APPENDIX C9A.01

Terrestrial Ecology Baseline Report

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TEN-T Priority Route Improvement Project, Donegal

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Terrestrial Ecology Baseline Report

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1 INTRODUCTION

RPS and Barry Transportation were commissioned by Donegal County Council to assist in the delivery of the TEN–T Priority Route Improvement Project, Donegal (hereafter referred to as "the Proposed Development"). The Proposed Development comprises three sections, as follows:

- **Section 1:** N15/N13 Ballybofey/Stranorlar Urban Region.
- **Section 2:** N56/N13 Letterkenny to Manorcunningham.
- **Section 3:** N14 Manorcunningham to Lifford/Strabane/A5 Link.

A full description of the Proposed Development which has been subject to environmental assessment is set out in Chapter 4: Project Description.

Terrestrial ecological surveys were undertaken between 2017 and 2025 to inform the development and environmental assessment of the Proposed Development, including route selection, identification of the preferred option, and environmental assessment of the Proposed Development. The ecological surveys have evolved over that period to respond to the information necessary to inform each stage of the Proposed Development's design evolution and environmental assessment. This report sets out the methodology and findings of the ecological surveys completed over that period; which constitutes the baseline against which the environmental assessment of the Proposed Development has been assessed. This report sets out in full the ecological baseline for those environmental assessments and will be appended to those assessments with information relevant to those assessments referenced accordingly within those assessments; including Chapter 9A: Biodiversity – Terrestrial and the Appropriate Assessment (Screening and Natura Impact Statement). The aquatic ecological surveys are documented separately within Chapter 9B: Biodiversity – Aquatic.

The ecological surveys for Section 1 and 2 have been led by RPS while EirEco has led on the ecological surveys for Section 3. RPS and EirEco have collaborated as necessary with respect to the completion of the ecological surveys to ensure that a robust and comprehensive baseline is available for the environmental assessment of the Proposed Development.

2 METHODOLOGY

2.1 Study Area

The study area for ecological field surveys was determined with reference to the Zone of Influence (ZoI) of the Proposed Development. The ZoI (or "*spatial extent of the impact*" as described in Annex III (3) of the EIA Directive) is the area over which ecological receptors (habitats, species, and/or ecosystems) may be subject to significant impacts and effects as a result of the Proposed Development. The study area used to inform earlier stages of the evolution of the Proposed Development (*e.g.* constraints mapping, route selection and optioneering) was, out of necessity and mindful of the purpose of those stages, larger than that eventually refined for the purposes of the Proposed Development subject to environmental assessment to inform its consenting.

The ZoI is likely to extend beyond the boundary of a scheme; for example, where there are hydrological links extending beyond site boundaries. It will also vary for different ecological features depending on their sensitivity to an environmental change or other characteristics of the ecological feature (e.g. mobile species have 'range' outside of the designated sites for which they are a conservation interest). It is therefore appropriate to identify different ZoIs for different features. The features affected could include habitats, species, and the processes on which they depend. ZoIs are specified for different features and types of potential impact.

It is also important to acknowledge, as per the Environmental Protection Agency (EPA) guidance (EPA, 2022), "… *that the absence of a designation or documented feature (e.g. ecological) does not mean that no such feature exists within the site*". Therefore, a ZoI should be identified for all features potentially occurring within the site of the Proposed Development, in addition to any known to occur. Also, as recommended by the CIEEM (2018) guidelines and where available, professionally accredited or published scientific studies were used to determine ZoIs for this Proposed Development.

The ecology study area for the desk study extended over a larger spatial area than what was defined for field surveys and varied depending on the ecological feature in question. Through the incorporation of relevant ZoIs for the Proposed Development, the terrestrial biodiversity study area is determined to extend outside the footprint of the Proposed Development to include the ecological features as set out in Table 2-1.

Table 2-1: Study Areas for Different Ecological Features used to inform the Proposed Development which is subject to environmental assessment and seeking planning consent.

Ecological Features	Desktop Study Area[1]	Field Study Area, for Reporting
Sites designated for nature conservation	Groundwater body (GWB) Ballybofey (IE_NW_G_048), Upper Deele (IE_NW_G_058), Raphoe (IE_NW_G_054), Lough Swilly (IE_NW_G_059), Manorcunningham (IE_NW_G_052) Catchment Management Unit (CMU) Foyle (ID: 01), Lough Swilly (ID: 39)	Compulsory Purchase Order (COP) boundary of the Proposed Development and adjoining habitats.
Habitats and protected flora (including invasive alien plant species)	10 km grid squares (hectads) that the Proposed Development overlaps	CPO boundary of the Proposed Development and adjoining habitats.
Otter (*Lutra lutra*)	Hectads that the Proposed Development overlaps	Surveys undertaken for otter involved surveying the riverbanks, where accessible, 600 m upstream and downstream of proposed bridge crossing locations as per National Otter Survey of Ireland 2010/12 methods (Reid *et al.*, 2013).

[1] The Proposed Development falls within the following hectads: C10, H09, H19 (Section 1); C10, C11, C20 and C21 (Section 2); and C20, C21, C30, and H39 (Section 3).

Ecological Features	Desktop Study Area[1]	Field Study Area, for Reporting
Badger (*Meles meles*)	Hectads that the Proposed Development overlaps	150 m buffer of the CPO boundary of the Proposed Development.
Bats	Hectads that the Proposed Development overlaps	Bat roost surveys: CPO boundary of the Proposed Development. Bat activity surveys: CPO boundary of the Proposed Development and adjoining habitats.
Amphibians	Hectads that the Proposed Development overlaps	CPO boundary of the Proposed Development and adjoining habitats.
Invertebrates	Hectads that the Proposed Development overlaps	CPO boundary of the Proposed Development and adjoining habitats.
Other mammals	Hectads that the Proposed Development overlaps	CPO boundary of the Proposed Development and adjoining habitats.
Breeding birds, SCI birds, and barn owl	Hectads that the Proposed Development overlaps	Breeding birds and SCI birds: CPO boundary of the Proposed Development and adjoining habitats. Barn owl: 5 km buffer of the CPO boundary of the Proposed Development.

2.2 Desk Study

Information on biodiversity within the desk study area (see Table 2-1) was collected through a detailed desktop review of existing studies and datasets. These are summarised in Table 2-2. The latest update of the desktop study baseline was carried out in October 2025 for Sections 1 and 2 and August and November 2023 for Section 3.

Table 2-2: Summary of Key Desktop Resources

Title	Publication Year	Author/Source
Map of Irish Wetlands	2025	Wetlands of Ireland[2]
Current and Historical mapping	2025	Tailte Éireann[3]
Bedrock, subsoil, and groundwater data and mapping	2025	Geological Survey of Ireland (GSI)[4]
Surface and ground water quality status and river catchment boundaries	2025	Environmental Protection Agency (EPA)[5]
National Parks and Wildlife Services (NPWS) designated areas spatial data	2025	NPWS
Distribution records for protected species and habitats (including suitability index for bats) held online by the National Biodiversity Data Centre (NBDC)[6], NPWS, University College Dublin (UCD), Bat Conservation Ireland (BCI), and the Heritage Council.	2011-2025	NBDC, NPWS, Heritage Council, Lundy *et al*. (2011).

[2] Available at http://www.wetlandsurveysireland.com/wetlands/map-of-irish-wetlands--/. Accessed December 2025.

[3] Available at https://www.geohive.ie/. Accessed December 2025.

[4] Available at https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx. Accessed December 2025.

[5] Available at https://gis.epa.ie/EPAMaps/. Accessed December 2025.

[6] Accessed October 2024. The records for hectads that the Proposed Development overlaps were consulted to investigate the likelihood of the presence of rare, protected, and threatened species within the study area of such species (mammals, fish, invertebrates, amphibians, birds, reptiles, plants, etc.). The following records were excluded from this assessment:

- Plant records greater than 25 years old.

Title	Publication Year	Author/Source
Checklists of protected and threatened species in Ireland	2019	Nelson *et al*. (2019)
Red Lists	1998, 2006, 2009, 2010, 2011, 2012, 2016, 2019, 2020, 2021	Curtis and McGough (1998); Fitzpatrick *et al*. (2006); Marnell *et al*. (2009); Regan *et al*. (2010); King *et al*. (2011); Clarke *et al*. (2016); Wyse Jackson *et al*. (2016); Marnell *et al*. (2019); Gilbert *et al*. (2021).
Status of EU Protected Habitats and Species in Ireland, Volume 1, 2, and 3	2019	NPWS (2019a, b, c)
Interpretation Manual of European Union Habitats	2013	European Commission (EC)
Ireland's 4th National Biodiversity Action Plan 2023–2030	2024	Department of Housing, Local Government and Heritage (DHLGH, 2024a)
County Donegal Development Plan 2024–2030	2024	Donegal County Council (DCC, 2024a)
Donegal County Council Climate Action Plan 2024–2029	2024	Donegal County Council (DCC, 2024b)
County Donegal Heritage Plan (2023–2030)	2024	Donegal County Council (DCC, 2024c)
Ramsar Sites	2025	Irish Ramsar Wetlands Committee[7]
Protected Sites in Ireland (National Heritage Areas (NHA), proposed National Heritage Areas (pNHA), nature reserves, wildfowl sanctuaries, and OSPAR sites)	2025	NPWS[8]

2.2.1 Designated Sites

The identification of relevant designated sites to be included in this report was based on the identification of the ZoI of the Proposed Development and a Source-Pathway-Receptor (S-P-R) model of effects.

In order to identify European sites which could be subject to likely significant effects arising from the Proposed Development, all European sites within the Natura 2000 network were initially considered including transboundary European sites. With respect to Northern Ireland, and following Brexit, no former European sites are now mapped as part of the Natura 2000 network[9] and, for the purpose of this report have been treated separately as "former European sites". Out of an abundance of caution and where relevant to the environmental assessments of the Proposed Development, they have been treated as if they still formed part of the Natura 2000 network.

The European sites which could be subject to likely significant effects (LSEs) from the Proposed Development have been identified through the application of ZoI "rules" which have been developed specifically for this Proposed Development and through the application of an S-P-R model. These were then applied with reference to available databases and mapping for the Natura 2000 network. The rules have been defined following a consideration of the potential sources of impact and defining the potential pathways of effects arising from these impacts upon the receptors. If no such pathway existed or the pathway did not

- Mobile animal species records greater than 10 years old (bird species greater than 15 years old).
- Records of species identified as Extinct in the Wild (EW), Regionally Extinct (RE), or Extinct (EX) in national red lists and records of birds.
- Any species listed as Not Evaluated (NE), Data Deficient (DD), Least Concern (LC), or Near Threatened (NT) in national red lists.
- Any species listed as being on the Waiting List in national red lists.

[7] Available https://www.irishwetlands.ie/irish-ramsar-sites/. Accessed December 2025.

[8] Available at https://www.npws.ie/protected-sites. Accessed December 2025.

[9] Available at https://natura2000.eea.europa.eu/. Accessed December 2025.

extend sufficiently based on scientific analysis to impinge on the European site (in whole or part) then no pathway for LSEs was considered to exist.

In determining the nationally designated sites of relevance, all designations within the Republic of Ireland (Irl) and Northern Ireland were initially considered. The designations of relevance to the Proposed Development and the impact assessment were then identified through a combination of considering potential impacts using the S-P-R model and applying the professional judgement and experience of the assessor.

2.2.1.1 Source-Pathway-Receptor Model

The likely effects of the Proposed Development on any designated site have been assessed using an S-P-R model, where:

- A ‘source’ is defined as the individual element of the proposed works that has the potential to impact on a designated site.
- A ‘pathway’ is defined as the means or route by which a source can affect the ecological receptor.
- A ‘receptor’ is defined as the ecological feature for which the site being screened is designated.

An S-P-R model is a standard tool used in environmental assessment. In order for an effect to be likely, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism results in no likelihood for the effect to occur. The S-P-R model was used to identify designated sites with potential links to the Proposed Development. These are termed as ‘relevant’ designated sites throughout this report.

2.2.1.2 Zone of Influence

The Proposed Development has been evaluated based on an identified ZoI with regard to the potential impact pathways to ecological features. the ZoI extends outside of the study area to include ecological receptors connected to the Proposed Development through intersection, proximity, connectivity through features such as watercourses and other surface waterbodies, and potential connectivity through groundwater, air, and migratory/commuting routes of fauna. An initial ZoI was defined to identify all potentially relevant designated sites.

Hydrological linkages between the Proposed Development and a designated site (and ecological features for which it is designated) can occur over significant distances; however, any effect will be site specific depending on the receiving water environment and nature of the potential impact. As a precautionary measure, a reasonable worst-case ZoI for water pollution from the Proposed Development area is considered to be the surface water catchment. In this report, the surface water catchment is defined at the scale of Catchment Management Unit (CMU), as adopted in the Water Action Plan 2024 A River Basin Management Plan for Ireland (DHLGH, 2024b). The ZoI then extends into the first coastal water body.

Hydrogeological linkages between the Proposed Development and designated sites (and ecological features for which they are designated) are highly variable based on the characteristics of the groundwater body, methodologies used, and the presence of groundwater-dependant habitats and species. As a precautionary measure, a reasonable worst-case ZoI for water pollution from the Proposed Development is considered to capture the entirety of each groundwater body which the Proposed Development overlies.

2.2.1.3 Identifying Relevant Designated Sites

Following the identification of designated sites within the initial ZoI, a secondary scoping was carried out to identify relevant designated sites for impact assessment. Disturbance buffers, and hydrological and hydrogeological linkages extending from the Proposed Development area were assessed to determine if pollution sources arising from the Proposed Development could come into contact with ecological features of designated sites. The designated sites that lie within or intersect with the following pathways and their associated extents will be identified for impact assessment based on the following ZoI “rules”:

1. Any designated sites within the CPO boundary of the Proposed Development. This is to take account of direct impacts and effects.

2. Any designated sites which lie within 200 m straight-line measurement of the CPO boundary. This is to account for:
   a. The potential incursion of construction personnel, vehicles or materials beyond the CPO boundary during construction.
   b. The extent of potential dust-generating effects and pollution from vehicle emissions.
3. Any designated sites which lie within 50 m of the CPO boundary will be considered with respect to any vibration disturbance effects[10].
4. Any designated sites which lie within 500 m of the CPO boundary will be considered with respect to any noise disturbance effects[11].
5. Any designated sites within the subcatchment(s) of the Proposed Development which are designated for ecological features which are sensitive to hydrological change (flow or quality) and are downstream of the CPO boundary.
6. Any designated sites which are designated for species which have been shown through survey to be present in *ex situ* habitats within 500 m of the CPO boundary. This is particularly focussed on bird species, mindful of the proximity of the Proposed Development to Lough Swilly and its interaction with Lough Foyle. The importance of the ornithological connection between Lough Swilly and Lough Foyle came out of consultation discussions with NPWS.

2.3 Field Survey

In order to inform the baseline, site-specific surveys were undertaken as detailed in Table 2-3. Surveys were undertaken between the years 2017 and 2025. Since the identification of the preferred option during Phase 2 Options Selection (completed in 2019), the survey scope and methodologies have been focused on the direct and indirect impacts/effects likely to arise from the Proposed Development. All field surveys were undertaken with reference to the most up-to-date published guidance available at the time of survey and the application of professional interpretation and judgement (Table 2-3). The National Roads Authority (NRA) publication, *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes* (NRA, 2008), was also referenced for appropriate survey seasons and methods for protected species. The ecological surveys evolved between 2017 and 2025 to respond to the information necessary to inform each stage of the Proposed Development's development. Therefore, the survey extents described in Table 2-3 reflect the extents of the latest surveys which were used to inform the ecological baseline used to inform the environmental assessment of the Proposed Development for which planning consent will be sought.

Table 2-3: Summary of Site-Specific Surveys

Title	Description of Survey Scope	Survey Contractor	Date	Extent of Survey
Habitat survey	Phase 1 Habitat classification with reference to Fossitt (2000).	RPS	Sections 1 and 2: July and August 2023 and re-verified for any material changes during August 2025. Earlier surveys completed: December 2017; July and August 2018; July and August 2019; August 2020;	Within the CPO boundary and immediately adjoining habitats.

[10]The maximum extent of potential vibration disturbance is considered to be 50 m from the CPO boundary. The vibration disturbance 50 m distance is based upon measurements listed within BS5228-2:2009 *Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration*

[11]The maximum extent of potential noise disturbance is considered to be 500 m from the CPO boundary. This is based on a threshold of construction noise of 50 dB LAeq, 24hr, below which it is anticipated that it will have no disturbance effect (see Figure 2 from Cutts *et al.* (2009) *Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance*)

Title	Description of Survey Scope	Survey Contractor	Date	Extent of Survey
			May and August 2021; and August and September 2022.	
		EirEco	Section 3: September 2025, August 2023. Earlier surveys completed: July 2019 and August 2021.	
Protected flora surveys	Survey for the FPO species, globeflower (*Trollius europaeus*).	RPS	Section 1: May 2021 June 2023 (recheck of Habitats in August 2025)	Townlands of Drumboe Lower and Cappry within Section 1. River Finn floodplain at Lifford on Section 3.
		EirEco	Section 3: August 2021, August 2023. (recheck of habitats in September 2025)	
Invasive alien plants and animals	Identification of invasive alien species, with cognisance of the species listed in the Third Schedule to the European Communities (Birds and Natural Habitats) Regulations, as amended, and the species classified as high or medium impact by Kelly *et al*. (2013).	RPS	Sections 1 and 2: July 2023 and re-verified for any material changes between August to October 2025. Earlier surveys completed: July to September 2018; July and August 2019; and August 2020.	Within the CPO boundary and immediately adjoining habitats.
		EirEco	Section 3: September 2025, August 2023. Earlier surveys: July 2019 and August 2021.	
		RPS and Murphy Geospatial	Sections 1, 2, and 3: October 2021.	
Badger	Assessment for evidence of sett entrances and field signs (e.g. scat, hair, trails, prints, and snuffle holes).	RPS	Sections 1 and 2: July 2023 and re-verified for any material changes between August to October 2025. Earlier surveys completed: December 2017; July 2018; July, August, and December 2019; and February, March and August 2020.	Within the CPO boundary and all accessible lands within 150 m of the CPO boundary. It was not possible to gain access to all areas within 150 m, particularly residential gardens. However, assessment of such areas using binoculars was possible.
		EirEco	Section 3: February 2020, November 2023, and September 2025.	

Title	Description of Survey Scope	Survey Contractor	Date	Extent of Survey
Otter	Assessment for evidence of holts and field signs (e.g. spraint, slides, trails, prints, and couches) and camera trapping.	RPS	Sections 1 and 2: August 2023 and re-verified for any material changes between August to October 2025. Earlier surveys completed: December 2017; September 2018; July and December 2019; and February to March, August 2020.	Surveys undertaken for otter involved surveying the riverbanks, where accessible, 600 m upstream and downstream of proposed bridge crossing locations, as per National Otter Survey of Ireland 2010/12 methods (Reid *et al*., 2013). Accessibility was influenced by factors such as safe means of access and access permissions from landowners.
		EirEco	Section 3: February 2020,November 2023, and September 2025.	
Bats: preliminary roost assessments of structures and tree roosting assessments.	Preliminary roost assessments of structures and ground level tree assessment to identify Potential Roost Features (PRFs), with reference to Collins (2023)[12].	RPS	Sections 1 and 2: August 2025. A tree climbing PRF inspection survey was carried out by two suitably qualified bat surveyors of all trees identified during the preliminary roost assessment as PRF-Ms (i.e. potential for multiple roosting bats). Sections 1 and 2: August and September 2025 Earlier surveys completed: August 2022 and March 2021.	Within the CPO boundary. For any trees within the CPO boundary of section 1 and 2, identified as requiring such surveys based on preliminary assessment of trees.
		Bat Eco Services	Section 3: Trees were assessed in February 2020 and March 2021. Trees were reassessed on 26 August and 20, 21, and 22 October 2025. Buildings and structures were assessed August 2019, February and July 2020, February, July, and August	

[12] At the time of undertaking bat surveys in 2019–2022, the third edition of the Bat conservation Trust (BCT) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, 2016) published in 2016 was applicable. The fourth edition of the BCT Guidelines, which the 2025 surveys followed, was published in 2023 (Collins, 2023)

Title	Description of Survey Scope	Survey Contractor	Date	Extent of Survey
			2021, August 2023, September 2024, and August and October 2025.	
Bats: Activity Survey	Passive monitoring for bat activity, with reference to Collins (2023)[12]. Walked and driven transects were conducted, where feasible and accessible, to record bat activity along the routes of Sections 1 and 2. Surveys involved walked transects within the proposed route corridors traversing the field network (where accessible) and following the local road network, with reference to Collins	RPS	Sections 1 and 2: August to September 2025. Earlier surveys completed: July to October 2019; August and September 2020; May 2021; and August 2022. Transect surveys: September 2019 and July 2020. In order to characterise the bat species active within or in close proximity to the CPO boundary, the methodology for such characterisation in subsequent years focussed on the use of static detectors on the basis that they can be deployed for longer periods; capturing more effective information capable of better characterising bat activity relevant to the assessment of the Proposed Development.	Static detector surveys were focussed within and adjacent to habitats likely to enable a characterisation of the bat species active within or in close proximity to the CPO boundary. Transect surveys were focussed within and adjacent to habitats likely to enable a characterisation of the bat species active within or in close proximity to the CPO boundary.
		Bat Eco Services	Section 3: August 2018, August 2019, February and July 2020, February, July, and August 2021, August 2023, and October 2025.	
Bats: emergence/re-entry surveys	Any structures assessed as having low, moderate, or high bat roost potential as a result of the preliminary roost assessment were subject to emergence surveys, with reference to Collins (2023)[12]. 2019–2022 surveys included re-entry surveys.	RPS	Sections 1 and 2: August to October 2025 Earlier surveys completed: July, September, and October 2019; June and July 2020; May 2021; and August and September 2022.	For any buildings/structures within the CPO boundary identified as requiring such surveys based on preliminary assessment of those buildings/structures.
		Bat Eco Services	Section 3: August 2018, August 2019, February and July 2020, February, July, and August 2021,	

Title	Description of Survey Scope	Survey Contractor	Date	Extent of Survey
			August 2023, September 2024, and August and October 2025.	
Other non-volant mammals (hedgehog, pygmy shrew, pine marten, Irish stoat, red squirrel, Irish hare and red deer)	Any incidental records of other protected mammals were captured during all field surveys.	RPS	Sections 1 and 2: July 2023 and re-verified for any material changes between August to October 2025 Earlier surveys completed: December 2017; September 2018; July and December 2019; and February, March and August 2020.	Within the CPO boundary.
		EirEco	Section 3: February 2020, November 2023, and September 2025.	
General Breeding Bird Surveys	A comprehensive breeding bird survey has been undertaken with reference to the guidance set out in Bibby et al. (2000) and the Breeding Bird Survey (BBS) methodology as described by the British Trust for Ornithology (BTO). These surveys identified a typical range of species that would be associated with agricultural land and urban edge habitats. No notable populations of one or more species or a notable assemblage of breeding bird species was identified as a result of the breeding bird surveys. The habitats present within the CPO boundary have been regularly surveyed and updated with the final survey undertaken in 2025 to verify that the habitats had not significantly changed. The only changes to habitat value were noted in a negative trend, with further intensification	Kendrew Colhoun	Sections 1 and 2: May and June 2023 Habitat Assessment in August 2025 confirmed no material change to habitats Earlier surveys completed: May and June 2020.	Transects were routed to include areas within and in close proximity to the CPO boundary to survey a representative sample of habitat which will be impacted by the Proposed Development.
		EirEco	Section 3: April, May and June 2023. Habitat Assessment in September 2025, confirmed no material change to habitats Earlier surveys completed: May and June 2020.	

Title	Description of Survey Scope	Survey Contractor	Date	Extent of Survey
	of management or habitat loss. Given that the habitats have not changed significantly and in a negative assessment of value the breeding bird assemblage, and potential for notable populations will not have changed over time and the results of the breeding bird surveys can be regarded as comprehensive and valid for the assessment of value.			
General Winter Bird Surveys	Bird survey to characterise the general wintering bird populations and assemblages within and adjacent to the CPO boundary. The methodology used was with reference to NPWS low tide survey guidance – Lewis and Tierney (2014) and Bibby *et al*. (2000).	RPS	Section 1: winter 2018/2019. No further surveys deemed necessary with respect to Section 1; re-confirmed through verification check completed during 2025/2026 to determine any factors which could have materially changed the populations and assemblages characterised during 2018/19 survey. Section 2: winter 2017/2018, 2018/2019, 2019/2020, 2022/2023, and September 2025 to January 2026.	Surveys were focussed in areas likely to support wintering bird activity within or in close proximity to the CPO boundary.
		Kendrew Colhoun	Section 2: winter 2020/2021.	
		Kendrew Colhoun, RPS, and EirEco	Section 3: winter 2018/2019, 2019/2020, 2022/2023, and October 2025 to January 2026	
Raptor Vantage Point (VP) surveys; with specific emphasis on hen harriers.	Standard vantage point methodology (using standard Scottish Natural Heritage methods).	Kendrew Colhoun	Section 1: May to August 2023. Habitat Assessment in August 2025 confirmed no material change to habitats No suitable habitats present in Sections 2 and 3 requiring vantage point surveys	The south-west end of Section 1, with VPs in the townlands of Cappry, Dooish, and Meencargagh.

Title	Description of Survey Scope	Survey Contractor	Date	Extent of Survey
Breeding raptor survey	Sites with potentially suitable locations for breeding raptors were identified and surveyed for raptor activity and nests.	Kendrew Colhoun	Sections 1 and 2: April, June, and July 2023.	Potentially suitable areas within the study area.
			No suitable habitats present in Section 3 requiring breeding raptor surveys	
Kingfisher habitat appraisal and vantage point surveys	The survey method followed that of Cummins *et al*. (2010) and Colhoun *et al*. (in prep) and comprised a combination of (a) walkover surveys of predetermined transects along watercourses within the study area with potentially suitable habitat and (b) vantage point surveys where the initial walkover survey found potentially suitable habitat.	Kendrew Colhoun	Sections 1 and 2: May and June 2023. Habitat Assessment in August 2025 confirmed no material change to habitats	Watercourses intersected by the Proposed Development.
		EirEco	Section 3: May and June 2020 and August 2021. Habitat Assessment in September 2025, August 2023 confirmed no material change to habitats	
Barn owl surveys	The survey methodology employed followed the methods as defined by the *Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects* (TII, 2021).	John Lusby	Sections 1, 2, and 3: 20 June 2023 to 20 July 2023; and 28 April 2021 to 04 June 2021.	The extent of the ZoI for barn owl surveys and for assessing the impacts to barn owls is based on the home range ecology of the species to incorporate all nest sites which may be potentially impacted by the development of a national road project (within 5 km from the route) (Lusby *et al*. 2021).
Amphibian and reptiles	Assessment for evidence of field signs and incidental records during mammal and habitat surveys.	RPS	Sections 1 and 2: August to October 2025 and July 2023. Earlier surveys: December 2017; September 2018; July and December 2019; and February, March and August 2020.	Within the CPO boundary and adjoining habitats.
		EirEco	Section 3: July 2023 to November 2023, and September 2025. Earlier surveys: July 2019 and August 2021.	

Title	Description of Survey Scope	Survey Contractor	Date	Extent of Survey
Invertebrates	Assessment for evidence of field signs and incidental records during mammal and habitat surveys.	RPS	Sections 1 and 2: August to October 2025 and July 2023. Earlier surveys: December 2017; September 2018; July and December 2019; and February, March and August 2020.	Within the CPO boundary and adjoining habitats.
		EirEco	Section 3: July 2023 to November 2023, and September 2025. Earlier surveys: July 2019 and August 2021.	

