	large stand at field margin to the south of hedgerow
Castlefin	CHB74	Himalayan balsam	H26799475	0.5	Other species present	No	No	1	stands along field margin
Castlefin	CHB75	Himalayan balsam	H26669486	0.5	Other species present	Yes	No	1	stands along drainage channel
Castlefin	CHB76	Himalayan balsam	H26659486	0.5	Other species present	Yes	No	1	stands along drainage channel
Castlefin	CHB77	Himalayan balsam	H26589485	0.5	Other species present	No	No	1	large dense stand around agricultural building
Castlefin	CHB78	Himalayan balsam	H26589483	0.5	Other species present	No	No	10	large dense stand around agricultural building
Castlefin	CHB79	Himalayan balsam	H26569490	0.5	Other species present	Yes	No	1	stand on north side of road to the west of bridge
Castlefin	CHB80	Himalayan balsam	H26559492	0.5	Other species present	Yes	Yes	1	scattered plants along drainage channel
Castlefin	CHB81	Himalayan balsam	H26549496	0.5	Other species present	Yes	Yes	1	scattered plants along drainage channel slopes at the rear of the general merchant yard
Castlefin	CHB82	Himalayan balsam	H26549498	0.5	Other species present	Yes	No	1	stands along watercourse
Castlefin	CHB83	Himalayan balsam	H26559494	0.5	Other species present	Yes	No	1	scattered plants along watercourse
Castlefin	CHB84	Himalayan balsam	H26569491	0.5	Other species present	Yes	No	1	scattered plants along watercourse
Castlefin	CHB85	Himalayan balsam	H26599488	0.5	Other species present	Yes	No	1	scattered plants along road margin
Castlefin	CHB86	Himalayan balsam	H26589488	0.5	Other species present	No	No	1	stand within low lying woodland
Castlefin	CHB87	Himalayan balsam	H26639489	0.5	Other species present	Yes	No	1	scattered plants along watercourse
Castlefin	CHB88	Himalayan balsam	H26669488	0.5	Other species present	Yes	No	1	scattered plants along drainage channel

Site	Site Reference	Species	Grid Reference	Average Height of Stem (m)	Vegetation Composition	Adjacent to Water	Slope	Area (m <sup>2</sup> )	Description
Castlefin	CHB89	Himalayan balsam	H26729493	0.5	Other species present	Yes	No	1	scattered plants along roadside
Castlefin	CHB90	Himalayan balsam	H26689488	0.5	Other species present	No	No	1	scattered plants along roadside
Castlefin	CHB91	Himalayan balsam	H26089463	0.5	Other species present	Yes	No	1	small stand at drainage outlet
Castlefin	CHB92	Himalayan balsam	H26289463	0.5	Other species present	Yes	No	1	stand adjacent to western side of road
Castlefin	CHB93	Himalayan balsam	H26139464	0.5	Other species present	Yes	Yes	1	stand along riverbank
Castlefin	CHB94	Himalayan balsam	H26779462	0.5	Other species present	Yes	Yes	1	stand along hedgerow
Castlefin	CHB95	Himalayan balsam	H26309518	0.5	Other species present	Yes	No	1	scattered plants either side of the watercourse
Castlefin	CHK01	Himalayan knotweed	H26099478	1.2	HK only	No	Yes	120	large stand (12m x 10m) on western side of a large heap of spoil, undergoing treatment and fenced off
Castlefin	CHK02	Himalayan knotweed	H26069481	1.2	HK only	Yes	Yes	8	linear stand (8mx1m) along the southern boundary of the water treatment works
Castlefin	CHK03	Himalayan knotweed	H26089480	1.2	HK only	Yes	Yes	90	linear stand (90m x 1m) along the southern boundary of the water treatment works
Castlefin	CJK01	Japanese knotweed	H26169478	1.6	Other species present	No	Yes	30	stand (around 10m x 3m) on southern slope of spoil
Castlefin	CJK02	Japanese knotweed	H26789486	0.5	Other species present	No	Yes	1	small narrow stand (1m x 1m) along southern roadside, appears to be regenerating from treatment
Castlefin	CJK03	Japanese knotweed	H26769486	0.6	Other species present	No	Yes	2	narrow stand 2m x 1m adjacent to road to south, appears to be regenerating from treatment.
Castlefin	CJK04	Japanese knotweed	H26759486	0.5	Other species present	No	Yes	2	narrow stand 2m x 1m adjacent to road to south, appears to be regenerating from treatment.
Castlefin	CJK05	Japanese knotweed	H26749487	0.2	Other species present	No	No	25	narrow linear band (around 25m long) on northern roadside which appears to be regenerating from treatment.
Castlefin	CJK06	Japanese knotweed	H26759487	0.1	Other species present	No	No	3	several small sprouting plants which appear to be regenerating from a treated stand.
Castlefin	CJK07	Japanese knotweed	H26749488	1.5	Other species present	No	Yes	1	single plant on slope on other side of ditch to northern side of road.

