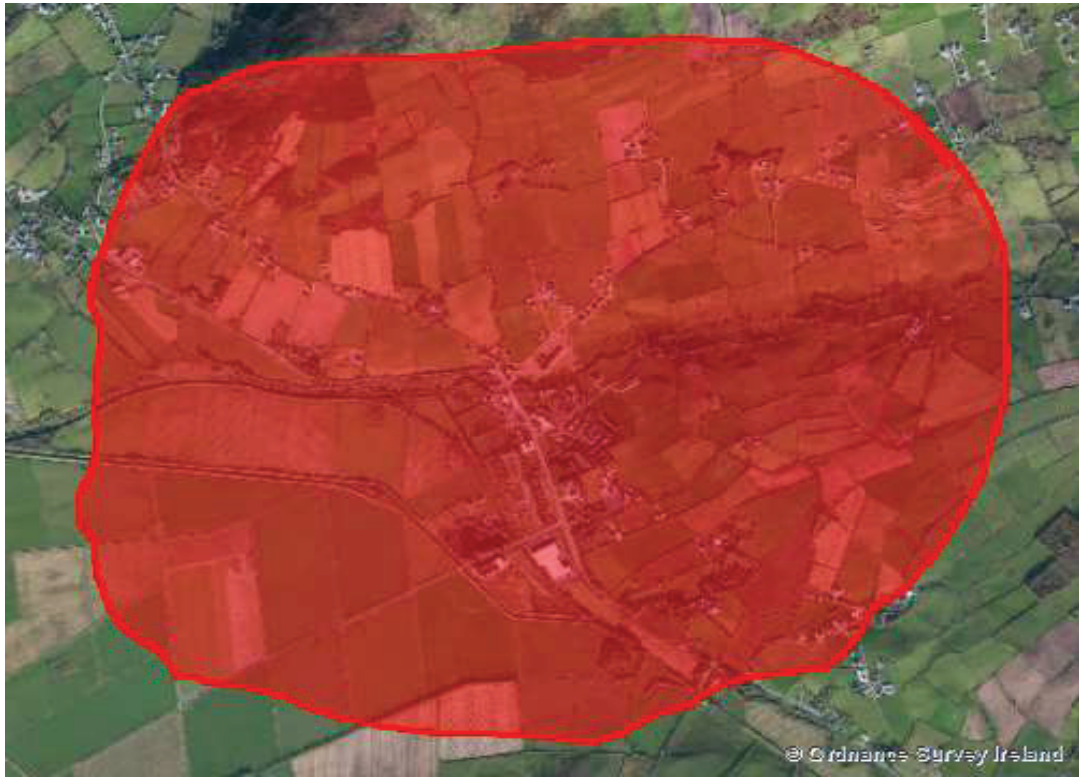
Appendix 7

Appendix 7.1

Data from National Biodiversity Data Centre

Species list for a User-Defined Polygon (Within)



Quality of information

The National Biodiversity Data Centre makes every effort to ensure the quality of the information available on this website and updates the information regularly. Before relying on the information on this site, however, users should carefully evaluate its accuracy, currency, completeness and relevance for their purposes. The National Biodiversity Data Centre cannot guarantee and assumes no legal liability or responsibility for the accuracy, currency or completeness of the information.

To assist the Centre in the provision of high quality information, should you identify an error in any of the information provided, please notify the Centre and every effort will be made to rectify the error.

Feature name	Species group	Species name	Record count	Date of last record	Title of dataset	Designation
Custom	acarine (Acari)	Acari	4	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	annelid	Eiseniella	2	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	annelid	Eiseniella tetraedra	1	17/09/2007	River Biologists' Database (EPA)	
Custom	annelid	Erpobdella	3	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	annelid	Glossiphonia	5	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	annelid	Glossiphonia complanata	2	17/09/2007	River Biologists' Database (EPA)	
Custom	annelid	Helobdella	1	29/07/2010	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	annelid	Oligochaeta	1	29/07/2010	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	annelid	Piscicola	3	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	annelid	Tubificidae	5	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	bird	Great Bittern (Botaurus stellaris)	1	09/01/1900	Rare birds of Ireland	Protected Species: Wildlife Acts

Custom	bird	Whooper Swan (Cygnus cygnus)	2	15/10/2019	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Yellowhammer (Emberiza citrinella)	3	14/04/2021	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Custom	crustacean	Asellus	4	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	crustacean	Gammarus	3	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	crustacean	Gammarus duebeni	2	29/07/2010	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	flowering plant	Bifid Hemp-nettle (Galeopsis bifida)	1	13/08/2002	Irish vascular plant data 1999-2009	
Custom	flowering plant	Broad-leaved Pondweed (Potamogeton natans)	1	17/09/2007	River Biologists' Database (EPA)	
Custom	flowering plant	Hawthorn (Crataegus monogyna)	1	17/09/2007	River Biologists' Database (EPA)	
Custom	flowering plant	Hemlock Water-dropwort (Oenanthe crocata)	1	17/09/2007	River Biologists' Database (EPA)	
Custom	flowering plant	Indian Balsam (Impatiens glandulifera)	1	31/07/2016	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)

Custom	flowering plant	Sycamore (Acer pseudoplatanus)	1	17/09/2007	River Biologists' Database (EPA)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Custom	flowering plant	Unbranched Bur-reed (Sparganium emersum)	1	17/09/2007	River Biologists' Database (EPA)	
Custom	flowering plant	Water Figwort (Scrophularia auriculata)	1	13/08/2002	Irish vascular plant data 1999-2009	
Custom	flowering plant	Winter Heliotrope (Petasites fragrans)	2	17/12/2016	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Custom	insect - beetle (Coleoptera)	Dytiscidae	4	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - beetle (Coleoptera)	Elmis aenea	3	31/07/2013	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - beetle (Coleoptera)	Haliplidae	1	31/07/2013	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - beetle (Coleoptera)	Limnius volckmari	3	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - butterfly	Ringlet (Aphantopus hyperantus)	1	23/07/2019	Butterflies of Ireland	
Custom	insect - butterfly	Small Tortoiseshell (Aglais urticae)	2	16/07/2019	Butterflies of Ireland	
Custom	insect - caddis fly (Trichoptera)	Glossosomatidae	1	17/09/2007	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - caddis fly (Trichoptera)	Limnephilidae	2	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - caddis fly (Trichoptera)	Rhyacophila	2	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - caddis fly (Trichoptera)	Sericostoma	2	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - dragonfly (Odonata)	Blue-tailed Damselfly (Ischnura elegans)	1	08/08/2003	Dragonfly Ireland	

Custom	insect - mayfly (Ephemeroptera)	Baetis	9	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - mayfly (Ephemeroptera)	Rhithrogena	2	31/07/2013	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - mayfly (Ephemeroptera)	Serratella ignita	4	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - stonefly (Plecoptera)	Leuctra	3	31/07/2013	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - true bug (Hemiptera)	Corixidae	1	29/07/2010	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - true bug (Hemiptera)	Gerridae	1	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - true fly (Diptera)	Chironomidae	8	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - true fly (Diptera)	Chironomus	4	31/07/2013	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - true fly (Diptera)	Dicranota	4	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - true fly (Diptera)	Simuliidae	3	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	insect - true fly (Diptera)	Tipulidae	1	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	liverwort	Chiloscyphus polyanthos	1	17/09/2007	River Biologists' Database (EPA)	Threatened Species: Least concern

Custom	mollusc	Ancylus fluviatilis	3	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	mollusc	Bithynia	1	31/07/2013	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	mollusc	Dusky Slug (Arion (Mesarion) subfuscus)	1	17/07/1976	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Jenkins' Spire Snail (Potamopyrgus antipodarum)	4	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Custom	mollusc	Netted Slug (Deroceras (Deroceras) reticulatum)	1	17/07/1976	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Planorbis	1	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	mollusc	Rounded Snail (Discus (Gonyodiscus) rotundatus)	1	17/07/1976	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Slippery Moss Snail (Cochlicopa cf. lubrica)	1	17/07/1976	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Smooth Glass Snail (Aegopinella nitidula)	1	17/07/1976	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Strawberry Snail (Trochulus (Trochulus) striolatus)	1	17/07/1976	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Two-toothed Door Snail (Clausilia (Clausilia) bidentata)	1	17/07/1976	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Wandering Snail (Radix balthica)	6	13/09/2016	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Custom	moss	Raspberry Bryum (Bryum klinggraeffii)	1	13/08/2002	Bryophytes of Ireland	Threatened Species: Least concern
Custom	terrestrial mammal	Eurasian Red Squirrel (Sciurus vulgaris)	1	21/08/2015	Atlas of Mammals in Ireland 2010-2015	Protected Species: Wildlife Acts
Custom	terrestrial mammal	European Otter (Lutra lutra)	1	22/03/2014	Atlas of Mammals in Ireland 2010-2015	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts

Custom	terrestrial mammal	Pipistrelle (Pipistrellus pipistrellus sensu lato)	1	27/09/2009	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Custom	terrestrial mammal	Red Fox (Vulpes vulpes)	2	23/10/2013	Atlas of Mammals in Ireland 2010-2015	
Custom	terrestrial mammal	Soprano Pipistrelle (Pipistrellus pygmaeus)	2	27/09/2009	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts

Appendix 7.2

Outline 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

www.rpsgroup.com

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
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Prepared for:

Donegal County Council

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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 wallichi,* 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 16th 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.30m2) on rough ground on the eastern bank of a small tributary of the Burnfoot River; a large stand (c.50m2), 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.5m2) 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^2)
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 9th and 10th 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^2) within an area of dumped spoil, which appears to have been subject to fencing and treatment, and a two-part linear stand (c. 98m^2) 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^2)
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 9th and 23rd 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 15th 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^2) 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^2) 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^2 and 300m^2 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^2.

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^2)
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

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

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 'S*uitable 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 breeched.

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-excavation 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 breeched.

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 Castlefinn 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 Castlefinn 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, strimmed 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 Castlefinn 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

Rhodendron 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.

5 REFERENCES

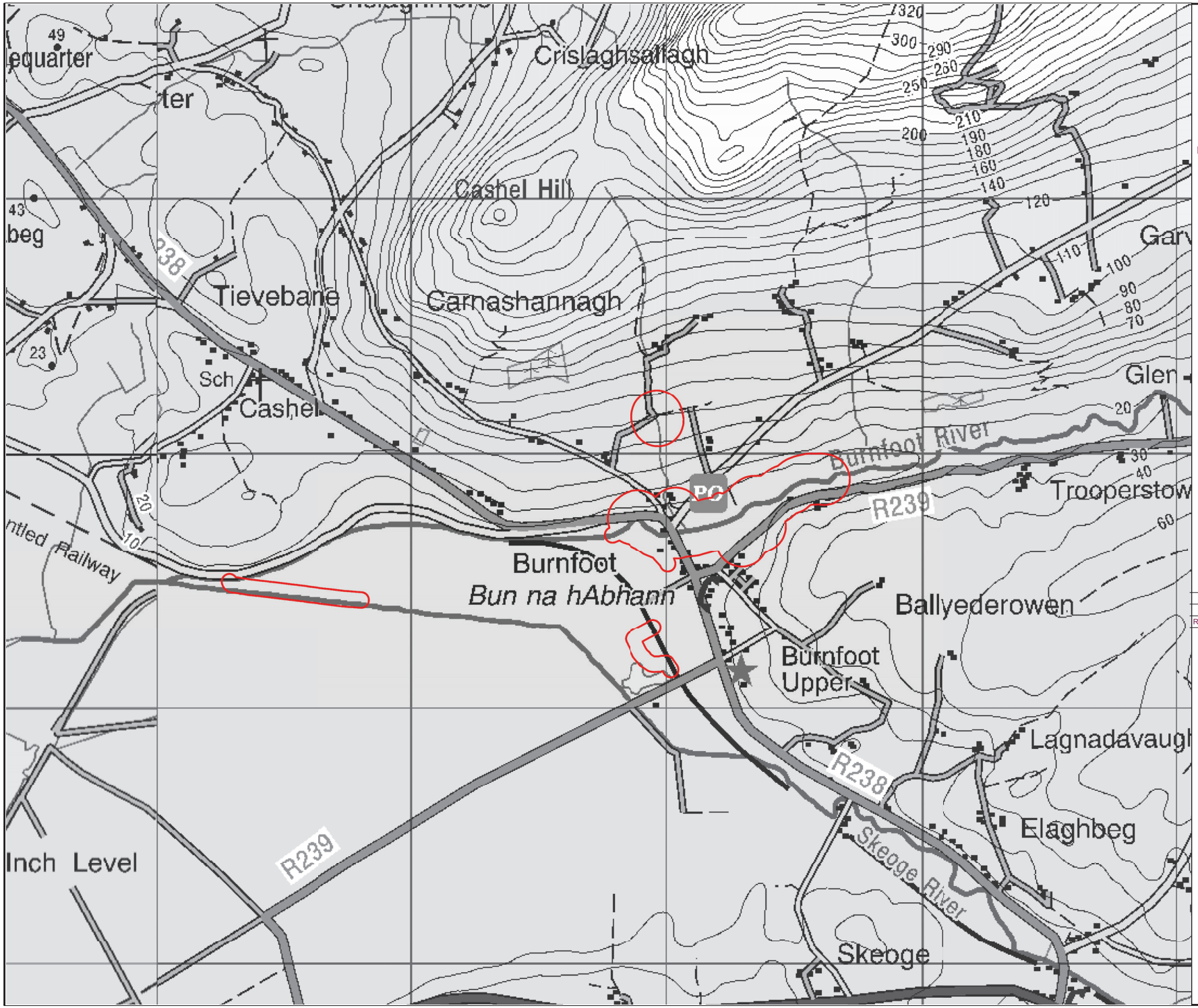
Barron, C. (2006) *the Control of Rhododendron in Native Woodlands*, Native Woodland Scheme

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
NI2258

Revision
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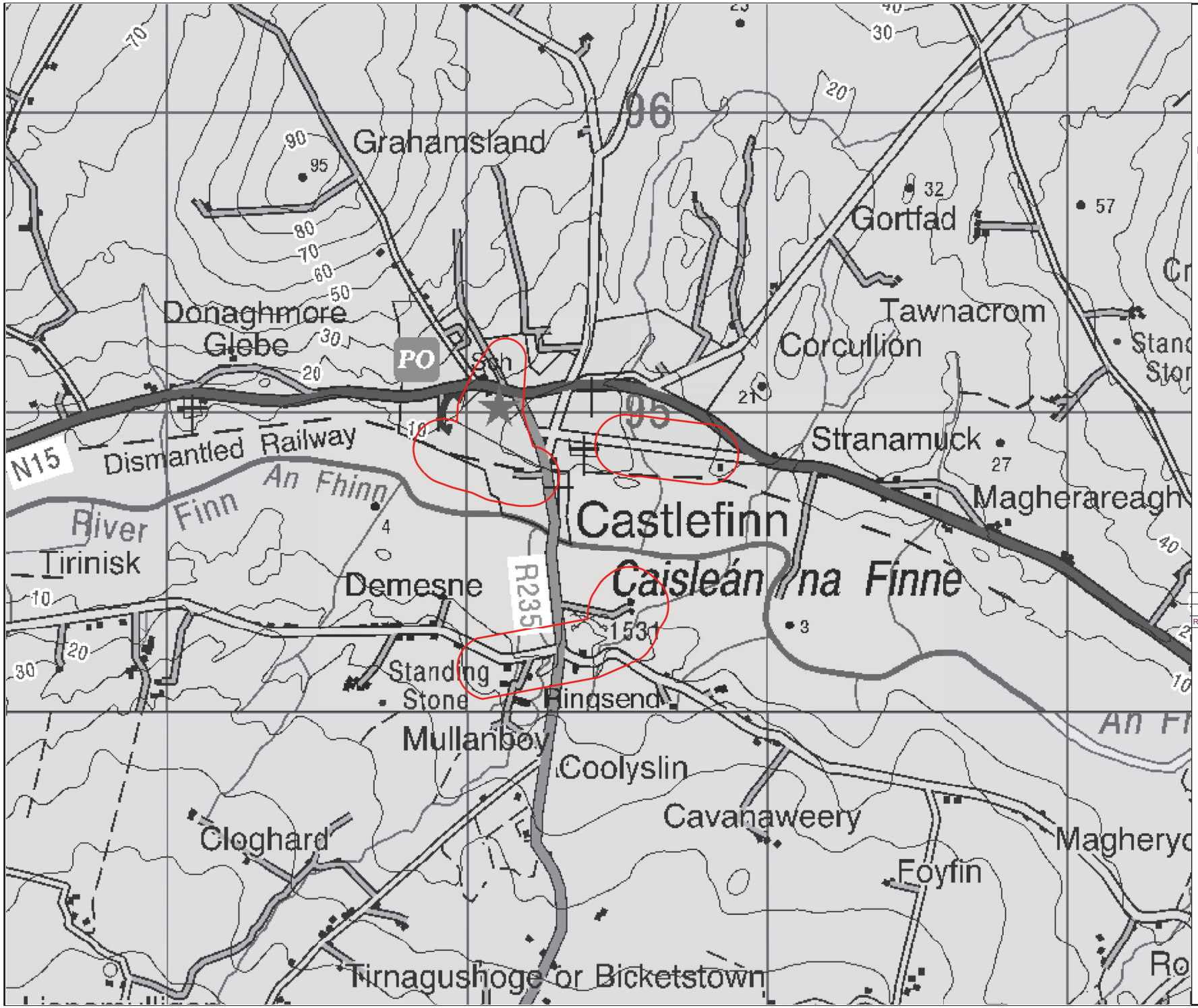
Figure 1.2: Castlefinn Survey Area