2.3.1 Habitats and Flora

2.3.1.1 Terrestrial

Habitat surveys were undertaken in December 2017, July to August 2018, July to August 2019, August 2020, May and August 2021, August to September 2022, July and August 2023, and August and September 2025. During the most recent habitat survey, habitats within and immediately adjacent to the CPO boundary were checked for any material changes in terms of their current distribution, composition and condition compared to earlier surveys.

The habitat mapping, categorisation, and descriptions had regard to the national standards, as outlined in Smith *et al*. (2011) and Fossitt's (2000) habitat classification system for habitats. The Fossitt classification is the standard method for identifying, describing, and classifying habitats, both terrestrial and aquatic, in Ireland. The classification system is hierarchical and operates at three levels, listed below, and is based on the relationship between its habitat categories and the components of each habitat type, including, but not solely reliant on, phytosociological units (plant communities) of botanical classifications. The three levels are:

- **Level 1:** Broad habitat groups e.g. G - Grassland and marsh.
- **Level 2:** Habitat subgroups e.g. GA - Improved grassland.
- **Level 3:** Habitat e.g. GA1 - Improved agricultural grassland.

A variety of publications were used to supplement and refine Fossitt (2000) classifications as required, including, but not limited to, classification schemes derived from Perrin *et al.* (2008) and O'Neill *et al*. (2013). The classification of semi-natural woodlands and scrub took cognisance of categories and criteria outlined in Forest Service (2015). The relevant NPWS Irish Wildlife Manuals for National Survey and Conservation Assessment Guidelines for woodlands, grasslands, and upland habitats were also consulted. The *Interpretation Manual of European Union Habitats* (EC, 2013) was used to assess the affinity of any recorded habitat to Annex I habitats. Where invasive species listed in the Third Schedule of the European Union (Birds and Natural Habitats) Regulations 2011 as amended (SI. No. 293/2021) were encountered, their presence and distribution was recorded as part of the habitat survey.

2.3.1.2 Protected Flora – Globeflower

A dedicated survey to identify globeflower (*Trollius europaeus*) specimens was carried out on 18 May 2021 in Section 1 on the River Finn in the townland of Cappry, in the vicinity of the Proposed Development. Follow

up surveys in June 2023 and August 2025 were also carried out within the CPO boundary to ensure that no occurrence of the species had occurred in the vicinity of the bridge crossing since 2021. Surveys for the species were also undertaken in the vicinity of the major river crossings on Section 3 in August 2021 and August 2023, where potentially suitable habitat occurs. A check for suitable habitats was also undertaken September 2025.

The survey was completed since the potential presence of globeflower was incidentally identified during preliminary data collection prior to 2021. Given the design solution for the crossing of the River Finn which avoid direct impacts on habitat supporting this species, no update surveys of where the species was recorded in 2021, were considered necessary to inform the environmental assessment of the Proposed Development.

2.3.1.3 Invasive Alien Plant Species and Invasive Alien Animal Species

During the habitat surveys detailed above, any incidental evidence of Invasive Alien Plant Species (IAPS) and Invasive Alien Animal Species (IAAS) was recorded[13]. In addition, a dedicated IAPS survey was undertaken between 8 and 15 October 2021 by a qualified ecologist in conjunction with a qualified topographical surveyor with reference to TII guidance (TII, 2020a, 2020b). The baseline information was checked for any material changes most recently during 2025. The approximate perimeter of each IAPS infestation was identified and mapped. Where IAPS were found, the species, exact location, number of individuals, and approximate extent was recorded.

2.3.2 Fauna

2.3.2.1 Badger

The badger survey methodology recorded any signs of badger activity, including the presence of setts, evidence of foraging, access runs, tracks, latrines, and prints. The survey was completed with reference to published guidance (Scottish Badgers, 2018; NRA, 2005a; and Harris, 1989). Where setts were identified, usage of potential sett entrances and direction of tunnelling was also recorded.

The badger surveys were completed across the CPO boundary. Various sections were surveyed during the following periods: December 2017, July 2018, July and August 2019, December 2019, February to March 2020, August 2020, July and November 2023, and August to October 2025. Any incidental records of badger were also recorded while completing the other site surveys. The badger survey was completed for all land within the CPO boundary and up to 150 m outside the CPO boundary.

2.3.2.2 Otter

The survey methodology (based on Lenton *et al*. (1980), Bailey and Rochford (2006), NRA (2006), and Reid *et al*. (2013)) consisted of surveying the riparian habitat within a 600 m corridor both upstream and downstream of proposed water crossing locations.

The otter surveys were completed during the following periods: December 2017, September 2018, July 2019, December 2019, February to March 2020, August 2020, July to August 2023, November 2023 and August to October 2025. Any incidental records of otter were also recorded while completing the other site surveys.

The survey focus was on the detection of evidence of otter activity, such as spraint, tracks, slides, couches, feeding remains, and holts, along the survey corridor at each location. Based on the desk study information, otter is recorded within the study area and is likely to be active on all suitable watercourses within the study area.

[13] With cognisance of the species listed in the Third Schedule to the European Communities (Birds and Natural Habitats) Regulations, as amended, and the species classified as high or medium impact by Kelly *et al*. (2013).

Camera trapping was undertaken in Sections 1 and 2 to supplement findings from the walkover surveys. Camera traps were deployed at three possible holt locations; one in Section 1 and two in Section 2 (see Table 2-4 and EIAR Drawings 9A.24 and 9A.25 in Volume D: Book of Drawings. Footage was recorded under NPWS license [137/2023]. No holts were recorded as potentially being active in Section 3 and therefore camera trap surveys were not conducted.

Table 2-4: Trail Camera Survey Details

Camera ID	Section	ITM (X)	ITM (Y)	Operational Period	Duration (Days)
TC1	2	619127	911374	03/08/2023 – 18/08/2023	16
TC2	2	618988	911647	02/08/2023 – 10/08/2023	9
TC3	1	613073	895229	06/08/2023 – 18/08/2023	13

In Section 2, a trail camera (TC1) was erected on the western bank of the River Swilly within the townland Ballyraine and a second trail camera (TC2) was set up along a drainage ditch adjacent to the River Swilly at Milk Isle. In Section 1, the camera was deployed at a potential holt on the bank of the River Finn within the townland of Drumboe Lower. The camera traps were set up to confirm if the possible holts were actively in use by otter.

2.3.2.3 Bats

Various bat surveys were completed between 2019 and 2025 with the following aims:

- To identify and characterise bats roosting within and immediately adjacent to the CPO boundary. These surveys focussed on potential roosting structures consisting of buildings, structures and trees.
- To characterise the bat activity along each section of the Proposed Development.

Maps of the bat survey locations are included in EIAR Drawings 9A.26–9A.47 and additional survey details are included in Appendix C.

2.3.2.3.1 Sections 1 and 2

With respect to bat roosting, the most recent surveys for Sections 1 and 2 were completed in 2025, with reference to NPWS (Marnell *et al*., 2022) and Bat Conservation Trust (BCT) Guidance (Collins, 2023). The 2025 survey methodology is reported first, because this provides the most up to date baseline information and was completed with reference to the most recently published NPWS and BCT guidance. The 2022 and pre-2022 survey methodologies are then reported. The environmental assessment is completed against the most recent (2025) survey baseline with the previous surveys providing contextual information with respect to the nature and character as relevant to the environmental assessment of the Proposed Development.

2.3.2.3.1.1 2025 Surveys

Preliminary Ground Level Roost Assessment

Preliminary Roost Assessments (PRAs) were carried out on structures during daylight hours between 11 and 18 August 2025, using close focusing binoculars to identify features with suitability for roosting bats. 70no. structures were assessed, comprising 38no. and 32no. structures in Sections 1 and 2, respectively. The locations of these structures are shown in EIAR Drawings 9A.36 and 9A.38. Structures surveyed are located within the CPO boundary of the Proposed Development and the majority are scheduled to be removed during the construction of the Proposed Development.

PRAs consisted of external and, where accessible, internal building inspections, focusing on signs of bat activity, such as residue staining, droppings, scratch marks, feeding signs (moth wings, etc.), roof voids, and lack of cobwebs to try to identify potential roost sites. Accessibility was influenced by landowner permission, health/safety considerations and the physical accessibility of the structure/feature being surveyed. The

structures were graded into negligible, low, moderate, or high roost suitability. The structure was then assigned an overall grade based on the potential roost sites recorded for that structure. The surveys were completed by two suitably experienced and qualified RPS ecologists.

Ground Level Tree Assessments (GLTAs) were carried out on trees during daylight hours between 19 and 26 August 2025, using close focusing binoculars to identify features with suitability for roosting bats. The surveys were targeted based on aerial photography analysed by surveyors. Available aerial photographs were overlayed with the CPO boundary for Sections 1 and 2 in order to identify trees or groups of trees that could potentially support trees with bat roosting potential. The aerial analysis identified 13 areas, comprising nine and four areas in Sections 1 and 2, respectively, where suitable trees were subject to GLTAs. 139no. trees or small groups of trees were surveyed.

The locations of these trees are shown in EIAR Drawings 9A.40 and 9A.41. Trees were studied and assessed for the presence of features with suitability for roosting bats, including cavities, frost cracks, trunk and branch splits, rot holes, bark peel, and hollow sections of trunk and branches. Potential Roost Features (PRFs) were classified as PRF-I (suitable for individual bats or very small numbers of bats) or PRF-M (suitable for multiple bats). The tree was then assigned an overall grade based on the highest grade PRF recorded for that tree. The surveys were completed by two suitably experienced and qualified RPS ecologists.

Emergence Surveys of Structures

Using the evidence gathered during the PRAs, emergence surveys were conducted using Elekon Batlogger M2 detectors and Canon XA60 infrared cameras. Structures assessed as having low, moderate, or high bat roost potential were subject to emergence surveys, where access was possible (see EIAR Drawings 9A.37 and 9A.39). Low suitability structures were surveyed once, moderate suitability structures were surveyed twice, and high suitability structures were surveyed three times. All surveys were completed between 11 August and 7 October 2025.

With reference to Collins (2023), emergence surveys were conducted from 15 minutes before sunset (dusk) until two hours after sunset. Emergence surveys should be carried out in optimal weather conditions (e.g. mild temperatures, light winds, and no heavy rainfall) to maximise the results of the roost surveys (Kelleher and Marnell, 2006; Collins, 2023). Poor weather conditions were avoided. A sufficient number of surveyors were deployed to each building during each emergence survey to provide sufficient visual coverage of all the features identified during the PRA.

Tree Climbing Survey

A tree climbing PRF inspection survey was carried out by two suitably qualified bat surveyors on all trees identified as PRF-Ms during the GLTAs (see EIAR Drawings 9A.40 and 9A.41). The survey was completed using tree-climbing rope equipment, ladders, a torch, and an Explorer Premium Digital Endoscope Inspection Camera. The surveys were carried out by licenced surveyors from 26 to 28 August and a repeat survey was carried out from 16 to 17 September 2025. 13no. trees in Section 1 and 3no. trees in Section 2 were surveyed.

The aim of the survey was to allow closer inspection of PRFs, identified during the GLTA, in order to look for evidence of bats, including live or dead bats, droppings, staining, odour, and/or other physical characteristics. Based on the results of this survey, PRFs were reclassified where necessary following the completion of the survey, in accordance with Collins (2023).

Static Detectors

Static detectors were deployed along the proposed route corridors, between August and September 2025 to characterise bat activity along the routes of Sections 1 and 2.

The static detectors were deployed in 13no. locations within Section 1 and in 9no. locations within Section 2. Each location had a static detector deployed over two periods of at least five days each. However, due to excessive triggering of the detector or hardware faults, in some instances, less than five days of data were captured during a deployment. Such issues are not uncommon; they are accounted for in the survey

approach/methodology to ensure there is some redundancy "built-in" to the survey design to allow for such issues while also ensure the collation of a robust and comprehensive baseline data collection. The locations where the static detectors were deployed are shown in EIAR Drawings 9A.45 and 9A.46. The timing and durations of each deployment at each location is set out in Appendix C.

The detectors (Anabat Swift or Anabat Ranger with a microphone and recording system sensitive to bat frequencies) were deployed at specific locations along the route, selected based on the professional judgement of the deployer. Locations were chosen on the basis of their potential to support bat activity (e.g. due to the presence of watercourses or intact hedgerow and treeline networks of good quality for bat activity). The detectors recorded bat passes within their immediate vicinity during the period they were deployed.

The captured data was then analysed using Kaleidoscope Pro. For each static detector deployment, the bat species of each audio record was automatically identified with Kaleidoscope Pro software. These automatic identifications were then verified manually by suitably trained RPS personnel. Random 10% samples of the common pipistrelle, soprano pipistrelle, and noise files were analysed manually. All recordings of all other species were analysed manually.

2.3.2.3.1.2 2022 Surveys

The bat roost surveys were broadly similar to those carried out in 2025, except an earlier 3rd edition of BCT Guidance (Collins, 2016) was followed. The 2025 surveys were completed with reference to the most up-to-date guidance.

Preliminary Ground Level Roost Assessment

A preliminary ground level roost assessment was carried out during daylight hours between 8 and 11 August 2022, using close focusing binoculars to identify features with suitability for roosting bats in trees and structures (all of which were revisited during 2025 surveys). Any PRFs found on structures or trees were graded into negligible, low, moderate, or high roost suitability. The structure or tree was then assigned an overall grade based on the highest grade PRF recorded for that structure or tree.

Dusk/Dawn Emergence/Re-entry Surveys of Structures

Using the evidence gathered during the initial daylight site inspections at each potential roost, dusk/dawn roost surveys were then conducted using Elekon Batlogger M2 detectors and an Anabat Scout detector. Any structures assessed as having medium or high bat roost potential were subject to emergence/re-entry surveys. All surveys were completed over two periods: 8 to 11 August and 12 to 15 September 2022. With reference to Collins (2016), a dusk emergence survey is conducted 15 minutes before sunset (dusk) and continues until an hour and a half to two hours after sunset. A dawn re-entry survey is conducted an hour and a half to two hours before sunrise (dawn) and continues until 15 minutes after sunrise.

Tree Climbing Survey

A tree climbing PRF inspection survey was carried out by two suitably qualified bat surveyors on all trees identified during the preliminary ground level roost assessment as having moderate or high bat roosting suitability. The survey was completed using tree-climbing rope equipment, ladders, a torch, and a Rigid CA-350 Endoscope Inspection Camera. The survey was carried out by licenced surveyors over two periods: 15 to 16 September and 29 to 30 September 2022.

2.3.2.3.1.3 Pre-2022 Bat Surveys

Preliminary Ground Level Roost Assessment

A preliminary ground level roost assessment was carried out during daylight hours between July 2019 and March 2021, using close focusing binoculars to identify features with suitability for roosting bats in structures. Structures within the CPO boundary were revisited in 2022 and 2025.

A total of 16 structures were assessed, comprising eight structures in proximity to Section 1 and eight structures in proximity to Section 2. The locations of these structures are shown in EIAR Drawings 9A.28 and

9A.29. Three of the structures assessed between 2019 and 2021 are within the CPO boundary and were therefore subject to 2025 and 2022 surveys. Structural assessments consisted of external and internal building inspections (depending on access), focusing on signs of bat activity, such as residue staining, droppings, scratch marks, feedings signs (moth wings, etc.), roof voids, and lack of cobwebs to try to identify PRFs. Suitability assessments of structures were completed with reference to (now superseded) Kelleher and Marnell (2006) guidance. A summary of the survey dates is set out in Appendix C.

Dusk/Dawn Emergence/Re-entry Surveys of Structures

Using the evidence gathered during the initial daylight site inspections at each potential roost, dusk/dawn roost surveys were then conducted using heterodyne bat detectors: Batbox Duet, Petterson D-200 Bat Detector, Anabat Swift, and Wildlife Acoustic Minibat, in conjunction with an Echo Meter Touch 2 recorder.

Structures assessed as having medium or high bat roost potential were subject to emergence/re-entry surveys (see Appendix C). Surveys were conducted between July 2019 and May 2021. Buildings within the CPO boundary which merited emergence/re-entry surveys were surveyed in 2022 and 2025. Therefore, the results of 2019 to 2021 emergence/re-entry surveys are detailed in this report primarily to provide evidence of bat activity and roosting in the surrounding environs of the Proposed Development. A summary of the survey dates and timing/duration of surveys is set out in Appendix C.

Walked and Driven Transects

Sections of predetermined combined transect routes were walked/driven, were feasible and accessible regards land access and health and safety procedures, between 2019 and 2020 to record bat activity along the routes of Sections 1 and 2.

Dusk surveys involved walked transects within the proposed route corridors traversing the field network (where accessible) and following the local road network.

Walked transects were carried out using heterodyne bat detectors: Batbox Duet and Petterson D-200 Bat Detector, in conjunction with an Echo Meter Touch 2 recorder. Driven transects were conducted using an Echo Meter Touch 2 and Anabat Swift with reference to published guidance (Roche *et al*., 2005). Surveys were conducted between dusk and dawn. Bats were identified by their ultrasonic calls, behavioural and flight observations, and by means of spectrogram and sound analysis of the EchoMeter Touch 2 data[14].

Within Section 1, 18 transects were surveyed (see Appendix C). Transects 1 through 8 were surveyed in both 2019 and 2020 while transects 9 through 18 were surveyed in 2019 only. Transects 1 through 15 were undertaken on foot, while transects 16 to 18 were driven.

Within Section 2, 14 transects were surveyed between 2019 and 2020 (see Appendix C). Transects 2 through 6 were surveyed in both 2019 and 2020 while transects 1 and transects 7 through 14 were surveyed in 2019. Transects 4, 7, 8, and 14 were driven with all other transect being undertaken on foot. Transect locations are shown in EIAR Drawings 9A.26 and 9A.27.

Static Detectors

Static detectors were deployed along the proposed route corridors, where feasible and accessible, between July 2019 and May 2021 to characterise bat activity along the routes of Sections 1 and 2 and to supplement the findings of the transect surveys detailed above.

The static detectors were deployed in 14 locations within Section 1 for 18 nights between 2019 and 2021. With respect to Section 2, the static detectors were deployed in nine locations over 14 nights between 2019 and 2021. The locations where the static detectors were deployed are shown in EIAR Drawings 9A.33 and 9A.34. The timing and durations of each deployment at each location is set out in Appendix C.

[14] Spectrograms and sound files generated by Wildlife Acoustic's Kaleidoscope software.

The detectors (Wildlife Acoustics Song Meter SM2 BAT+ or similar with a microphone and recording system sensitive to bat frequencies) were deployed at specific site locations along the route at locations selected based on the professional judgement of the deployer. Locations were chosen on the basis of their potential to support bat activity (e.g. due to the presence of intact hedgerow and treeline networks of good quality for bat activity). Deployment locations also considered areas where walking transects would be difficult to undertake due to poor underfoot conditions. The detectors recorded bat passes within their immediate vicinity during the period they were deployed. The captured data was then analysed using Kaleidoscope (Wildlife Acoustic compatible software).

2.3.2.3.2 Section 3

With respect to bat roosting, the most recent surveys for Section 3 were completed in 2023, 2024 and 2025, with reference to NPWS (Marnell *et al*., 2022) and BCT Guidance (Collins, 2016). The 2023 to 2025 survey methodology is reported first, because this provides the most up to date baseline information and was completed with reference to the most recently published NPWS guidance. The pre-2023 survey methodology is then reported.

2.3.2.3.2.1 2023-2025 Surveys

Preliminary Ground Level Roost Assessment

A preliminary ground level roost assessment was carried out during daylight hours, using close focusing binoculars to identify features with suitability for roosting bats in buildings, trees, and structures (i.e. bridges). The following are the daytime assessment survey dates:

- Buildings: 22, 23, and 24 August 2023; 5 September 2024; and 26 August and 20 October 2025
- Bridges: 26 August and 21 October 2025
- Trees: 26 August and 20, 21, and 22 October 2025.

A total of 24 buildings and two bridges were assessed. The locations of these structures are shown in EIAR Drawings 9A.42 and 9A.43. All structures surveyed are located within the CPO boundary of the Proposed Development. Structural assessments consisted of external and internal building inspections (depending on access), focusing on signs of bat activity, such as residue staining, droppings, scratch marks, feedings signs (moth wings, etc.), roof voids, and lack of cobwebs to try to identify PRFs.

Trees were assessed during the dates outlined above. The surveys were targeted based on aerial photography analysed by surveyors. Available aerial photographs were overlayed with the CPO boundary for Section 3 in order to identify trees or groups of trees that could potentially support trees with bat roosting potential. The aerial analysis identified 43 areas where suitable trees were subject to preliminary roost assessment. The locations of these trees are shown in EIAR Drawing 9A.44. Trees were examined and assessed for the presence of features with suitability for roosting bats, including cavities, frost cracks, trunk and branch splits, rot holes, bark peel, and hollow sections of trunk and branches.

Any PRFs found on structures or trees were graded into negligible, low, moderate, or high roost suitability. The structure or tree was then assigned an overall grade based on the highest grade PRF recorded for that structure or tree.

Dusk/Dawn Emergence/Re-entry Surveys of Structures

Dusk and dawn surveys of buildings, trees, and structures were undertaken on the following dates:

- Buildings: 22, 23, 24 August 2023; 5 September 2024; and 26 August and 20 October 2025
- Bridges: 26 August and 21 October 2025
- Trees: 26 and 27 August and 20, 21, and 22 October 2025.

Using the evidence gathered during the initial daytime site inspections at each structure, dusk surveys were then conducted using Anabat Walkabout, Elekon Batlogger M2, and Anabat Scout full spectrum bat

detectors coupled with night-vision aids (thermal imagery scopes and infra-red cameras). Buildings assessed as having low, moderate or high bat roost potential were subject to emergence surveys (22 buildings), while bridges with a High value were surveyed at dusk (two bridges) (see EIAR Drawings 9A.42 and 9A.43). In addition, a selection of trees (20 locations) were also surveyed by dusk/dawn surveys where such trees or tree groups were deemed to have a Moderate or High potential roost value (see EIAR Drawing 9A.44). With reference to Collins (2016 & 2023), a dusk emergence survey is conducted 15 minutes before sunset (dusk) and continues until an hour and a half to two hours after sunset. A dawn re-entry survey is conducted an hour and a half to two hours before sunrise (dawn) and continues until 15 minutes after sunrise. The dusk/dawn surveys should be carried out in optimal weather conditions (e.g. mild temperatures, light winds, and no rainfall) to maximise the results of the roost surveys (Marnell *et al.,* 2022; Collins, 2016 & 2023).

Additional information was gathered at some buildings/structures by deploying a full spectrum static bat detector for at least one night (set to recorded 30 minutes prior to sunset to 30 minutes after sunrise).

Bats were identified to species level, where possible, by their ultrasonic calls, behavioural and flight observations, and by means of spectrogram and sound analysis of the full spectrum bat detector recorded data[15].

Walked Transects

Sections of a predetermined combined transect routes were walked, where feasible and accessible regards land access and health and safety procedures, to record bat activity along the routes of Section 3. This data was collected using full spectrum bat detectors which provided geo-referenced locations for each audio file recorded. Audio files were analysis to species level, where possible, using sound software. This information was gathered to supplement information on the distribution of local bat populations within and adjacent to the proposed road route. Survey dates were as follows:

- Walking Transects: 22nd and 23rd August 2023.

Static Detectors

Static detectors were deployed along the proposed route corridors, where feasible and accessible, to characterise bat activity along the routes of Section 3, to supplement the findings of the transect surveys detailed above, and to provide additional evidence of bat usage at buildings and structures surveyed. Static detectors were deployed on the following dates:

- 2023 – 22 August (1-2 nights) at eight locations
- 2025 – 7 October (7-14 nights) at 15 locations.

The locations where the static detectors were deployed are shown in EIAR Drawing 9A.47. The timing and durations of each deployment at each location is set out in Appendix C.

The detectors (Wildlife Acoustics Song Meter SM4 Bat, Mini Bat 1, and Mini Bat 2) were deployed at specific site locations along the route at locations selected based on the professional judgement of the deployer. Locations were chosen on the basis of their potential to support bat activity (e.g. due to the presence of intact hedgerow and treeline networks of good quality for bat activity). Deployment locations also considered areas where walking transects would be difficult to undertake due to poor underfoot conditions. The detectors recorded bat passes within their immediate vicinity during the period they were deployed. The captured data was then analysed using Kaleidoscope Pro (Wildlife Acoustic compatible software).

[15] Spectrograms and sound files generated by Wildlife Acoustic's Kaleidoscope Pro software.

2.3.2.3.2.2 Pre-2023 Bat Surveys

Preliminary Ground Level Roost Assessment

A preliminary ground level roost assessment was carried out during daylight hours, using close focusing binoculars to identify features with suitability for roosting bats in buildings, trees and structures (i.e. bridges and culverts). The following are the daytime assessment survey dates:

- Buildings: 22 and 28 August 2019, 10 February and 24 July 2020, and 25 February and 8 July 2021
- Bridges: 28 August 2019 and 25 February 2021
- Trees: 24 July 2020 and 8 July 2021.

A total of 22 buildings were assessed (12 buildings in 2019, 10 buildings in 2020, and 5 buildings in 2021. Please note some buildings were assessed in multiple years) while 12 structures (bridges and culverts) were examined. The locations of these structures are shown in EIAR Drawings 9A.30 and 9A.31. Many of the buildings assessed between 2019, 2020, and 2021 were adjacent to the CPO boundary. Structural assessments consisted of external and internal building inspections (depending on access), focusing on signs of bat activity, such as residue staining, droppings, scratch marks, feedings signs (moth wings, etc.), roof voids, and lack of cobwebs to try to identify PRFs. Suitability assessments of structures were completed with reference to (now superseded) Kelleher and Marnell (2006) and Collins (2016) guidance.

Trees were assessed during the dates outlined above. The surveys were targeted based on aerial photography analysed by surveyors. Available aerial photographs were overlayed with the CPO boundary for Section 3 in order to identify trees or groups of trees that could potentially support trees with bat roosting potential. The aerial analysis identified 34 areas where suitable trees were subject to preliminary roost assessment. The locations of these trees are shown EIAR Drawing 9A.32. Trees were examined and assessed for the presence of features with suitability for roosting bats, including cavities, frost cracks, trunk and branch splits, rot holes, bark peel, and hollow sections of trunk and branches.

Any PRFs found on structures or trees were graded into negligible, low, moderate, or high roost suitability. The structure or tree was then assigned an overall grade based on the highest grade PRF recorded for that structure or tree.

Dusk/Dawn Emergence/Re-entry Surveys of Structures

Using the evidence gathered during the initial daylight site inspections at each potential roost, dusk/dawn roost surveys were then conducted using heterodyne bat detectors: PD200 (Heterodyne bat detector), Echo Meter Touch 2 Pro (Android, connected to Samsung Galaxy Tb S3), and Echo Meter Touch 1 (Apple, connected to iPad 2).

Structures assessed as having moderate or high bat roost potential were subject to emergence/re-entry surveys, where possible (see Appendix C). Therefore, the results of 2019 to 2022 emergence/re-entry surveys are detailed in this report primarily to provide evidence of bat activity and roosting in the surrounding environs of the Proposed Development.