Site	Site Reference	Species	Grid Reference	Average Height of Stem (m)	Vegetation Composition	Adjacent to Water	Slope	Area (m <sup>2</sup> )	Description
Castlefin	CJK08	Japanese knotweed	H26739487	0.1	Other species present	No	No	2	several small sprouting plants which appear to be regenerating from a treated stand
Castlefin	CJK09	Japanese knotweed	H26769488	1.3	Other species present	No	No	2	small stand (2m x 1m) which appears to have been treated with some regeneration.
Castlefin	CJK10	Japanese knotweed	H26119476	0.2	JK Only	No	No	3	shooting individuals within an area of dumped spoil, spreading from larger adjacent stand
Castlefin	CJK11	Japanese knotweed	H26099476	1.8	JK only	No	Yes	160	large stand (around 20m x 8m) on the southern slopes of dumped spoil
Castlefin	CJK12	Japanese knotweed	H25969496	1.7	JK only	No	Yes	20	stand (around 8m x 2.5m) on steep slope at access lane hedgerow
Castlefin	CJK13	Japanese knotweed	H26649478	1.8	Other species present	No	Yes	1	single plant on northern slope of raised bund (old railway)
Castlefin	CJK14	Japanese knotweed	H26259481	1.5	Other species present	No	No	19	stand (around 10m x 2m) within an area of unmanaged garden up to adjacent road.
Castlefin	CJK15	Japanese knotweed	H26239510	0.3	Other species present	Yes	No	2	stand of weak plants (1m x 2m) on west bank of watercourse.
Castlefin	CJK16	Japanese knotweed	H26249511	2	JK only	Yes	No	50	large stand (25m x 2m) on both banks of the watercourse.
Castlefin	CJK17	Japanese knotweed	H26299515	0.2	Other species present	Yes	No	60	area of newly sprouting plants within dumped rubble at the SW corner of the cleared construction site.
Glenties	GGR01	giant-rhubarb	G81859420	2.5	GR only	Yes	No	10	large stand outside of the survey area. Not closely assessed.
Glenties	GHK01	Himalayan knotweed	G81829427	1	Other species present	Yes	No	2	small stand around 2.5m x 1m, along watercourse
Glenties	GHK02	Himalayan knotweed	G81819431	1	HK only	Yes	Yes	150	large stand (around 15m x 10m) within an area of steep sloped woodland near the watercourse
Glenties	GJK01	Japanese knotweed	G81759437	2	Other species present	No	No	300	part of a large stand (approx. 30m x 10m) spanning a number of unmanaged back gardens
Glenties	GJK02	Japanese knotweed	G81739439	2	Other species present	No	No	240	a long narrow stand (around 40m x 6m) within an unmanaged back garden which extends to the NE, either side of a shed
Glenties	GR01	rhododendron	G81149430	1.2	Rhododendron and other species	No	No	2	single plant within an area of raised bog within the survey area
Glenties	GR02	rhododendron	G81159430	1.3	Other species present	No	No	2	part of a gappy hedgerow on the edge of raised bog