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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
NI2258

Revision
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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
NI2258

Revision
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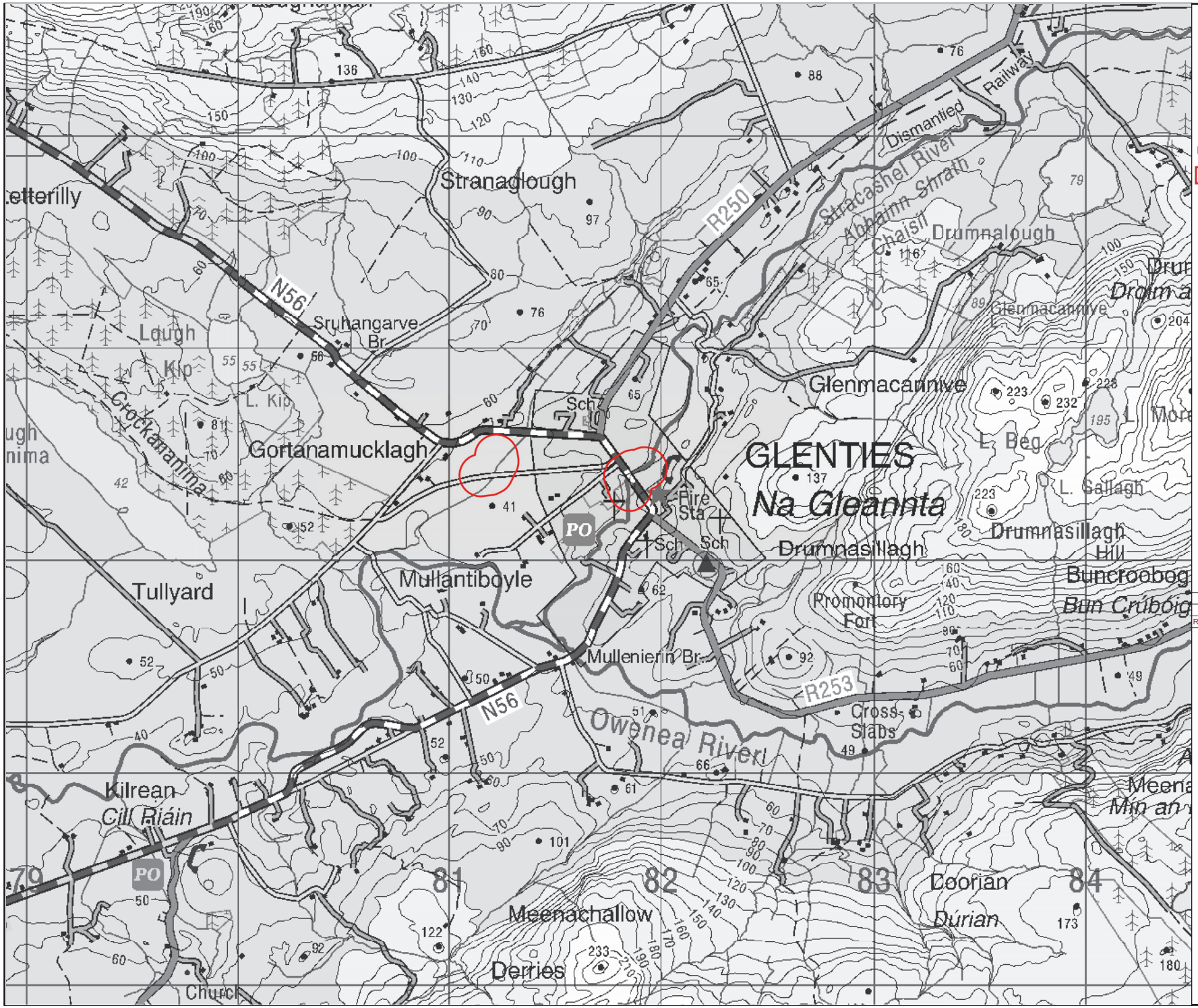
Figure 1.4: Glenties Survey Area



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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
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
Preliminary	**1:1250**	**20.02.23**

RPS Project Number	Revision
NI2258	--

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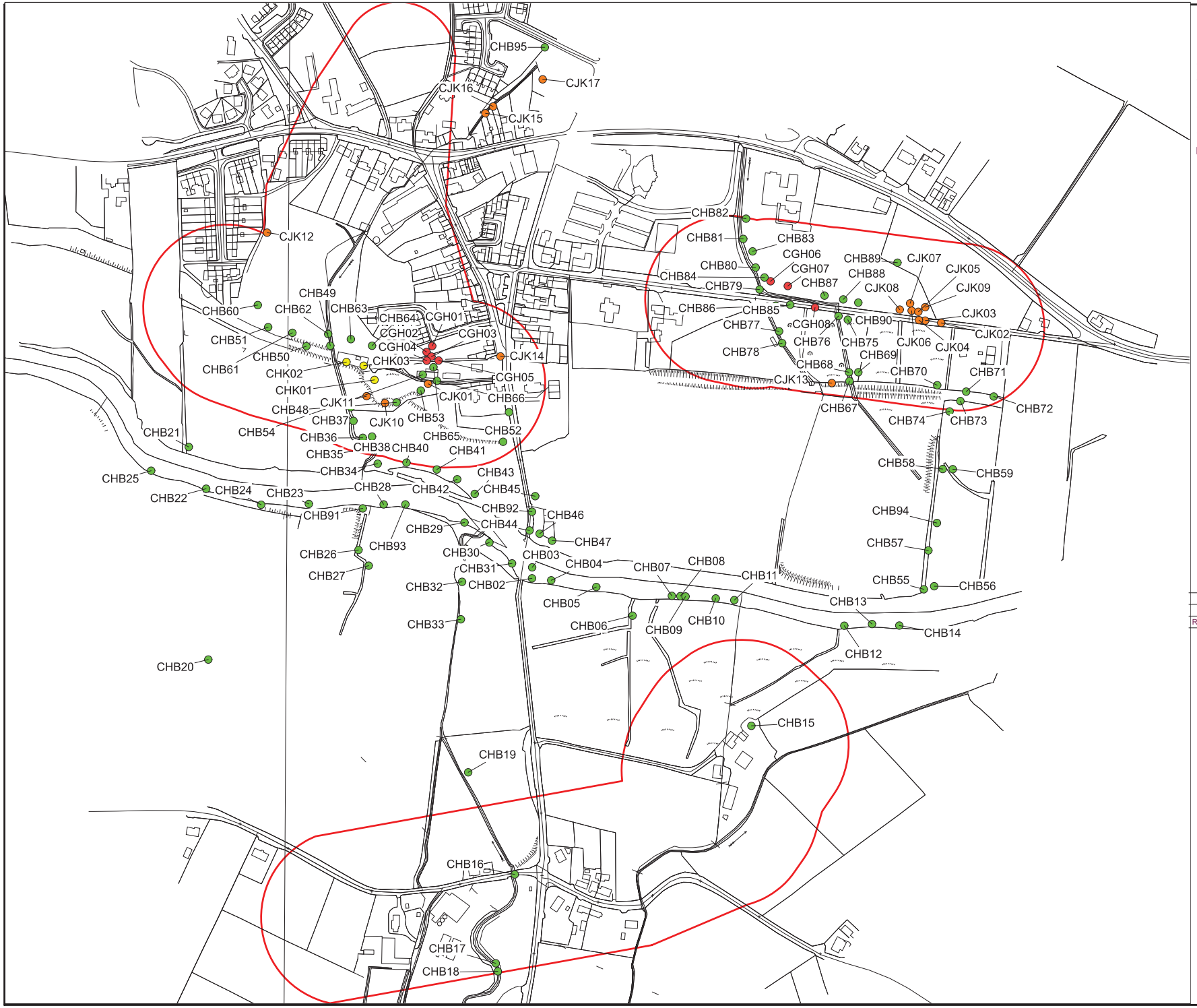
Figure 3.2: Castlefinn Invasive Species Plan



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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
Preliminary	**1:1250**	**05.10.20**

RPS Project Number
NI2258

Revision
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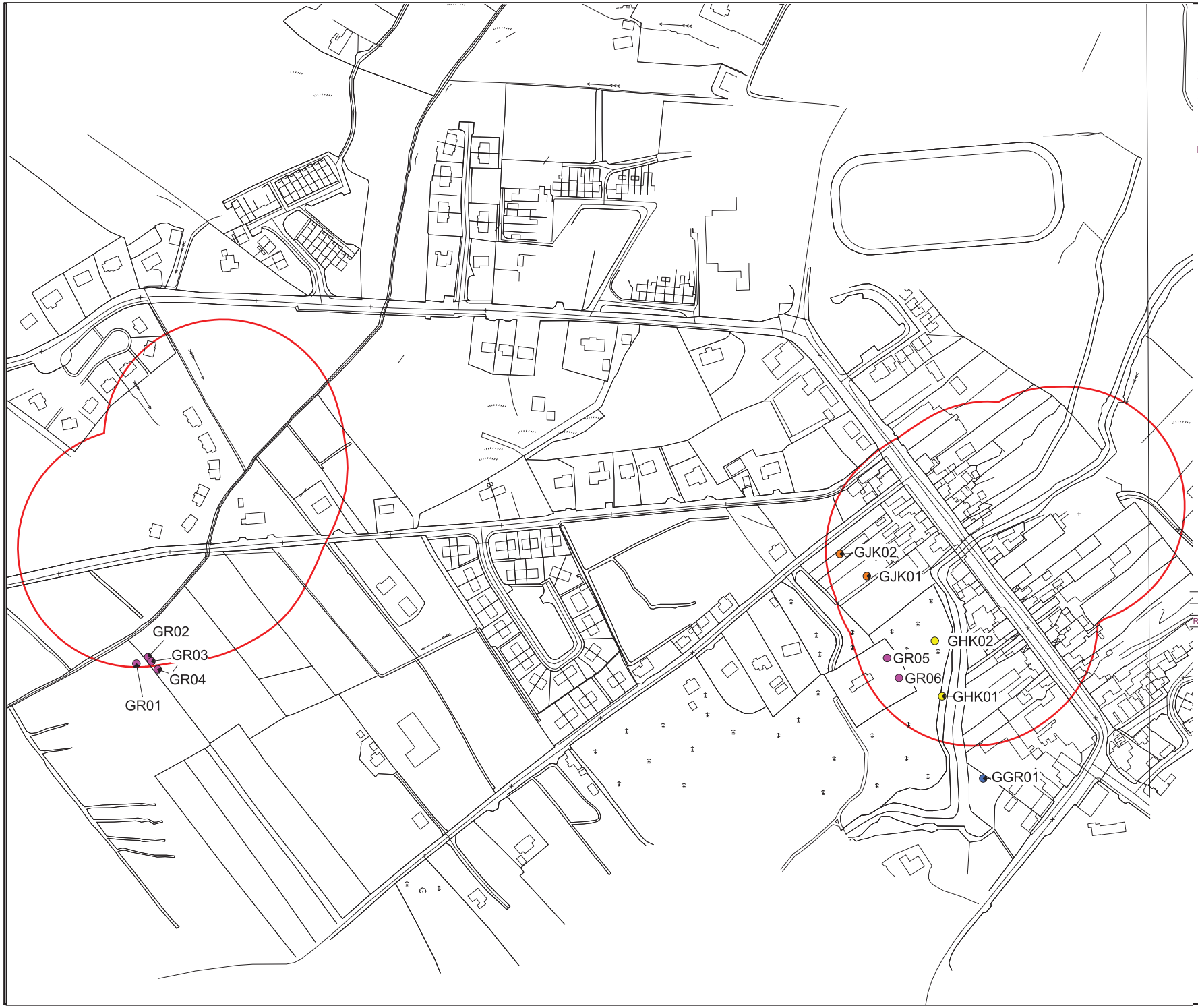
Figure 3.3 Glenties Invasive Species Plan



Note

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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
Preliminary	**1:1250**	**05.10.20**

RPS Project Number	Revision
NI2258	**--**

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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^2)	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^2)	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^2)	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^2)	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^2)	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^2)	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^2)	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 regerating 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^2)	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^2)	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

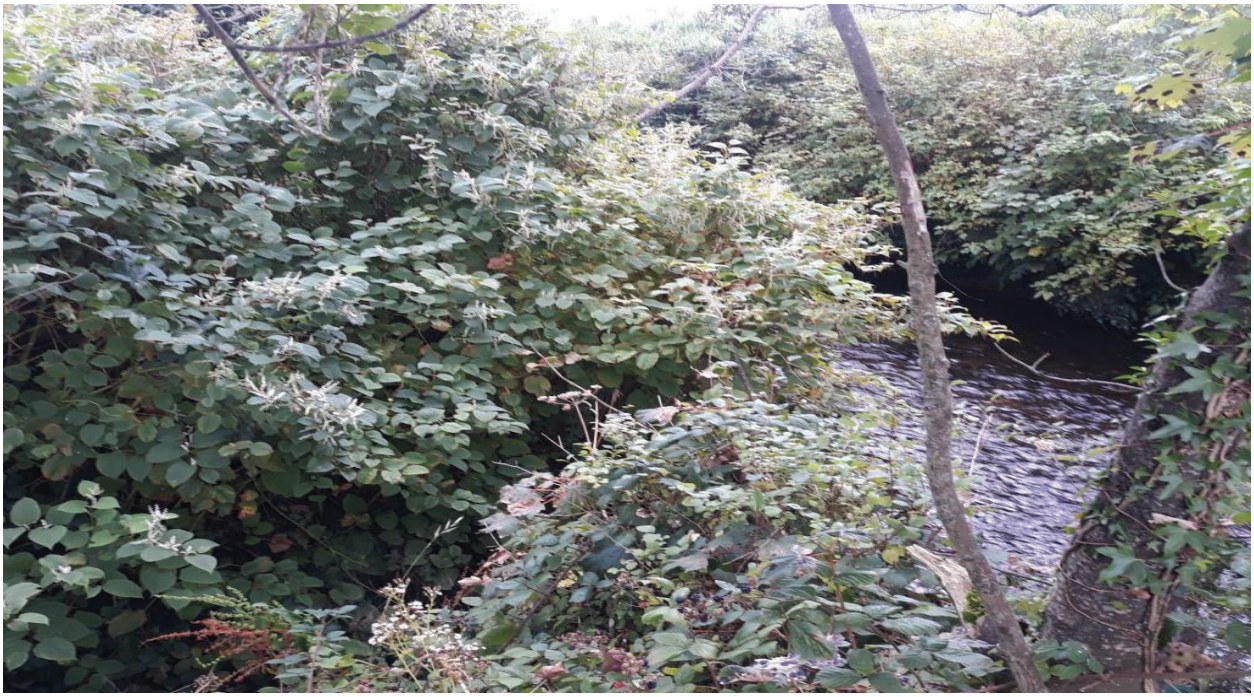

Plate 3: BJK02

Plate 4: BJK02

Plate 5: BJK03

Plate 6: BR01

Plate 7: BR02

APPENDIX V: PLATES: CASTLEFIN

Plate 1: CGH04

Plate 2: CGH05

Plate 3: CGH06

Plate 4: CGH07

Plate 5: CGH08

Plate 6: CJK01

Plate 7: CJK05

Plate 8: CJK07

Plate 9: CJK10

Plate 10: CJK11

Plate 11: CJK13

Plate 12: CJK14

Plate 13: CJK15

Plate 14: CJK16

Plate 15: CJK17

Plate 16: CHK01

Plate 17: CHK03

Plate 18: CHB02 & CHB03

Plate 19: CHB15

Plate 20: CHB73

APPENDIX VI: PLATES: GLENTIES

Plate 1: GHK02

Plate 2: GHK02

Plate 3: GJK01

Plate 4: GJK01

Plate 5: GJK02

Plate 6: GJK02

Plate 7: GR01

Plate 8: GR02

Plate 9: GR03 & GR04

Appendix 7.3

Ecological Survey for Birds

ECOLOGICAL SURVEY FOR BIRDS

Overwintering Wetland Bird Survey, Burnfoot and Inch Levels

NI2258 Donegal Flood Relief
Ecology
ESB
D01
September 2025

www.rpsgroup.com

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 for:

Donegal County Council

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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 (EcIA).