Walked and Driven Transects

Sections of a predetermined combined transect routes were walked/driven, where feasible and accessible regards land access and health and safety procedures, to record bat activity along the routes of Section 3. This data was collected using full spectrum bat detectors which provided geo-referenced locations for each audio file recorded. Audio files were analysis to species level, where possible, using sound software. This information was gather as part of initial assessment of potential routes. Survey dates were as follows:

- Walking Transects: 31 August and 1 and 2 September 2018; 22, 23, and 24 August and 29 September 2019; 22 and 28 April, 14 and 15 July, and 25 August 2021
- Driven Transects: 1 and 2 September 2018.

Dusk surveys involved walked transects within the proposed route corridors traversing the field network (where accessible) and following the local road network.

Driven transects were conducted using an Echo Meter Touch 2 with reference to published guidance (Roche *et al*., 2005). Surveys were conducted between dusk and dawn. Bats were identified by their ultrasonic calls, behavioural and flight observations, and by means of spectrogram and sound analysis of the EchoMeter Touch 1 & 2 data[16].

Static Detectors

Static detectors were deployed along the proposed route corridors, where feasible and accessible to characterise bat activity along the routes of Section 3 and to supplement the findings of the transect surveys detailed above and to provide additional evidence of bat usage at buildings and structures surveyed. Static detectors were deployed on the following dates:

- 2018 – 31 August (1 night) at four locations; 1 September (1 night) at four locations.
- 2019 – 23 August (1-2 nights) at five locations.
- 2020 – 10 February (2 nights) at two locations; 23 July (1 night) at three locations; 24 July (1 night) at three locations; 25 July (1 night) at three locations.
- 2021 – 25 February (7 nights) at seven locations; 22 April (6 nights) at eight locations; 10 July (5 nights) at one location; 15 July (1 night) at one location; 21 August (2-4 nights) at four locations, 23 August (4 nights) at one location, and 24 August (4 nights) at one location.

The static detectors were deployed in 46 locations within Section 1 on the dates provided above. The locations where the static detectors were deployed are shown in EIAR Drawing 9A.35. The timing and durations of each deployment at each location is set out in Appendix C.

The detectors (Wildlife Acoustics Song Meter SM2 BAT+, SM4 Bat and Mini Bat 1) were deployed at specific site locations along the route at locations selected based on the professional judgement of the deployer. Locations were chosen on the basis of their potential to support bat activity (e.g. due to the presence of intact hedgerow and treeline networks of good quality for bat activity). Deployment locations also considered areas where walking transects would be difficult to undertake due to poor underfoot conditions. The detectors recorded bat passes within their immediate vicinity during the period they were deployed. The captured data was then analysed using Kaleidoscope (Wildlife Acoustic compatible software).

2.3.2.4 Other Relevant Mammals

During the detailed habitat and species surveys, the potential was also noted for habitats of other relevant terrestrial mammal species likely to occur in addition to recording any incidental evidence of such species. They were identified as relevant primarily either due to receiving a level of legal protection and/or they were noted to be of conservation concern at a national level. These included: hedgehog (*Erinaceus europaeus*), pygmy shrew (*Sorex minutus*), pine marten (*Martes martes*), Irish stoat (*Mustela erminea hibernica*), red squirrel (*Sciurus vulgaris*), Irish hare (*Lepus timidus hibernicus*), and deer species (red deer (*Cervus elaphus),* fallow deer *(Dama dama*), and sika deer (*Cervus nippon*)).

Incidental evidence of these species was specifically noted within and adjacent to the CPO boundary over the following periods: December 2017, September 2018, July 2019, December 2019, February and March 2020, August 2020, July and November 2023, and August to October 2025. These surveys were not targeted towards any particular species and recorded incidental evidence of each species observed. The surveys focused on semi-natural habitats and habitat assemblages that could provide optimum refuge, foraging, and/or transit/corridor options for those relevant species. This typically involved semi-natural habitat assemblages such as scrub, woodland (semi-natural and planted), linear woodland (hedgerows and

[16] Spectrograms and sound files generated by Wildlife Acoustic's Kaleidoscope Pro software.

treelines), watercourses, waterbodies, and semi-natural grassland. Due to the widespread distribution and mobile nature of hedgehog, pygmy shrew, Irish stoat, and Irish hare within the Irish countryside, including Co. Donegal, no targeted surveys were carried out for these species as they are assumed to occur within potentially suitable habitats within and adjacent to the CPO boundaries of the Proposed Development.

A Deer Collision Risk Assessment of the entire Proposed Development was carried out by Deer Management Solutions between 4 and 8 September 2023. The methodology and results of this assessment are detailed in full in Appendix C9A.05 and the results, insofar as they are relevant to terrestrial biodiversity, have been incorporated into this report.

2.3.2.5 Ornithology

2.3.2.5.1 Breeding Bird Surveys

A comprehensive breeding bird survey has been undertaken with reference to the guidance set out in Bibby et al. (2000) and the Breeding Bird Survey (BBS) methodology as described by the British Trust for Ornithology (BTO). These surveys identified a typical range of species that would be associated with agricultural land and urban edge habitats. No notable populations of one or more species or a notable assemblage of breeding bird species was identified as a result of the breeding bird surveys. The habitats present within the CPO boundary have been regularly surveyed and updated with the final survey undertaken in 2025 to verify that the habitats had not significantly changed. The only changes to habitat value were noted in a negative trend, with further intensification of management or habitat loss. Given that the habitats have not changed significantly and in a negative assessment of value the breeding bird assemblage, and potential for notable populations will not have changed over time and the results of the breeding bird surveys can be regarded as comprehensive and valid for the assessment of value.

2020 Breeding Bird Survey

Given the linear nature of the Proposed Development, predetermined transects, focused on the footprint of the Proposed Development, were used to complete the breeding bird survey with reference to the guidance set out in Bibby *et al*. (2000). Transects aim to provide an indication of the assemblage of breeding birds within the survey area, but it is recognised that the transects completed during 2020 do not cover the entirety of the Proposed Development footprint.

Line transects involve surveying the predetermined routes and recording breeding bird species seen or heard on either side (up to approximately 100 m) of the selected transect. In Sections 1, 2, and 3 the locations and routing of the transects were informed by the findings of the habitat surveys, targeting areas which potentially had greater opportunity for the assemblage of breeding birds. The transect lengths and segments were selected according to the particular habitat composition and homogeneity along a given transect. Along some localised sections, where vegetation cover was very dense (such as that associated with thicket woodland or scrub), point counts were completed to allow birds to settle and to allow recording to take place. The species, their numbers, and their behaviour were recorded and mapped.

Bird counts at any transect were undertaken during two visits, whereby each transect was walked once on each visit. The first visit was carried out in the early part of the breeding season (late May) and the second visit was carried out four weeks later (late June). This reflects the abundance of residents and early migrants which tend to be more easily detected during the first visit, and late migrants which are more abundant during the second visit. The surveys were carried out between 05:30 hrs and 11:00 hrs to coincide with maximum bird activity. Most of the identified bird species displayed the behavioural criteria necessary to suggest possible or probable breeding or to confirm breeding. Non-breeders were also recorded.

Within Sections 1, 2, and 3, eighteen, seven, and eight transects were completed, respectively. Each transect was surveyed once in May and once in June 2020, with the timings, locations, and durations of each survey set out in Appendix E and mapped in EIAR Drawing 9A.48.

2023 Breeding Bird Survey

Further breeding bird surveys along pre-defined transects were undertaken between late May and late June 2023. These surveys utilised a generic breeding bird survey methodology as has been developed and

employed for the United Kingdom (UK) Breeding Bird Survey[17] and the Irish Countryside Bird Survey (CBC)[18] and as fully described by Bird Survey Guidelines[19].

Transects were pre-defined by RPS ecologists (see EIAR Drawing 9A.49) and walked slowly in the early morning period, recording all species on or adjacent to the transect by sight/sound, searching particular features/habitats of interest. Windy (>F5), wet (constant precipitation), or low visibility conditions were avoided, as this might have negatively influenced detectability. The location, number, and activity of all species encountered was recorded using standard BTO species codes and CBC activity codes. The 2023 breeding bird surveys in Sections 1 and 2 are further detailed in Appendix F.

2.3.2.5.2 Wintering Bird Surveys

The locations of wintering bird surveys are mapped in **EIAR Drawings 9A.53–9A.61**.

2.3.2.5.2.1 Section 1

The Section 1 study area does not overlap with any designated SPA. However, one season of wintering bird surveys was carried out to gain a representative sample of wintering bird populations that may be utilising the study area. Monthly site visits to known wintering bird field feeding areas were undertaken during the over-wintering survey months (October to March, inclusive) of 2018/2019. On each occasion, the location and number of birds seen feeding in fields from suitable vantage points (see Table 2-5 and EIAR Drawing 9A.53) were recorded by surveyors to ascertain the level of usage within these areas and their consequent importance to the bird populations associated with nearby SPAs.

The surveys were completed on six separate dates (22/10/2018, 20/11/2018, 11/12/2018, 30/01/2019, 28/02/2019, and 28/03/2019) for each of the three VP areas. Due to the lack of wintering bird activity associated with SCI species, the lack of suitable habitat to support significant numbers of wintering birds (including SCI species) and no receptors, such as SPAs, within or adjacent to Section 1, no further seasons of wintering bird surveys were completed for Section 1. As documented, a verification check was completed during September 2025 to January 2026 to confirm that there were no material changes which could invalidate the reasoning for not completing further wintering bird surveys for Section 1. No such material changes were identified.

Table 2-5: 2018/2019 Section 1 Vantage Point Locations

VP	Coordinates (ITM)
VP1.1 (Dooish)	610651 894837
VP1.2 (Backlees)	614629 897385
VP1.3 (Lough Alaan)	615741 895831

2.3.2.5.2.2 Section 2

2017 to 2020

The Section 2 survey design used NPWS's Low Tide Waterbird Survey guidance (Lewis *et al.*, 2014); in particular, the recommendation that no count was undertaken within ten days of a previous count. Surveys also adopted the standard line transect approach (Bibby *et al.*, 2000) to document any birds present within field systems adjacent to the estuarine habitat.

[17] Available at https://www.bto.org/our-science/projects/breeding-bird-survey/research-conservation/methodology-and-survey-design. Accessed December 2025.

[18] Available at https://birdwatchireland.ie/app/uploads/2019/03/CBS_Manual_June2012_web_resolution.pdf. Accessed December 2025.

[19] Available at https://birdsurveyguidelines.org/methods/survey-method/. Accessed December 2025.

Systematic surveys of waterbirds in the area of the Swilly Estuary and its hinterland were undertaken over three winters to assess the significance of the site in the context of Lough Swilly and over a broader area extending beyond the area of the Proposed Development. Monthly site visits of wintering bird feeding areas were undertaken in Section 2 during the overwintering survey months (October to March, inclusive) of 2017/2018, 2018/2019, and 2019/2020. On each occasion, the location and number of birds seen feeding in fields from suitable VPs (see EIAR Drawing 9A.54) were recorded to ascertain the level of usage within these areas and their importance to the bird populations associated with nearby areas of Lough Swilly SPA.

The surveys were completed on 11 separate dates for the four VP areas (VP2.1 to VP2.4), three transects, and the Airfield/Farsetmore (VP2.9) and Manorcunningham/Big Isle (VP2.10) areas, as outlined in Table 2-6 and mapped in EIAR Drawing 9A.54. Surveys were undertaken around the high-water period and on days when this was close to midday to maximise daylight observation periods in the three-hour period before and after high-water. Surveys were conducted in six one-hour blocks either side of high water, during which all areas were visited by driving road transects and viewing the areas from the vantage points (used in 2018/19 and 2019/20). Surveys at low tide were scheduled to coincide with low tide times between 9.30 am and 11.00 am, to allow the surveyor to attend the site at least an hour before low tide and thereafter undertake the VP and line transect surveys of the estuary/tidal channel throughout the low tide cycle. Surveys of geese and swans feeding at the Airfield/Farsetmore and Big Isle areas at both dusk and dawn were conducted from VPs prior to and following the estuary surveys.

Table 2-6: Section 2 2017 to 2020 Vantage Point and Transect Locations

VP	Coordinates (ITM)	Length
VP2.1 (Golf Course)	620822 912729	NA
VP2.2 (Pontoon Area)	620275 912430	NA
VP2.2 (Supplemental)	620324 911928	NA
VP2.3	619976 911429	NA
VP2.4 (Bridge Crossing)	619391 911817	NA
VP2.9 (Goose Site)	621588 911630	NA
VP2.10 (Manorcunningham/Big Isle)	624198 912367	NA
T1	619705 911276 – 619156 911837	1037 m
T2	618973 911319 – 618315 911224	1077 m
T3	621744 910861 – 621504 909436	1446 m

The number and behaviour of all waterbirds using the terrestrial sites of interest were recorded, classifying behaviour as foraging or non-foraging. The activities which may have had a bearing on the presence of birds were also recorded (e.g. shooting, human disturbance, farming activities, etc.) to gain a better understanding of the relative importance of the area.

Surveys initially followed the methodology outlined above. However, after a meeting with NPWS, it was agreed that the February/March 2019 counts should follow a standardised 1-hour VP approach. In the preceding surveys before this date, observations (approximately 15 to 30 minutes) were carried out to determine snapshots of site use, following completion of line transects. For the 2019/2020 season, it was decided to conduct dawn and dusk counts along with this 1-hour VP at high tide to determine bird usages of the crossing footprint. Additionally, following the 2018/2019 season, Line Transect 3 was no longer utilised as part of the survey protocol following the selection of the emerging preferred corridor which resulted in Transect 3 becoming obsolete.

The survey design was cognisant of observations recorded during consultations with NPWS on 5 February 2019. During the meeting it was recommended that the following bird surveys be carried out during high/low tide: walkovers, transects, and VPs. NPWS advised that there should be a standardised VPs watch

incorporated into the survey methodology for the proposed Swilly crossing point at high and low tide. NPWS representatives noted, specifically with regard to the River Swilly in Section 2, that geese and swans would be the most significant bird constraints to be considered. Counts of 30 whooper swan (*Cygnus cygnus*), at a location approximately 200 m to 300 m north of the route corridor, were made available by NPWS. It was recommended that surveys (standardised methodology) should be undertaken to provide further detail on the locations and movement through the area by whooper swan and to determine whether, and to what extent, members of populations for which the Lough Foyle and/or Lough Swilly SPA are designated utilise the areas surveyed.

2020/2021

Surveys were undertaken to investigate the potential usage of terrestrial sites within and adjacent to the Proposed Development corridor at the proposed Swilly crossing. Of particular interest was the degree to which terrestrial sites were being used by SCI species, in particular Eurasian curlew (*Numenius arquata*) and other waterbirds including whooper swan, geese (*Anser* spp. and *Branta* spp.), oystercatcher (*Haematopus ostralegus*), and redshank (*Tringa tetanus*). The VP locations are outlined in Table 2-7 and the surveyed areas are mapped in EIAR Drawing 9A.55 – encompassing the primary terrestrial foraging/resting opportunities by the range of SCI waterbirds in the vicinity of Section 2.

Table 2-7: Section 2 2020/2021 Vantage Point Locations

VP	Coordinates (ITM)
VP2.5	619621 911882
VP2.6	619380 911563
VP2.7	619793 911764
VP2.8	620176 911997
VP2.9 (Goose site)	621588 911630
VP2.9 (backup goose site)	620635 911757

Whilst species were observed using the intertidal areas, they were not systematically recorded during these 2020/2021 surveys because these areas were surveyed intensively in previous years. Surveys at low tide were scheduled to coincide with low tide times occurring between 9.30 and 11.00 am, to allow the surveyor to attend the site at least an hour before low tide, and thereafter, undertake the VP and line transect surveys of the estuary/tidal channel throughout the low tide cycle. Surveys of geese and swans feeding at the Airfield and Big Isle at both dusk and dawn were conducted from VPs prior to and following the estuary surveys.

2022/2023

To assess the use of the study area by wintering birds, a combination of vantage point surveys and windscreen surveys were carried out over the wintering season between 2022/2023. This was to further understand the usage of the fields adjacent to the Proposed Development to better understand what areas hold the most function for the SCI species. The VP locations are outlined in Table 2-8 and the study area is mapped in EIAR Drawing 9A.56.

Vantage Point Surveys (Wintering birds)

Because there is no guidance on VP survey protocols for the Republic of Ireland, guidance developed by Scottish Natural Heritage (SNH) for onshore wind farm ornithology surveys was followed (SNH, 2017). The protocol followed during surveys was a systematic 180° scan (including overhead for birds in flight). Surveys were not undertaken in unfavourable weather conditions.

The primary target species were whooper swan, mute swan (*Cygnus olar*), and all species of goose. However, secondary target species were noted, which included waders, ducks, cormorants, herons, and all birds of prey.

Data collected for each primary target observation included:

- Time of observation
- Species
- Flock size
- Details of flights were recorded to determine if the species flew towards or in the vicinity of the Proposed Development.

From November to March, inclusive, each location was visited twice monthly, at low and high tide. All species encountered during the surveys were mapped and coded using standard BTO species codes.

Table 2-8: Section 2 2022/2023 Vantage Point Locations

VP	Coordinates (ITM)
VP2.9 (Goose site)	621588 911630
VP2.10 (Manorcunningham/Big Isle)	624198 912367

Windscreen Survey

The methodology employed was based on the BTO's Wetland Bird Survey (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 was the northern portion of Section 2, excluding the most southern portion south of the townland of Lurgybrack.

Counts were made via a windscreen survey, driving slowly on all roads within the survey area and stopping to count target species when identified. Numbers of all waterbird species, as defined by Wetlands International (Rose and Scott, 1997), were recorded. Target species for the purposes of this survey were swans and geese. However, all identifiable birds of prey, gulls, divers, grebes, cormorants, herons, ducks, rails, cranes, waders, and kingfisher (*Alcedo atthis*) were also noted.

Data collected for each primary target observation included:

- Date of observation
- Species
- Flock size.

The entire survey area was driven through once monthly. All species encountered during the surveys were mapped and coded using standard BTO species codes.

2025/2026

Surveys were undertaken in September 2025 to January 2026 to verify, compared to earlier surveys, the potential usage of terrestrial sites within and adjacent to the Proposed Development corridor in and around the Swilly Estuary and especially the Swilly crossing. Of particular interest was the degree to which terrestrial sites were being used by SCI species, in particular Eurasian curlew, whooper swan, geese, duck and other water birds. Aside from SCI species all identifiable birds of prey, gulls, divers, grebes, cormorants, herons, rails, waders, and kingfisher were also noted.

To assess the use of the study area by wintering birds from September 2025 to January 2026, a combination of vantage point surveys and windscreen surveys were carried out. This was to further supplement the information gained from earlier surveys and to identify any material difference to either habitat usage or species distribution compared to the suite of earlier surveys completed (the study area is mapped in EIAR Drawing 9A.58).

Vantage Point Surveys (Wintering Birds)

Vantage point surveys were carried out following NatureScot guidance (SNH, 2017). Four vantage point survey locations were selected to provide adequate survey coverage of the areas where the proposed development closely approached the Lough Swilly SPA. The protocol followed during surveys was a systematic 180° scan from each selected vantage point location. Surveys were not undertaken in unfavourable weather conditions.

Each vantage point was surveyed for three hours twice per month, once at high tide, and once at low tide. Surveys were timed so that the lowest or highest point of the tide would occur at midpoint of the vantage point survey. Whenever possible surveys were conducted starting no more than 30 minutes before sunrise and finishing no more than 30 minutes after sunset.

All target species observations were recorded and mapped precisely. Data collected for target species observations included:

- Date and time of observation
- Species
- Flock size
- Activities of note, e.g. Foraging, roosting, travelling
- The height above the ground at which birds were flying (where applicable).
- Location, weather and tidal conditions at the time of the observation.

Surveys were undertaken throughout the winter season, the survey scope and timing was considered entirely satisfactory.

VP	Coordinates (ITM)
VP2.12	619007 911806
VP2.13	621164 911707
VP2.14	623087 910883
VP2.15	619846 911353

Windscreen Survey

The methodology employed was based on the BTO's Wetland Bird Survey (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 was the northern portion of Section 2, excluding the most southern portion south of the townland of Lurgybrack.

Counts were made via a windscreen survey, driving slowly on all roads within the survey area and stopping to count target species when identified. Numbers of all waterbird species, as defined by Wetlands International (Rose and Scott, 1997), were recorded. Target species for the purposes of this survey were the SCI species associated with the Lough Swilly SPA. However, all identifiable birds of prey, gulls, divers, grebes, cormorants, herons, ducks, rails, waders, and kingfisher were also noted.

Data collected for each target observation included:

- Date and time of observation
- Species
- Flock size.
- Activity of note

The entire survey area was driven through once monthly. All species encountered during the surveys were mapped and coded using standard BTO species codes.

2.3.2.5.2.3 Section 3

Lough Swilly SPA lies approximately 600 m north-west from the Section 3 CPO boundary (See EIAR Drawing 9A.02). The surveys associated with Section 2 cover the area in proximity to Section 3 that could support SCIs for Lough Swilly and Lough Foyle SPAs (see EIAR Drawings 9A.53–9A.56 and 9A.58). The majority of the habitat and topography within Section 3 were not suitable to support populations of SCI species, where these habitats were present targeted surveys were undertaken as described below.

2019 to 2020

Areas of whooper swan activity had been identified during the winter season 2018/2019 by EirEco. The surveys for the 2019/2020 season (monthly from October to March), carried out by RPS, followed Scottish Natural Heritage (SNH) (2017). Important areas for birds within the vicinity and in the Proposed Development boundary were identified from the BirdWatch Ireland and the NBDC databases, as well as from the NPWS Lough Swilly SPA site synopsis NPWS (2014).

Survey approach for the 2019/2020 season involved the following:

1. Dawn surveys were conducted one hour before and up to one hour after dawn.
2. Transect of the Proposed Development boundary driven/walked where identified several times throughout the day.
3. VP on Manorcunningham viewpoint area to record any patterns in swan/geese flight lines that may have intersected with the study area.
4. Identification of any swan sites around the southern area of Section 3 in the Lifford/Saint Johnston area.
5. Close to dusk observations of swan activities to determine flight lines at Manorcunningham.
6. Dusk surveys were conducted one hour before dusk to one hour after dusk, where visibility allowed.

2020/2021

Wintering bird feeding areas surveys were undertaken monthly during the over-wintering survey months (December – April inclusive) of 2020-2021. On each occasion, the location and number of birds seen feeding in fields from suitable VPs (see Appendix H: Lifford Whooper Swan Report) were recorded by surveyors to ascertain the level of usage within these areas.

Apart from the Swilly Burn floodplain, there are no important bird areas identified within the Proposed Development boundary and the habitats present are unsuited to supporting significant aggregations of wintering birds or likely flyways for wintering species. Small numbers of wintering waterbirds (including mallard (*Anas platyrhynchos*), teal (*Anas crecca*), wigeon (*Anas penelope*) and redshank (*Tringa totanus*)) are also likely to occur along the river Deele in the vicinity of the Proposed Development where the tidal variation in the river provides a limited area of intertidal habitat for foraging by birds.

The Lough Swilly SPA is designated, *inter alia*, for the protection of Greenland white-fronted goose (*Anser albifrons flavirostris*) and whooper swan populations. The main areas of the site used by these species are at Big Isle, Farsetmore, Blanket Nook, Ballylawn and Inch Levels. The flock sizes for both species are among the highest in the country. Considerably higher numbers of whooper swan (peak of 1,946) have been recorded, especially early in the season, as this is the area where the swans make their Irish landfall in autumn on their return from breeding grounds in Iceland.

During the 2020/2021 winter (Appendix H: Lifford Whooper Swan Report) a number of road transects combined with vantage counts were used to identify occupied areas by whooper swan and to record flight-lines which, for example, could reveal the location of additional flocks or flight-lines associated with commuting to and from roosts. During each survey all areas within the 20 km^2 were visited at least twice.

The only exception being the eastern side of River Foyle (Grange) where visits were not made on every occasion.

Surveys were conducted for periods of around six hours at least once per month from November through to April. The positions of each flock of swans, geese, ducks or waders encountered was recorded on a field map to land management units (field parcels Irish Transverse Mercator (ITM) co-ordinates). In addition to the location, habitat type, flock size and composition (distinguishing first winter/adult swans and noting family unit sizes) were noted. For each visit, survey methodology consisted of site observations of the established swan site one hour before dawn to one hour after dawn (or until the roost is vacated if necessary), and one hour before dusk to one hour after dusk. In between dawn and dusk surveys, transects (driven/walkovers) of the emerging preferred route corridor were carried out to establish potential sites being utilised by geese or swans – including observations of flocks and/or droppings which would indicate site usage.

2025/2026

The 2025/2026 surveys also undertook road transects combined with vantage count Surveys, these are described as windscreen surveys, undertaken from October 2025 to January 2026. The driven transect routes are shown in EIAR Drawing 9A.71**.** Surveys were undertaken twice per month. The positions of each flock of swans, geese, ducks, gulls or waders encountered was recorded on a field map to land management units (field parcels Irish Transverse Mercator (ITM) co-ordinates). In addition to the location, habitat type and flock size were also recorded.

2.3.2.5.3 Raptor Surveys

Targeted raptor surveys, with a particular focus on hen harrier and peregrine, were completed for sections of the Proposed Development following a review of preliminary data and consultation with TII. The surveys focused on the south-western end of Section 1 (given evidence of breeding hen harrier in the vicinity of this area) and quarry areas in the vicinity of both Section 1 and 2 (given their potential to support breeding peregrine). No raptor surveys were identified as necessary with respect to Section 3. The raptor survey consisted of vantage point surveys and surveys of quarries, described below.

2.3.2.5.3.1 Raptor Vantage Point Surveys

Hen harriers are confirmed to breed in the broad area south-west of Section 1. Therefore, vantage point surveys were carried out at the south-western end of Section 1 between 20 May and 12 August 2023 (see **Appendix F**). Vantage Point surveys are a well-established method for surveying raptors and similar species over large areas. Vantage point surveys were undertaken on the transport corridor south of Ballybofey using standard SNH methods. VPs were pre-defined by RPS ecologists following viewshed analysis (see EIAR Drawing 9A.52), and verified and subject to very minor modification by the surveyors to ensure that they:

a. minimised human disturbance to any potential target species
b. maximised visibility across all viewsheds (coverage)
c. had safe locations from which to observe, not causing obstruction to traffic, landowners, etc.

Surveys were undertaken in weather conditions with good ground visibility (>2 km), each survey block taking a minimum of six hours, typically split across two 3-hour blocks with a short break of approximately 30 minutes in between. Weather conditions were recorded at the start and end of each survey visit.

Surveyors recorded notable flights into/within/out of the viewsheds, recording the species type, number, and behaviour continuously through the duration of each survey visit.

2.3.2.5.3.2 Breeding Raptor Survey

Visits to potentially suitable nesting areas, focussing on quarry areas in the vicinity of Sections 1 and 2 identified by RPS ecologists as potentially suitable for nesting peregrine, were made on multiple occasions from early June to early July 2023. An initial reconnaissance visit was made on 20 April 2023, checking a range of sites around the transport corridor in Sections 1 and 2, with subsequent visits in June and July to

each site deemed potentially suitable. The surveys are detailed in Appendix F and mapped in EIAR Drawing 9A.51.

2.3.2.5.4 Kingfisher Surveys

2.3.2.5.4.1 Sections 1 and 2

The kingfisher survey method followed that of Cummins *et al*. (2010) and Colhoun *et al*. (in prep) and comprised a combination of walkover surveys (K-WO) of predetermined transects along watercourses with potentially suitable habitat and vantage point surveys (K-VP) where the initial walkover survey found potentially suitable habitat.