Site	Site Reference	Species	Grid Reference	Average Height of Stem (m)	Vegetation Composition	Adjacent to Water	Slope	Area (m <sup>2</sup> )	Description
Glenties	GR03	rhododendron	G81159430	1.3	Other species present	No	No	1	part of a gappy hedgerow on the edge of raised bog
Glenties	GR04	rhododendron	G81169429	1.4	Other species present	No	No	2	part of a gappy hedgerow on the edge of raised bog
Glenties	GR05	rhododendron	G81779430	2.5	Other species present	No	No	40	one of several large plants within the churchyard
Glenties	GR06	rhododendron	G81789428	2.5	Other species present	No	No	10	one of several large plants within the churchyard

## APPENDIX IV: PLATES: BURNFOOT



Plate 1: BJK01



Plate 2: BJK01

APPENDIX IV: PLATES: BURNFOOT

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Plate 3: BJK02



Plate 4: BJK02

APPENDIX IV: PLATES: BURNFOOT

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Plate 5: BJK03



Plate 6: BR01

APPENDIX IV: PLATES: BURNFOOT

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Plate 7: BR02

## APPENDIX V: PLATES: CASTLEFIN



Plate 1: CGH04

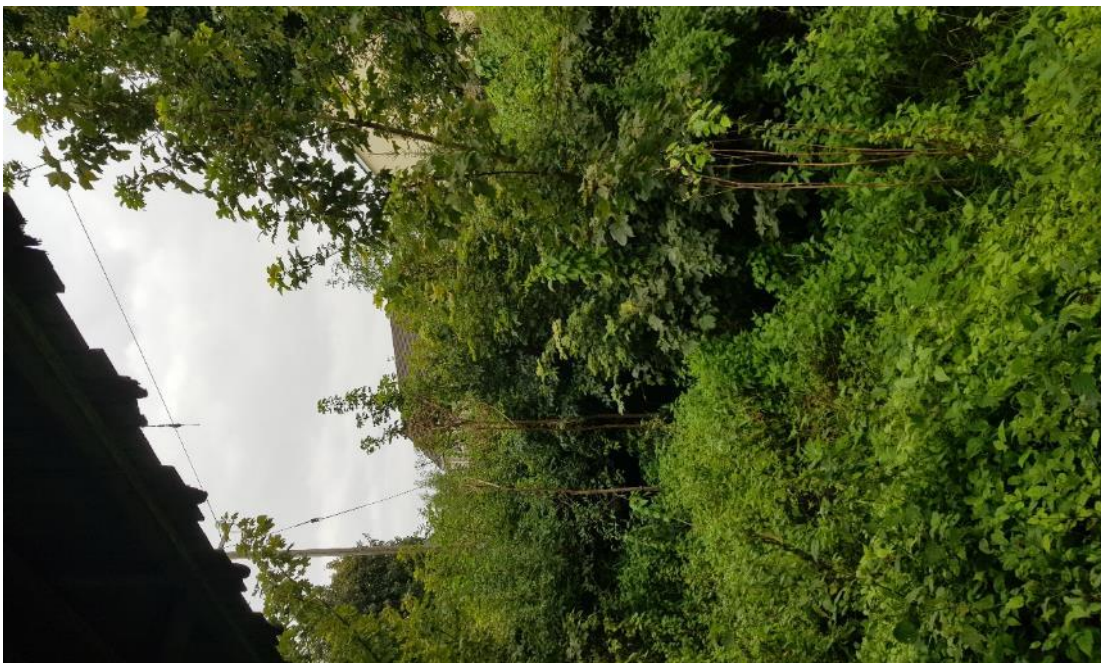


Plate 2: CGH05

APPENDIX V: PLATES: CASTLEFIN

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Plate 3: CGH06

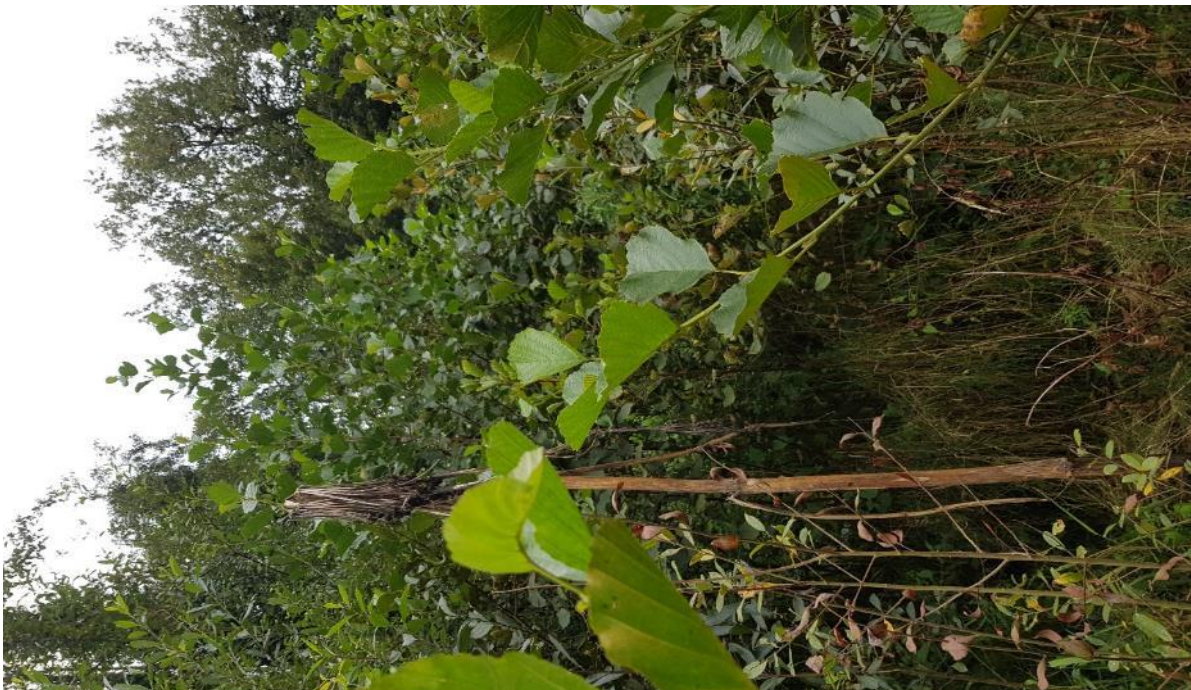


Plate 4: CGH07

APPENDIX V: PLATES: CASTLEFIN

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Plate 5: CGH08