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).


High Level LVIA
Carnashannagh
Magherabeg
Monreagh
Burnfoot
Ballyederowen
Skeoge
Skeoge Road
Carrownamaddy
Inch Level
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
Survey Boundary
Donegal County Council
NI 2258
Designated Species Survey Field Boundaries
1.0

3 RESULTS

3.1 Consultation

Consultation with National Biodiversity Data Centre identified three historical bird records within 1 km of the site. The records indication 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

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
Black-headed gull	✓	**420**	**1270**	**724**	**0**	**0**		**0**	**300**	**1**	**0**	**400**	**765**		**0**	**0**	**0**	**19**	**4**	1270	244
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
Common gull	✓	**50**	**50**	**174**	**0**	**0**		**0**	**0**	**0**	**0**	**0**	**0**		0	0	0	351	5	351	39
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	**219**	**300**	300	32
Great black-backed gull	X	3	0	0	2	2		0	0	0	1	2	0		0	3	3	8	2	8	2
Greenland White-fronted goose	✓	**0**	**0**	**0**	**0**	**12**		**0**	**0**	**0**	**0**	**0**	**3**		**0**	**0**	**5**	**0**	**5**	12	2
Grey heron	✓	**2**	**0**	**0**	**0**	**1**		**0**	**1**	**1**	**0**	**0**	**0**		**0**	**0**	**6**	**1**	**1**	6	1
Greylag goose	✓	**1164**	**1725**	**91**	**652**	**718**		**0**	**208**	**994**	**882**	**245**	**435**		**544**	**437**	**790**	**359**	**820**	1725	629
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
Mallard	✓	**0**	**0**	**0**	**2**	**6**		**0**	**0**	**1**	**2**	**0**	**2**		**0**	**7**	**12**	**19**	**20**	20	4
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
Teal	✓	**0**	**0**	**4**	**1**	**2**		**0**	**0**	**0**	**16**	**2**	**0**		**0**	**11**	**10**	**23**	**13**	23	5
Whooper swan	✓	**347**	**120**	**86**	**370**	**609**		**0**	**374**	**323**	**71**	**91**	**64**		**21**	**51**	**13**	**187**	**307**	609	190
Wigeon	✓	**0**	**0**	**0**	**0**	**0**		**0**	**0**	**0**	**0**	**0**	**0**		**1**	**0**	**0**	**0**	**0**	1	0
Total		**1994**	**3414**	**1079**	**1056**	**1355**		**2**	**927**	**1320**	**980**	**761**	**1274**		**758**	**514**	**851**	**1351**	**1587**		

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.	Carrion 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.	Dunnock	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


Carnashannagh
Magherabeg
Monreagh
Killnacharmenry
Burnfoot
Ballyederowen
Skeoge
Skeoge Road
Lisfannan
Carrownamaddy
Inch Level
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
Survey Boundary
Month
Nov
Dec
Jan
18
250
500
250
120
4
90
38
25
90
50
18
49
500
70
150
12
17
120
43
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W www.rpsgroup.com/ireland
E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Designated Species Survey
Black-headed Gull
Year 1
FIGURE: 2.0
Drawn by KA
Revision 001
Project Number NI 2258
Date 28.03.23


High Level LVIA
Carnashannagh
Magherabeg
Monreagh
Carnashannagh
Magherabeg
Kilnachaverny
Carnashannagh
Burnfoot
Carnashannagh
Ballyederowen
23
170
572
400
100
1
Ballyederowen
Ballyederowen
Skeoge Road
Carrownamaddy
Lisfannan
Skeoge
Skeoge Road
Inch Level
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
Survey Boundary
Month
Nov
Dec
Feb
Mar
Elmwood House T +44(0) 28 90 667914
74 Boucher Road F +44(0) 28 90 668286
Belfast W www.rpsgroup.com/ireland
BT12 6RZ 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


High Level LVIA
Carnashannagh
Magherabeg
Monreagh
Carnashannagh
Killnacloverny
Magherabeg
Carnashannagh
Burnfoot
Carnashannagh
Ballyederowen
50
10
100
40
Ballyederowen
50
24
Ballyederowen
Skeoge Road
Carrownamaddy
Lisfannan
Skeoge
Skeoge Road
Inch Level
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
Survey Boundary
Month
Nov
Dec
Jan
Elmwood House T +44(0) 28 90 667914
74 Boucher Road F +44(0) 28 90 668286
Belfast W www.rpsgroup.com/ireland
BT12 6RZ E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Designated Species Survey
Common Gull
Year 1 (Not Recorded Y2)
FIGURE: 2.2
Drawn by KA
Revision D01
Project Number NI 2258
Date 20.03.23


Survey Boundary
Month
Nov
Dec
Jan
Feb
Mar
Carnashannagh
Magherabeg
Monreagh
Killnachennry
Burnfoot
Ballyederowen
Skeoge
Skeoge Road
Carrownamaddy
Lisfannan
Inch Level
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
583
62
5
606
3
53
13
2
6
210
109
36
18
7
47
70
163
1
170
2
2
154
27
21
51
52
452
57
334
114
885
52
20
Donegal County Council
NI 2258
Designated Species Survey
Greylag Goose
Year 1
2.3
KA
D01
NI 2258
20.03.23


High Level LVIA
Carnashannagh
Magherabeg
Monreagh
Killnachevenny
Burnfoot
Ballyederowen
Skeoge
Skeoge Road
Carrownamaddy
Lisfannan
Inch Level
150
9
587
750
1
120
62
357
104
71
111
96
89
27
77
13
12
95
6
19
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
Survey Boundary
Month
Nov
Dec
Jan
Feb
Mar
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Designated Species Survey Greylag Goose Year 2
FIGURE: 2.4
Drawn by KA
Revision D01
Project Number NI 2258
Date 20.03.23


High Level LVIA
Carnashannagh
Magherabeg
Monreagh
Carnashannagh
Magherabeg
Carnashannagh
Carnashannagh
Burnfoot
Ballyedrowen
Ballyedrowen
Ballyedrowen
Skeoge Road
Carrownamaddy
Lisfannan
Skeoge
Skeoge Road
Inch Level
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
Survey Boundary
Month
Nov
Mar
Elmwood House T +44(0) 28 90 667914
74 Boucher Road F +44(0) 28 90 668286
Belfast W www.rpsgroup.com/ireland
BT12 6RZ E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Designated Species Survey
Grey Heron
Year 1
FIGURE: 2.5
Drawn by KA
Revision D01
Project Number NI 2258
Date 20.03.23


High Level LiDAR
Carnashannagh
Magherabeg
Monreagh
Killnacheeny
Burnfoot
Ballyederowen
Skeoge
Skeoge Road
Carrownamaddy
Lisfannan
Inch Level
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
Survey Boundary
Month
Nov
Dec
Elmwood House 74 Boucher Road Belfast BT12 6RZ
T +44(0) 28 90 667914
F +44(0) 28 90 668286
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Designated Species Survey
Grey Heron
Year 2
FIGURE: 2.6
Drawn by KA
Revision D01
Project Number NI 2258
Date 20.03.23


High Level LVIA
Carnashannagh
Magherabeg
Monreagh
Carnashannagh
Magherabeg
Carnashannagh
Burnfoot
Carnashannagh
Ballyederowen
Ballyederowen
Ballyederowen
Skeoge Road
Skeoge
Skeoge Road
Carrownamaddy
Inch Level
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
Survey Boundary
Month
Feb
Mar
Donegal County Council
NI 2258
Designated Species Survey
Mallard
Year 1
2.7


High Level LVIA
Carnashannagh
Magherabeg
Monreagh
Carnashannagh
Magherabeg
Kilnachevenny
Carnashannagh
Burnfoot
Carnashannagh
Ballyederowen
Ballyederowen
Ballyederowen
Skeoge Road
Carrownamaddy
Lisfannan
Skeoge
Skeoge Road
Inch Level
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
1
2
Survey Boundary
Month
Dec
Mar
Elmwood House T +44(0) 28 90 667914
74 Boucher Road F +44(0) 28 90 668286
Belfast W www.rpsgroup.com/ireland
BT12 6RZ E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Designated Species Survey
Mallard
Year 2
FIGURE: 2.8
Drawn by KA
Revision D01
Project Number NI 2258
Date 20.03.23


High Level LVIA
Carnashannagh
Magherabeg
Monreagh
Carnashannagh
Magherabeg
Carnashannagh
Burnfoot
Carnashannagh
Ballyederowen
12
Ballyederowen
Ballyederowen
Skeoge Road
Carrownamaddy
Lisfannan
Skeoge
Skeoge Road
Inch Level
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
Survey Boundary
Month
Mar
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W www.rpsgroup.com/ireland
E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Designated Species Survey Eurasian Wigeon Year 1
FIGURE: 2.9
Drawn by KA
Revision D01
Project Number NI 2258
Date 20.03.23


High Level LVIA
Carnashannagh
Magherabeg
Monreagh
Kilmacowenny
Burnfoot
Ballyederowen
Skeoge
Skeoge Road
Carrownamaddy
Lisfannan
Inch Level
3
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
Survey Boundary
Month
Mar
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Belfast W www.rpsgroup.com/ireland
BT12 6RZ E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Designated Species Survey
Eurasian Wigeon
Year 2
FIGURE: 2.10
Drawn by KA
Revision D01
Project Number NI 2258
Date 20.03.23


High Level LVIA
Carnashannagh
Magherabeg
Monreagh
Carnashannagh
Magherabeg
Carnashannagh
Carnashannagh
Burnfoot
Carnashannagh
Ballyederowen
Ballyederowen
Ballyederowen
Skeoge Road
Carrownamaddy
Skeoge
Skeoge Road
Inch Level
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
Survey Boundary
Month
Nov
Dec
Jan
Feb
Mar
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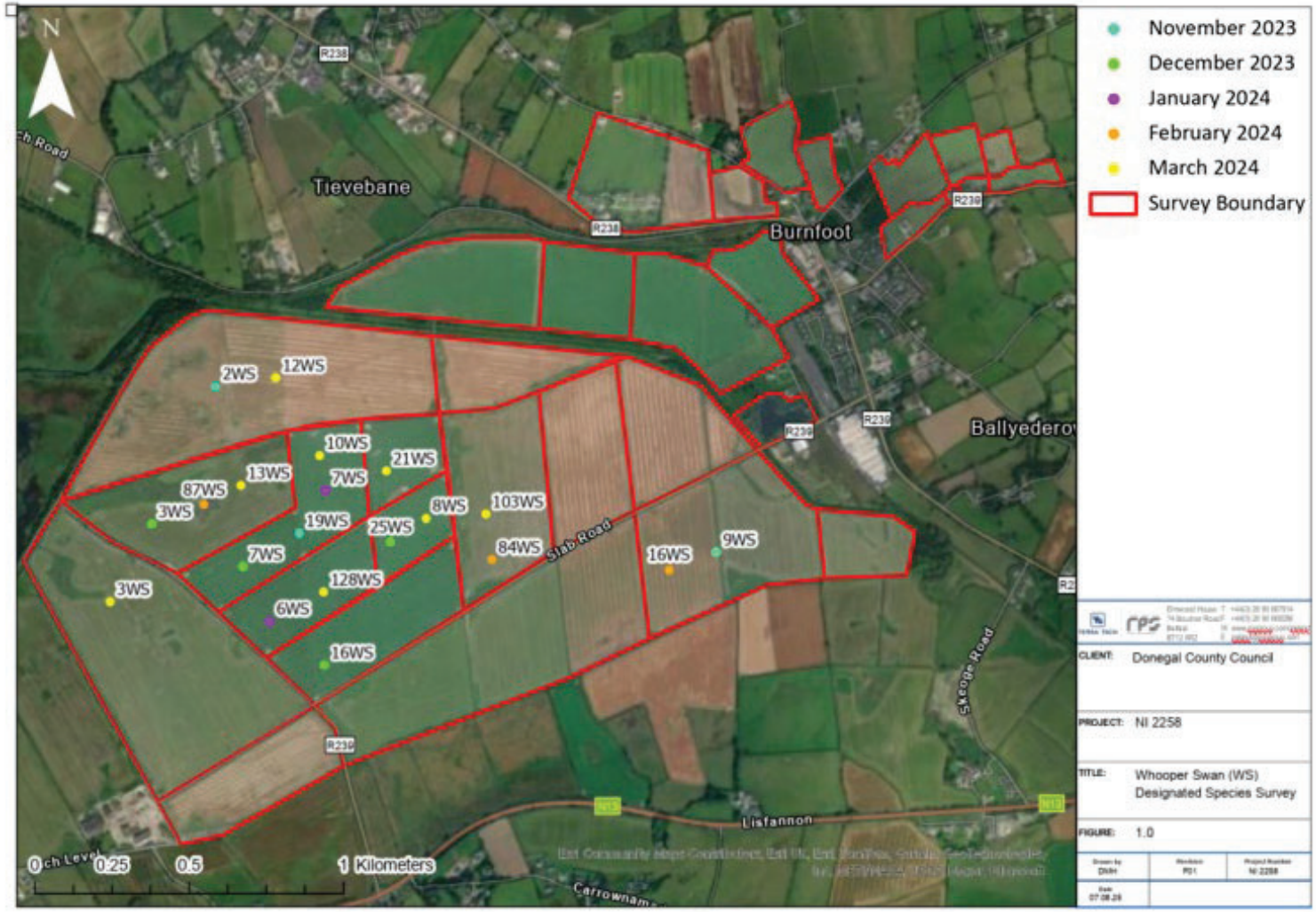
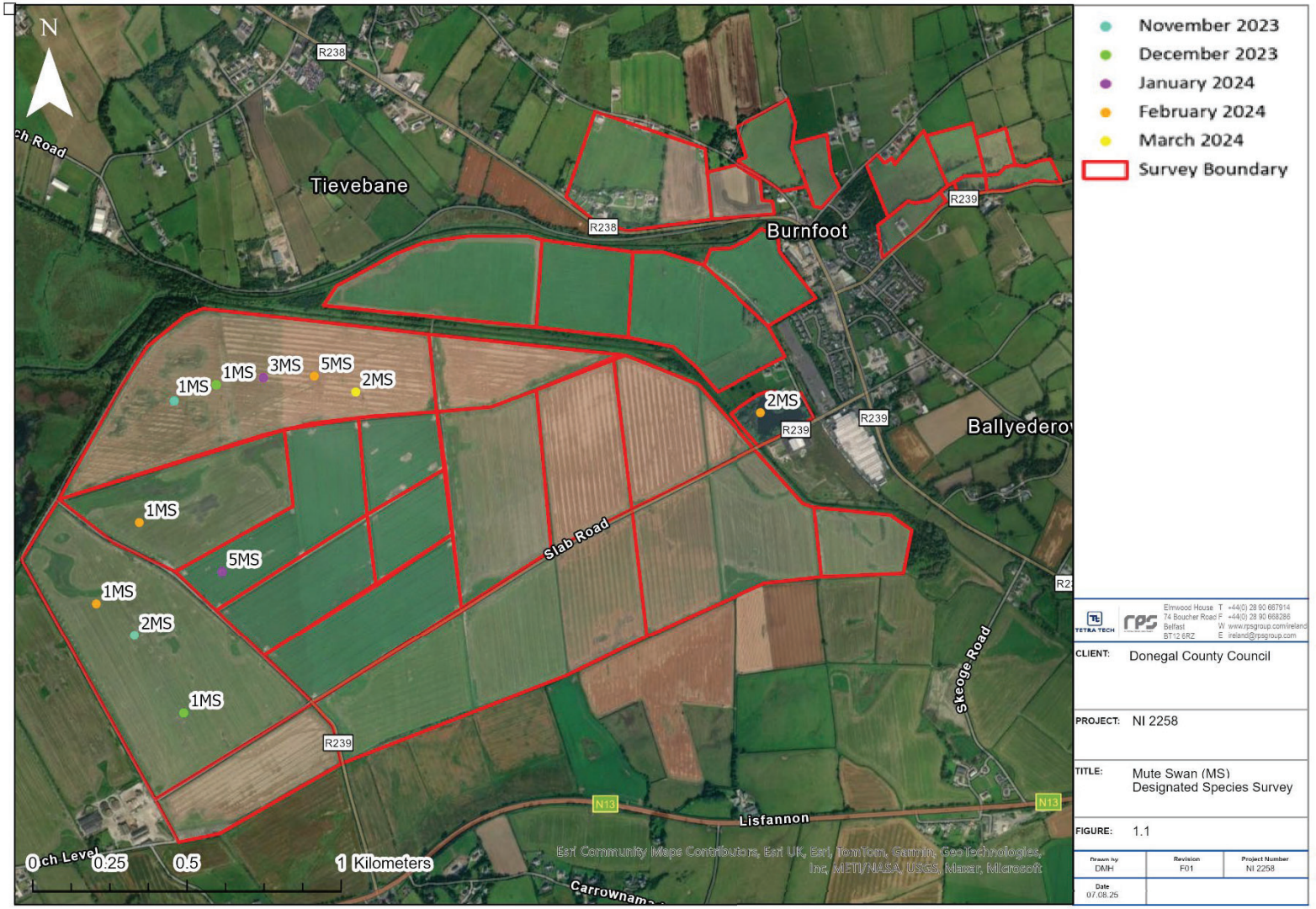
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Designated Species Survey Whooper Swan Year 1
FIGURE: 2.11
Drawn by KA
Revision D01
Project Number NI 2258
Date 20.03.23