In addition to searching for kingfisher, the survey aimed to assess the suitability/presence-absence of nesting habitat in banks and record other species of note that might be associated with this habitat, such as grey wagtail (*Motacilla cinerea*) or dipper (*Cinclus cinclus hibernicus*). The surveys are detailed in Appendix F.

Walkover Surveys

Initial walkover surveys were carried out between late May and mid-June (23 May to 2 June (Section 2) and 7 to 15 June (Section 1)). The K-WO covered 34 transects (16 in Section 1 (T19-34) and 18 in Section 2 (T1-18)) along watercourses intersecting the Proposed Development, shown in EIAR Drawing 9A.50, in addition to a 100 m buffer. These were walked at a slow and steady pace, primarily to search for kingfisher and make an assessment of the suitability or otherwise of the banks for nesting of that species.

Vantage Point survey (Kingfisher)

The K-VP surveys were undertaken where areas were deemed potentially suitable with respect to habitat for feeding/nesting or where the K-WO recorded kingfisher. These lasted 1 to 1.5 hours, during which time the surveyor sat at a suitable vantage point (determined following the K-WO), observing the area. Based on the findings of the walkover surveys, only one location merited a VP survey; the Leslie Hill Stream (see EIAR Drawing 9A.50).

2.3.2.5.4.2 Section 3

Walk-over surveys were undertaken as part of the general aquatic survey of all watercourse crossings in 2020 and again in 2021 (see Chapter 9B: Biodiversity – Aquatic). Each watercourse was surveyed over a distance of approximately 500 m upstream and downstream of the proposed crossing point to assess aquatic habitats for fisheries potential as well as the potential for protected aquatic and riparian species. The surveys aimed to identify kingfisher nest holes as well as potentially suitable nesting habitat along the stretch of river, while also assessing the suitability of the watercourse for foraging by kingfisher.

2.3.2.5.5 Barn Owl Surveys

The employed survey methodology followed the methods as defined by the *Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects* (TII, 2021). The barn owl surveys are discussed in full in the Barn Owl Survey Report in Appendix I.

Barn Owl Survey 2021

Field surveys were conducted between 28 April and 4 June 2021 to confirm barn owl occupancy and breeding status at all sites identified as potentially suitable for which permissions to access were granted. All sites which were accessible received a daytime inspection to determine suitability for breeding barn owl based on nesting opportunities available and to search for signs to indicate the presence of barn owls. For sites at which a daytime inspection could not effectively determine the presence of barn owls, a nocturnal survey was conducted to confirm barn owl occupancy. All information on barn owl sightings and reports was collated to identify potential areas where tree nesting barn owls may occur within the survey area. At all sites or areas where evidence of barn owls was confirmed, a nocturnal survey or nest visit (under Schedule II licence to NPWS) was carried out to determine the breeding status of the site).

Barn Owl Survey 2023

Update field surveys were conducted according to the same survey methodologies as detailed above between 20 June and 20 July 2023. All sites identified as potentially suitable for barn owl and for which permissions to access were granted within the survey area were revisited to assess barn owl occupancy and breeding status. This allowed for assessment of the status of sites over two breeding seasons to determine any changes in occupancy over this period and also provided contemporary data on barn owl distribution and abundance in the survey area and relative to the proposed road. In addition, all sites which were deemed to be unsuitable for barn owl in 2021 were assessed once again in case there were any changes to these sites which may make them more suitable for barn owls since the previous survey was undertaken.

Incidental Records

As documented above, detailed inspections of all buildings, structures and trees within the CPO boundary were completed for roosting bats between 2022 and 2025. Such inspections would also identify any incidental evidence of barn owl presence. Any incidental observations are supplementary to the barn owl-specific surveys completed during 2021 and 2023.

2.3.2.6 Invertebrates

During walkover surveys of the Proposed Development and wider ZoI, the potential was also noted for habitats of protected invertebrate species to occur, including marsh fritillary (*Euphydryas aurinia*) and small blue (*Cupido minimus*). In the case of these two butterfly species, searches were made of suitable habitats for the larval food plants of marsh fritillary (devil's bit scabious (*Succisa pratensis*)) and small blue (kidney vetch (*Anthyllis vulneraria*)).

2.4 Limitations

The receiving environment (i.e. baseline condition) may naturally vary through seasons and between years (NRA, 2008). All reasonable effort has been made to acknowledge the dynamism of the receiving environment (e.g. combined use of desk and field survey data and completing update surveys periodically to identify any material changes). Given this effort, the dynamism is not considered a significant limitation to the environmental assessments, particularly given that where reasonable and proportional a precautionary approach has been adopted both in terms of the assessment and any mitigations identified to respond to any identified likely significant effects.

2.4.1 Invasive Alien Plant Species surveys

The optimal time for undertaking IAPS surveys is between April and September. The dedicated IAPS survey was undertaken in the period 8 to 15 October 2021, outside the optimum time. This survey, however, relied on data gathered from previous surveys which were carried out within the optimum times for IAPS surveying. Furthermore, due to the mild weather in October 2021, the growing season was extended beyond the normal growing season and well into October. For these reasons, alongside verification checks completed during 2025, it is not considered that the recording of the extents and locations of any IAPS within the footprint of the Proposed Development was underestimated to the extent that it would materially affect the environmental assessments completed or the need and scope of mitigations identified to respond to any likely significant effects identified by that assessment arising from the presence of invasive alien plan species surveys.

2.4.2 Otter Surveys

Any active holts identified in the 2019 surveys within 100 m of the CPO boundary were revisited in 2023 to confirm if the holts were still active or no longer in use. In Section 2, an active holt was identified in 2019 18 m from the CPO boundary. During the 2023 surveys, this holt could not be investigated due dense vegetation growth which physically blocked surveyor access to the holt. The activity level of this holt could therefore not be confirmed during 2023. However, other evidence, including an otter trail leading into the

watercourse 2 m from the previously recorded holt, indicated that otter was active in the area. This area was surveyed again in 2025 and no evidence of otter activity was identified in that location.

Any evidence of otter holts identified in the 2023 surveys were also revisited in 2025 to confirm whether the holts were in use. In Section 1, a potential holt was identified 51 m from the CPO boundary on the opposite bank of the River Finn. During the 2025 surveys, this holt could not be investigated due to limited access. The activity level of this holt could therefore not be confirmed. To address this limitation, a precautionary approach was adopted with respect to the environmental assessment of the Proposed Development with respect to this potential holt.

2.4.3 Bat Surveys

2.4.3.1 Sections 1 and 2

The 2025 emergence surveys were carried out for buildings that were classified as having low, moderate, or high suitability for roosting bats. However, a small number of buildings could not be accessed for emergence surveys (see Section 3.6.1.3.2.3). A small number of emergence surveys were also carried out in the first week of October, which is outside the optimal survey season. However, temperatures were still typically above 10° C at sunset in early October, reducing the risk that roosts were already vacated for the winter during the emergence surveys. To address these limitations, a precautionary approach was adopted with respect to the environmental assessment of the Proposed Development with respect to bat roosting.

The 2025 static detector surveys were carried out for the months August and September. This only covers a portion of the optimum survey period (May to September, inclusive). Additionally, due to excessive triggering of the detector, in some instances, less than five days of data were captured during a deployment. However, static detector and transect survey data from previous years has supplemented the 2025 data. These surveys identified a typical range of species that would be associated with agricultural land and urban edge habitats. No notable activity levels of one or more species was identified as a result of the activity surveys. The habitats present within the CPO boundary have been regularly surveyed and updated with the final survey undertaken in 2025 to verify that the habitats had not significantly changed. The only changes to habitat value were noted in a negative trend, with further intensification of management or habitat loss. Given that the habitats have not changed significantly and in a negative assessment of value, the bat assemblage and potential for notable populations will not have changed over time and the results of the bat activity surveys can be regarded as comprehensive and valid for the assessment of value. The above limitations are not considered to prevent a robust environmental assessment of the Proposed Development to be completed or given any uncertainty to the design or mitigation responses identified for the Proposed Development.

The best time for identifying PRFs on the trees is winter when most broad-leaved trees and some conifers (larch) have shed their leaves/needles. The 2025 surveys were carried out in August. However, each tree was checked carefully to ensure that the likelihood of PRFs being missed was low. As per the Collins guidance (2023), three separate PRF inspections are recommended between May and September, with at least two in the period May to August. Only two inspections were completed, with one being in September. However, the 2025 survey data is supplemented by the 2022 survey data, which identified the same single confirmed roost. This is not considered a significant limitation to the environmental assessment of the Proposed Development.

The 2022 bat surveys were conducted during the appropriate survey season as outlined in the *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* NRA (2005b) and in Bat Surveys for Professional Ecologists Collins, J. (2016). June and September 2019 surveys were supplemented with additional surveys conducted in summer and autumn 2020 and spring and summer 2021. However, it should be noted due to the worldwide Covid-19 pandemic, survey efforts for spring 2020 were impacted upon as a result of Government imposed lockdown on a national scale. This is not considered a significant limitation to the environmental assessment of the Proposed Development; particularly mindful that multiple years of data has been collated to inform the evolution of the Proposed Development, its environmental assessment and the mitigations identified as necessary to address the likely significant effects of that assessment.

2.4.3.2 Section 3

In relation to Section 3, an array of surveys were completed since 2018 and where possible, surveys were undertaken during the prime summer months with additional surveys in off-season months to supplement survey data.

2.4.4 Breeding Bird Surveys

A comprehensive breeding bird survey has been undertaken with reference to the guidance set out in Bibby *et al*. (2000) and the Breeding Bird Survey (BBS) methodology as described by BTO. These surveys identified a typical range of species that would be associated with agricultural land and urban edge habitats. No notable populations of one or more species or a notable assemblage of breeding bird species was identified as a result of the breeding bird surveys. The habitats present within the CPO boundary have been regularly surveyed and updated with the final survey undertaken in 2025 to verify that the habitats had not significantly changed; which could have resulted in material changes to the findings of the breeding bird survey. The only changes to habitat value were noted in a negative trend, with further intensification of management or habitat loss. Given that the habitats have not changed significantly and in a negative assessment of value, the breeding bird assemblage and potential for notable populations will not have changed over time and the results of the breeding bird surveys can be regarded as comprehensive and valid for the assessment of value.

2.4.5 Barn Owl Surveys

The objective of the barn owl survey was to identify all barn owl breeding sites within the defined survey area (5 km radius surrounding the preferred route option) however there are certain constraints to achieving this which should be recognised. Firstly, despite efforts to survey all potentially suitable sites for barn owl within the defined survey area, there are certain sites which were not possible to survey as landowner permissions to access these sites were not in place, it was therefore not possible to reliably ascertain the suitability and/or presence of barn owls at these sites. In addition, the timing of the survey is scheduled to confirm breeding activity of barn owls, however in instances where a breeding pair may fail early in the breeding season and prior to the survey visits then it may not be possible to confirm breeding activity at this site. The fact that the survey was conducted over two breeding seasons (2021 and 2023) should allow for accurate determination of breeding status at all sites deemed to be suitable and which were accessible to undertake the surveys. This is further supplemented by any incidental observations arising from the detailed bat surveys completed during 2022 and 2025 within the CPO boundary. This limitation is not considered significant with respect to the environmental assessment of the Proposed Development.

3 DESCRIPTION OF EXISTING ENVIRONMENT

3.1 Designated Sites for Nature Conservation

3.1.1 European Sites (Natura 2000 Network)

Following the applications of the ZoI 'rules' set out in Section 2.2.1, the following European sites were identified to have actual or potential S-P-R connectivity with the Proposed Development:

- **River Finn SAC** (Site Code: 002301). The SAC comprises almost the entire freshwater element of the River Finn and its tributaries, the Corlacky, the Reelan sub-catchment, the Sruhamboy, Elatagh, Cummirk and Glashagh, and also includes Lough Finn where the river rises. It encompasses an area of approximately 5,498 ha. The spawning grounds at the headwaters of the Mourne and Derg Rivers, Loughs Derg and Belshade and the tidal stretch of the Foyle north of Lifford to the border are also part of the site. The Finn and Reelan, rising in the Bluestack Mountains, drain a catchment area of 195 square miles. The assessment of the Proposed Development has been completed with reference to multiple published documents, including: Conservation Objectives (NPWS, 2017), Site Synopsis (NPWS, 2014a), and related publications (NPWS, 2019b; 2019c). The River Finn SAC is designated for the following QIs:

  Habitats:
  - Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
  - Northern Atlantic wet heaths with *Erica tetralix* [4010]
  - Blanket bogs (* if active bog) [7130]
  - Transition mires and quaking bogs [7140]

  Species:
  - Salmon (*Salmo salar*) [1106]
  - Otter (*Lutra lutra*) [1355]

- **Lough Swilly SAC** (Site Code: 002287) is a large site, situated in the northern part of Co. Donegal. It comprises the inner part of Lough Swilly. It extends from below Letterkenny to just north of Buncrana. Lough Swilly is a long sea lough, cutting through a variety of metamorphic rocks on the west side of Inishowen, encompassing a total area of approximately 9,298 ha. The main rivers flowing into the site are the Swilly, Lennan, and Crana. At low tide, extensive sand and mudflats are exposed, especially at the mouths of the Swilly and Lennan rivers. The site is estuarine in character, with shallow water and intertidal sand and mudflats being the dominant habitats. The assessment of the Proposed Development has been completed with reference to multiple published documents, including: Conservation Objectives and supporting documents (NPWS, 2011a; 2011b; 2011c), Site Synopsis (NPWS, 2024a), an Amendment Notification (NPWS, 2024b), and related publications (NPWS, 2019b; 2019c). Lough Swilly SAC is designated for the following QIs:

  Habitats:
  - Estuaries [1130]
  - Coastal lagoons [1150]*
  - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
  - *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
  - Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]

  Species:
  - Harbour porpoise (*Phocoena phocoena*) [1351]
  - Otter (*Lutra lutra*) [1355]

- **Lough Swilly SPA** (Site Code: 004075) overlaps with much of the Lough Swilly SAC area. The SPA encompasses a total area of approximately 8,559 ha. The SPA comprises the inner part of Lough Swilly from just east of Letterkenny northwards to Killygarvan (approximately 2 km north of Rathmullan) on the west side and to approximately 2 km south of Buncrana on the east side, including the adjacent Inch Lough. Also forming part of the site is a series of improved pasture and arable fields on the south side of Lough Swilly between Farsetmore and Inch Levels. These are of importance to geese and swans. It

includes sections of the estuaries of the River Swilly, the River Leannan, and the Isle Burn, and the predominant habitat is a series of extensive sand and mud flats which are exposed at low tide. Other habitats represented in the site are salt marshes, lagoons (at Inch Lough and Blanket Nook), rivers and streams, sand and shingle beaches, lowland wet and dry grasslands, drainage ditches, reedbeds, and scrub. Inch Lough, whilst artificial in origin, is one of the largest and best examples of a shallow, low salinity lagoon in the country. It supports what is probably the largest population in the country of the red-listed charophyte: bearded stonewort (*Chara canescens)*. A small sandy island, used by nesting terns, swans, and gulls, occurs in the southern part of the lagoon. The assessment of the Proposed Development has been completed with reference to multiple published documents, as per Lough Swilly SAC, in addition to the Site Synopsis (NPWS, 2014b) and a Conservation Objective supporting document specific to the SPA (NPWS, 2011d). Lough Swilly SPA is designated for the following SCIs:

Species (migratory, over-wintering populations):
- Great crested grebe (*Podiceps cristatus*) [A005]
- Grey heron (*Ardea cinerea*) [A028]
- Whooper swan (*Cygnus cygnus*) [A038]
- Greenland white-fronted goose (*Anser albifrons flavirostris*) [A395]
- Greylag goose (*Anser anser*) [A043]
- Shelduck (*Tadorna tadorna*) [A048]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Mallard (*Anas platyrhynchos*) [A053]
- Shoveler (*Anas clypeata*) [A056]
- Scaup (*Aythya marila*) [A062]
- Goldeneye (*Bucephala clangula*) [A067]
- Red-breasted merganser (*Mergus serrator*) [A069]
- Coot (*Fulica atra*) [A125]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Knot (*Calidris canutus*) [A143]
- Dunlin (*Calidris alpina*) [A149]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Greenshank (*Tringa nebularia*) [A164]
- Common Gull (*Larus canus*) [A182]

Species (resident, breeding populations):
- Black-headed gull (*Chroicocephalus ridibundus*) [A179]
- Sandwich tern (*Sterna sandvicensis*) [A191]
- Common tern (*Sterna hirundo*) [A193]

Habitat and Species Complex:
- Wetland and waterbirds [A999]

- **Lough Foyle SPA** (Site Code: 004087). The SPA comprises a section of the western shore of Lough Foyle from Muff to north of Vances Point in Co. Donegal. It encompasses a total area of 587.7 ha. The site is part of the larger cross-border Lough Foyle complex which regularly supports in excess of 20,000 wintering waterbirds. The majority of the wintering waterbirds that utilise this site occur along the southern and eastern shoreline of Lough Foyle in Derry, which is also designated and was, prior to the exit of the UK from the European Union (EU), an SPA of the Natura 2000 network in Northern Ireland. The assessment of the Proposed Development has been completed with reference to multiple published documents, including: Conservation Objectives and supporting document (NPWS, 2014c; 2014d), Site Synopsis (NPWS, 2015), and related publications (NPWS, 2019b; 2019c). Lough Foyle SPA is designated for the following SCIs:

  Species (migratory, over-wintering populations):
  - Red-throated diver (*Gavia stellata*) [A001]
  - Great crested grebe (*Podiceps cristatus*) [A005]
  - Bewick's swan (*Cygnus columbianus bewickii*) [A037]
  - Whooper swan (*Cygnus cygnus*) [A038]

- Greylag goose (*Anser anser*) [A043]
- Light-bellied brent goose (*Branta bernicla hrota*) [A046]
- Shelduck (*Tadorna tadorna*) [A048]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Mallard (*Anas platyrhynchos*) [A053]
- Eider (*Somateria mollissima*) [A063]
- Red-breasted merganser (*Mergus serrator*) [A069]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Golden plover (*Pluvialis apricaria*) [A140]
- Lapwing (*Vanellus vanellus*) [A142]
- Knot (*Calidris canutus*) [A143]
- Dunlin (*Calidris alpina*) [A149]
- Bar-tailed godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Black-headed gull (*Chroicocephalus ridibundus*) [A179]
- Common gull (*Larus canus*) [A182]
- Herring gull (*Larus argentatus*) [A184]

Habitat and Species Complex:

- Wetland and waterbirds [A999]

Natura 2000 sites are mapped within the context of the Proposed Development in EIAR Drawings 9A.01 and 9A.02.

3.1.2 Former European sites (Northern Ireland)

Following the applications of the ZoI 'rules' set out in Section 2.2.1, there are two former European sites which are no longer part of the Natura 2000 network which lie within the jurisdiction of Northern Ireland which were identified to have actual or potential S-P-R connectivity with the Proposed Development, namely:

- River Foyle and Tributaries SAC
- Lough Foyle SPA

These sites are now protected under the national legislation of the UK rather than via the Directives of the EU. Prior to the exit of the UK from the EU, the part of Lough Foyle under the jurisdiction of Northern Ireland was also designated, in part, as an SPA, forming part of the Lough Foyle complex of SPAs (Irl and UK). Likewise, the River Foyle and Tributaries SAC is contiguous with and downstream of the River Finn SAC.

For the purposes of the EIA, both former European sites are treated as distinct from the European sites of the Natura 2000 network. However, out of an abundance of caution, they are treated as part of the Natura 2000 network for the purpose of the consideration of the proposed development with reference to the EU Habitats Directive; particularly Article 6(3). The reasons for designating the SAC and SPA remain unchanged other than the legal context with respect to the UK national legislation and EU Directives.

The assessment for the River Foyle and Tributaries SAC has been made with reference to its Conservation Objectives and supporting advice (Northern Ireland Environment Agency (NIEA), 2024) and cognisant of the assessment completed with respect to the River Finn SAC which flows into the River Foyle and Tributaries SAC, mindful that they are effectively part of the same watercourse/catchment.

The River Foyle and Tributaries SAC is designated because it supports the following habitats and species (Environment and Heritage Service (EHS), 2007):

- Watercourse of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation for which this SAC is considered to be one of the best areas in the UK for this habitat.

- Otter, for which this is SAC is considered to support significant presence (in the context of the UK).
- Atlantic salmon (Salmo salar), for which this SAC is considered to be one of the best areas in the UK for this species.

The assessment for the Lough Foyle SPA (UK) has been made with reference to its Citation (EHS, 1999), Conservation Objectives (NIEA, 2015), and Standard Data Form (Joint Nature Conservation Committee (JNCC), 2018) and cognisant of the assessment completed with respect to the Lough Foyle SPA (Irl), mindful that they are effectively part of the same complex ornithologically.

The Lough Foyle SPA (UK) covers an area of 2,204.36 ha and the designation broadly still mirrors the reasons for designations of the Lough Foyle SPA (Irl) designation, namely:

- It regularly supports internationally important wintering populations of whooper swan, bar-tailed godwit (*Limosa lapponica*), and light-bellied brent goose (*Branta bernicla hrota*).
- It supports an internationally important assemblage of migratory waterfowl and during the non-breeding season the area regularly supports approximately 36,600 waterfowl, including multiple species listed within the citation with populations important in an all-Ireland context, namely: red-throated diver (*Gavia stellata*), great crested grebe (*Podiceps cristatus*), mute swan (*Cygnus olor*), Bewick's swan (*Cygnus columbianus*), greylag goose (*Anser anser*), shelduck (*Tadorna tadorna*), teal (*Anas crecca*) mallard (*Anas platyrhynchos*), wigeon (*Anas penelope*), eider (*Somateria mollissima*), red-breasted merganser (*Mergus serrator*), oystercatcher (*Haematopus ostralegus*), golden plover (*Pluvialis apricaria*), grey plover (*Pluvialis squatarola*), lapwing (*Vanellus vanellus*), knot (*Calidris canutus*), dunlin (Calidris alpina), curlew (*Numenius arquata*), redshank (*Tringa tetanus*), and greenshank (*Tringa nebularia*).

Former European sites are mapped within the context of the Proposed Development in EIAR Drawings 9A.03 and 9A.04.

3.1.3 Ramsar Sites

One Ramsar site was identified to have actual or potential S-P-R connectivity with the Proposed Development, namely Lough Foyle Ramsar site, which lies in the jurisdiction of the UK along the eastern side of the lough, encompassing the exact same area as the Lough Foyle SPA (UK) (a former European site; as documented above). It lies approximately 27 km from Section 2 of the Proposed Development. It is considered of relevance because it overlaps with Lough Foyle SPA (UK) and lies within the overall Lough Foyle complex together with the Lough Foyle SPA (Irl), which collectively reflect the international ornithological importance of Lough Foyle.

In addition, for certain bird species (e.g. whooper swan) there is a documented interaction and interdependence between the Lough Foyle and Lough Swilly complexes. The Ramsar site was designated in 1999 and is composed of a large shallow lough, including estuaries, extensive intertidal areas of mudflats, sandflats, saltmarsh, and associated brackish ditches. As with the spatially overlapping Lough Foyle SPA (UK), the site supports a diverse assemblage of waterfowl, and similarly to the SPA, it is designated for internationally important populations of whooper swan, bar-tailed godwit, and brent geese. The Ramsar site is mapped within the context of the Proposed Development in EIAR Drawing 9A.05.

The assessment of the Lough Foyle Ramsar site has been made with reference to its Information Sheet (JNCC, 2005) and cognisant of the assessment completed with respect to the Lough Foyle SPA (Irl), mindful that they are effectively part of the same complex, ornithologically.

3.1.4 Designated Sites for Nature Conservation – National Sites

3.1.4.1 Natural Heritage Areas and Proposed Natural Heritage Areas (Republic of Ireland)

For the purposes of the impact assessment, both Natural Heritage Area (NHAs) and proposed Natural Heritage Area (pNHAs) are evaluated equally. NHA/pNHAs are considered important for the habitats they support which are valued in their own right or for the animals or plants those habitats support.

There are no NHAs which are connected by the CPO boundary of the Proposed Development and there are no such designations within sufficient distance to the Proposed Development considered relevant for assessment purposes. Pathways of impact do not exist or are too tenuous to be considered to result in any likely significant effect on those NHAs.

There are three pNHAs which were identified to have actual or potential S-P-R connectivity with the Proposed Development:

- **Lough Swilly including Big Isle, Blanket Nook and Inch Lake** (Site Code: 000166). The boundary of Lough Swilly including Big Isle, Blanket Nook and Inch Lake pNHA (hereafter referred to as the Lough Swilly pNHA) is broadly contiguous with the boundaries of Lough Swilly SAC and SPA. The pNHA is considered relevant to Sections 2 and 3 of the Proposed Development due to potential effect pathways, and is traversed by Section 2. The northern portion of Section 2 intersects and runs in close proximity to the pNHA. Section 3 is partially within the catchment of the pNHA and a small area of Section 3 intersects with the pNHA at the interface with Section 2 at the Leslie Hill Stream.
- **River Foyle, Mongavlin to Carrigans** (Site Code: 002047). The pNHA is identified due to its wetland habitats which overlap completely with the River Finn SAC designation detailed above. It is approximately 10.5 km and 33 km downstream of Sections 3 and 1, respectively.
- **Port Lough** (Site Code: 000180) is a relatively small site with a variety of natural habitats including open lake, reed-beds, freshwater marsh, cutaway bog, and lowland wet grassland. The site lies 10.4 km north-east of the Proposed Development. No impacts or effects on the habitats of the pNHA are predicted due to the distance and lack of hydrological or hydrogeological pathway from the Proposed Development to the pNHA. However, the pNHA is considered to support waterbirds that are SCIs of both Lough Swilly SPA and Lough Foyle SPA, including whooper swan. Therefore, it is considered, in the context of the impact assessment, to be part of the overall complex of habitats for these ornithological receptors centred around Lough Swilly and Lough Foyle.

Nationally designated sites of the Republic of Ireland, including pNHAs, are mapped within the context of the Proposed Development in EIAR Drawings 9A.06 and 9A.07.

3.1.4.2 Areas of Special Scientific Interest (Northern Ireland)

Areas of Special Scientific Interest (ASSIs) are protected areas in Northern Ireland. Two ASSIs were identified to have actual or potential S-P-R connectivity with the Proposed Development:

- **Lough Foyle ASSI (Site Code: ASSI051)**. This site includes the whole of the intertidal area and foreshore, some sections of the backshore and the tidal waters of multiple tributary rivers of Lough Foyle within the Northern Ireland jurisdiction. The boundary of the ASSI is broadly contiguous with the Lough Foyle SPA (UK) and Ramsar site (as detailed above). The biological interest of the ASSI is associated with the intertidal and shore vegetation, the internationally significant wintering wildfowl and wader populations, the occurrence of a number of rare estuarine fish species and the presence of a small common seal (*Phoca vitulina*) colony. In winter, internationally important numbers of waterfowl regularly use the mudflats and open water for feeding and roosting. Individual species which qualify as internationally important populations are whooper swan, light-bellied brent geese, and bar-tailed godwit. Other wildfowl species which are nationally important in an all-Ireland context are red-throated diver (*Gavia stellata*), great crested grebe, mute swan (*Cygnus olor*), Bewick's swan (*Cygnus columbianus*), greylag goose, shelduck (*Tadorna tadorna*), teal, mallard, wigeon (*Anas penelope*), eider (*Somateria mollissima*), and red-breasted merganser. The ASSI is considered relevant with respect to the Proposed

Development, particularly Section 2, because it supports ornithological interests which are dependent on the Lough Swilly and Lough Foyle complex.