Plate 6: CJK01

APPENDIX V: PLATES: CASTLEFIN

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Plate 7: CJK05



Plate 8: CJK07

APPENDIX V: PLATES: CASTLEFIN

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Plate 9: CJK10



Plate 10: CJK11

APPENDIX V: PLATES: CASTLEFIN

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Plate 11: CJK13



Plate 12: CJK14

APPENDIX V: PLATES: CASTLEFIN

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Plate 13: CJK15



Plate 14: CJK16

APPENDIX V: PLATES: CASTLEFIN

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Plate 15: CJK17



Plate 16: CHK01

APPENDIX V: PLATES: CASTLEFIN

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Plate 17: CHK03



Plate 18: CHB02 & CHB03

APPENDIX V: PLATES: CASTLEFIN

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Plate 19: CHB15



Plate 20: CHB73

## APPENDIX VI: PLATES: GLENTIES



Plate 1: GHK02



Plate 2: GHK02

APPENDIX VI: PLATES: GLENTIES

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Plate 3: GJK01



Plate 4: GJK01

APPENDIX VI: PLATES: GLENTIES

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Plate 5: GJK02



Plate 6: GJK02



Plate 7: GR01

APPENDIX VI: PLATES: GLENTIES

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Plate 8: GR02

APPENDIX VI: PLATES: GLENTIES

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Plate 9: GR03 & GR04