Carnashannagh
Magherabeg
Monreagh
Carnashannagh
Magherabeg
Carnashannagh
Carnashannagh
Burnfoot
Carnashannagh
Ballyederowen
Ballyederowen
Ballyederowen
Skeoge Road
Carrownamaddy
Skeoge
Skeoge Road
Inch Level
Maxar, Microsoft, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS
Survey Boundary
Month
Nov
Dec
Jan
Feb
Mar
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Designated Species Survey Whooper Swan Year 2
FIGURE: 2.12
Drawn by KA
Revision D01
Project Number NI 2258
Date 20.03.23


N
Tievebane
Burnfoot
Ballyedero
Slab Road
Skeogo Road
Lisfannon
Carrowmar
R238
R239
R230
2WS
12WS
10WS
21WS
13WS
7WS
87WS
3WS
19WS
25WS
8WS
103WS
84WS
7WS
9WS
16WS
3WS
128WS
6WS
16WS
0 0.25 0.5 1 Kilometers
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Whooper Swan (WS) Designated Species Survey
FIGURE: 1.0


N
R238
Tievebane
Burnfoot
R239
Ballyedero
Slab Road
Skeoge Road
N13
Lisfannon
Carrownam
1MS
1MS
3MS
5MS
2MS
2MS
1MS
5MS
1MS
2MS
1MS
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
0 0.25 0.5 1 Kilometers
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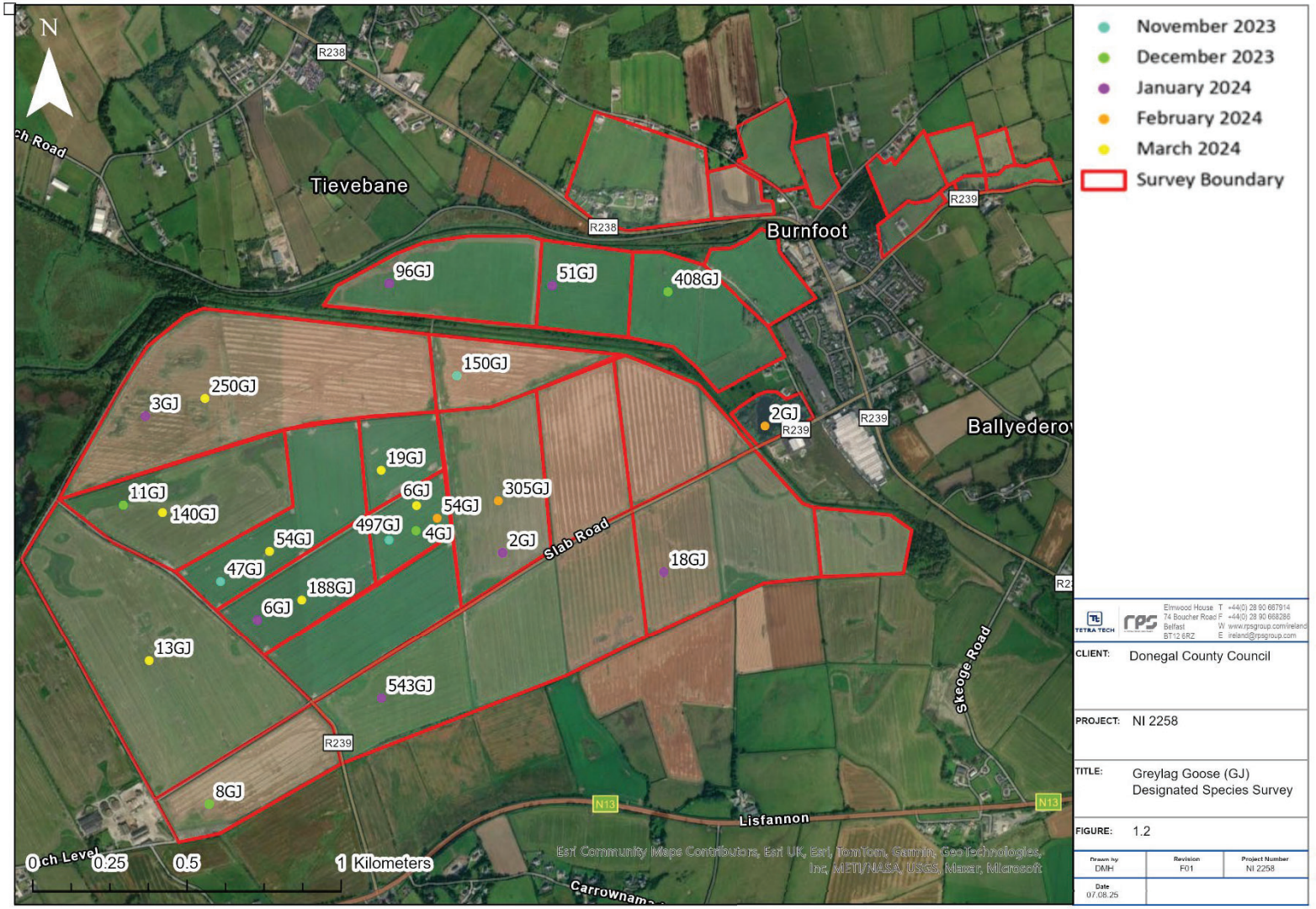
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Mute Swan (MS) Designated Species Survey
FIGURE: 1.1
Drawn by DMH
Revision F01
Project Number NI 2258
Date 07.08.25


N
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
Tievebane
Burnfoot
Ballyedero
R238
R239
N13
Slab Road
Skeoge Road
Lisfannon
Carrownam
96GJ
51GJ
408GJ
150GJ
250GJ
3GJ
2GJ
19GJ
11GJ
140GJ
6GJ
54GJ
305GJ
497GJ
4GJ
54GJ
2GJ
47GJ
188GJ
18GJ
6GJ
13GJ
543GJ
8GJ
0 ch Level
0.25
0.5
1 Kilometers
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F +44(0) 28 90 668286
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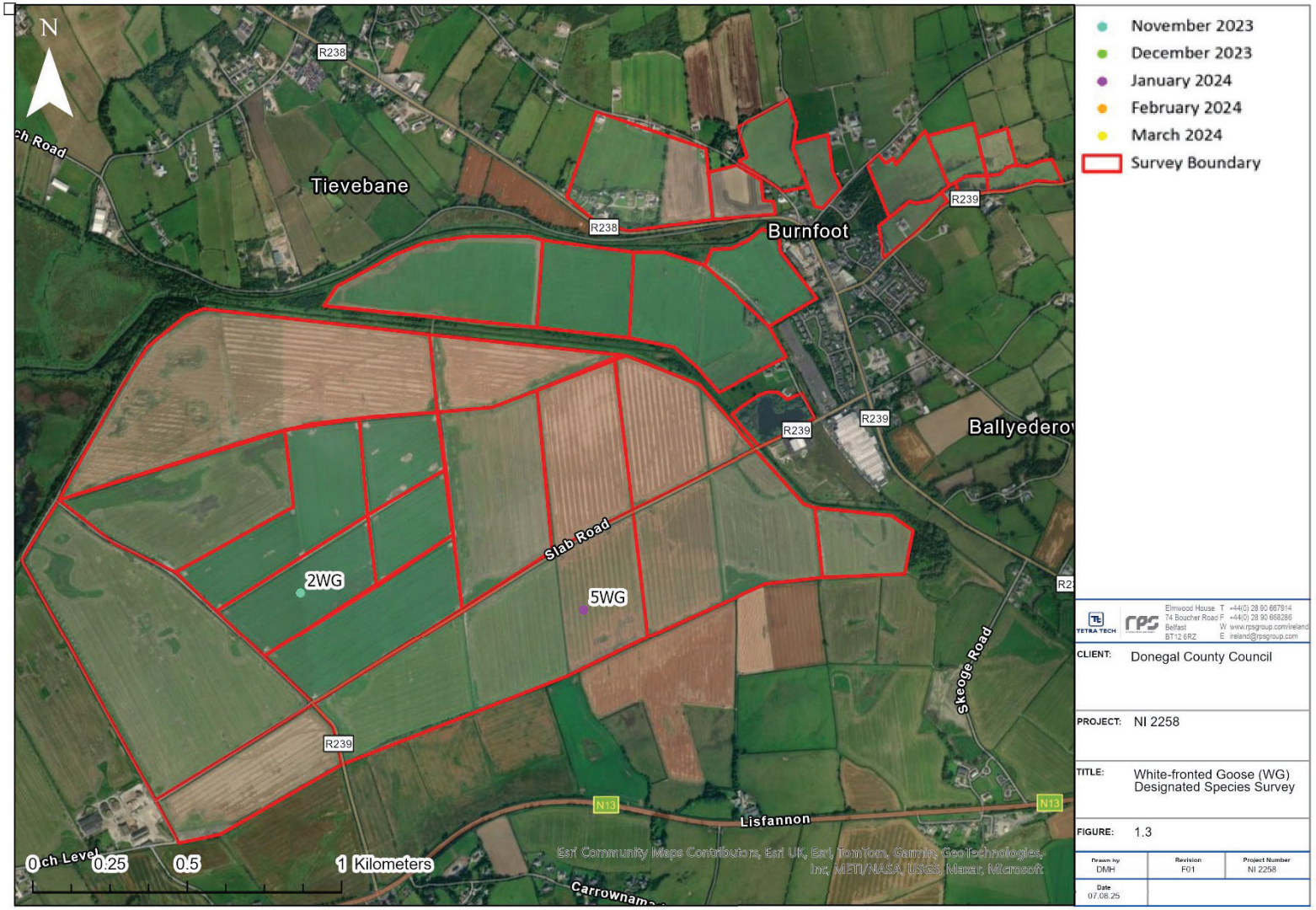
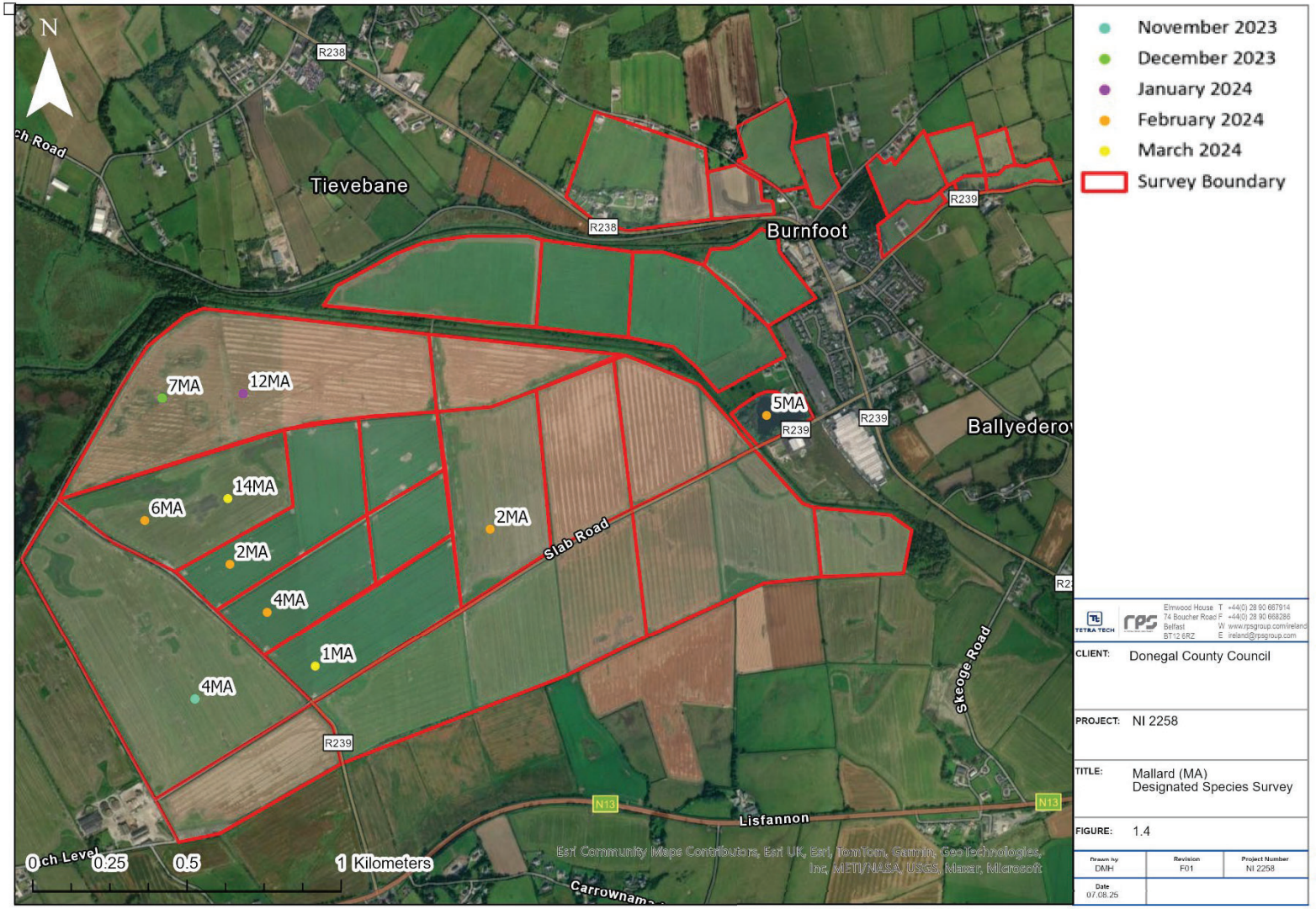
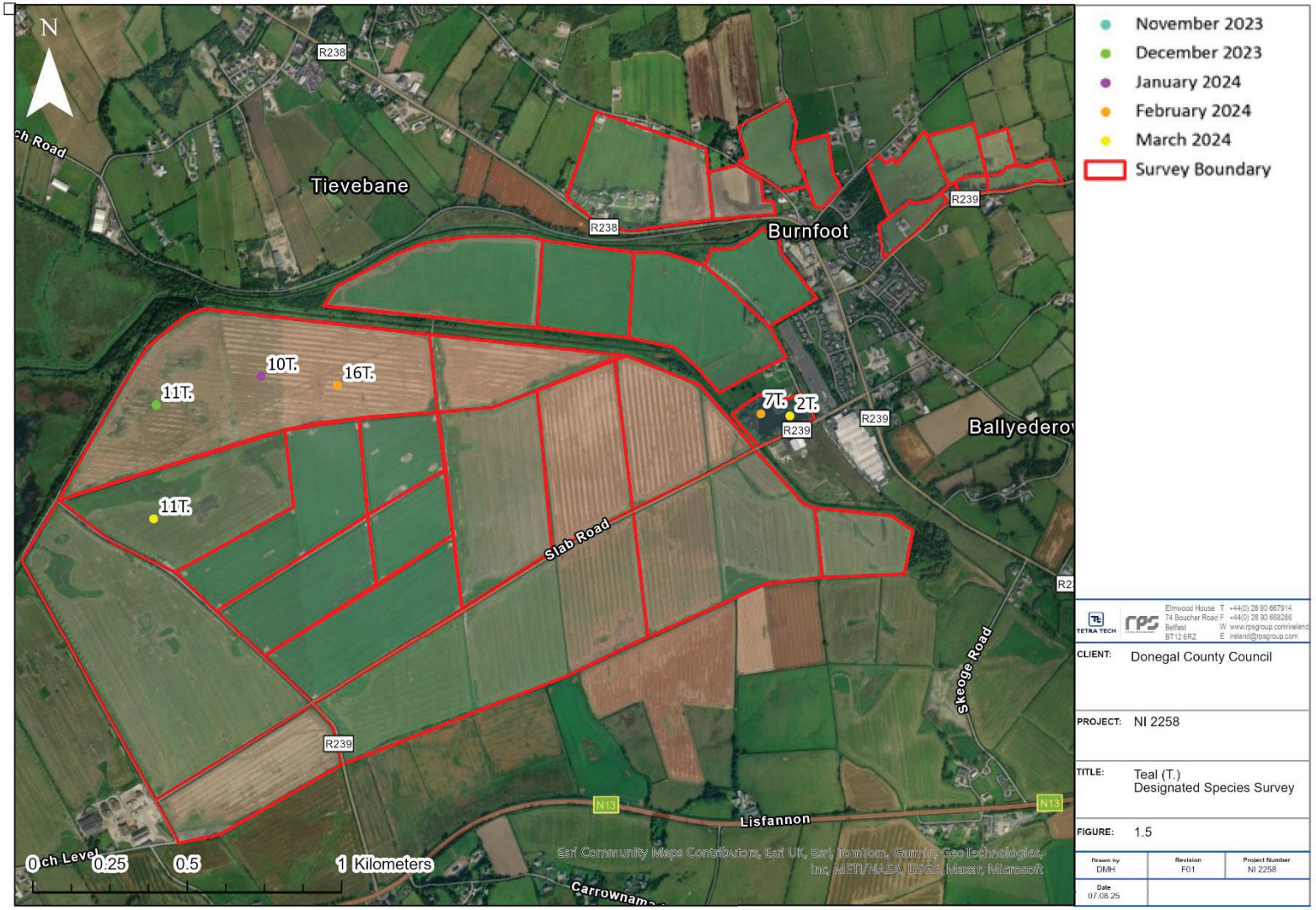
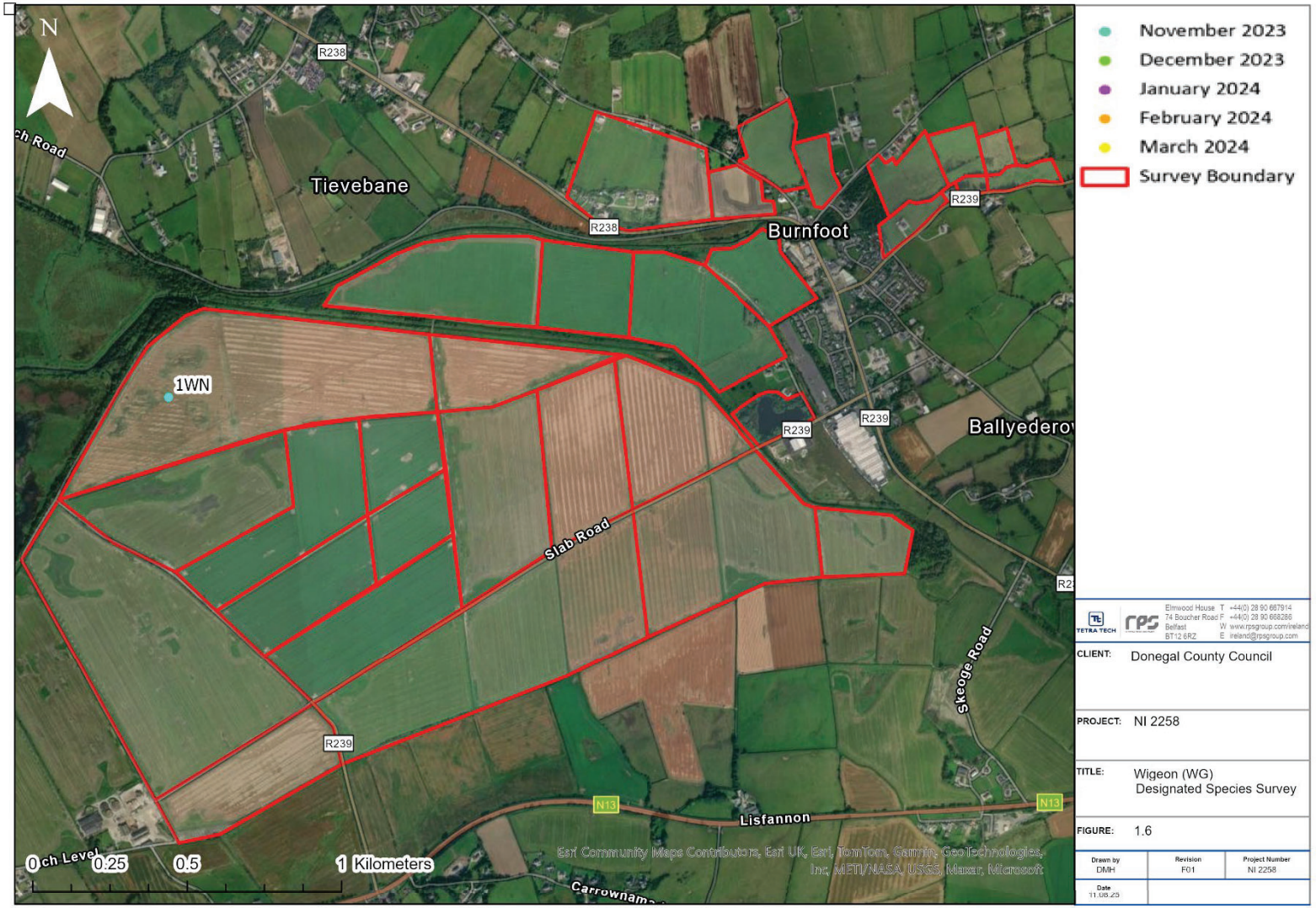
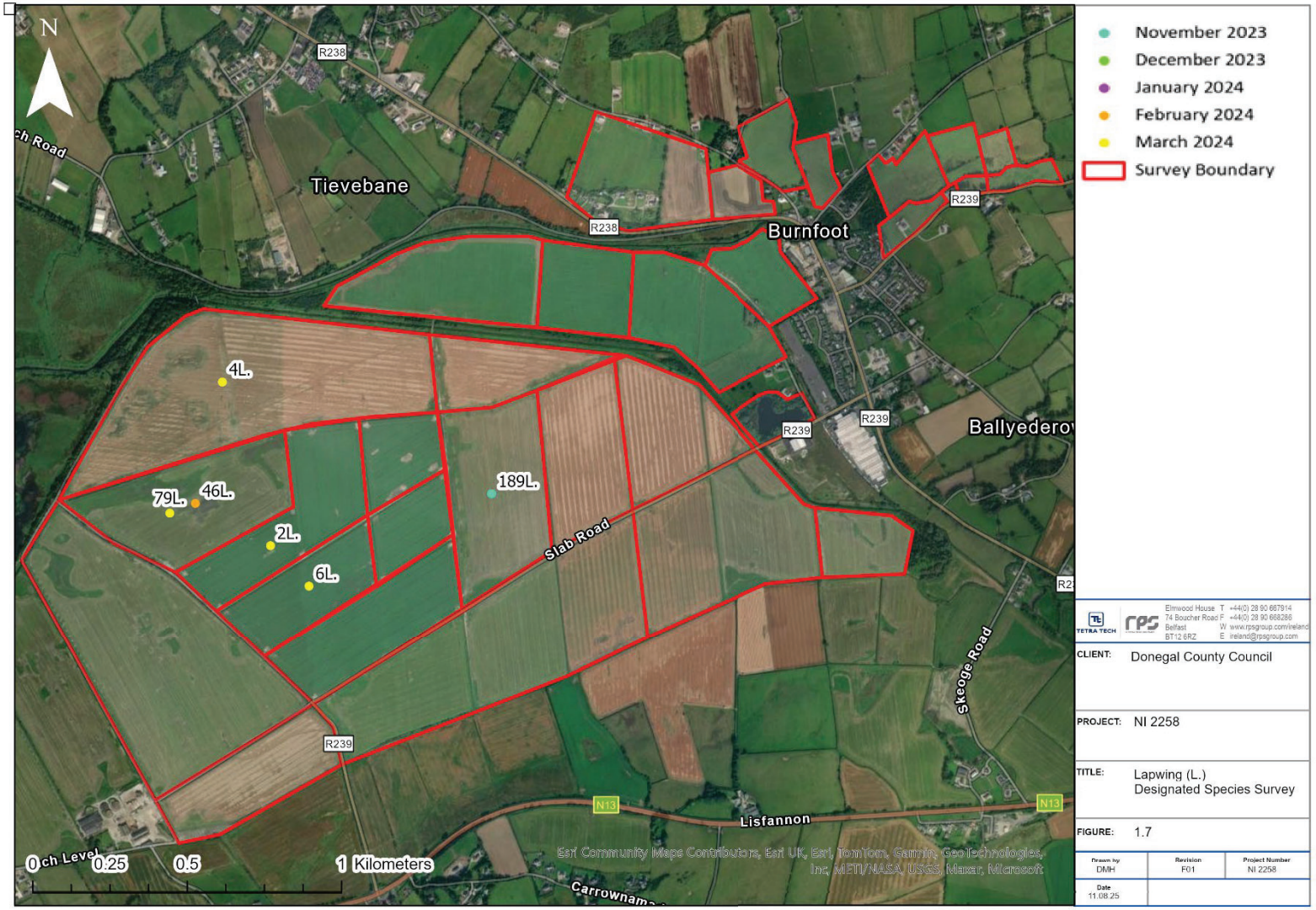
E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Greylag Goose (GJ) Designated Species Survey
FIGURE: 1.2
Drawn by DMH
Revision F01
Project Number NI 2258
Date 07.08.25