- **River Foyle and Tributaries ASSI (Site Code: ASSI229)**. This ASSI shares broadly the same boundary as the former Natura 2000 site of the same name in Northern Ireland (as detailed above). It includes the part of the River Finn which lies within Northern Ireland in addition to the River Mourne and its tributary, the River Strule (up to its confluence with the Owenkillew River), and the River Derg, along with two of its sub-tributaries, the Mourne Beg River and the Glendergan River. The ASSI is notable for the physical diversity and naturalness of the banks and channels, especially in the upper reaches, and the richness and naturalness of its plant and animal communities, in particular the population of Atlantic salmon, which is of international importance. Red-breasted merganser are regularly seen fishing in the larger channels. Otter is also found throughout the system. The ASSI is considered relevant with respect to the Proposed Development, namely Sections 1 and 3, due to the hydrological connectivity of these sections to the ASSI and the potential for impacts on *ex situ* otter and salmon.

Nationally designated sites of the UK, including ASSIs, are mapped within the context of the Proposed Development in EIAR Drawings 9A.08 and 9A.09.

3.1.4.3 Nature Reserves (Irl and UK)

In Ireland, a nature reserve (NR) is an area of importance to wildlife, which is protected under Ministerial order. In Northern Ireland, NRs are designated by the Department of Agriculture, Environment and Rural Affairs (DAERA) under the Amenity Lands Act (NI) 1965 and the Nature Conservation and Amenity Lands (NI) Order 1985 (as amended), with NRs and National Nature Reserves (NNR) collectively referred to as 'statutory' nature reserves.

There are no NRs in the Republic of Ireland which were identified to have actual or potential S-P-R connectivity with the Proposed Development. There is one in Northern Ireland which was identified to have actual or potential S-P-R connectivity with the Proposed Development, namely, Roe Estuary Nature Reserve (NR24). Within the mud of Roe Estuary Nature Reserve are vast numbers of small seashore animals such as lugworms (*Arenicola marina*), shrimp species, ragworms (*Hediste diversicolor*), and periwinkles (*Littorina littorea*). There are also large beds of mussels and extensive areas of eel-grass (*Zostera* spp.). These are the food sources for many of the migrating waders, ducks, swans, and geese in Lough Foyle. This site overlaps with the Lough Foyle Ramsar site and Lough Foyle SPA (UK).

Nationally designated sites of the UK, including NRs, are mapped within the context of the Proposed Development in EIAR Drawings 9A.08 and 9A.09.

3.1.4.4 Wildfowl Sanctuaries and Wildfowl Reserves

Wildfowl Sanctuaries are designated on state or private land by statutory instrument (S.I. No. 192/1979) Wildlife (Wild Birds) (Open Seasons) Order, 1979 under the 1976 Wildlife Act and the 2000 Wildlife (Amendment) Act. The only Wildfowl Sanctuary which was identified to have actual or potential S-P-R connectivity with the Proposed Development is Blanket Nook Wildfowl Sanctuary (WFD-14). This Wildfowl Sanctuary overlaps with the previously described Lough Swilly SAC and SPA.

The only Wildfowl Reserve which was identified to have actual or potential S-P-R connectivity with the Proposed Development is Inch Levels Wildfowl Reserve. This Irish state-owned Wildfowl Reserve is situated to the east of Lough Swilly, approximately 8 km to the south of Buncrana. It overlaps with the Lough Swilly SAC and SPA areas and is therefore an integral part of maintaining the ornithological interest of Lough Swilly.

Nationally designated sites of the Republic of Ireland, including Wildfowl Sanctuaries and Wildfowl Reserves, are mapped within the context of the Proposed Development in EIAR Drawings 9A.06 and 9A.07.

3.2 Hydrology and Hydrogeology

Aquatic receptors are discussed in detail in Chapter 9B: Biodiversity – Aquatic. Regional hydrogeology, aquifer classification, groundwater vulnerability, groundwater recharge, and groundwater quality status are detailed in Chapter 10: Land, Soils & Hydrogeology. However, due to the potential for hydrological and hydrogeological pathways from the Proposed Development to relevant terrestrial receptors, surface and ground waterbodies potentially affected by the Proposed Development are briefly discussed below. Surface waterbodies are mapped in EIAR Drawings 11.01, 11.02, and 11.03, groundwater aquifers are mapped in EIAR Drawings 10.18, 10.19, and 10.20, and groundwater vulnerability is mapped in EIAR Drawings 10.21, 10.22, and 10.23.

3.2.1 Section 1

3.2.1.1 Surface Waterbodies

Section 1 lies entirely within the Foyle WFD catchment (ID: 01). The majority of Section 1 is set in the EPA sub catchment Finn [Donegal] _SC_030, including a new crossing of the main channel of the River Finn, approximately 2.4 km upstream of Ballybofey, and crossings and/or interactions on several small 1st and 2nd order EPA delineated watercourses that drain to the River Finn. A small portion at the northern end of Section 1 is in the Deele [Donegal] _SC_010 sub catchment, including a new crossing of the Cloghroe River and crossings and/or interactions on two small 1st/2nd order EPA delineated channels.

The River Finn rises in the Stack Mountain range in central County Donegal, draining in a predominantly easterly direction through Ballybofey/Stranorlar to confluence with the tidal River Foyle in the Lifford/Strabane area.

The northern end of Section 1 intersects Teevickmoy Burn. This is a small tributary of the Cloghroe River, itself a tributary of the Deele River. The River Deele rises in the Cark Mountain plateau between the Derryveagh and Stack Mountains and flows in mainly an easterly direction towards the River Foyle at Lifford. Teevickmoy Burn joins the Cloghroe River approximately 1.5 km downstream of the N13 road and the Cloghroe River then joins the Deele River a few hundred metres downstream.

Lough Alaan is set between Lough Hill to its east and the N13 road to the west, adjacent to Ballybofey and Stranorlar Golf Club. Its feeder tributary stream, which is crossed in the very upper reach on the link road near Tircallan, flows into the lake in a north to south direction, parallel and immediately adjacent to the existing N13 road.

3.2.1.2 Ground Waterbodies

The majority of Section 1 lies over the Ballybofey ground waterbody (GWB) (WFD ID: IEGBNI_NW_G_048). At the northern end, it crosses over the Upper Deele (WFD ID: IEGBNI_NW_G_048) and Raphoe (WFD ID: IE_NW_G_054) GWBs. Each of these GWBs is composed of generally poorly productive bedrock and in absence of inter-granular permeability, groundwater flow is expected to be concentrated in the upper fractured and weathered zones and in the vicinity of fault zones. Unconfined groundwater flow paths in each of the three GWB are short (30–300 m) and owing to the poor productivity of the aquifers in each GWB, it is unlikely that any major groundwater – surface water interactions occur (Geological Survey Ireland (GSI), 2004a; 2004b; 2004c).

Groundwater flow in the Ballybofey GWB generally follows the topography and then discharges rapidly to seeps, small springs, and streams. Overall, groundwater flow in the Ballybofey GWB is eastwards, as determined by the topography (GSI, 2004a).

There may be some degree of karstification in the upper fractured and weathered zones of the Raphoe GWB. Shallow groundwater flow is dominant in this GWB with available groundwater levels mainly being 0–5 m below ground level and groundwater discharging rapidly to nearby streams and small springs. Groundwater flow directions are expected to follow topography i.e. generally to the east to discharge into the River Foyle. Groundwater will discharge locally to streams and rivers crossing the aquifer and to small springs and seeps. Baseflow to rivers and streams is relatively low (GSI, 2004b).

Within the Upper Deele GWB the few available groundwater levels are <10 m below ground level. Groundwater generally follows the topography and then discharges rapidly to seeps, small springs, and streams. Shallow flow is more likely to be dominant. Overall groundwater flow is eastwards, as determined by topography. Baseflow to rivers and streams is relatively low (GSI, 2004c).

The groundwater vulnerability over the area of Section 1 is predominantly classified as 'High' or 'Extreme', with some smaller area with 'Moderate' vulnerability or 'Rock at or near the surface'. Generally, the groundwater vulnerability is lower at the ends of the proposed route and higher at the middle portion, from the townland of Drumboe Lower to southern Teevickmoy. For all three GWBs, the water quality status and risk category is "Good" and "Not at Risk", respectively.

3.2.2 Section 2

3.2.2.1 Surface Waterbodies

Section 2 of the Proposed Development is set in the EPA sub catchments of Swilly_SC_010 and Leslie Hill [Stream]_SC_010, which all ultimately flow into Swilly Estuary. A new mainline crossing of the estuarine River Swilly is proposed approximately 1.5 km downstream of the existing N56 bridge ('Port Bridge' near Polestar Roundabout). A footbridge over the Isle Burn (EPA Leslie Hill Stream) is proposed near the Manorcunningham Roundabout, in similarly estuarine river habitat. In addition, there are crossings and/or interactions on multiple small 1st and 2nd order EPA delineated watercourses and several drains, mainly in the low-lying Milk Isle/Bunnagee area that lies behind the flood embankments bordering the Swilly (river/estuary).

The Swilly Estuary (Lough Swilly) covers an area of 59 km², starting at the tidal limit of the River Swilly in Letterkenny town and extending seaward approximately 20 km north-easterly to the village of Rathmullan (Central and Regional Fisheries Boards (CRFB), 2009). The estuary is within Lough Swilly SAC (002287) and 'Lough Swilly including Big Isle, Blanket Nook and Inch Lake' pNHA (000166). In addition, the Lough Swilly SPA (004075) is approximately 60 m downstream of the proposed Swilly Estuary crossing.

The River Swilly rises in the mountains of Glendore, flowing generally east-north-east through Letterkenny into the estuary at Lough Swilly before flowing into the Atlantic Ocean. The river is tidal to a point upstream of Letterkenny near the Oldtown Bridge. The lower reaches (i.e. those within the ZoI of Section 2) are estuarine in nature and have been highly modified (i.e. dredged and embanked) by the OPW's Swilly Embankments drainage scheme.

Corravaddy Burn and Corranagh Burn join to form one channel just upstream of the existing N56 crossing location, forming a tributary of the River Swilly. The stream discharges to the tidal zone of the Swilly downstream of Letterkenny. This is relevant in so far as a small tributary of the Corranagh Burn is crossed by the Proposed Development.

At Manorcunningham, several small streams potentially affected by the Proposed Development drain to the Isle Burn River, which forms the lower, tidal reaches of the "Corkey" River (EPA name: Leslie Hill stream). The existing N13 crossing of the Isle Burn also forms part of the Proposed Development. The Isle Burn also flows into the Swilly Estuary (of Lough Swilly). The Isle Burn, immediately downstream of the existing N13 crossing, forms part of the Lough Swilly SAC/pNHA, with Lough Swilly SPA located a further 1 km downstream.

3.2.2.2 Ground Waterbodies

The southern and western ends of Section 2 (i.e. within and to the west and south of Dromore townland) lie over the Lough Swilly GWB (WFD ID: IEGBNI_NW_G_059). The north-eastern end of Section 2 (i.e. within and to the east of Dromore townland) lies over the Manor Cunningham GWB (WFD ID: IE_NW_G_052). Both of these GWBs are composed of generally poorly productive bedrock.

Lough Swilly GWB aquifer has shallow groundwater flow and the groundwater and surface waters are closely linked and discharges readily to the overlying (gaining) streams and peat. Unconfined groundwater flow paths in this GWB are short (30–300 m), with groundwater generally following the topography and then

discharging rapidly to seeps, small springs, streams and lakes. In general, shallow groundwater flow is dominant with overall groundwater flow towards Lough Swilly (GSI, 2004d).

The available groundwater levels within the Manor Cunningham GWB are mainly 0–5 m below ground level with unconfined flow paths in the GWB likely to be short (30–300 m) with groundwater discharging rapidly to nearby streams and small springs. Shallow groundwater flow is dominant and groundwater flow directions are expected to follow topography (i.e. generally to the north to discharge into Lough Swilly). Groundwater in the Manor Cunningham GWB will discharge locally to streams and rivers crossing the aquifer and also to small springs and seeps. Owing to the poor productivity of the aquifers in this body it is unlikely that any major groundwater – surface water interactions occur. Baseflow to rivers and streams is relatively low (GSI 2004e).

The groundwater vulnerability over the area of Section 2 is predominantly classified as 'Moderate', 'High', or 'Extreme', with some smaller areas with 'Rock at or near the surface'. Generally, the groundwater vulnerability is lower around the townland of Milk Isle and around the Leslie Hill Stream and higher throughout the rest of Section 2. For both GWBs, the water quality status and risk category is "Good" and "Not at Risk", respectively.

3.2.3 Section 3

3.2.3.1 Surface Waterbodies

Section 3 of the Proposed Development is set in several EPA sub catchments: Leslie Hill [Stream]_SC_010, flowing into Swilly Estuary and the Johnston Stream_SC_010, The River Deele [Donegal]_SC_010 and River Finn [Donegal]_SC_030, flow to Lough Foyle. New crossings of main channels of River Finn (A5 Link), Swilly Burn and Deele River are proposed. In addition, there are crossings and/or interactions on a number of small 1st and 2nd order EPA delineated watercourses and several drains.

3.2.3.2 Ground Waterbodies

There are four GWBs underlying the Proposed Development:

- Manorcunningham GWB
- Raphoe GWB
- Ballybofey GWB
- Foyle Gravels GWB

The bedrock aquifers are characterised by low transmissivity rocks with low yields. However, there are localised areas where above average yields can be encountered. In terms of water quality status and risk category, all the GWBs are the same, i.e. "Good" and "Not at Risk" respectively.

Chapter 10: Land, Soils and Hydrogeology provides more detail on regional hydrogeology, aquifer classification, groundwater vulnerability, groundwater recharge, and groundwater quality status.

3.3 Habitats

The following sections detail the terrestrial habitats (classified with reference to Fossitt (2000)) located within the CPO boundary of the Proposed Development. The ecological value of each habitat and their correspondence to habitats listed on Annex I of the EU Habitats Directive are also provided. In addition to the consideration of the habitats in their own right, occasionally agglomerations of several habitats that lay within (whole or part) or adjacent to the CPO boundary were identified which, based on professional opinion, the ecological value of the agglomeration was considered greater than their individual habitat component. These agglomerations are described and valued as Key Ecological Receptors (KERs) for the purpose of assessing the Proposed Development.

Habitats within the CPO boundary are illustrated in EIAR Drawings 9A.10, 9A.11, and 9A.12, with reference to the relevant habitat codes from Fossitt (2000). The Proposed Development study area predominantly consists of agricultural grasslands, unmanaged grasslands, disturbed ground, built land, and trees and scrub.

The following habitats were identified within the areas surveyed for the Proposed Development:

- Arable crops (BC1)
- Horticultural land (BC2)
- Tilled land (BC3)
- Earth banks (BL2)
- Buildings and artificial surfaces (BL3)
- Spoil and bare ground (ED2)
- Recolonising bare ground (ED3)
- Refuse and other waste (ED5)
- Depositing/lowland rivers (FW2)
- Drainage ditches (FW4)
- Improved agricultural grassland (GA1)
- Amenity grassland (GA2)
- Dry calcareous and neutral grassland (GS1)
- Dry meadows and grassy verges (GS2)
- Wet grassland (GS4)
- Wet Heath (HH3)
- (Mixed) broadleaved woodland (WD1)
- Mixed broadleaved/conifer woodland (WD2)
- (Mixed) conifer woodland (WD3)
- Conifer plantation (WD4)
- Hedgerows (WL1)
- Treelines (WL2)
- Wet pedunculate oak-ash woodland (WN4)
- Riparian woodland (WN5)
- Wet willow-alder-ash woodland (WN6)
- Scrub (WS1)
- Immature woodland (WS2)
- Ornamental/non-native shrub (WS3)
- Recently-felled woodland (WS5)

It is recognised that some of these habitats, although they are of limited botanical value in their own right, do provide a function for supporting species as part of the wider landscape. Their function in relation to supporting these species are considered in the assessment of impacts on the relevant species.

3.3.1 Section 1

3.3.1.1 Habitats

The dominant habitat within Section 1 was improved agricultural grassland (GA1), followed by wet grassland (GS4), interspersed with areas of road and residential dwellings (BL3 build and artificial surfaces). These grasslands were bounded by hedgerows (WL1), treelines (WL2), and grassy verges (GS2) habitats.

The north of the study area is composed of improved agricultural grassland interspersed with areas of wet grassland. Scattered patches of broadleaf woodland are located throughout the landscape, with occasional tracts of conifer woodland. There are significant areas of broadleaf woodlands at Drumboe and Dunwiley.

Six eroding/upland rivers (FW1) cross the study area: Burn Daurnett_010 (IE_NW_01B020200); Finn (Donegal)_050 (IE_NW_01F010600); Finn (Donegal)_060 (IE_NW01F010800); Finn (Donegal) (IE_NW_01F010910); Deele (Donegal) (IE_NW_01D010500); and Cloghroe_010 (IE_NW_01C050400). The status and quality of these watercourses are detailed in Chapter 9B: Biodiversity – Aquatic.

The annexed habitats for which the River Finn SAC is selected are:

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- Blanket bogs (* if active bog) [7130]
- Transition mires and quaking bogs [7140]

The former is an aquatic habitat, discussed in Chapter 9B: Biodiversity – Aquatic. The latter three are bog/mire habitats. Only one area of wet heath was observed at the northern end of Section 1. However, no cross-leaved heather (*Erica tetralix*) was observed, it was a relatively poor quality example of wet heath, tree stumps indicated that it had been a plantation, and it is approximately 4.6 km north of the SAC. The primary point of interaction between Section 1 and European sites is the 360 m long, seven span bridge over the River Finn SAC and flood plain at Ballybofey/Stranorlar. At this location, the terrestrial habitats within the floodplain are composed of riparian woodland (WN5), (mixed) broadleaved woodland (WD1), improved agricultural grassland (GA1), and conifer plantation (WD4).

The habitats identified in Section 1 are:

- Arable crops (BC1)
- Horticultural land (BC2)
- Buildings and artificial surfaces (BL3)
- Spoil and bare ground (ED2)
- Recolonising bare ground (ED3)
- Refuse and other waste (ED5)
- Depositing/lowland rivers (FW2)
- Drainage ditches (FW4)
- Improved agricultural grassland (GA1)
- Amenity grassland (GA2)
- Dry meadows and grassy verges (GS2)
- Wet grassland (GS4)
- Wet Heath (HH3)
- (Mixed) broadleaved woodland (WD1)
- Mixed broadleaved/conifer woodland (WD2)
- (Mixed) conifer woodland (WD3)
- Conifer plantation (WD4)
- Hedgerows (WL1)
- Treelines (WL2)
- Oak-birch-holly woodland (WN1)
- Wet pedunculate oak-ash woodland (WN4)
- Riparian woodland (WN5)
- Wet willow-alder-ash woodland (WN6)

- Scrub (WS1)
- Immature woodland (WS2)
- Recently-felled woodland (WS5)

Arable crops (BC1)

Arable crop habitat was identified at one location, adjacent to the N13 and north-east of Dunwiley. Floristic diversity was limited within the arable crop habitat, consisting of corn spurrey (*Spergula arvensis*), clover (*Trifolium* spp.), and redshank (*Persicaria maculosa*).

Horticultural land (BC2)

Horticultural land was identified at two locations, namely at Gallinagh Finn Valley Nursery (garden center) and Dunwiley Nurseries (plant nursery), which commercially produce trees, shrubs, perennials, and other ornamentals.

Buildings and artificial surfaces (BL3)

Built land and artificial surfaces are extensive throughout Section 1 and include commercial properties, rural domestic and agricultural buildings, existing local and national roads, and tracks, paths, and driveways. Buildings and artificial surfaces also occurred as a mosaic habitat alongside recolonising bare ground (ED3), amenity grassland (improved) (GA2), and horticultural land (BC2).

Spoil and bare ground (ED2)

Spoil and bare ground was identified at one location at the southern end of Section 1 at lands associated with transport services. Features noted included rubble, bare ground, and artificial surfaces (see BL3).

Recolonising bare ground (ED3)

Recolonising bare ground was identified at three locations. At the northern end of Section 1, ED3 was identified along Teangue road where several earth piles and rubble have started recolonising. Species identified include docks (*Rumex* spp.), nettle (*Urtica dioica*), horsetail (*Equisetum* sp.), thistle, rush, and Himalayan knotweed (*Persicaria wallichii*). At the southern end of Section 1, ED3 was identified at two locations consisting of Yorkshire fog (*Holcus lanatus*), nettles, horsetail, spear thistle (*Cirsium vulgare*), dock sp., willow sp. (*Salix* sp.), rushes, sharp-flowered rush (*Juncus acutiflorus*), bird's-foot trefoil (*Lotus corniculatus*), false oat-grass (*Arrhenatherum elatius*), buttercup (*Rananculus* sp.), white clover (*Trifolium repens*), tufted vetch (*Vicia cracca*), gorse (*Ulex europaeus*). red clover (*Trifolium pratense*), ribwort plantain (*Plantago lanceolata*), and great willowherb (*Epilobium hirsutum*).

Refuse and other waste (ED5)

Refuse and other waste was evident at one location, near Tyrcallen to the rear of agricultural buildings and adjacent to the N13. Refuse and waste included waste accumulation, spoiled machinery, and brash.

Eroding/upland rivers (FW1)

This habitat refers to the numerous watercourses that flow through the study area. This includes the River Finn which is an SAC (i.e. River Finn SAC), a salmonid river designated in the Salmonid Regulations (SI 293/1988), and upstream of a pNHA (i.e. River Foyle, Mongavlin To Carrigans pNHA). Many of the other watercourse are tributaries of the River Finn and all flow into the River Finn SAC and ultimately into Lough Foyle estuary, which itself is the site of Lough Foyle SPA. These watercourses are discussed further in Chapter 9B: Biodiversity – Aquatic.

Drainage ditches (FW4)

Drainage ditches are often associated with wet grassland and boundaries of agricultural fields in addition to regularly being located adjacent to treelines (WL2), hedgerows (WL1), and scrub (WS1), or within conifer plantations (WD4). They may hold water only in times of rainfall or throughout the year depending on

localised topography. Perennially wet ditches are often associated with wet grassland and the river floodplains, most notably along the River Deele. They are important features in the landscape, in particular larger drainage ditches which have potential to provide habitat and habitat/species connectivity in the landscape. They also form part of the drainage catchment for eroding/upland rivers (FW1) detailed above. Drainage ditches are discussed further in Chapter 9B: Biodiversity – Aquatic.

Improved agricultural grassland (GA1)

Improved agricultural grassland habitat occurs throughout Section 1. This habitat generally included a species-poor sward, typically dominated by perennial ryegrass (*Lolium perenne*), with varying occurrences of crested dog's-tail (*Cynosurus cristatus*), Yorkshire fog, sweet vernal grass (*Anthoxanthum odoratum*), red fescue (*Festuca rubra*), broad-leaved dock (*Rumex obtusifolius*), white clover, red clover, creeping buttercup (*Ranunculus repens*), dandelion (*Taraxacum officinale* agg.), daisy (*Bellis perennis*), creeping thistle (*Cirsium arvense*), marsh thistle (*Cirsium palustre*), foxglove (*Digitalis purpurea*), sharp-flowered rush, foxtail (*Alopecurus pratensis*), creeping bent (*Agrostis stolonifera*), yellow rattle (*Rhinanthus minor*) in a localised instance, bird's-foot trefoil, sneezewort (*Achillea ptarmica*), rushes, and sedges. Improved agricultural grassland also occurred as a mosaic habitat alongside wet grassland (GS4), dry meadows and grassy verges (GS2), and amenity grassland (GA2).

Amenity grassland (improved) (GA2)

Amenity grassland habitat was identified throughout Section 1, largely occurring as a mosaic habitat alongside BL3. Similar to GA1 habitat described above, GA2 habitat generally included a species-poor sward, containing a variety of grasses and broadleaved herbs. GA2 habitat was heavily managed throughout Section 1. Broadleaved herbs present in GA2 included broad-leaved dock, creeping buttercup, dandelion, daisy, white clover, and red clover. Amenity grassland also occurred as a mosaic habitat alongside improved agricultural grassland (GA1).

Dry meadows and grassy verges (GS2)

Dry meadow and grassy verge habitat was identified beside the majority of the road network, hedgerows, and improved grassland habitat within Section 1. These habitats are likely mown at least once a year and contained varying abundances of ryegrasses, Yorkshire fog, creeping bent, sweet vernal grass, meadow grass (*Poa* sp.), foxtail, soft rush (*Juncus effusus*), broad-leaved dock, yellow rattle, red clover, white clover, meadow buttercup (*Ranunculus acris*), bird's-foot trefoil, marsh thistle, nettle, bush vetch (*Vicia sepium*), false-oat grass, ragwort (*Senecio* sp.), daisy, eyebright (*Euphrasia* sp.), and meadow vetchling (*Lathyrus pratensis*). Dry meadow and grassy verges also occurred as a mosaic habitat alongside wet grassland (GA4) and improved agricultural grassland (GA1). This habitat does not conform to the Annex I habitat lowland hay meadow [6510] within the CPO boundary.

Wet grassland (GS4)

Although the majority of Section 1 reflects agricultural lands of an intensive nature, wet grassland habitat occurred frequently throughout the area. This habitat is typically characterised by wet organic soils occurring locally alongside drainage ditches and in low-lying land that can be subject to periodic inundation from heavy rain or rising river water. The habitat is botanically more diverse compared to the surrounding agricultural grasslands. Some areas of this habitat were also subject to grazing regimes (typically cattle).

Wet grassland habitat contained the following species: Yorkshire fog, creeping bent, sweet vernal grass, tufted hair grass (*Deschampsia cespitosa*), meadow grass, false-oat grass, timothy (*Phleum pratense*), soft rush, compact rush (*Juncus conglomeratus*), sharp-flowered rush, jointed rush (*Juncus articulatus*), silverweed (*Argentina anserina*), creeping buttercup, marsh thistle, spear thistle, dandelion, star sedge (*Carex echinata*), oval sedge (*Carex ovalis*), self-heal (*Prunella vulgaris*), pill sedge (*Carex pilulifera*), white clover, red clover, marsh violet (*Viola palustris*), marsh foxtail (*Alopecurus geniculatus*), yellow rattle, bush vetch, greater bird's-foot trefoil (*Lotus pedunculatus*), common bird's-foot trefoil, marsh bedstraw (*Galium palustre*), rosebay willowherb (*Chamerion angustifolium*), lesser spearwort (*Ranunculus flammula*), purple loosestrife (*Lythrum salicaria*), mosses, willow (*Salix* sp.), common heather (*Calluna vulgaris*), gorse, bramble (*Rubus fruticosus*), foxglove, field horsetail (*Equisetum arvense*), meadowsweet (*Filipendula ulmaria*), angelica (*Angelica sylvestris*), marsh valerian (*Valeriana dioica*), and violet (*Viola* sp.). Marsh orchid (*Dactylorhiza* sp.) was also recorded within the southern area of Section 1 adjacent to a local road near

Cappry. Wet grassland also occurred as a mosaic habitat alongside dry meadows and grassy verges (GS2) and improved agricultural grassland (GA1). None of the wet grassland within the Site conformed to Annex I habitats especially *Molinia* meadows on calcareous, peaty or clayey-siltladen soils (*Molinion caeruleae*) [6410].

Wet heath (HH3)

Wet heath habitat was identified at the northern end of Section 1, north of Teangue road, which intersects the N13 at Teevickmoy. The wet heath habitat exhibited evidence of previous plantation land use and was considered degraded, now characterised with common heather in relative abundance. Other species present were bell heather (*Erica cinerea*), tormentil (*Potentilla erecta*), cotton grass (*Eriophorum* sp.), purple moor-grass (*Molinia caerulea*), spruce sp., soft rush, rosebay willowherb, and birch.