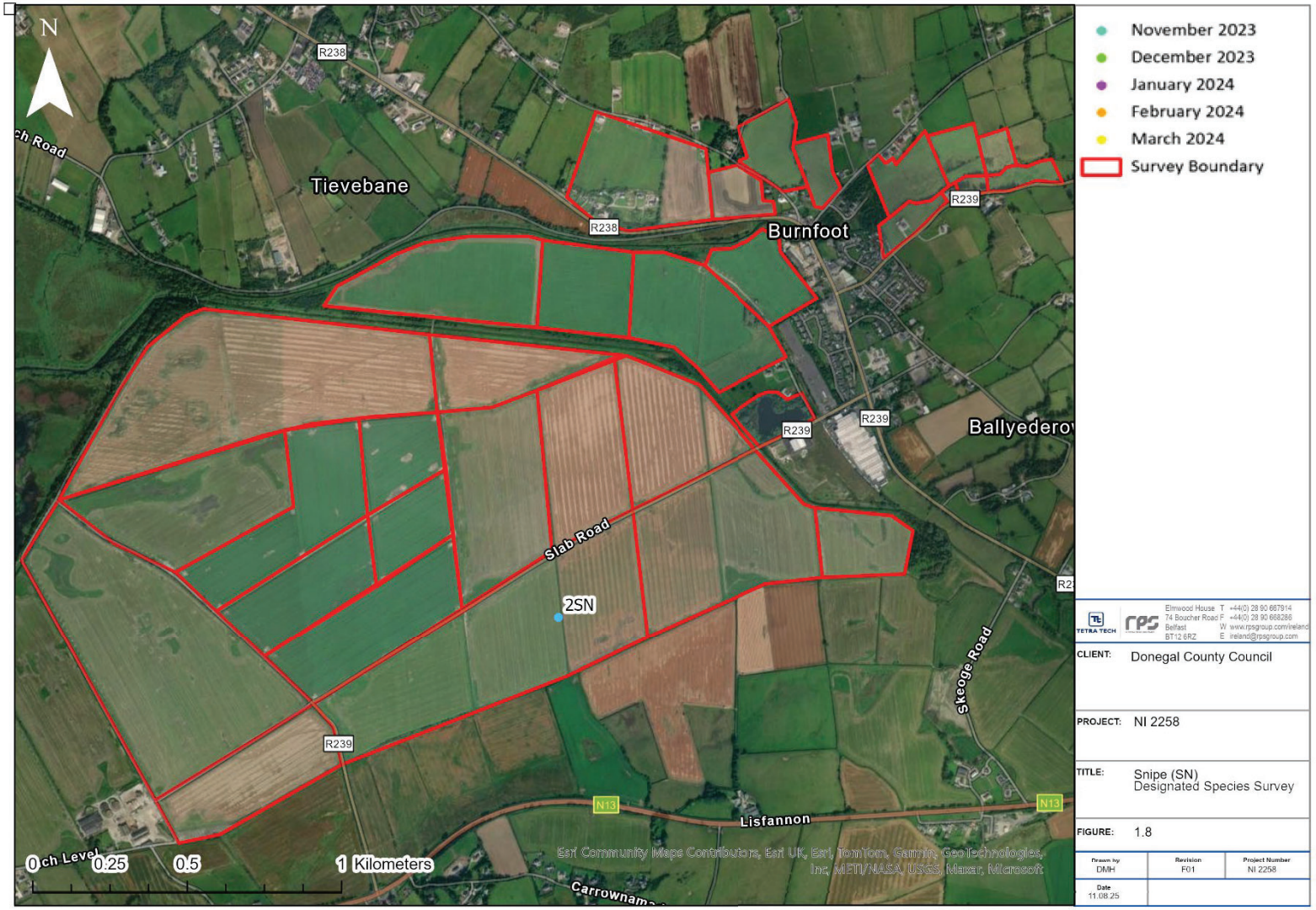

N
R238
Tievebane
R238
Burnfoot
R239
R239
R239
Ballyedero
Slab Road
2WG
5WG
Skeoge Road
R239
N13
Lisfannon
N13
0 ch Level
0.25
0.5
1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: White-fronted Goose (WG) Designated Species Survey
FIGURE: 1.3
Drawn by DMH
Revision F01
Project Number NI 2258
Date 07.08.25


N
R238
Tievebane
Burnfoot
R239
Ballyedero
7MA
12MA
5MA
14MA
6MA
2MA
2MA
4MA
1MA
4MA
Slab Road
Skeoge Road
N13
Lisfannon
Carrownam
0 0.25 0.5 1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Mallard (MA) Designated Species Survey
FIGURE: 1.4
Drawn by DMH
Revision F01
Project Number NI 2258
Date 07.08.25


N
R238
Tievebane
R238
Burnfoot
R239
10T.
16T.
11T.
7T.
2T.
R239
R239
Ballyedero
11T.
Slab Road
Skeoge Road
R239
N13
Lisfannon
N13
0 ch Level
0.25
0.5
1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Teal (T.) Designated Species Survey
FIGURE: 1.5
Drawn by DMH
Revision F01
Project Number NI 2258
Date 07.08.25


N
R238
Tievebane
R238
Burnfoot
R239
1WN
R239
R239
Ballyedero
Slab Road
Skeoge Road
R239
N13
Lisfannon
N13
0 ch Level
0.25
0.5
1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Wigeon (WG) Designated Species Survey
FIGURE: 1.6
Drawn by DMH
Revision F01
Project Number NI 2258
Date 11.08.25


N
R238
Tievebane
Burnfoot
R239
Ballyedero
4L.
79L.
46L.
189L.
2L.
6L.
Slab Road
Skeoge Road
N13
Lisfannon
Carrownam
0 ch Level
0.25
0.5
1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Lapwing (L.) Designated Species Survey
FIGURE: 1.7
Drawn by DMH
Revision F01
Project Number NI 2258
Date 11.08.25


N
R238
Tievebane
R238
Burnfoot
R239
R239
R239
Ballyedero
Slab Road
2SN
Skeoge Road
R239
N13
Lisfannon
N13
Carrownam
0 ch Level
0.25
0.5
1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
TETRA TECH
rps
Elmwood House
74 Boucher Road
Belfast
BT12 6RZ
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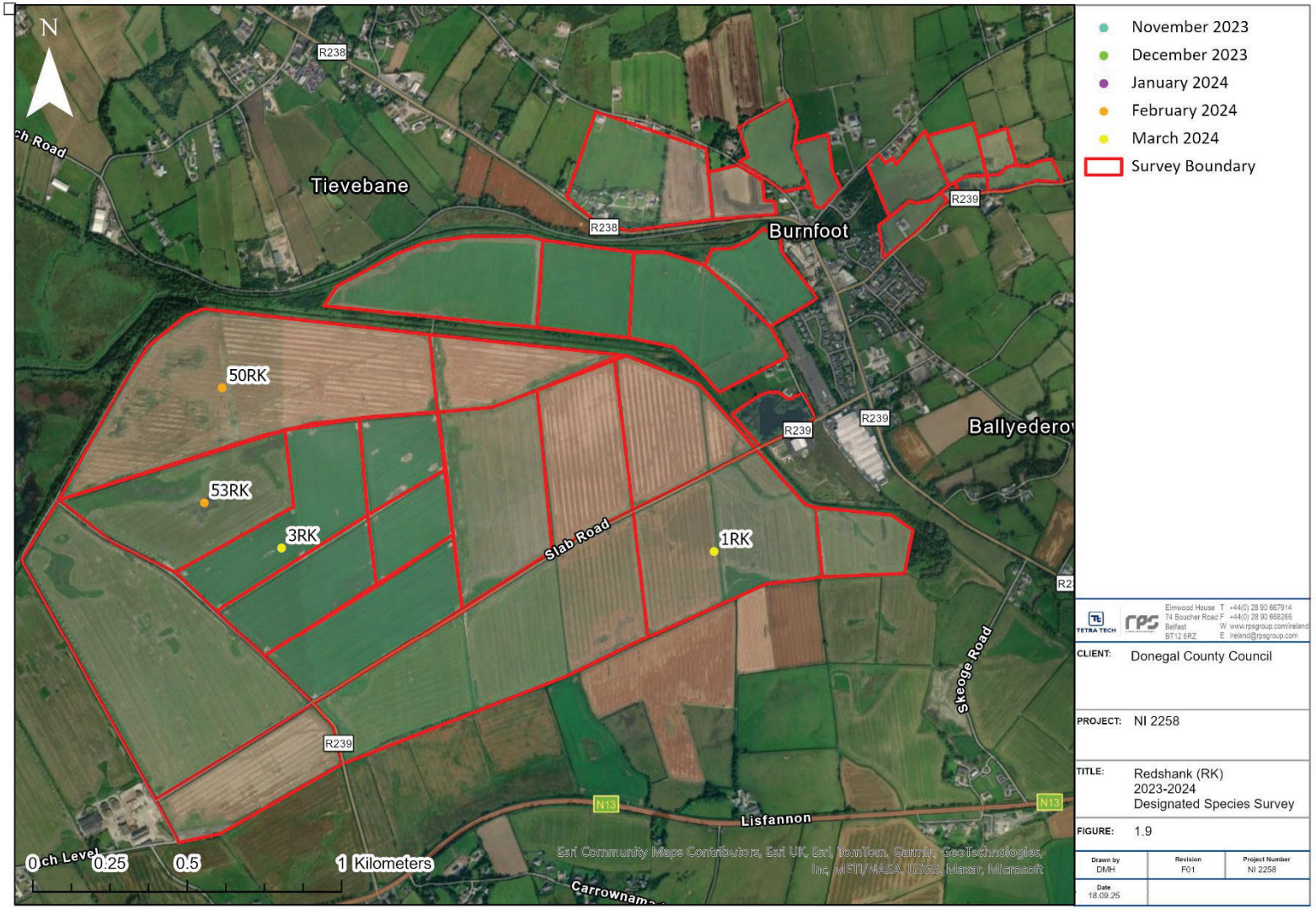
F +44(0) 28 90 668286
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Snipe (SN) Designated Species Survey
FIGURE: 1.8
Drawn by DMH
Revision F01
Project Number NI 2258
Date 11.08.25


N
R238
Tievebane
R238
Burnfoot
R239
50RK
R239
R239
Ballyedero
53RK
3RK
Slab Road
1RK
Skeoge Road
R239
N13
Lisfannon
N13
0 ch Level
0.25
0.5
1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
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F +44(0) 28 90 668286
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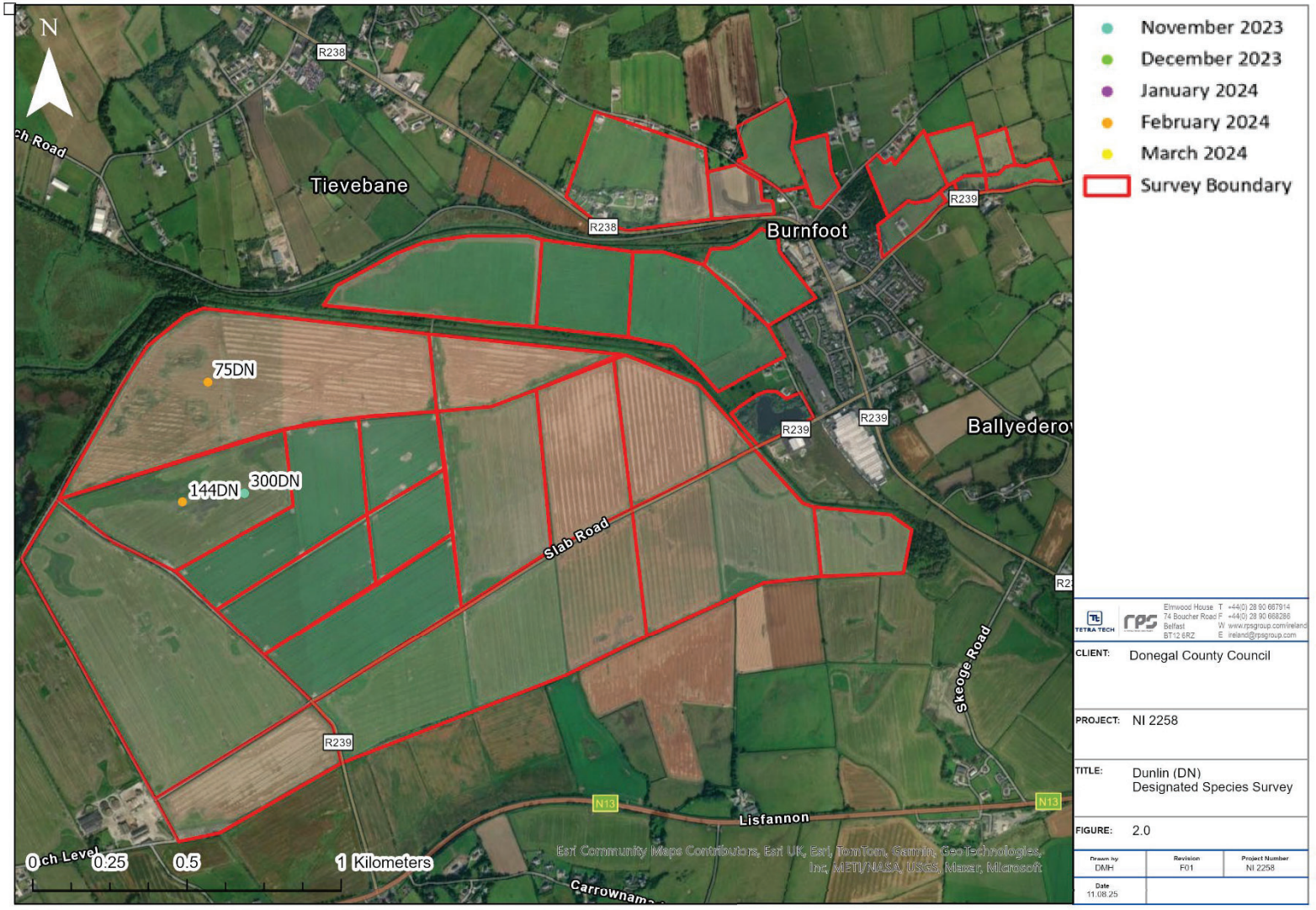
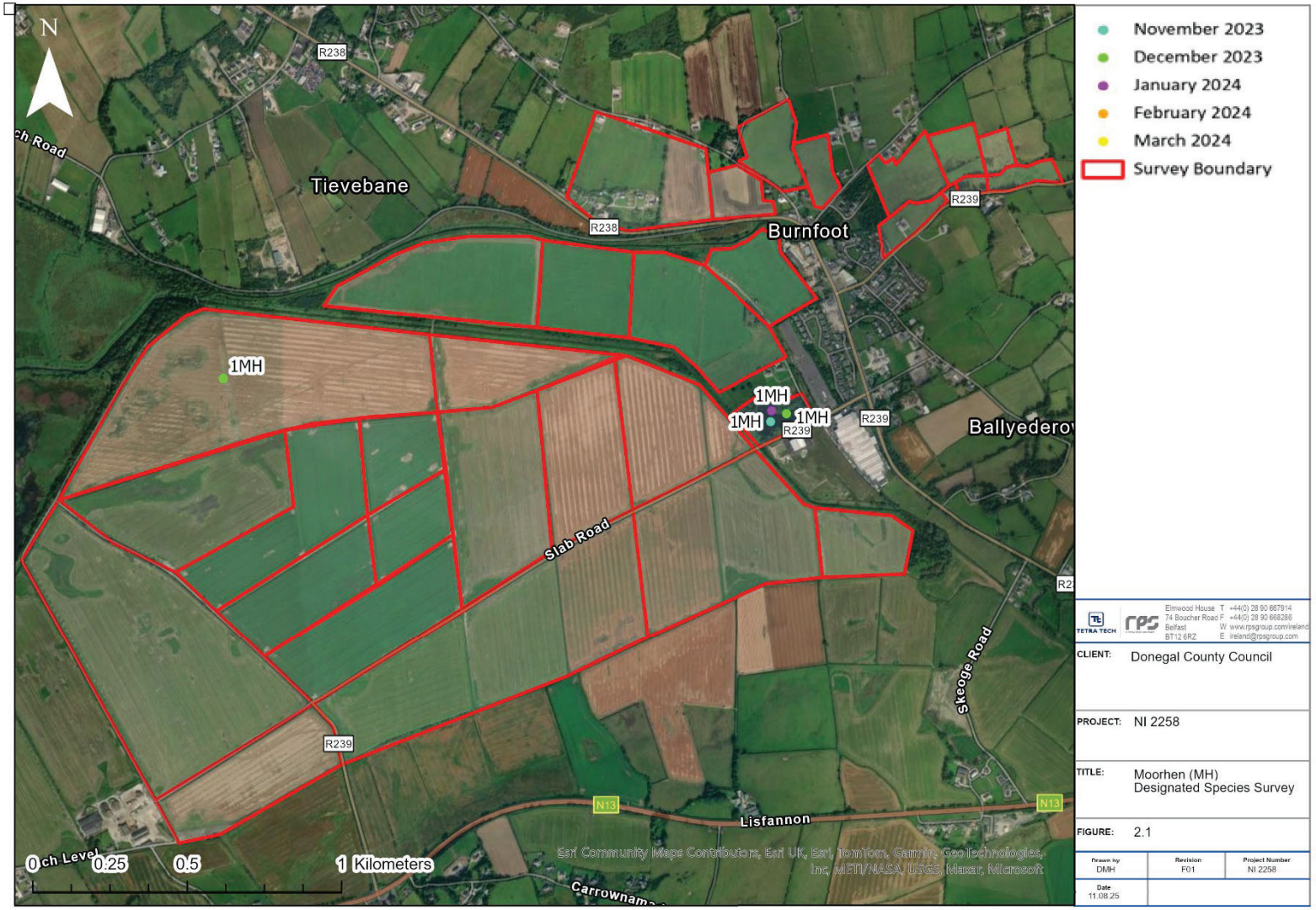
E Ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Redshank (RK) 2023-2024 Designated Species Survey
FIGURE: 1.9
Drawn by DMH
Revision F01
Project Number NI 2258
Date 18.09.25


N
R238
Tievebane
R238
Burnfoot
R239
75DN
R239
R239
Ballyedero
144DN
300DN
Slab Road
Skeoge Road
R239
N13
Lisfannon
N13
0 ch Level
0.25
0.5
1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Dunlin (DN) Designated Species Survey
FIGURE: 2.0
Drawn by DMH
Revision F01
Project Number NI 2258
Date 11.08.25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Tievebane
R238
Burnfoot
R239
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1MH
1MH
1MH
R239
R239
Ballyedero
Slab Road
R239
Skeoge Road
N13
N13
Lisfannon
Carrownam
0 ch Level
0.25
0.5
1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
Elmwood House
74 Boucher Road
Belfast
BT12 6RZ
T +44(0) 28 90 667914
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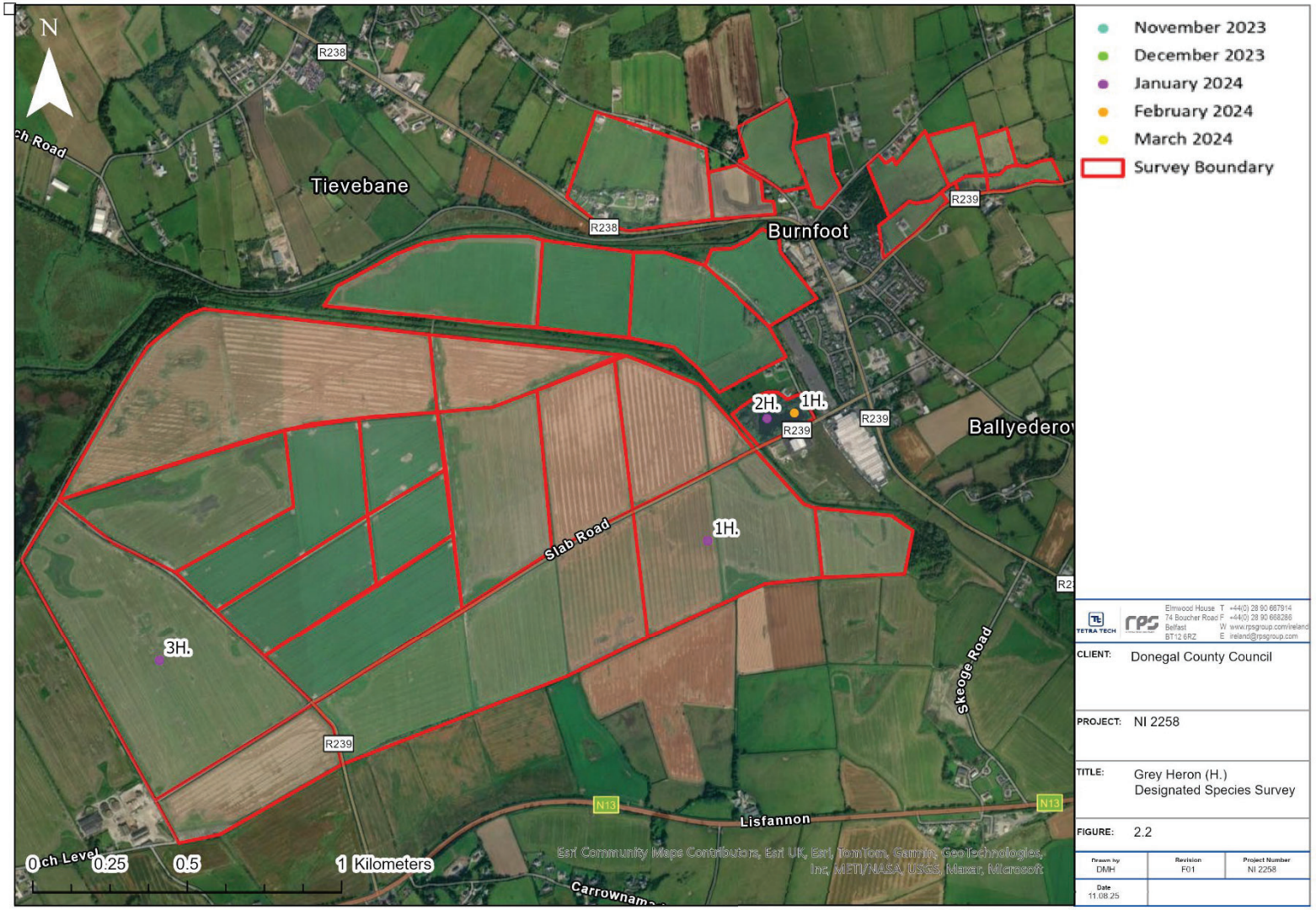
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Moorhen (MH) Designated Species Survey
FIGURE: 2.1
Drawn by DMH
Revision F01
Project Number NI 2258
Date 11.08.25