Wet heath can have affinity to the Annex I habitat, Northern Atlantic wet heaths with *Erica tetralix* [4010], which is a QI of the River Finn SAC. However, *E. tetralix*, the only species within the Annex I habitat description (EC, 2013), was not observed at this location.

Mixed broadleaved woodland (WD1)

Mixed species broadleaved woodland was identified at fourteen locations within Section 1. Mixed broadleaved woodland also occurred as a mosaic habitat alongside scrub (WS1) and immature woodland (WS2). Species present in the individual patches of WD1 habitat (see patch IDs in EIAR Drawing 9A.10) are listed in Table 3-1.

Table 3-1: Features of WD1 (Mixed) Broadleaved Woodland.

ID	Species Present
S1-WD1-01	Ash, willow, hawthorn, holly, mountain ash, ivy, blackthorn, gorse, silver birch (*Betula pendula*) (WD1/WS2 mosaic)
S1-WD1-02	Alder, ash, hazel, sycamore and an understory comprising gorse, false oat-grass, wavy hair grass (*Deschampsia flexuosa*), Yorkshire fog, nettle, foxglove and cock's-foot
S1-WD1-03	Beech, oak, sycamore, holly
S1-WD1-04	Conifers, beech, ash, holly
S1-WD1-05	Hazel, beech, alder, ash, dog rose (*Rosa canina*), holly, bramble
S1-WD1-06	Hazel, willow, alder, beech, blackthorn
S1-WD1-07	Hazel, ash, willow, beech, gorse
S1-WD1-08	Ash, willow, mountain ash, blackthorn (*Prunus spinosa*), hazel (*Corylus avellana*), alder, holly, *Leylandii* sp., hawthorn (*Crataegus monogyna*)
S1-WD1-09	Hazel, willow, beech, bramble, nettle, dock sp., birch (WD1/WS1 mosaic)
S1-WD1-10	Ash, hazel, sycamore, beech, willow
S1-WD1-11	Sweet cherry (*Prunus avium*), red alder (*Alnus rubra*), hawthorn, cherry laurel (*Prunus laurocerasus*), black alder, hazel, blackthorn, holly, grey alder (*Alnus incana*), sycamore (*Acer pseudoplatanus*), beech, conifer sp
S1-WD1-12	Alder, birch, ash, willow, bramble, raspberry, fern sp., herb-robert (*Geranium robertianum*), honeysuckle (*Lonicera periclymenum*)
S1-WD1-13	Alder, beech, willow (*Salix* sp.), ash, holly, bramble, raspberry (*Rubus idaeus*)
S1-WD1-14	Beech (*Fagus sylvatica*), oak (*Quercus* sp.), birch (*Betula* sp.), ash (*Fraxinus excelsior*), mountain ash (*Sorbus aucuparia*), holly (*Ilex aquifolium*), alder (*Alnus glutinosa*), soft rush, creeping bent

Mixed broadleaved/conifer woodland (WD2)

Mixed broadleaved and conifer woodland was identified at two locations, adjoining both sides of a local road at Teevickmoy. The woodland west of this local road was dominated by beech, oak sp., ash, spruce (*Picea* sp.), fir, and western hemlock (*Tsuga heterophylla*), while the woodland east of this local road was dominated by birch, sycamore, ash, oak, hazel, bramble, wood horsetail (*Equisetum sylvaticum*), hard fern (*Blechnum spicant*), and scaly male fern (*Dryopteris affinis*).

Mixed conifer woodland (WD3)

Mixed conifer woodland was identified at one location just south of Drumboe Cottages, comprising a large conifer plantation with occasional broadleaf components including ash, beech, mountain ash, willow, birch, and sycamore.

Conifer plantation (WD4)

Conifer plantations were identified at nine locations within Section 1, including south of Mullanachose at Cappry, Tyrcallen, Teevickmoy and south of Magheracorran. This habitat was typically characterised by Sitka spruce (*Picea sitchensis*), larch (*Larix decidua*), and Norway spruce (*Picea abies*).

Hedgerows (WL1) and Treelines (WL2)

Hedgerows and treelines were the dominant field boundary along the length of Section 1. The network of hedgerows and treelines provide multiple benefits to biodiversity apart from their direct habitat value. Critically, they function as key corridors for movement and connectivity within the landscape for many animal species. Plant species composition along the hedgerow habitats were dominated by hawthorn, ash, and alder, with varying occurrences of blackthorn, bramble, ivy (*Hedera helix*), and occasional occurrence of holly and elder (*Sambucus nigra*). Gorse was frequent to dominant where scrub development occurred, with blackthorn succession evident in areas. The habitat often occured in conjunction with other habitats such as eroding/upland river (FW1), scrub (WS1), woodland (WD1, WD2, WD3, WD4), and drainage ditches (FW4).

Oak-birch-holly woodland (WN1)

Section 1 borders a large, approximately 9.8 ha area of native woodland in Dunwiley, predominantly composed of oak-birch-holly woodland (WN1) dominated by birch in the canopy and rowan in the subcanopy. Approximately 0.03 ha of this is within the CPO boundary. This woodland especially that within the CPO boundary would not be regarded as the Annex I habitat Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0].

Wet pedunculate oak-ash woodland (WN4)

Wet pedunculate oak-ash woodland was identified at one location, adjoining the R252 and located approximately 30 m south of the River Finn. Approximately 0.36 ha of this habitat is within the CPO boundary. Species identified include ash, pedunculate oak (*Quercus robur*), hawthorn, willow, holly, cherry, blackthorn and elder. The floristic assemblage of this habitat is reflective of an area which is subject to seasonal waterlogging in proximity to the River Finn. The portion of WN4 within the floodplain of the River Finn has affinity for the priority Annex I habitat, alluvial forests [91E0], but is small in size and lacks the herbaceous species that would typically be associated with this Annex I habitat.

Riparian woodland (WN5)

Riparian woodland was identified at one location along the northern riverbank where the Proposed Development crosses the River Finn near the southern end of Section 1. This riparian woodland habitat extends for approximately 0.65 km (approximately 50 m of which is within the CPO boundary) and consists of willow, sycamore, alder, blackthorn, hawthorn, reed canary grass (*Phalaris arundinacea*), tufted hair grass, montbretia (*Crocosmia x crocosmiiflora*), creeping buttercup, and two third schedule invasive species; Himalayan balsam (*Impatiens glandulifera*) and Japanese knotweed (*Reynoutria japonica*). The portion of WN5 within the floodplain of the River Finn has affinity for the priority Annex I habitat, alluvial forests [91E0]. However, at the section 1 bridge crossing area the woodland does not conform to this habitat type.

Wet willow-alder-ash woodland (WN6)

Wet willow-alder-ash woodland was identified at five locations within Section 1. The areas identified were ≤1 ha in area, with the exception of patch S1-WN6-04 located between Drumboe Cottages and Dunwiley, northwest of Stranorlar, covering an area of approximately 3.7 ha (approximately 0.4 ha of which is within the CPO boundary). In total, approximately 1.7 ha of WN6 is within the CPO boundary. Overall, this woodland was dominated by willow, alder, and ash, with varying occurrences of birch, sycamore, hawthorn, holly, hazel, and beech. Species present in the individual patches of WN6 habitat (see patch IDs in EIAR Drawing 9A.10) are listed in Table 3-2. The portion of S1-WN6-02 within the floodplain of the River Finn has affinity for the priority Annex I habitat, alluvial forests [91E0], but lacked the large herb species typically associated with this habitat.

Table 3-2: Features of WN6 Wet Willow-Alder-Ash Woodland.

ID	Species Present
S1-WN6-01	Alder, willow, holly, ash, hawthorn
S1-WN6-02	Willow, ash, silver willow, alder, hazel, silver birch, pedunculate oak, bird's-foot trefoil, herb-robert, bramble, gorse, mosses, hedge bindweed (*Calystegia sepium*), dock sp., tufted hair grass, creeping thistle, Yorkshire fog, bent grass
S1-WN6-03	Willow, hazel, ash, blackthorn, bramble, holly
S1-WN6-04	Hazel, ash, beech, holly, willow, mountain ash, ivy, mosses, wood sorrel (*Oxalis acetosella*), fern sp., ground ivy (*Glechoma hederacea*), bramble
S1-WN6-05	Alder, birch, willow, sycamore, holly, hawthorn, bramble, tufted hair grass, ferns, herb-robert

Scrub (WS1)

Scrub habitat was recorded throughout Section 1. Areas of scrub were found within or adjacent to wet grassland, built land, forestry edges, or formed a mosaic with grassland habitats. Given the extent of low intensity managed seminatural grassland habitat occurring within the survey area, scrub habitat occurs in association with much of this grassland habitat, as a border or within a mosaic. Some areas of scrub were noted for the suitability of the habitat for badger (NRA, 2005a). Scrub within the site is composed predominantly of combinations of gorse, willow, and bramble. Other species which may also be present in mosaic with other habitat types include birch, hazel, holly, and sycamore.

Immature woodland (WS2)

This habitat type was identified at two locations at the southern end of Section 1 in Cappry and Ballybofey. Species identified at these locations include ash, willow, hawthorn, alder, mountain ash, silver birch, and gorse. This habitat type was recorded in mosaic with mixed broadleaved woodland. In the absence of changes in site management, these areas would probably develop into mature woodland.

Recently-felled woodland (WS5)

An area of forestry plantation was recently clearfelled at the time of surveying. Historical satellite imagery indicates that the clearfelling occurred within the time period of September 2020 to April 2023.

3.3.1.2 Key Ecological Receptors

Certain specific areas of habitats have been identified as Key Ecological Receptors (KERs) for assessment which, due to site-specific characteristics, have elevated ecological importance due to the agglomeration of multiple habitats which are, based on professional judgement, considered to be of greater ecological value than the individual habitat components of that agglomeration. A total of four sites were identified as KERs along Section 1. Descriptions of each site are presented in Table 3-3 along with their ecological evaluation. Locations of all KERs are shown in EIAR Drawing 9A.13.

In addition to the sites within the footprint of the Proposed Development, consideration was also given to sites outside of the footprint, but which may be within the ZoI of the Proposed Development.

Table 3-3: Key Ecological Receptors within Section 1 ZoI

KER No.	Townland	Key Ecological Receptor	Evaluation
1-1	Drumboe Upper	Areas of wet willow-alder-ash woodland with smaller areas of mixed broadleaved woodland in drier areas within a wider matrix with improved agricultural grassland. The Backlees stream runs through this area.	Local Importance (Higher Value)
1-2	Dunwiley	An area of mixed broadleaved woodland, oak-ash-hazel woodland, and oak-birch-holly woodland, mapped by the NPWS National Survey of Native Woodlands database[20].	County Importance
1-3	Drumboe Lower	Mixed conifer and broadleaved woodland within the Holy Well Woods. Numerous mature oak trees are present within this area.	Local Importance (Higher Value)
1-4	Drumboe Lower / Cappry / Ironworks / Creggan	Woodlands in the vicinity of the River Finn, which include: ▪ A stretch of riparian woodland that extends along both banks of the River Finn SAC. ▪ A small conifer plantation adjoining riparian woodlands to the west and east. This woodland included some broadlaved species at the edge of the river. ▪ A small area wet pedunculate oak-ash woodland on the south bank of the River Finn, located partially within the River Finn SAC. ▪ Species-rich wet willow-alder-ash woodland on the south bank of the River Finn, located partially within the River Finn SAC. ▪ Mixed broadleaved woodland along the River Finn SAC. This woodland showed signs of squirrel and badger activity and is also located approximately 290 m south of Holy Well Woods. ▪ A narrow strip of mixed broadleaved woodland extending north from the River Finn in Ironworks, surrounded by improved agricultural grassland.	County Importance

KER 1-1 is an area of woodlands running along the Backlees stream and between the Backlees and a tributary; the Greenhills stream. The majority of this KER is within one contiguous patch of approximately 3.7 ha of wet willow-alder-ash woodland, with other smaller areas of wet willow-alder-ash woodland and drier mixed broadleaved woodland. Trees in these areas included hazel, ash, beech, holly, willow, mountain ash, and blackthorn. The understories included ivy, mosses, wood sorrel, ferns, ground ivy, and bramble. As this KER consists of areas of semi-natural habitat with high biodiversity in a local context, it is considered of Local Importance (higher).

KER 1-2 is a woodland site adjacent to the CPO boundary in Dunwiley. It is a contiguous area of approximately 9.8 ha of native woodland and is therefore considered to be of county importance. It comprises approximately 1.6% of the area of native woodland mapped in County Donegal in the National Survey of Native Woodlands. The habitat description for this KER was derived from the NPWS National Survey of Native Woodlands database[21]. KER 1-2 is predominantly oak-birch-holly woodland (WN1) dominated by birch in the canopy and rowan in the subcanopy. Mature sessile oak are occasional, as are holly in the shrub layer. Ground flora is comprised of European blueberry (*Vaccinium myrtillus*), wood sorrel, *Agrostis* spp. and hairy wood-rush (*Luzula pilosa*). Patches of *Sphagnum* and *Polytrichum* spp. also occur. Grazing by cattle is evident across the site. There is a mixed broadleaved woodland (WD1) at the centre of the KER, where beech is locally frequent. A small fringe of oak-ash-hazel woodland (WN2) to the south of the site is dominated by hazel and borders built land in Dunwiley.

[20] https://www.npws.ie/maps-and-data/habitat-and-species-data. Accessed November 2025.

[21] https://www.npws.ie/maps-and-data/habitat-and-species-data. Accessed November 2025.

KER 1-3 at Drumboe Lower is within the Holy Well Woods. This is a mosaic of mixed broadleaved woodland (WD1) and mixed conifer woodland (WD3). There are numerous mature oak trees present in the area. Other tree species here include beech, sycamore, and holly. Historical satellite imagery indicates that as of 2020, a previously wooded site north-west of the KER has been felled. This area is approximately 90 m from the CPO boundary, and therefore, has not been included within the KER. As this KER consists of an area of semi-natural habitat with high biodiversity in a local context, it is considered of Local Importance (higher).

KER 1-4 is made up of areas of woodland which are all constituent parts of a corridor of woodlands along the River Finn. Because of the supporting role of these woodlands in the function of this ecological corridor, they are considered of county importance. This KER is made up of the following:

- A site of mixed broadleaved woodland (WD1) at the western end of the KER along the floodplain of the River Finn and partially within the SAC. This woodland in Drumboe Lower is approximately 290 m south of Holy Well Woods and showed signs of squirrel and badger activity. The Drumboe_Lower stream (WFD Code: IE_NW_01F010800) flows along the western perimeter of this site and into the River Finn.
- A stretch of riparian woodland (WN5) that extends approximately 2.5 km on the north bank of the River Finn, from Drumboe Lower, through Ironworks, into Creggan. There is also a strip of riparian woodland on the southern bank of the river, approximately 320 m in length. This habitat supports a diverse assemblage of species including willow, sycamore, alder, blackthorn, hawthorn, reed canary grass, tufted hair grass, creeping buttercup, as well as other alien species including Crocosmia, Himalayan balsam, and Japanese knotweed.
- Two areas of wet woodlands located in low-lying areas at Cappry, on the southern banks of the River Finn.
  - A small wet pedunculate oak-ash woodland (WN4). This site is adjacent to wet grasslands and built land. Species in this area include ash, pedunculate oak, hawthorn, willow, holly, cherry tree, blackthorn, and elder.
  - A wet willow-alder-ash woodland (WN6). This species-rich site contains willow, ash, silver willow, alder, hazel, silver birch, and pedunculate oak. Ground flora includes bird's-foot trefoil, herb-robert, bramble, gorse, mosses, hedge bindweed, dock species, tufted hair grass, creeping thistle, Yorkshire fog, and bent grass.
- A small conifer plantation (WD4) at Ironworks adjoining riparian woodlands to the west and east. This woodland includes some broadleaved species at the edge of the river such as sycamore, willow, holly, and alder.
- A narrow strip of mixed broadleaved woodland extending north from the River Finn at Ironworks. It contains alder, ash, hazel, and sycamore trees, with an understory comprising of gorse, false oat-grass, wavy hair grass, Yorkshire fog, nettle, foxglove, and cock's-foot.

3.3.2 Section 2

3.3.2.1 Habitats

Section 2 of the Proposed Development crosses the Swilly Estuary and the Lough Swilly SAC site boundary in Letterkenny and crosses the Isle Burn west of the N13/N14 Manorcunningham Roundabout. The SAC is designated for the protection of the following habitats:

- Estuaries [1130]
- Coastal lagoons [1150]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0].

The former three are halophytic habitats and the latter two are terrestrial habitats. By definition, halophytic habitats could not occur within the study area, aside from the Swilly Estuary crossing, which is discussed in **Chapter 9B: Biodiversity – Aquatic**. Neither of the terrestrial QI habitats occur within the study area. Wet grassland (GS4), which was found at numerous locations throughout Section 2, can have affinity to *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]. However, as discussed in the wet grassland section below, the wet grasslands in the study area share no common species with the *Molinia* meadows [6410] habitat description (EC, 2013). Therefore, QI *Molinia* meadows [6410] was not identified in the study area.

At the Swilly Estuary crossing, the habitats on the eastern bank are composed of a mosaic of GA1 improved agricultural grassland and GS4 wet grassland with GS2 Dry meadows and grassy verges on the flood berm. The area is subject to intermittent grazing and supports a short sward. GA1 comprises a species-poor grassy sward of typical agricultural grassland cultivars, including a dominance of perennial ryegrass with occasional to frequent occurrences of white clover, creeping buttercup, common mouse-ear (*Cerastium fontanum*), and broad-leaved dock. GS4 comprises soft rush with locally abundant yellow iris (*Iris pseudacorus*) and occasional to frequent marsh thistle, creeping bent, silverweed, and creeping buttercup.

GS2 is found on the flood berms on both banks of the Swilly Estuary and is within the boundary of the SAC. As these grasslands appear to be rarely fertilised and only occasionally mown and grazed, they have developed a good diversity of grassland species including false oat-grass, cock's-foot (*Dactylis glomerata*), rough meadow grass (*Poa trivialis*), creeping bent, meadow foxtail, tall fescue (*Schedonorus arundinaceus*) and Yorkshire fog. In general, there is not a good diversity or abundance of herbaceous species, but species such as spear thistle, creeping thistle, ragwort (*Senecio jacobaea*), meadow vetchling, white clover, red clover, hogweed (*Heracleum sphondylium*), upright hedge parsley (*Torilis japonica*), and hedge bindweed (*Calystegia sepium*) have established well in these conditions. Due to the lack of ongoing management, many of these grassland habitats are being encroached by bramble and gorse scrub. This habitat type commonly forms mosaics with improved agricultural grassland and wet grassland habitats.

The dominant habitat within the Section 2 study area was improved agricultural grassland (GA1), followed by wet grassland (GS4) and mixed broadleaved woodland (WD1). These habitats were bounded by hedgerows (WL1) and treelines (WL2). There were also areas of road, residential dwellings, and industrial sites (BL3 build and artificial surfaces) located throughout the CPO boundary. The habitats identified in this section are:

- Tilled land (BC3)
- Earth banks (BL2)
- Buildings and artificial surfaces (BL3)
- Recolonising bare ground (ED3)
- Drainage ditches (FW4)
- Improved agricultural grassland (GA1)
- Amenity grassland (GA2)
- Dry meadows and grassy verges (GS2)
- Wet grassland (GS4)
- (Mixed) broadleaved woodland (WD1)
- Mixed broadleaved/conifer woodland (WD2)
- Hedgerows (WL1)
- Treelines (WL2)
- Scrub (WS1)
- Immature woodland (WS2)
- Ornamental/non-native shrub (WS3)

Tilled Land (BC3)

This habitat type refers to tilled land that is prepared for planting but where the type of crop or the future use of the land cannot be determined. It was recorded at one location, within a field at the north-east end of Section 2, just off the Manorcunningham Roundabout at N13.

Earth banks (BL2)

Earth banks (BL2) were typically well-vegetated, supporting numerous habitat types of high biodiversity. This habitat was identified as a linear mosaic in association with BL3 habitat on the old railway line. The earth banks were recorded within mixed broadleaved woodland/scrub south of L1114 in Dromore.

Buildings and artificial surfaces (BL3)

This habitat type includes all buildings (i.e. domestic, commercial, and industrial), roads, car parks, artificial recreation surfaces, and other concrete/hard standing areas. This habitat type was frequently encountered throughout Section 2, owing to the urban and suburban nature of sites within the study area. This habitat type was also found in mosaics with earth banks (BL2) and amenity grassland (GA2).

Recolonising bare ground (ED3)

This habitat type, which is ephemeral in nature/distribution as vegetation cover matures, was assigned to areas of disturbed ground and/or artificial surfaces, which have been recolonised by plants, and vegetation cover is now greater than 50%. This habitat type was identified in two locations: undeveloped land adjacent to the NCT Centre in the Dry Arch Business Park and abandoned lands to the east of Bunagee Lane, across from Bonagee Business Park.

Drainage Ditches (FW4)

Drainage ditches are often associated with wet grassland and boundaries of agricultural fields in addition to regularly being located adjacent to treelines (WL2), hedgerows (WL1), and scrub (WS1). They may hold water only in times of rainfall or throughout the year depending on localised topography. FW4 habitat was recorded throughout Section 2. They are important features in the landscape, in particular larger drainage ditches which have potential to provide habitat and connectivity in the landscape for animal species. Drainage ditches are discussed further in Chapter 9B: Biodiversity – Aquatic.

Improved agricultural grassland (GA1)

Improved agricultural grassland was the most dominant habitat type within the study area. The majority of these fields were grazed by livestock. GA1 habitat was recorded across Section 2. The improved agricultural grassland at these locations was a mix of permanent grassland and planted grasslands as part of arable rotation. A species-poor sward typically dominated. The grass species present was predominantly perennial ryegrass, while other species present included ribwort plantain, white clover, Yorkshire fog, creeping bent, and meadow grass. This habitat was also found in mosaics with other habitat types including dry meadows and grassy verges (GS2) and wet grassland (GS4).

Amenity grassland (GA2)

Numerous small patches of amenity grassland were recorded in mosaics with buildings and other artificial surfaces (BL3). These were typically private dwellings with maintained lawns, which are of low botanical diversity.

Dry meadows and grassy verges (GS2)

This habitat type was composed of unmanaged, freely draining grassland areas, including areas adjacent to agricultural lands which are less intensively managed and some roadside verges. This habitat type was recorded at numerous areas of varying sizes across Section 2. Prominent areas of this habitat were identified along the N13 and at various sites close to this stretch of road. Grass species included false oat-grass, reed canary grass, perennial ryegrass, and Yorkshire fog, while herbaceous species present included silverweed, cleavers (*Galium aparine*), bindweed, creeping bent, dock, couch (*Elytrigia repens*), and

redshank. This habitat type also occurred in mosaics with scrub (WS1) and ornamental/non-native shrub (WS3).

Wet grassland (GS4)

Wet grassland habitat was identified throughout the Section 2 study area. Similar to Section 1, this habitat was more species diverse than adjacent agricultural fields. Species which were recorded in multiple area of wet grassland included soft rush, sharp-flowered rush, jointed rush, bird's-foot trefoil, creeping bent, marsh thistle, Yorkshire fog, creeping buttercup, meadowsweet, sweet vernal grass, crested dog's-tail, and white clover. Species which were recorded in no more than one area of wet grassland included spotted orchid (*Dactylorhiza* sp.), star sedge, self-heal, eyebright, greater bird's-foot trefoil, silverweed, broad-leaved dock, nettle, ragwort, yarrow (*Achillea millefolium*), meadow buttercup, and ribwort plantain. GS4 habitat was also identified within mosaics with scrub (WS1), dry meadows and grassy verges (GS2), and immature woodland (WS2).

Wet grassland (GS4) can contain examples of the Annex I habitat, *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410], which is a QI of Lough Swilly SAC. However, because none of the species in the *Molinia* meadows [6410] habitat description[22] were identified in any area of wet grassland, the wet grassland within the study area did not have affinity to *Molinia* meadows [6410].

Mixed broadleaved woodland (WD1)

Areas of mixed broadleaved woodland were primarily recorded along the eastern extent of Section 2 between Drumany and Raymoghy. These stretches of woodland were located alongside the N13 or local roads adjacent to the N13. Tree species recorded at these locations included alder, willow, ash, beech, birch, sycamore, hawthorn, and oak. WD1 habitat also occurred in mosaics with scrub (WS1).

Mixed broadleaved/conifer woodland (WD2)

This habitat was identified at one location within the study area. This woodland covered an area of approximately 12.5 ha (of which, approximately 12.1 ha is within the CPO boundary) east of the N13 in Listellian, near the south end of Section 2. This is an area of Sitka spruce plantation, but the spruce appears to have not uniformly established and has formed a mosaic with areas of wet woodland and scrub species. This woodland was dominated by Sitka spruce, with abundant birch, gorse, and bramble, frequent occurrences of alder, willow, and grasses, and occasional ash, heather, juniper (*Juniperus communis*), and soft rush.

Hedgerows and Treelines (WL1 and WL2)

Hedgerows and treelines are the dominant field boundary along the length of Section 2. Most of the hedgerows which were recorded along Section 2 consisted of screening vegetation at residential properties, along roadsides and within the vegetated median of larger roads, however, species composition was infrequently recorded. Substantial areas of this habitat are present to the south in Corranagh and Listellian, as well as east of the study area in Drumany and Dromore. Hedgerows also occurred in mosaics with drainage ditches (FW4), treelines (WL2), and scrub (WS1).

WL2 habitat is composed of narrow rows or single lines of trees, which are greater than 5 m in height. Treelines were frequently recorded across the study area of Section 2, typically along field borders in agricultural lands and road edges. Substantial areas of this habitat are present in Correnagh and Lurgybrack, as well as at the Dry Arch roundabout. Treelines also occurred in mosaics with drainage ditches (FW4), hedgerows (WL2), and scrub (WS1).

[22]Species included in the *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] habitat description are: *Ophioglossum vulgatum, Carex pallescens, Cirsium dissectum, Cirsium tuberosum, Colchicum autumnale, Crepis paludosa, Dianthus deltoides, Dianthus superbus,* and *Galium uliginosum* (EC, 2013).

Scrub (WS1)

Scrub was identified at various locations across Section 2. As access and visibility was limited at some of these areas, species recorded include willow, gorse, bramble, horsetail, and ragwort. Scrub also occurred in mosaics with recolonising bare ground (ED3), dry meadows and grassy verges (GS2), wet grassland (GS4), mixed broadleaved woodland (WD1), and immature woodland (WS2). Some of these mosaic habitats had a greater species diversity. Scrub was also recorded as a mosaic in linear habitats with drainage ditches (FW4), hedgerows (WL1), and treelines (WL2).

Immature woodland (WS2)

Immature woodland was identified at three locations within the study area, within two mosaics with wet grassland (GS4) and one mosaic with scrub (WS1). Within the GS4/WS4 habitats, willow sp. was the only tree species recorded, while gorse and bramble were also recorded. The grass and herbaceous species recorded were typical of wet grassland. The species recorded within the WS1/WS2 habitat were willow sp., hawthorn, bramble, cleaver, birch, elder, and Leyland cypress (*Cupressus* × *leylandii*).

Ornamental/non-native shrub (WS3)

An area of ornamental/non-native shrub was recorded with amenity and landscape planting at Manorcunningham roundabout. This habitat type was recorded in mosaic with amenity grassland (GA2). This site included a mown grass verge along with alder, poplar (*Populus* sp.), and birch.

3.3.2.2 Key Ecological Receptors

A total of five sites were identified as KERs along Section 2. Descriptions of each site are presented in Table 3-4 along with their ecological evaluation. Locations of all KERs are shown in EIAR Drawing 9A.14.

In addition to the sites within the footprint of the Proposed Development, consideration was also given to sites outside of the footprint, but which may be within the ZoI of the Proposed Development.

Table 3-4: Key Ecological Receptors within Section 2 ZoI

KER No.	Townland	Key Ecological Receptor	Evaluation
2-1	Dromore	Mosaic of scrub and wet grassland habitat which borders the Lough Swilly SAC. There are some mature trees towards the centre of the habitat.	Local Importance (Higher Value)
2-2	Drumgreggan /Trimagh /Magheraboy	Strips of mixed broadleaved woodland as well as areas of wet grassland/scrub mosaic flanking the N13.	Local Importance (Higher Value)
2-3	Dromore	Mosaic of mixed broadleaved woodland and scrub (dominated by alder). Embankments of railway tracks, a culvert crossing, and an access track are within this area.	Local Importance (Higher Value)
2-4	Drumany / Listillion / Corranagh	A mixed broadleaved/conifer woodland formed by a Sitka spruce plantation which, due to wet conditions, has an abundance of wet woodland species. It is dominated by conifers, that have formed a mosaic with scrub on the margins.	Local Importance (Higher Value)
2-5	Listillion	A wet grassland and scrub mosaic, with a mix of species including *Juncus* sp., at the southern limit of the CPO boundary.	Local Importance (Higher Value)

Given the habitats included within each KER, the quality of the habitats, their size, and their connectivity to other habitats, all KERs in Section 2 are considered of local importance (higher value). The KERs are described below:

- KER 2-1 at Dromore consists of a mosaic of willow dominated scrub (WS1) with intermittent wet grassland (GS4) habitat. Historical mapping indicates that this site was previously maintained and, as of 2013, has been left to naturally regenerate. It contains a diverse perimeter of mixed broadleaved

woodland, treelines, and hedgerows. Other species identified include beech, gorse, hawthorn, bramble, soft rush, creeping thistle, dock, and nettle. The Swilly (Donegal)_010 (WFD Code: IE_NW_39S020300) stream flows north-west through this low-lying site into the River Swilly.

- KER 2-2 captures the multiple stretches of woodland/scrub along the N13. It includes multiple areas of relatively young mixed broadleaved woodlands along the N13. Areas of wet grassland/scrub mosaic and mature treelines are also included within this KER. These areas are described below:
  - Strips of mixed broadleaved woodland (WD1) habitats flank the N13 from Dromore to Trimagh. The Farsetmore (WFD Code: IE_NW_39S020300) stream flows through the sites, and a wooded stream corridor is present at the south-eastern extent. Species within this area include alder, ash, beech, birch, hazel, sycamore, hawthorn, and willow. The understory contains bramble, ferns, remote sedge, ivy, opposite leaved golden saxifrage (Chrysosplenium oppositifolium), herb-robert, primrose, and salmonberry. Other areas are dominated by alder, ash, and willow, with sycamore also present in the southern strip.
  - A mosaic habitat of mixed broadleaved woodland and treelines is adjacent to the Trimragh (WFD Code: IE_NW_39L050660) stream. It contains alder, ash, rowan, and Himalayan balsam and is bounded by GA1 habitat to the north and the N13 to the south.
  - Low-lying areas of wet grassland (GS4), scrub (WS1), and hedgerow mosaic are on either side of the N13. Species recorded at these sites include willow, gorse, ash, hawthorn, bracken, salmonberry, foxglove, meadowsweet, soft rush, Yorkshire fog, yellow flag iris, ragwort, and greater bird's foot trefoil.
- KER 2-3 in Dromore is a mixed broadleaved woodland (WD1) and scrub (WS1) mosaic adjacent to the Swilly (Donegal)_010 (WFD Code: IE_NW_39S020300) watercourse. Alder dominates this wet ground habitat, with areas of wet grassland also identified. There is an embankment of railway tracks and a culvert crossing within the site, and access tracks traversing the centre. Species present include black alder, willow, ash, hawthorn, bramble, elder, and blackthorn. The understory and more open areas contain nettle, rosebay willow herb, birds foot trefoil, yellow bartsia (Parentucellia viscosa), horsetail, bush vetch, creeping buttercup, wild angelica, and salmonberry.
- KER 2-4 is the only location of mixed broadleaved/conifer woodland (WD2) habitat within Section 2. This is an area of Sitka spruce plantation, but due to the wet conditions, the spruce has formed a mosaic with areas of wet woodland and scrub species. This woodland is dominated by Sitka spruce, with abundant birch, alder, hazel, willow, gorse, bramble and grasses, and occasional ash, heather, juniper, and soft rush. This woodland covers an area of approximately 12.5 ha (of which, approximately 12.1 ha is within the CPO boundary) east of the N13 in Listellian.
- KER 2-5 is a low-lying area of wet grassland (GS4) and scrub (WS1) mosaic. The wet grassland ranges from Juncus sp. dominating to an increased species diversity. A wide range of species were recorded here, which include willow, sharp-flowered rush, gorse, soft rush, Yorkshire fog, creeping bent, sweet vernal grass, bramble, horsetail, spotted orchid, marsh thistle, birds foot trefoil, creeping buttercup, self-heal, meadowsweet, star sedge, white clover, crested dog's-tail, herb-robert, foxglove, false oat-grass, dock, ragwort, meadow buttercup, ribwort plantain, and yarrow.

3.3.3 Section 3

3.3.3.1 Habitats

The landscape within the vicinity of the Proposed Development is predominantly gently undulating with scattered low drumlin hills. The majority of the land is intensively managed agricultural grasslands subdivided by hedgerows and treelines. The highest point in the vicinity is Mullafin Hill (205 m) approximately 3 km north of Raphoe, while Mullasawny (approximately 5 km northeast of Raphoe) rises to 179 m. There are occasional small blocks and strips of deciduous woodland and scrub scattered throughout the study area, many of these occurring along watercourses and also along the two sections of dismantled railway lines. Some low-lying areas support a mixture of wet grassland, willow-dominated wet woodland and occasional coniferous plantations.

In the north of the study area drainage is primarily to the north via the Leslie Hill Stream (also known as the Corkey River) and its tributaries which flow into Lough Swilly immediately north of Manorcunningham. Drainage in the southern half of the Proposed Development is into the Swilly Burn and Deele Rivers which

both flow into the River Foyle in its estuarine reaches. The very southern portion of the road development is within the River Finn catchment and includes a crossing of the river.

The habitats along and in the vicinity of the Proposed Development are shown in EIAR Drawing 9A.12 using the Heritage Council Habitat classification system (Fossitt, 2000) and for which codes are provided in the text below. Areas of semi-natural habitat are limited in extent within the vicinity of the Proposed Development and are mainly treated as Key Ecological Receptors (detailed below and subject to detailed assessment of the likely significant impacts of the Proposed Development). These mostly constitute areas with poor drainage supporting a mosaic of wet grassland (GS4) and wet willow-alder-ash woodland (WN6), though many have been planted with coniferous forestry (WD4). Coniferous plantations are excluded from the KER's though in many cases they adjoin them.

Arable Crops (BC1)

Arable crops are a widespread landuse in the southern half of the study area with some lands being rotated between grains, potatoes and grassland. This intensive agricultural enterprise is mainly associated with large field systems and frequently heavily managed field boundaries. This intensive landuse benefits a small number of species of conservation concern including whooper swan who feed on left-over potatoes after the harvest, and Yellowhammer which are associated primarily with grain production.

Improved Agricultural Grasslands (GA1)

Much of the proposed route is low-lying and characterised by intensive agricultural grasslands (GA1) and tillage (BC1) with associated field boundaries of hedgerows (WL1) and treelines (WL2). The floristic diversity of grasslands across the Proposed Development however varies locally with topography and management. Most areas of grassland fall within the classification of improved agricultural grassland (GA1). Improved agricultural grasslands vary in composition but are typically species poor and dominated by perennial rye-grass (*Lolium perenne*) with varying amounts of herbaceous species including white clover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*), common mouse-ear (*Cerastium fontanum*) and docks (*Rumex* spp.).

Wet grassland (GS4)

Wet grasslands are primarily included within KERs, though some small areas which are of low floristic diversity or isolated fragments are not included. The wet grasslands often occur in a mosaic or alongside wet woodland or scrub habitats in low-lying areas where drainage is impeded or along watercourses. Species diversity is described for wet grasslands within KERs in Section 3.3.3.2 below. Areas of wet grassland outside of KERs are typically species poor and dominated by rush species (*Juncus* spp.*)*

Dry Meadows and Grassy Verges (GS2)

This grassland type is widespread along the roadside verges throughout the study area and occurs in a few small fields which are currently ungrazed. Along roadsides they often merge with developing scrub habitats dominated by bramble (*Rubus fruticosus* agg.) and gorse (*Ulex europaeus*). The species composition is typically dominated by coarse grasses including false oat-grass (*Arrhenatherum elatius*), cock's-foot (*Dactylis glomerata*), and Yorkshire fog (*Holcus lanatus*). Associated herbaceous species are typically ruderal in nature including thistles (*Cirsium spp.*), hogweed (*Heracleum spondylium*) and hedge parsley (*Torilis japonica*).

Drainage Ditches (FW4)

Drainage ditches are frequent along field boundaries and may hold water only in times of rainfall or throughout the year depending on localised topography. Perennially wet ditches are often associated with wet grassland and along the river floodplains, most notably along the Swilly Burn and River Deele.

Hedgerows and Treelines

Hedgerows and treelines are the dominant field boundary along the length of the Proposed Development. Dominant species composition includes hawthorn and blackthorn, with varying amount of other woody

species including willow (*Salix* spp.), ash (*Fraxinus excelsior*), cherry (*Prunus avium*) and gorse. Where hedgerows are unmanaged, they may form linear strips of scrub (WS1) or immature woodland (WS2). The network of hedgerows and treelines provide multiple benefits to biodiversity apart from their direct habitat value. Critically, they function as corridors for movement and connectivity within the landscape for all types of fauna and the fragmentation of this network by road developments without appropriate mitigation can have profound implications for many species.

Scrub

Some areas of shallow soils with occasional outcrops of bedrock occur in the northern half of the scheme around Ballyboe and Drumoghill, which support areas of scrub (WS1) and small pockets of oak-ash-hazel woodland (WN2). These are typically dominated by gorse (*Ulex europaeus*), briar (*Rubus fruticosus aggr.*) and bracken (*Pteridium aquilinum*) with scattered emergent trees including rowan (*Sorbus aucuparia*), ash (*Fraxinus excelsior*), elder (*Sambucus niger*) and hawthorn (*Crataegus monogyna*). In wetter areas willows (*Salix* spp.) dominate.

Oak-ash-hazel woodland (WN2)

Small areas of oak-ash-hazel woodland occur in a few locations along the Proposed Development including at Ballyboe (KER 3-2) where it occurs on steep ground with some exposed siliceous bedrock outcrop, and at Drumoghill (KER 3-3) where it extends along a small river valley and adjacent embankment of a disused old railway line.

Wet willow-alder-ash woodland (WN6)

Mosaics of wet willow-alder-ash woodland and wet grassland occur in a number of locations in low-lying areas with impeded drainage or along stream corridors. These areas are mainly identified as KER's including at Doorabble – Mondooey (KER 3-5), Sheskinapoll (KER 3-6), Slievebuck (KER 3-7 and 3-8), Dromore Big (KER 3-10) and Feddyglass / Tullyrap (KER 3-11). A narrow band occurs along the southern bank of the River Finn in KER 3-15. Species composition is dominated by willow (*Salix* spp.) and alder (*Alnus glutinosa*) with varying amounts of wet grassland herbaceous species in the understorey dependant on light penetration.

(Mixed) Broad-leaved Woodland (WD1)

Areas of Mixed broad-leaved woodland are limited along the length of the Proposed Development and are mainly included as KERs. These woodlands includes both native and non-native tree species. This habitat type does not correspond to any Annex I habitats. The habitat is mainly associated with old estates where planting occurred in the nineteenth and early twentieth centuries such as Drumoghill (KER 3-4) and on the south of the River Finn at Urney. It also occurs as a linear band along the N14 at Feddyglass / Tullyrap (KER 3-11) where it merges with wet willow-alder-ash woodland and scrub along the river.

Conifer Woodland (WD4/WS1)

There are a number of conifer plantations along the Proposed Development, the most significant being in the vicinity of the Swilly Burn floodplain. While typically of limited ecological value, a heronry is located in the plantation on the northwest of the Proposed Development (outside of the CPO). The margins of plantations often support scrub development and drainage ditches.

Stonewalls and Other Stonework (BL1)

Stone walls are not common in the corridor. They are typically found in the vicinity of houses.

Buildings and Artificial Surfaces (BL3)

The Proposed Development is mostly across open land but where it crosses the existing N14 or any of the associated side roads, its encounters occasional buildings and artificial surfaces. Where these fall within the study area they have been assessed for suitability to support potential bat roosts (PBRs).

3.3.3.2 Key Ecological Receptors

A total of 15 separate sites were identified as Key Ecological Receptors (KERs) along the length of the Proposed Development. These sites were subject to detailed survey to assess their biota and determine their ecological value in accordance with criteria detailed in the TII Guidelines. An overview of description of each site is presented in Table 3-5 along with their ecological evaluation. A number of KERs encompass watercourses which are also described in more detail in the Aquatic Biodiversity Chapter. Locations of all KERs are shown in EIAR Drawing 9A.15.

In addition to the sites within the footprint of the Proposed Development, consideration was also given to sites outside of the footprint but which may be within the ZoI of the Proposed Development, such as ground water dependant sites that may be affected by drawdown or alteration of the groundwater hydrological regime. There are no ground water dependant sites identified within a potential zone of influence of the Proposed Development and the underlying geology is not conducive to hydraulic connectivity.

Table 3-5: Key Ecological Receptors within Section 3 ZoI

KER No.	Townland	Key Ecological Receptor	Evaluation
3-1	Pluck	Tidal river with reed swamp fringe and wet grassland along northern bank. Approx. 150 m upstream of Lough Swilly SAC (002287).	Local Importance (Higher Value)
3-2	Ballyboe	Oak-ash-hazel woodland on steep ground with exposed siliceous bedrock outcrop. Small stream along eastern boundary and scrub on upper slopes.	Local Importance (Higher Value)
3-3	Drumoghill	Oak-ash-hazel woodland along river valley and extending along embankment of old railway line. Young deciduous plantation woodland on northwest side.	Local Importance (Higher Value)
3-4	Drumoghill	Block of mature broad-leaved woodland on elevated knoll.	Local Importance (Higher Value)
3-5	Doorabble - Mondooey	Mosaic of wet willow-alder-ash woodland and wet grassland/ freshwater marsh along stream. Adjoins a conifer plantation with relic area of broad-leaved woodland in centre to east.	Local Importance (Higher Value)
3-6	Sheskinapoll	Area of wet willow-alder-ash woodland and wet grassland fed by a non-calcareous spring in the east.	Local Importance (Higher Value)
3-7	Slievebuck	Low-lying area of wet grassland with block of wet willow-alder-ash woodland in the east along stream.	Local Importance (Higher Value)
3-8	Slievebuck	Narrow mosaic of willow-alder-ash woodland, briar scrub and wet grassland along stream adjacent to existing N14.	Local Importance (Higher Value)
3-9	Slievebuck	Wet grassland with core of freshwater marsh bounded by stream to the east.	Local Importance (Higher Value)
3-10	Dromore Big	Block of wet willow-alder-ash woodland and wet grassland bounded by the existing N14 to the southwest.	Local Importance (Higher Value)
3-11	Feddyglass / Tullyrap	Linear band of wet willow-alder-ash woodland and scrub along river, with mature mixed broadleaved fringe along N14.	Local Importance (Higher Value)
3-12	Broadlea / Mulnaveagh	Depositing lowland River (Swilly Burn) with adjacent flood embankments of dry meadow and grassy verges.	Local Importance (Higher Value)
3-13	Tyleford	Depositing lowland / Tidal River (River Deele – W3-17) with adjacent flood embankments of dry meadow and grassy verges and fringe of tall herb swamp along the water's edge.	County Importance
3-14	Murlough	Minor stream with fringe of oak-ash-hazel woodland in steep-sided glen. Upper slopes of dry meadow vegetation with fringing mature treelines.	Local Importance (Higher Value)
15	Curraghalane	Low-lying fields of wet grassland along Depositing lowland river (River Finn) floodplain. Within River Finn SAC (002301)	International Importance.

KER 3-15 at Curraghalane consists of low-lying fields of wet grassland (GS4) along the River Finn floodplain at the southern end of the scheme. The wet grassland is within the River Finn SAC (002301) and thus rated of International Importance. However, the site is outside of the footprint of the Proposed Development and therefore will not be directly impacted by the scheme, though in view of its proximity (<50 m) would be considered at risk from indirect impacts during both construction and operation in the absence of appropriate mitigation.

The River Deele (W3-17) at Tyleford is rated of County Importance. The crossing point of the Proposed Development is in the lower reaches of the river where it has been canalised with large flood embankments and is subject to tidal effect. The substrate is dominated by muds and algal mat with extensive beds of macrophytes and is unsuited for spawning by salmonids or lamprey though will have regular passage of Salmonids, Lamprey and European Eels. There is also potential for lamprey ammocoetes to occur in the soft substrates.

The remaining 13 KER's are all rated of Local Importance (Higher Value). KER 3-1 at Pluck consists of a tidal section of the Lesliehill Stream with a reed swamp fringe and wet grassland along northern bank. This KER is not directly impacted by the Proposed Development but would be at risk from indirect impacts during both construction and operation in the absence of appropriate mitigation. The Lough Swilly SAC (002287) extends to include the river as far as the existing crossing on the N13 approx. 200 m from the Pluck Roundabout.

KER 3-1 and KER 3-2 consist of two small areas of Oak-ash-hazel woodland (WN2) at Ballyboe. KER 3-1 consists of a small area of ash and hazel dominated woodland with a single mature Oak (*Quercus robur*) on steep ground with exposed siliceous bedrock outcrop to the north of the Ballyboe Road. The woodland has a diverse herb layer with abundant bryophytes and ferns. The upper slopes to the north grade into scrub-woodland (WS1) dominated by Hawthorn, Gorse, Holly and occasional Rowan with abundant bracken. KER 3-2 consists of a more extensive area of Oak-ash-hazel woodland (WN2) which extends along a meandering section of the Ballyboe tributary of the Lesliehill Stream and along a section of the dismantled railway line. The canopy is quite diverse over the extent changing in character with the low-lying sections by the river and the drier sections on the railway embankments. The ground flora is equally diverse and includes some shaded wetland communities along the railway cuttings supporting pondweed (*Potamogeton natans*) Flote Grass (*Glyceria fluitans*) and Remote sedge (*Carex remota*). Frog spawn was present here in small quantities in May 2020.

KER 3-4, adjacent to the existing N14 at Ballyboe, consists of a copse of mature broad-leaved woodland (WD1) on an elevated knoll. The trees are a mixture of Oak, Beech (*Fagus sylvatica*) and Sycamore (Acer pseudoplatanus) with an understorey of holly, hawthorn and elder. The copse supports a rookery of c60-100 pairs of Rook.

KERs 3-5, 3-6, 3-7 and 3-8 consist of mosaics of wet willow-alder-ash woodland (WN6) and wet grassland (GS4) in low-lying areas, mostly adjacent to watercourses (W3-08 to W3-11). The woodland elements of these sites are dominated by willows (*Salix* spp.) with some alder (*Alnus glutinosa*), ash and occasional birch (*Betula pubescens*) and rowan. The wet grassland consists of a mixture of grass and rushes (Juncus spp.) with a range of broad-leaved herbs typically including Meadowsweet (Filipendula ulmaria), great hairy willowherb (*Epilobium hirsutum*), horsetails (*Equisetum* spp.), Birdsfoot trefoil (*Lotus uliginosus*), Valerian (*Valeriana officinalis*) and Marsh thistle (*Cirsium palustre*). At KER 3-6 in Sheskinapoll, a small spring (FP2) rises in the east of the site. Himalayan balsam is frequent at this site also. KER 3-8 consists of a narrow strip of willow-alder-ash woodland, briar scrub and wet grassland along the stream (W3-11) adjacent to existing N14, and is only marginally within the footprint of the Proposed Development at the Slievebuck Interchange tie-in with the existing N14.

KER 3-9 is a low-lying area of wet-grassland (GS4) with some patches of Freshwater Marsh (GM1) lying to the west of the Swilly Burn tributary (W3-11). This habitat supports a diverse suite of wetland species including Marsh pennywort (*Hydrocotyle vulgaris*), Water Forget-me-not (*Myosotis scorpioides*), Angelica (*Angelica sylvestris*) and various sedges (*Carex nigra*, *C. ovalis*, and *C. echinata*) along with occasional spikes of Spotted Orchid (*Dactylorhiza fuchsii*) and abundant Calliergon moss (*Calliergon* sp.).

KER 3-10 at Slievebuck is another block of wet willow-alder-ash woodland (WN6) and wet grassland (GS4) bounded by the existing N14 to the southwest. KER 3-11 is a linear band of wet willow-alder-ash woodland

and mixed broad-leaved woodland (WD1) along either side of the Swilly Burn tributary (W3-13) at Tullyrap. The river meanders considerably with some open patches of wet grassland (GS4) and dense briar scrub (WS1).

KER 3-12 and KER 3-13 encompass the Swilly Burn (W3-14) and River Deele (W3-17) respectively. Both rivers are described in detail in the Chapter 9B: Biodiversity – Aquatic. The crossing point of the Proposed Development is in the lower reaches of both rivers which have been canalised with adjacent flood embankments. The riparian habitats are limited to a narrow fringe of Tall herb swamp (FS2) along the base of the riverbanks with rank grassland higher up and extending on to the embankments. The Swilly Burn has deep drains on the outer side of the flood embankments with conifer plantations along both north and south banks. The lower reaches of the Swilly Burn have an infestation of the alien invasive Asian Clam.

KER 3-14 encompasses a minor tributary stream (W3-18) and its associated valley at Murlough. The stream has a narrow fringe of oak-ash-hazel woodland (WN2) in its steeply cut mid-section, and a tree-lined belt of steeply sloping dry grassland (GS2) above this. The grassland is semi-natural dominated by tufted grasses (*Holcus mollis* and *Dactylis glomerata*) with various vetches (*Viccia* sp. and *Lathyrus* sp.) and abundant Creeping Thistle (*Cirsium arvense*). A pair of Buzzard are nesting in a mature tree at this location and the area also supports one of the few active Badger setts encountered along the Proposed Development.

3.4 Flora

The principal source of information regarding the distribution of flora in Ireland is the *New Atlas of the British & Irish Flora* (Preston *et al*., 2002). The data included in this atlas supports data from the pre-1970 to 1999 atlas surveys. This atlas shows data for vascular plants in individual hectads. The records for the hectads were consulted and a search was carried out to investigate if any rare or protected plant species had been recorded in the square during the 1987-1999 atlas survey (and previous surveys) carried out by the Botanical Society of Britain and Ireland (BSBI). The NBDC database was also searched for records of rare and protected plants within the grid squares. The search included the vascular plants listed in Annex II of the EU Habitats Directive, Flora Protection Order (FPO) of 2022, *Irish Red Data Book: Vascular Plants* (Curtis & McGough, 1988), and *Ireland Red List No. 10: Vascular Plants* (Wyse *et al*., 2016). The search excluded those listed as *Least Concern*, *Waiting List*, or *Regionally Extinct* on the Red List (Wyse *et al*., 2016), or as *Indeterminate* or *Not Threatened* in the Red Data Book (Curtis & McGough, 1988). Globeflower, which is an FPO species, was found in Section 1 during ecological surveys. No other instances of protected flora were encountered in any other section.

3.4.1 Section 1

The results from this desktop study are detailed in Table 3-6.

During surveys in May 2021, globeflower, which is an FPO species, was recorded on the banks of the River Finn within the townland of Cappry. Globeflower records were confined to this small section of the River Finn. The results of this survey are detailed in Table 3-7 and EIAR Drawing 9A.16. No incidental records of this species were made within Section 2 of the Proposed Development.

During all surveys which were carried out, there were no other rare and protected flora species recorded in the study area.

Table 3-6: Desk Study Results for Rare and Protected Flora in Section 1

Species	Common name	Annex (HD)	FPO (2022)	Red Data Book*	Red List Category**	Record Source	Grid Square
Lamoastrum galeobdolon	Yellow archangel			R		BSBI	H19
Spiranthes romanzoffiana	Irish lady's-tresses		✓	R	NT	Atlas; BSBI	H19
Trollius europaeus	Globeflower		✓	V	NT	Atlas; BSBI	C10; H09; H19

Species	Common name	Annex (HD)	FPO (2022)	Red Data Book*	Red List Category**	Record Source	Grid Square
Huperzia selago	Fir Clubmoss	V			LC	NBDC	H

*Curtis & McGough (1988) Red Data Book status: EX (Extinct); E (Endangered); V (Vulnerable); R (Rare); IN (Indeterminate); NT (Not Threatened).

**Wyse *et al*. (2016) Red List categories: EX (Extinct); EW (Extinct in the Wild); RE (Regionally Extinct; CR (Critically Endangered); EN (Endangered); VU (Vulnerable); NT (Near Threatened); LC (Least Concern); WL (Waiting List).

Table 3-7: Globeflower Survey Results May 2021 – Section 1

No. of Plants Present	Description	ITM X	ITM Y
6	Further evidence approximately 15 m west of this point on inaccessible rocky outcrops).	612166	895101
3	-	612168	895099
9	-	612194	895103
4	-	612189	895098
9	-	612210	895114
-	Multiple plants upstream in rocky outcrops	612202	895104

3.4.2 Section 2

The results from this desktop study are detailed **in Table 3-8.**

During all surveys which were carried out, there were no rare and protected flora species recorded in the study area.

Table 3-8: Desk Study Results for Rare and Protected Flora in Section 2

Species	Common Name	Annex (HD)	FPO (2022)	Red Data Book*	Red List Category**	Record Source	Grid Square
Allium schoenoprasum	Chives				VU	NBDC	C11
Bromus racemosus	Smooth brome				VU	NBDC; BSBI	C21
Galeopsis speciosa	Large-flowered hemp-nettle				NT	Atlas; BSBI	C10; C11; C21
Geranium pratense	Meadow crane's-bill				VU	NBDC; Atlas; BSBI	C21
Glebionis segetum	Marigold corn				NT	BSBI	C21
Gnaphalium sylvaticum	Heath cudweed					Atlas	C11
Lamoastrum galeobdolon	Yellow archangel			R		BSBI	C20
Parentucellia viscosa	Yellow bartsia				NT	Atlas; BSBI	C11; C20; C21
Pseudorchis albida	Small-white orchid		✓	V	VU	Atlas	C11
Sorbus hibernica	Irish whitebeam				VU	Atlas; BSBI	C10
Trollius europaeus	Globeflower		✓	V	NT	Atlas; BSBI	C10; C20
Veronica agrestis	Green field-speedwell				NT	BSBI	H29

*Curtis & McGough (1988) Red Data Book status: EX (Extinct); E (Endangered); V (Vulnerable); R (Rare); IN (Indeterminate); NT (Not Threatened).