N
R238
Tievebane
R238
Burnfoot
R239
2H.
1H.
R239
R239
Ballyedero
1H.
Slab Road
3H.
R239
Skeoge Road
N13
Lisfannon
N13
0 ch Level
0.25
0.5
1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
Elmwood House
74 Boucher Road
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F +44(0) 28 90 668286
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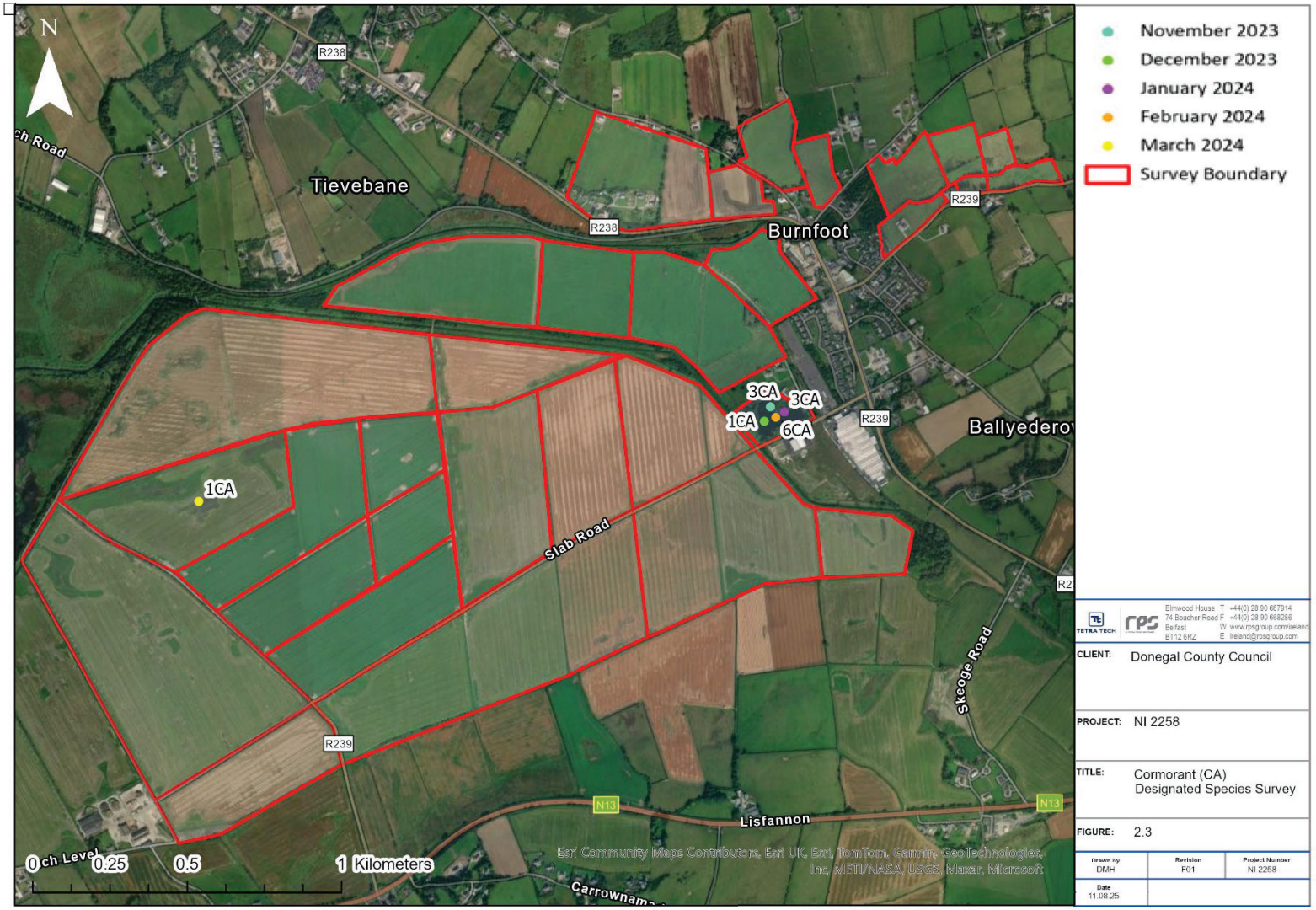
E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Grey Heron (H.) Designated Species Survey
FIGURE: 2.2
Drawn by DMH
Revision F01
Project Number NI 2258
Date 11.08.25


N
R238
Tievebane
R238
Burnfoot
R239
3CA
3CA
1CA
6CA
R239
Ballyedero
1CA
Slab Road
R2
Skeoge Road
R239
N13
Lisfannon
N13
0 ch Level
0.25
0.5
1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
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74 Boucher Road
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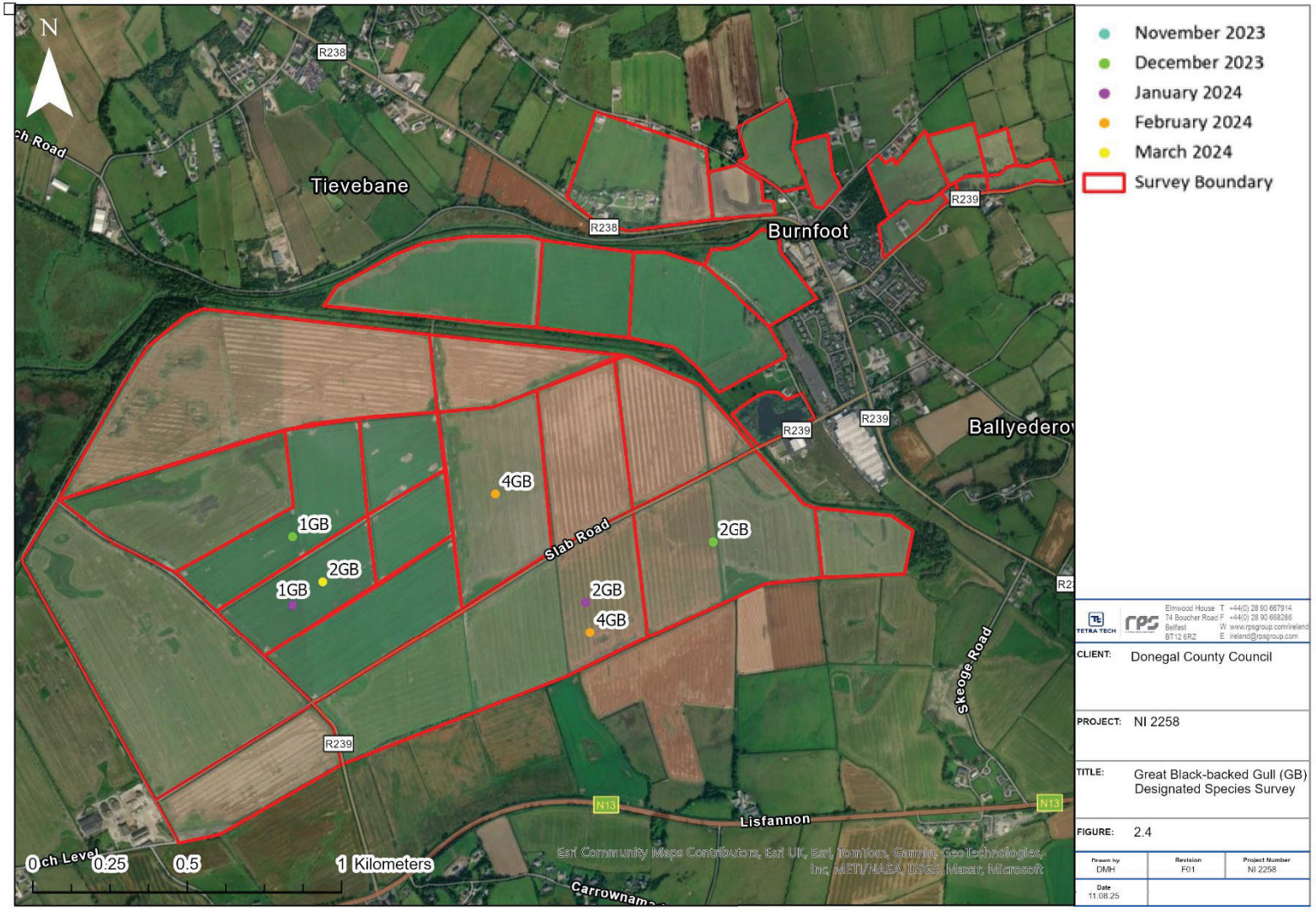
T +44(0) 28 90 667914
F +44(0) 28 90 668286
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Cormorant (CA) Designated Species Survey
FIGURE: 2.3
Drawn by DMH
Revision F01
Project Number NI 2258
Date 11.08.25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Tievebane
R238
Burnfoot
R239
R239
R239
Ballyedero
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1GB
2GB
1GB
Slab Road
2GB
2GB
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R239
Skeoge Road
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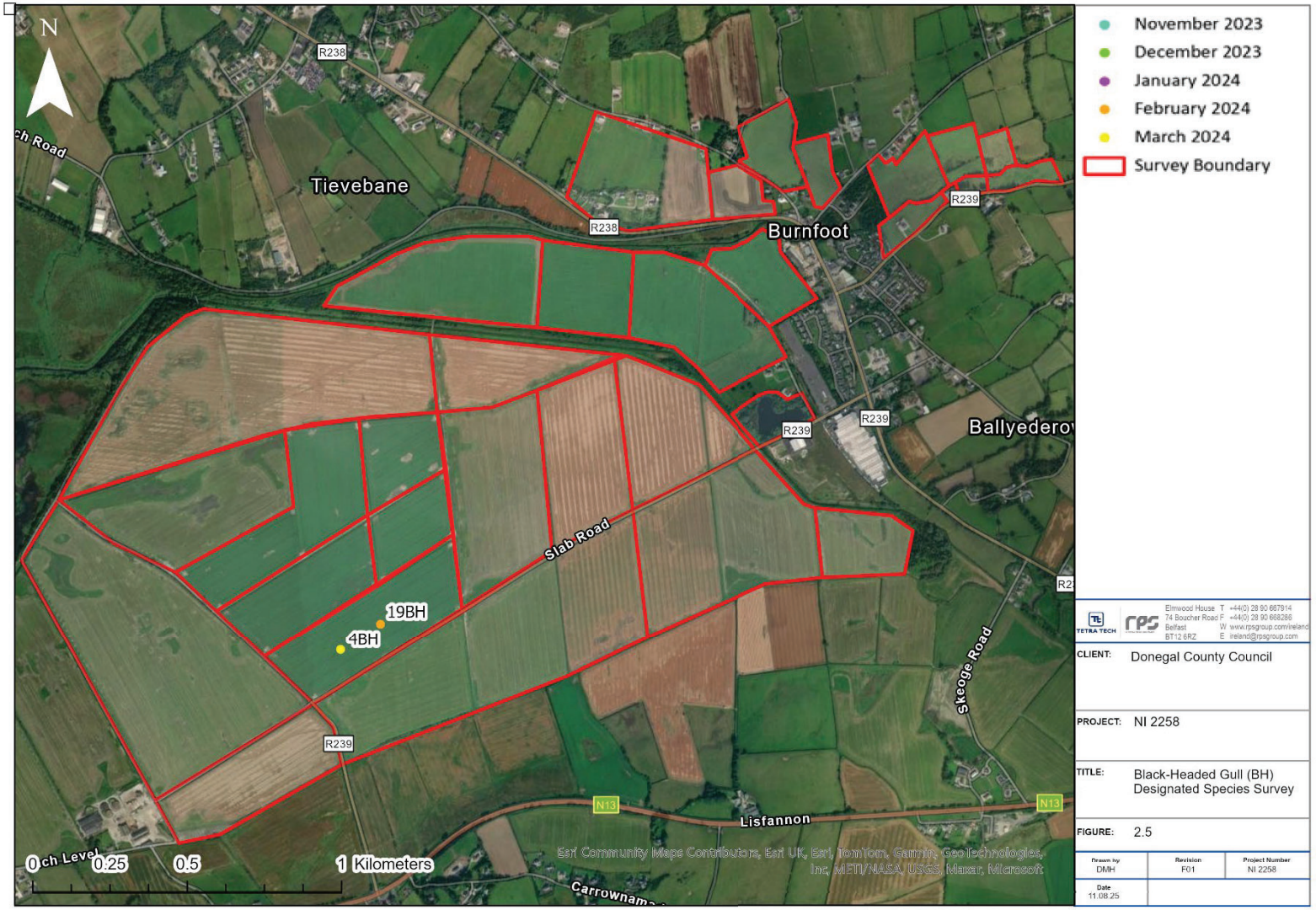
N13
Lisfannon
Carrownam
0 0.25 0.5 1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
Survey Boundary
Elmwood House 74 Boucher Road Belfast BT12 6RZ
T +44(0) 28 90 667914
F +44(0) 28 90 668286
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Great Black-backed Gull (GB) Designated Species Survey
FIGURE: 2.4
Drawn by DMH
Revision F01
Project Number NI 2258
Date 11.08.25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November 2023
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January 2024
February 2024
March 2024
Survey Boundary
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Black-Headed Gull (BH) Designated Species Survey
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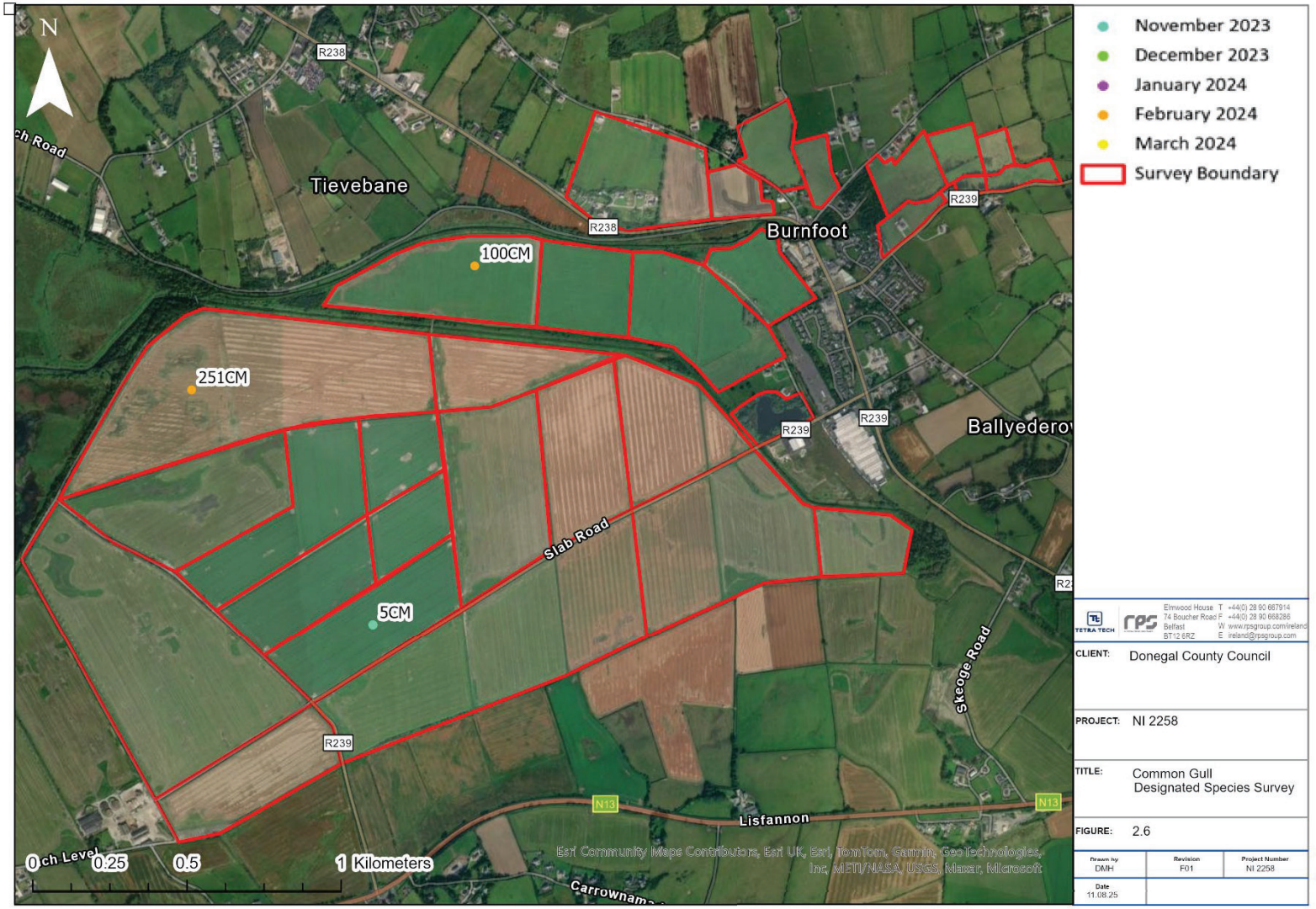
Drawn by DMH
Revision F01
Project Number NI 2258
Date 11.08.25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Ballyedero
Slab Road
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Skeoge Road
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Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
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March 2024
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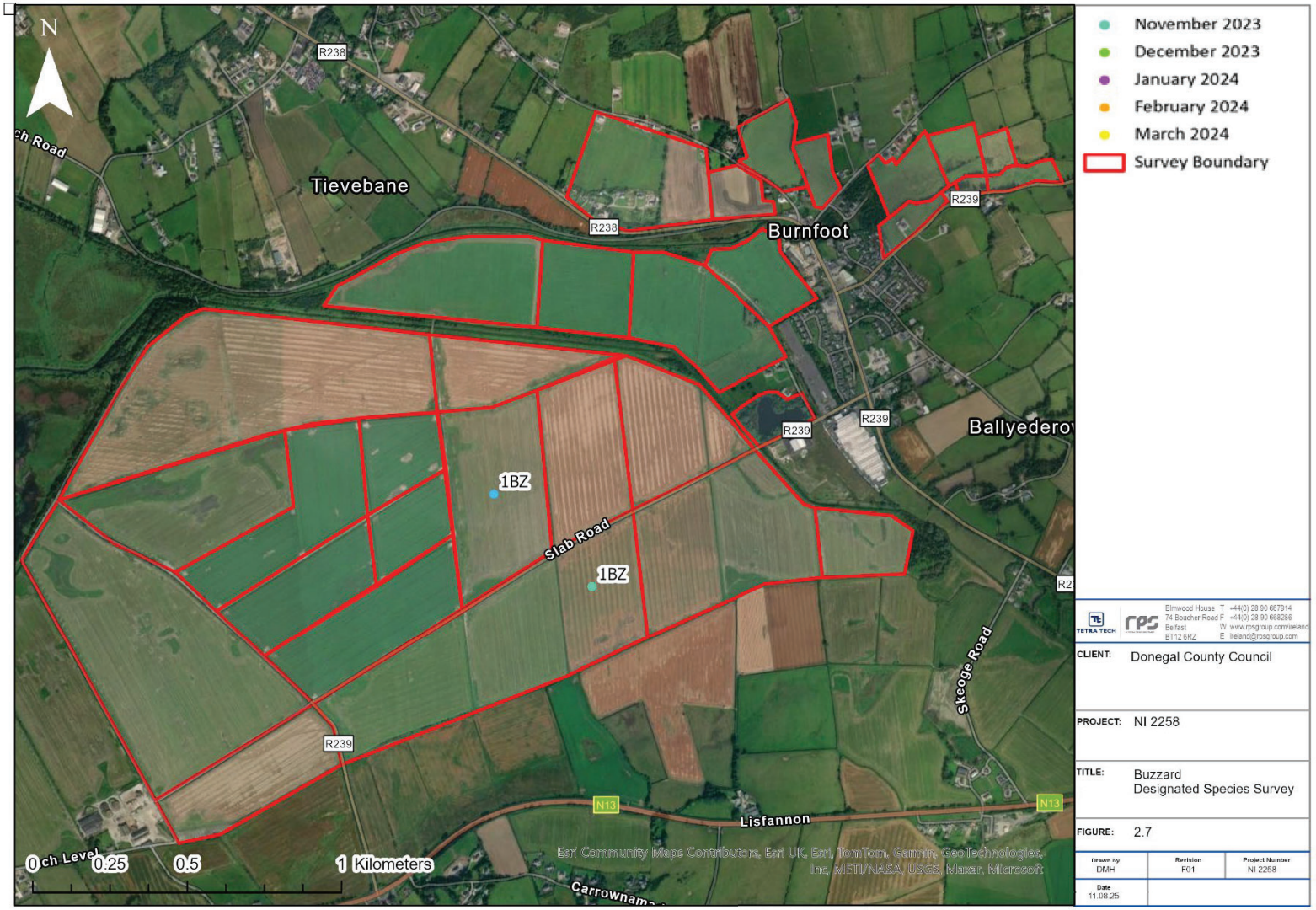
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Common Gull Designated Species Survey
FIGURE: 2.6
Drawn by DMH
Revision F01
Project Number NI 2258
Date 11.08.25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Tievebane
R238
Burnfoot
R239
R239
R239
Ballyedero
1BZ
Slab Road
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R239
Skeoge Road
N13
Lisfannon
N13
Carrownam
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1 Kilometers
Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft
November 2023
December 2023
January 2024
February 2024
March 2024
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E ireland@rpsgroup.com
CLIENT: Donegal County Council
PROJECT: NI 2258
TITLE: Buzzard
Designated Species Survey
FIGURE: 2.7
Drawn by DMH
Revision F01
Project Number NI 2258
Date 11.08.25

Appendix 7.4

Ecological Survey for Bats

ECOLOGICAL SURVEY FOR BATS

DB1 Donegal Flood Relief Scheme

794-NI-WAE-IBE2000
DB1 Donegal Flood Relief Scheme
Ecological Survey for Bats
July 2025
F01

rpsgroup.com

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1 INTRODUCTION

RPS was commissioned by Donegal County Council to carry out an Ecological Survey for Bats for lands at Burnfoot in association with the proposed DB1 Donegal Flood Relief Scheme (FRS).

1.1 Ecological Survey for Bats

The aim of the report is to provide a description of the bat survey methods used; to provide the detailed results of bat surveys, and to provide an interpretation of the results. This report identifies the ecological impacts on bats associated with the Proposed Development, evaluates the likely significance of effects on bats and applies the mitigation hierarchy to avoid, reduce or offset any significant negative effects on bats.

1.2 Legislation

All species of bats are European Protected Species (EPS) listed on Schedule 2 of the Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as Amended). Under the Regulations it is illegal to deliberately capture, injure or kill a EPS; deliberately disturb a EPS while it is occupying a structure or place it uses for shelter or protection; or deliberately disturb a EPS in such a way as is likely to affect its local distribution or abundance; impair its ability to survive, breed, reproduce or care for its young; impair its ability to hibernate or migrate; or deliberately obstruct access to or damage or destroy a resting or breeding site.

The presence of bat species is a material consideration in the determination of the planning application as set to out in the Strategic Planning Policy Statement (SPPS) (DOE 2015). The strategic policies state that the proposed development must not harm EPS; must be sensitive to all protected species; and must be sited and designed to protect EPS, their habitats and prevent deterioration and destruction of their breeding or resting sites.

1.3 Proposed Development

The proposed project is a FRS, 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.

This report will solely focus on the aspects of the project regarding the demolition of the existing garage structure located at Brae Road, Fahan ED, Inishowen Municipal District, County Donegal (C 38030 23743).

The location of the site and the red line boundary are illustrated in **Figure 1 Site Location**.

2 METHODOLOGY

2.1 Statement of Authority

The report has been approved for issue by James McCrory, Technical Director of Ecology with RPS. James holds a BA (Hons) in Natural Sciences (Mod) Botany and a MSc in Habitat Creation and Management. James is a Chartered Environmentalist (CEnv), a Chartered Ecologist (CEcol), a Chartered Biologist (CBiol) and a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and the Royal Society of Biology (MRSB). James is a former member of the CIEEM Irish Section Committee and CIEEM Policy Review Group in Ireland and a member of the CIEEM technical working group updating the Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland. James currently sits on the CIEEM technical working group for EcIA accreditation across the Institutes practitioner network.

The report has been reviewed by Suzanne Lowry, a Senior Associate of Ecology within RPS. Suzanne holds a BSc (Hons) in Biological Sciences, a MSc in Environmental Management and has over 20 years of experience in the field of ecology and environmental consultancy. Suzanne has extensive experience of project management and co-ordination, ecology field survey and technical report writing. Suzanne is an Associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

Conor Finlay, author and lead bat surveyor, carried out the Daytime Bat Walkover, Preliminary Roost Assessment (PRA) of Structures, Emergence Survey and bat data analysis. Conor is an Ecologist with RPS and holds a BSc (Hons) in Environmental Science, a MSc in Ecological Management and Conservation Biology with over three years of experience in ecological consultancy. Conor has experience of habitat, mammal, reptile, and bird survey and is a protected licence holder. Conor is a Qualifying member of the CIEEM and a volunteer with the Northern Ireland Amphibian and Reptile Group.

Euan Simpson, assisted with bat surveys. Euan is an Intern Ecologist with RPS currently in his final year of studying Marine Science with Professional Studies at Queens University, Belfast. Euan has in-house training in bat ecology and bat surveying.

RPS 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 2022).

2.2 Preliminary Ecological Appraisal for Bats

2.2.1 Desk Study

The National Biodiversity Network (NBN) Atlas Northern Ireland (NBN Atlas Partnership 2025) and the National Biodiversity Data Centre (NBDC 2025) was used to identify the existence of historical records of bats within 5 km of the site of the Proposed Development and within a 10 km square (C32) respectively. The information gathered during consultation is third party controlled data for the purposes of this report only. RPS cannot guarantee its accuracy and cannot be held liable for any inaccuracies.

2.2.2 Daytime Bat Walkover

A Daytime Bat Walkover (DBW) was carried out in July 2025 within the site of the Proposed Development. The aim of the DBW was to observe, assess and record the potential suitability of the site of the Proposed Development to support bat roosting habitat, commuting habitat and/or foraging habitat. Habitat features were classified as None, Negligible, Low, Moderate, or High in accordance with the *Bat Conservation Trust (BCT) Good Practice Guidelines 4th Edition* (Collins 2023).

2.2.3 Preliminary Roost Assessment of Structures

A Preliminary Roost Assessment (PRA) of structures was carried out during the DBW in July 2024. An external inspection survey of structures was undertaken from ground level to look for potential and actual bat entry / exit points, evidence of bat roosts, and signs of bat related activity in order to determine the presence of bats or likely presence of bats. Roosting features were classified as None, Negligible, Low, Moderate or High in accordance with the *BCT Good Practice Guidelines 4th Edition* (Collins 2023). The aim of the PRA is to determine if further Emergence Surveys are required.

2.3 Emergence Surveys

An Emergence Survey of Structure 1 was carried out to watch, listen and record bats exiting or entering potential roosts. A single dusk emergence survey was carried out in June 2025. The survey was carried out when weather conditions were forecast to consist of temperatures >10 °C with little or no wind or precipitation. The environmental conditions during emergence surveys can be found in **Appendix A** of this report.

2.3.1 Night Vision Aids

Night Vision Aids (NVAs) consisting of four Canon XA11 Compact Full HD Camcorders aided by two Nightfox XB5 850NM Infrared LED Flashlights per camcorder were used to record bats. Elekon Batlogger M bat detectors with real time full spectrum recording, an integrated Global Positioning System (GPS) and temperature logger were paired with each camcorder and used to record bat echolocation calls. The NVA equipment was deployed and monitored by two surveyors during the course of the survey in July. The video recordings were analysed using VLC Media Player.

3 RESULTS

3.1 Preliminary Ecological Appraisal for Bats

3.1.1 Desk Study

Consultation with NBN Atlas Northern Ireland (NBN Atlas Partnership 2021) identified no historical records of bat roosts within the site, or within 5 km of the Proposed Development. The NBDC returned a total of 22 records highlighting bat records of the following species within the 10 km square (C32) of the site: common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pygmaeus pipistrellus*, Leisler's bat *Nyctalus leisleri* and Daubenton's bat *Myotis daubentonii*.

3.1.2 Daytime Bat Walkover

The majority of the land surrounding Structure 1 itself consists of residential dwellings and public roads to the west, public roads to the south and agricultural grassland to the east and north with additional farm dwellings. Additionally, immediately adjacent to the eastern boundary of Structure 1 is a small overgrown and unnamed stream.

Foraging opportunities within 250 m of the site consist of the overgrown unnamed stream adjacent to the east boundary of Structure 1, an unnamed stream running through the northern half of Burnfoot, surrounding agricultural grasslands, residential gardens and rough grassland to the southeast.

The potential suitability of the site to provide habitat for foraging and commuting bats is considered Low in accordance with Collins 2023. This is primarily due to the significant number of artificial lights surrounding the public roads and residential dwellings.

3.1.3 Preliminary Roost Assessment of Structures

There is a single structure on site which is proposed to be demolished to accommodate the associated Burnfoot FRS. This structure was subject to a PRA to identify potential entry and exit points and to determine the potential suitability of the structures to provide roosting habitat for bat species. The structure is currently in relatively poor condition; however, it does provide some sheltered sections of crumbling walls and loose eaves which could be used opportunistically by individual bats. Therefore Structure 1 was considered of Low suitability to provide roosting habitat for bats. Full details of the PRA can be found in **Appendix B** of this report. The location of the structure can be found in **Figure 2.**

3.2 Emergence Surveys

A single dusk emergence survey was carried out on Structure 1 in July 2025. The location and field of view of NVAs can be found in **Figure 3**. A screenshot from each camcorder taken during the darkest point in the survey to illustrate the field of view and visibility can be found in **Plates 1-2. Table 1** below provides the results of the emergence survey.

Table 1 Emergence Surveys of Structures and Tree 1

Structure Ref.	Potential Suitability	Date	Notes	NVAs
S1	Low	09/07/25	No bats were observed emerging or re-entering the structure	4 Canons (CAM A, B, C and D

3.2.1 General Bat Activity During Emergence Surveys

General bat activity from the emergence survey was recorded both on site and during review of the camera footage. Bat observations were primarily of bats foraging along the unnamed stream and treeline adjacent to the east boundary of Structure 1. Commuting activity consisted solely of bats flying south to north and along

the treeline. Species recorded include soprano pipistrelle *Pygmaeus pipistrellus*, common pipistrelle *Pipistrellus pipistrellus* and Leisler's bat *Nyctalus leisleri*. The first bat recorded was at 22:24 and consisted of a single Leisler's bat, approximately 15 minutes after sunset which was heard not seen. The most common species heard was Leisler's bat, however it should be noted that activity levels were overall low, with a total of 132 recordings (many consisting of prolonged foraging periods of single bats). During the survey the artificial lights (streetlights) surrounding the structure remained on for the duration of the survey.

4 DISCUSSION & ANALYSIS OF RESULTS

Structure 1 was subject to a single emergence survey in July 2025 in which no bats were observed emerging or re-entering the structure. Therefore, Structure 1 can be ruled out as a bat roost and the demolition of Structure 1 will not have any effect on roosting bats.

5 RECOMMENDATIONS

As a matter of best practice, the Lighting Strategy for the proposed development will be designed in accordance with the Institution of Lighting Professional (ILP) Guidance Notes 01/21 Reduction of Obtrusive Light (ILP, 2021) and Guidance Note 08/23 Bats and Artificial Lighting at Night (ILP, 2023).

Lighting design will aim to use narrow spectrum lights with no UV content; warm white light emitting diodes (LED) (Colour Temperature < 2700 K and UV Wavelength > 550 nm); directional downlights illuminating below the horizontal plane; bollard or low level downward directional luminaries; external security lighting should be set on motion-sensors and short (1 minute) timers; and use accessories such as baffles, shields, louvres or adjusting the angle of the lamp where necessary (IPL, 2023).

6 REFERENCES & BIBLIOGRAPHY

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Plates

Plate 1 Screenshot from NVA to show field of view and illumination of Camera A

Plate 2 Screenshot from NVA to show field of view and illumination of Camera B

Plate 3 Screenshot from NVA to show field of view and illumination of Camera C

Plate 4 Screenshot from NVA to show field of view and illumination of Camera D

Figures

Figure 1 Site Location

Figure 2 Location of Structures Subject to Bat Survey

Figure 3 Bat Survey (S1) 16.06.2025

Legend

- Site Boundary
- Structure 1

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Client: Donegal County Council

Project: DB1 Donegal Flood Relief Scheme

Title: Site Location

Figure No. 1.0

Project No.	Date	Revision
IBE2000	25.07.2025	D01

Legend

- Site Boundary
- Potential Access (Linear)
- Potential Access (Point)
- Structure

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E ireland@rpsgroup.com

Client: Donegal County Council

Project: DB1 Donegal Flood Relief Scheme

Title: Location of Structure Subject to Bat Survey

Figure No. 2.0

Project No.	Date	Revision
IBE2000	25.07.2025	D01

Legend

- Site Boundary
- Structure
- Field of View
- Camera
- Potential Access (Linear)
- Potential Access (Point)

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E ireland@rpsgroup.com

Client: Donegal County Council

Project: DB1 Donegal Flood Relief Scheme

Title: Bat Survey Structure 1 09.07.2025

Figure No. 3.0

Project No.	Date	Revision
IBE2000	25.07.2025	D01

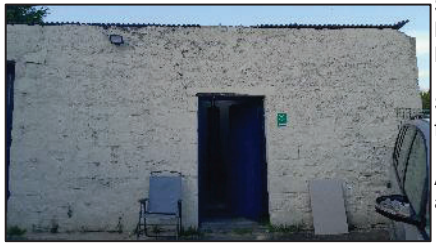
Appendix A
Environmental Conditions During Bat Surveys

Table A 1: Environmental Conditions During Emergence Survey of Structures

Date	Structure Ref.	Sunset	Sunrise	Start Time	Finish Time	Temperature	Weather Conditions
09.07.2025	S1	22:09	N/A	21:54	00:09	15	Moderate winds (15 mph southwest), partially cloudy (3 / 8 oktas) and no rain

Appendix B
Preliminary Roost Assessment of Structures

Table B 1: Preliminary Roost Assessment of Structures

Structure Ref No.	Photograph	Description	Bat Roost Suitability
S1	     	Single storey garage with a flat corrugated metal sheet roof with block / stone work and render within a concrete yard used for car salvage. Potential entry points include: Southwest aspect – Loose eaves, loose gap between door and wall, several small cracks and open door. Southeast aspect – Several cracks along eaves and loose crumbling blockwork Northeast aspect – Large section of loose stonework with minor ivy growth. Northwest aspect – Tree cover and dense ivy. Single storey changing facility with a flat corrugated metal roof with brickwork and metal frame walls. Artifical lights were observed alng the walls of the structure. Additionally, the garage was currently in use by the occupants with artifical lights placed along the southwest aspect.	Low