**Wyse et al. (2016) Red List categories: EX (Extinct); EW (Extinct in the Wild); RE (Regionally Extinct; CR (Critically Endangered); EN (Endangered); VU (Vulnerable); NT (Near Threatened); LC (Least Concern); WL (Waiting List).

3.4.3 Section 3

The only recently recorded protected plant species from the study area is the globeflower (*Trollius europaeus*). This plant which occurs on lake shores, riverbanks, wet pastures, scrub and woodland (Curtis and McGough, 1988) has a very limited national distribution and is protected under the Flora Protection Order (2021). The NPWS database holds a record in hectad C20 at Convoy from 1998 while the BSBI hold a record from post 2010 in hectad C10 to the east of Convoy. Both records are likely to be along the banks of the Deele River, and despite the arterial drainage of the river, the species may be extant at other locations within the study area. The Swilly Burn, which has also been arterially drained, may support relic populations of globeflower in remnants of suitable habitat. There was no evidence of globeflower at either the Deele or the Swilly Burn and the habitat conditions along both watercourses are not considered suitable for the plant, as they consist of rank grassland on the modified riverbanks and associated flood embankments. The remaining records of rare plants for the study area are historic, and the various species are unlikely to persist due to changes in land use over the intervening century. These are listed in Table 3-9.

Table 3-9: Records of Protected Plant Species from Within the Study Area

Species	Location	First Record	Most Recent Record	Grid Ref.
Lolium temulentum	Finn River, near Clady	Done 1898	Done 1898	H229 396
Prunus padus	Lifford-Reelan Water	Hart 1885	Hart 1885	H229 400
Cardamine amara	Ballindrait	Hart 1893	Hart 1893	H230 400
Cardamine amara	Killikeen	Halpin 1864	Halpin 1864	H230 C402
Lathryus palustris	Cavan	Moore1859	Moore 1859	H230 C402
Trollius europaeus	Conroy	1994	1998	C20
Trollius europaeus	Conroy	-	Post 2010	C10

3.5 Invasive Alien Species (IAS)

A search of the NBDC database was conducted for records of IAPS and IAAS listed on the Third Schedule to the EC Birds and Natural Habitats Regulations 2011, as amended, or classified as *high impact* or *medium impact* by Kelly *et al*. (2013). The study areas are located within the hectads outlined in Section 2.2.

3.5.1 Section 1

3.5.1.1 Plants

Six of the species identified in the NBDC data search are listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended and subject to strict controls under Regulation 49. These species are: Canadian waterweed (*Elodea canadensis*), Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*), Himalayan knotweed (*Persicaria wallichii*), rhododendron (*Rhododendron ponticum*), and salmonberry (*Rubus spectabilis*). Of these species, Canadian waterweed, Japanese knotweed, Indian balsam, and rhododendron are species with a risk of *high impact*, and Himalayan knotweed and salmonberry are species with a risk of *medium impact*.

Other IAPS that are not listed as Third Schedule species were also identified in the NBDC data search, including cherry laurel (*Prunus laurocerasus*) and sycamore (*Acer pseudoplatanus*). These species are not listed under the Third Schedule, but cherry laurel is classified as having a risk of *high impact*, and sycamore

is classified as having a risk of *medium impact*. The impact of these species on conservation goals remains uncertain due to lack of data showing impact (or lack of impact). Therefore, precautionary measures to avoid interaction and spread of the species are recommended. IAPS records from the NBDC for the grid squares (C10, H09, H19) are outlined in Table 3-10.

Table 3-10: NBDC Records for IAPS in Section 1

Scientific Name	Common Name	Status (Kelly *et al*., 2013)	Grid Square
Acer pseudoplatanus	Sycamore	Medium Impact Invasive Species	C10; H09; H19
Elodea canadensis	Canadian waterweed	High Impact Invasive Species; Regulation S.I. 477	H19
Fallopia japonica	Japanese knotweed	High Impact Invasive Species; Regulation S.I. 477	C10; H09; H19
Impatiens glandulifera	Himalayan balsam	High Impact Invasive Species; Regulation S.I. 477	C10; H19
Persicaria wallichii	Himalayan knotweed	Medium Impact Invasive Species; Regulation S.I. 477	C10; H19
Prunus laurocerasus	Cherry laurel	High Impact Invasive Species	C10
Rhododendron ponticum	Rhododendron	High Impact Invasive Species; Regulation S.I. 477	C10; H09; H19
Rubus spectabilis	Salmonberry	Medium Impact Invasive Species; Regulation S.I. 477	C10

Ecological surveys identified giant rhubarb (*Gunnera tinctoria*), Himalayan balsam, Himalayan knotweed, Japanese knotweed, rhododendron, cherry laurel, winter heliotrope (*Petasites fragrans*), snowberry (*Symphoricarpos albus*), and old man's beard (*Clematis vitalba*) in the study area. The dedicated IAPS survey carried out in October 2021 mapped these species and these records are detailed in Appendix A and shown in EIAR Drawing 9A.17. During surveys in July 2023 and August to October 2025, additional stands of IAPS were recorded in the study area, and these records are also detailed in Appendix A and shown in EIAR Drawing 9A.17. The species identified during field surveys are listed in Table 3-11.

Table 3-11: IAPS Identified During Field Surveys in Section 1

Scientific Name	Common Name	Status (Kelly *et al*., 2013)
Fallopia japonica	Japanese knotweed	High Impact Invasive Species; Regulation S.I. 477
Impatiens glandulifera	Himalayan balsam	High Impact Invasive Species; Regulation S.I. 477
Persicaria wallichii	Himalayan knotweed	Medium Impact Invasive Species; Regulation S.I. 477
Prunus laurocerasus	Cherry laurel	High Impact Invasive Species
Rhododendron ponticum	Rhododendron	High Impact Invasive Species; Regulation S.I. 477
Gunnera tinctoria	Giant rhubarb	High Impact Invasive Species; Regulation S.I. 477
Petasites fragrans	Winter heliotrope	Low Impact Invasive Species
Symphoricarpos albus	Snowberry	Low Impact Invasive Species; Regulation S.I. 477
Clematis vitalba	Old man's beard	Medium Impact Invasive Species
Erythranthe guttata	Monkeyflower	Low Impact Invasive Species

3.5.1.2 Animals

Two of the species identified in the NBDC data search are listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended and subject to strict controls under Regulation 49, namely, American mink (*Mustela vison*) and eastern grey squirrel (*Sciurus carolinensis*). Both of these species have a risk of *high impact*.

A number of other IAAS that are not listed as Third Schedule species were also identified in the NBDC data search including New Zealand flatworm (*Arthurdendyus triangulatus*) and Jenkins' spire snail (*Potamopyrgus antipodarum*). These species are not listed under the Third Schedule; however New Zealand flatworm is classified as being of risk of *high impact*, and Jenkins' spire snail is classified as being of risk of *medium impact*. The impact of all these species on conservation goals remains uncertain due to lack of data showing impact (or lack of impact). Therefore, precautionary measures to avoid interaction and spread of the species are recommended. IAAS records from the NBDC for the grid squares (C10, H09, H19) are outlined in Table 3-12.

During surveys in July 2023, numerous evidence of squirrel was recorded (cracked hazelnut and gnawed pinecones) within the study area. However, there were no live sightings, and therefore the presence of eastern grey squirrel cannot be confirmed, but it is assumed to be present.

Table 3-12: NBDC Records for IAAS in Section 1

Scientific Name	Common Name	Status (Kelly *et al*., 2013)	Grid Square
Arthurdendyus triangulatus	New Zealand flatworm	High Impact Invasive Species	H19
Mustela vison	American mink	High Impact Invasive Species; Regulation S.I. 477	H19
Potamopyrgus antipodarum	Jenkins' spire snail	Medium Impact Invasive Species	C10; H09; H19
Sciurus carolinensis	Eastern grey squirrel	High Impact Invasive Species; Regulation S.I. 477	C10; H09; H19

3.5.2 Section 2

3.5.2.1 Plants

Ten of the species identified in the NBDC data search are listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended and subject to strict controls under Regulation 49. These species are: three-cornered garlic (*Allium triquetrum*), Japanese knotweed, giant-rhubarb, giant hogweed (*Heracleum mantegazzianum*), Spanish bluebell (*Hyacinthoides hispanica*), Himalayan balsam, American skunk-cabbage (*Lysichiton americanus*), Himalayan knotweed, rhododendron, and salmonberry. Of these species, Japanese knotweed, giant rhubarb, giant hogweed, Himalayan balsam, and rhododendron are species with a risk of *high impact*, and three-cornered garlic, American skunk-cabbage, Himalayan knotweed, and salmonberry are species with a risk of *medium impact* (Kelly *et al.*, 2013).

Other IAPS that are not listed as Third Schedule species were also identified in the NBDC data search. These species are not listed under the Third Schedule but can still be classified as being of risk of *high impact* or *medium impact*. The impact of all these species on conservation goals remains uncertain due to lack of data showing impact (or lack of impact). Therefore, precautionary measures to avoid interaction and spread of the species are recommended. IAPS records from the NBDC for the grid squares (C10, C11, C20, C21) are outlined in Table 3-13.

Table 3-13: NBDC Records for IAPS in Section 2

Scientific Name	Common Name	Status (Kelly *et al*., 2013)	Grid Square
Acer pseudoplatanus	Sycamore	Medium Impact Invasive Species	C10; C11; C20; C21
Allium triquetrum	Three-cornered garlic	Medium Impact Invasive Species; Regulation S.I. 477	C20; C21
Berberis thunbergii	Thunberg's barberry	Medium Impact Invasive Species	C20
Berberis vulgaris	Barberry	Medium Impact Invasive Species	C20
Buddleja davidii	Butterfly-bush	Medium Impact Invasive Species	C20; C21
Cotoneaster horizontalis	Wall cotoneaster	Medium Impact Invasive Species	C20
Fallopia japonica	Japanese knotweed	High Impact Invasive Species; Regulation S.I. 477	C10; C11; C20; C21
Gunnera tinctoria	Giant-rhubarb	High Impact Invasive Species; Regulation S.I. 477	C21
Heracleum mantegazzianum	Giant hogweed	High Impact Invasive Species; Regulation S.I. 477	C11; C20; C21
Hyacinthoides hispanica	Spanish bluebell	Regulation S.I. 477	C20
Impatiens glandulifera	Himalayan balsam	High Impact Invasive Species; Regulation S.I. 477	C10; C11; C20; C21
Leycesteria formosa	Himalayan honeysuckle	Medium Impact Invasive Species	C20
Lysichiton americanus	American skunk-cabbage	Medium Impact Invasive Species; Regulation S.I. 477	C21
Persicaria wallichii	Himalayan knotweed	Medium Impact Invasive Species; Regulation S.I. 477	C10; C11; C20; C21
Prunus laurocerasus	Cherry laurel	High Impact Invasive Species	C10
Quercus ilex	Evergreen oak	Medium Impact Invasive Species	C20
Quercus rubra	Red oak	Medium Impact Invasive Species	C20
Rhododendron ponticum	Rhododendron	High Impact Invasive Species; Regulation S.I. 477	C10; C11; C20; C21
Ribes nigrum	Black currant	Medium Impact Invasive Species	C11; C20
Rosa rugosa	Japanese rose	Medium Impact Invasive Species	C20
Rubus spectabilis	Salmonberry	Medium Impact Invasive Species; Regulation S.I. 477	C10; C11; C20; C21

Ecological surveys identified Himalayan balsam, Himalayan knotweed, Japanese knotweed, rhododendron, butterfly bush (*Buddleja davidii*), and snowberry in the study area. These records are detailed in Appendix A and shown in EIAR Drawing 9A.18. During surveys in July 2023 and August to October 2025, additional stands of IAPS were recorded in the study area, and these records are also detailed in Appendix A and shown in EIAR Drawing 9A.18. The species identified during field surveys are listed in Table 3-14.

Table 3-14: IAPS Identified During Field Surveys in Section 2

Scientific Name	Common Name	Status (Kelly *et al*., 2013)
Fallopia japonica	Japanese knotweed	High Impact Invasive Species; Regulation S.I. 477
Impatiens glandulifera	Himalayan balsam	High Impact Invasive Species; Regulation S.I. 477
Persicaria wallichii	Himalayan knotweed	Medium Impact Invasive Species; Regulation S.I. 477
Rhododendron ponticum	Rhododendron	High Impact Invasive Species; Regulation S.I. 477
Rubus spectabilis	Salmonberry	Medium Impact Invasive Species; Regulation S.I. 477
Symphoricarpos albus	Snowberry	Low Impact Invasive Species
Buddleja davidii	Butterfly bush	Medium Impact Invasive Species

3.5.2.2 Animals

One of the species identified in the NBDC data search is listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended and subject to strict controls under Regulation 49, namely, eastern grey squirrel. This species has a risk of *high impact*.

A number of other IAAS that are not listed as Third Schedule species were also identified in the NBDC data search including New Zealand flatworm, European rabbit (*Oryctolagus cuniculus*), and Jenkins' spire snail. These species are not listed under the Third Schedule; however, New Zealand flatworm is classified as being of risk of *high impact* and European rabbit and Jenkins' spire snail are classified as being of risk of *medium impact*. The impact of these species on conservation goals remains uncertain due to lack of data showing impact (or lack of impact). Therefore, precautionary measures to avoid interaction and spread of the species are recommended. IAAS records from NBDC for the grid squares (C10, C11, C20, C21) are outlined in Table 3-15.

During surveys in July 2023, there were no live sightings or incidental evidence for IAAS recorded in the study area.

Table 3-15: NBDC Records for IAAS in Section 2

Scientific Name	Common Name	Status (Kelly *et al*., 2013)	Grid Square
Arthurdendyus triangulatus	New Zealand flatworm	High Impact Invasive Species	C11; C20; C21
Oryctolagus cuniculus	European rabbit	Medium Impact Invasive Species	C11; C20; C21
Potamopyrgus antipodarum	Jenkins' spire snail	Medium Impact Invasive Species	C10; C11; C20; C21
Sciurus carolinensis	Eastern grey squirrel	High Impact Invasive Species; Regulation S.I. 477	C10; C11; C20; C21

3.5.3 Section 3

3.5.3.1 Plants

Throughout all surveys undertaken as part of the biodiversity assessment, evidence of invasive plant species (listed in the Third Schedule to the Habitats Regulations (2011) and other non-native species with the potential to cause significant effects to the environment) were checked for and recorded where present. The NBDC database was also checked for records of invasive species within the study area.

Two Third Schedule species occur at a number of locations within the immediate vicinity of the Proposed Development. A stand of Japanese Knotweed (*Reynoutria japonica*) of approximately 80 m^2 in extent is present at Ch9+420 in Drumbeg on the eastern bank of the watercourse W3-12. A smaller more scattered stand is present in the isolated copse of trees at Ch17+000 at Carricknaslate.

Himalayan Balsam (*Impatiens glandulifera*) is widespread along a number of watercourses and drainage ditches, as well as some wet woodland sites within the vicinity of the Proposed Development. Locations of sites where Japanese Knotweed and Himalayan Balsam was recorded are detailed in Table 3-16 and Table 3-17.

Table 3-16: Locations of Japanese Knotweed Recorded from within the Study Area

Townland	Chainage	Description
Ballyboe	Ch2+200	Two stands alongside of L1274 road to north of proposed alignment and outside of the CPO lands.
Drumbeg	Ch9+420	Along the eastern bank of the watercourse W3-12, approximately 80 m^2 in extent
Carricknaslate	Ch17+000	A scattered stand is present in an isolated copse of trees

Table 3-17: Locations of Himalayan Balsam Recorded from within the Study Area

Townland	Chainage	Description
Drumbeg	Ch9+420	A stand of Japanese Knotweed (Reynoutria japonica) of approximately 80 m^2 in extent is present at Ch9+420 in on the eastern bank of the watercourse W3-12
Carricknaslate	Ch17+000	A smaller more scattered stand of Japanese Knotweed is present in the isolated copse of trees at Ch17+000 at Carricknaslate
Raymoghy	Ch800	Along watercourse W3-02
Raymoghy	Ch1+170	Along watercourse W3-03
Ballyboe	Ch2+200	Along watercourse W3-04 and KER 3
Sheskinapoll	Ch6+000	KER 6
Slievebuck	Ch6+600	Along watercourse W3-10
Slievebuck	Ch7+200	Along hedgerow
Slievebuck	Ch7+450	Along watercourse W3-11
Drumbeg	Ch9+400	Along watercourse W3-12
Tullyrap	Ch10+200	Along watercourse W3-13
Swilly Burn	Ch11+500 to 11+600	Along watercourse W3-15
River Deele	Ch14+000 to Ch15+000	Along watercourse W3-17
Townparks	Ch16+480	Along hedgerow
Curraghalane	Ch17+400	Along field edge

3.5.3.2 Animals

Two species identified in the NBDC data search are listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended and subject to strict controls under Regulation 49, namely, American mink (*Mustela vison*) and Eastern grey squirrel (*Sciurus carolinensis*). Both of these species have a risk of high impact. No evidence was recorded of their presence during surveys, though there are a small number of isolated records from the study are on the NBDC database. In view of their distribution within the surrounding landscape, they are expected to occur in suitable habitat.

The Swilly Burn in its lower reaches in the vicinity of the Proposed Development has a significant infestation of Asian Clam (*Corbicula fluminea*), an invasive alien species listed under the Third Schedule of the Habitats Regulations (2011) (Loughs Agency, pers.com.).

3.6 Fauna

3.6.1 Protected Mammals

3.6.1.1 Otter

Otter (*Lutra lutra*) are afforded protection under international and national legislation in Ireland. Otters are protected under Annex II of the EU Habitats Directive as a species for which core areas of their habitat must be protected within the Natura 2000 network, and Annex IV as species protected across their entire natural range. Additionally, they are nationally protected under the Wildlife Acts (1976, 2000). Within Ireland, otter are assigned a conservation status of Least Concern (Marnell *et al.,* 2019).

Otters have a wide distribution in Ireland, occurring alongside rivers, lakes, and coastlines. Otters are rarely found far from water and tend to occupy linear habitats along the aquatic – terrestrial interface. The home range of an adult otter varies widely, depending on the quality of foraging habitat, food supply and other resources. Male otters have been known to travel up to 30 km overnight in search of food or potential mates (Woodroffe, 2001). The habitats along the rivers within and in close proximity to the CPO boundary provide suitable foraging and commuting habitat for otter.

3.6.1.1.1 Section 1

Desktop

The NBDC data search returned 11 records of otter for the C10 grid square, one for the H09 grid square and ten for the H19 grid square. NPWS records show evidence of otters at numerous locations along the River Finn (Reid *et al.,* 2013). However, no records are located within the Section 1 CPO boundary.

Field Survey

Otter surveys carried out between 2017 to 2025 established that otters are active both upstream and downstream of the proposed crossing of the River Finn and also on its connected tributaries. Otter activity was also recorded on the tributaries of the River Deele catchment, including Cloghroe River, at the northern N13 tie-in. Evidence of otter was recorded in the form of possible holts, live sightings, prints, couches, spraint, and slides. Otter evidence in Section 1 is mapped in EIAR Drawings 9A.20 and 9A.21 and described in Tables B-1 to B-3 in Appendix B.

During walkover surveys in 2017 and 2020, multiple areas were identified as having the potential to hold otter holts, including locations within the townlands of Balybofey, Cappry (Graham), Carricknamanna, Carrickmagrath, Dooish, Drumboe Lower and Dreenan. One of these areas (Dooish) was within the CPO boundary.

During the detailed otter surveys in 2019 and 2020, live sightings were recorded within the townlands of Goland and Mullandrait. The live sighting of otter at Mullandrait was 135 m from the CPO boundary. The sighting in Goland located 646 m from the CPO boundary line was recorded as a potential mammal and therefore could not be confirmed as otter. At the time, one active holt was recorded along the River Finn at

Ballybofey bridge approximately 1.2 km downstream from the CPO boundary. A further two potential holts were recorded at Drumboe Lower, 45 m and 423 m from the CPO boundary. Numerous other signs of otter (e.g. spraint, slides, couches, trails, and footprints) were recorded across the study area both within and outside the CPO boundary.

During the detailed mammal surveys in July 2023, six further potential otter holts were recorded for Section 1 (see Table B-1 in Appendix B). No confirmed otter holts or couches were found within the study areas; however, multiple areas were identified as having the potential to hold otter holts, including locations within the townlands of Dooish, Drumboe Lower, and Ironworks. One of these areas (Dooish) was within the CPO boundary, while the locations at Drumboe Lower were 20 to 38 m from CPO boundary, and the locations at Ironworks were 30 to 50 m from the CPO boundary. Numerous other signs of otter (e.g. spraint, footprints, and trails) were recorded across the study area both within and outside the CPO boundary. All potential holts were regarded as not currently active from the field signs present with the exception of holt site (S1-HLT2).

A trail camera was deployed for 16 days between the 3 and 18 August 2023 at the potential holt site (S1-HLT2), due to potential activity, to ascertain if it was currently used by otters. The footage obtained concluded that otter was not using the potential holt sites during the operational time of the camera traps.

During surveys between August and October 2025, potential holts recorded in 2023 and earlier surveys were revisited. There was no evidence of potential holts S1-HLT2 and S1-HLT3 showing regular use. However, a spraint was located approx. 2 m from S1-HLT3, which highlights otter activity in this area. The potential holt S1-HLT1 previously identified within the CPO boundary (Dooish), was categorised as disused due to the presence of cobwebs at the entrance and the absence of any spoil heap. Other potential holts recorded outside of the CPO boundary in 2023 (S1-HLT4, S1-HLT5, S1-HLT7) were categorised as disused or ruled out as a potential holt. No further otter holts or couches were identified within the study areas in 2025. The potential holts were all categorised as inactive through the field surveys and there was no need to deploy any camera traps in 2025 to confirm the lack of use. However, two fresh spraints were recorded across the study area, both within and outside the CPO boundary, confirming that otters are still actively foraging and commuting through the CPO boundary.

Based on the most up-to-date baseline information available, otters are active along the River Finn and its tributaries. However, there are currently no active otter couches or holts identified (as relevant to the Proposed Development and, specifically, Section 1). It is the most up-to-date baseline against which the impact assessment has been made; recognising that otters are a dynamic species within a dynamic aquatic ecosystem.

3.6.1.1.2 Section 2

Desktop

The NBDC data search returned 11 records of otter for the C10 grid square, 15 records for the C11 grid square, and no records for the C20 and C21 grid squares. NPWS records show evidence of otter along the Dooballagh Burn_010 (IE_NW_39D020200) river, which flows into Leslie Hill Stream_020 (IE_NW_39L050660), which then discharges into Swilly Estuary (IE_NW_220_0100) and Lough Swilly coastal waterbody (IE_NW_220_0000) (Reid *et al.,* 2013). No records are located within the CPO boundary.

The study area is in close proximity to a number of designated sites. The closest site designated for otter is Lough Swilly SAC. This site is located in the same WFD catchment as the study area (Lough Swilly WFD Catchment) and intersects the CPO boundary. Otters feed on a range of aquatic species. The River Swilly supports a range of fish species including salmon, stickleback, eel, and brown trout (Gordon *et al.*, 2021). There is, therefore, potential for otter to occur in the study area.

Field Surveys

Otter surveys carried out between 2017 and 2025 established that otter is using the area upstream and downstream of the proposed crossing of the River Swilly, and are therefore considered to be utilising this section of the Swilly Estuary.. Evidence of otter was recorded in the form of possible holts, live sightings, prints, couches, spraint, and slides. Otter evidence in Section 2 is mapped in EIAR Drawings 9A.22 and 9A.23 and described in Tables B-4 to B-6 in Appendix B.

During the detailed otter surveys in 2019, an active holt was found approximately 18 m from the CPO boundary within the townland of Drumany, while one potential holt was observed within the townland of Ballyraine, approximately 776 m from the CPO boundary. A sighting of a live otter was also recorded within the townland of Bunagee, approximately 158 m form the CPO boundary. Numerous other signs of otter activity (e.g. spraint, slides, couches, trails, and footprints) were also recorded across the study area both within and outside the CPO boundary (Table B-5 in Appendix B).

During the detailed mammal surveys in July 2023, the active holt in Drumany recorded in 2019 was revisited. Due to growth of dense vegetation, the holt could no longer be accessed by the surveyor and could not be confirmed if otter were still actively using the holt. However, due to the lack of an active trail leading into the dense vegetation it is deemed unlikely that the holt is still active.

A further five potential otter holts were recorded in July 2023 for Section 2 within the townlands of Ballyraine, Milk Isle, and Trimragh (see Table B-4 in Appendix B). One of these areas (Trimragh) was within the CPO boundary, while the locations at Milk Isle were 20 to 89 m from the CPO boundary, and the location at Ballyraine was 6 m from the CPO boundary. Two of the holts were deemed as potentially active S2-HLT1 and S2-HLT2, whilst the others were deemed as inactive and disused.

Trail cameras were deployed for 16 days between the 3 and 18 August 2023 at the two potentially active holt sites; one in Ballyrain (S2-HLT1) and one at Milk Isle (S2-HLT2), to ascertain if they were in current use by otters. The footage obtained concluded that otter were not using the potential holt sites during the operational time of the camera traps.

Numerous other signs of otter activity (e.g. spraint, footprints, and trails) were also recorded across the study area both within and outside the CPO boundary (Table B-5 in Appendix B). Evidence of otter activity was predominantly along the River Swilly, upstream and downstream of the proposed crossing. Additionally, regular spraint was observed on a culvert in Farsetmore stream within the CPO boundary.

During the 2025 surveys, the five potential holts identified in 2023 and two in 2019 were revisited. S2-HLT1 did not show signs of regular use, however, a print was identified in close proximity to the hole. In Milk Isle, potential holts S2-HLT3 and S2-HLT4 were located approximately 10 m apart and found to have been used in recent months, potentially by otter, but were not currently active. It was determined that S2-HLT2 and S2-HLT5 were disused, and there was no other evidence of otter activity in these areas. The two potential holts identified in 2019 were absent in the 2025 re-survey, and there were no other signs of otter recorded in these areas. No further otter holts or couches were identified within the study areas in 2025. However, other evidence of otter activity (e.g. print, slide, trail) was recorded outside of the CPO boundary during the 2025 surveys.

During the entire survey period, other potential field signs, which could not be attributed with certainty to otter activity, but which could likely be caused by otter, were also encountered. Table B-6 in Appendix B lists field signs which, while not confirmed as being evidence of otter, are considered to be sufficient to be included on the basis of the precautionary principle.

Based on the most up-to-date baseline information available, otters are active within the Swilly Estuary and the tributaries that feed it. However, there are currently no active otter holts or couches identified (as relevant to the Proposed Development and, specifically, Section 2). It is the most up-to-date baseline against which the impact assessment has been made; recognising that otters are a dynamic species within a dynamic aquatic ecosystem.

3.6.1.1.3 Section 3

Desktop

The NBDC data search returned a small number of records of otter along the River Finn and two records from the River Deele in the H39 grid square, one record from the Swilly Burn in the C30 grid square, and a single record from the corker River in the C21 grid square to the north of the scheme.

Field Surveys

Evidence of otter activity was recorded during the surveys undertaken in 2020 at W3-08 (Ch4+550) on a tributary of the Lesliehill Stream, where a spraint was present under the existing bridge on the N14. Tracks, spraints and trails were recorded along the River Finn (W3-21) indicating regular activity, though no holts or couches were recorded in the vicinity of the proposed crossing. Dense vegetation along the southern river bank upstream of the crossing point may however, conceal holts or couches. No other field signs of otter were recorded during the mammal survey undertaken for the scheme, and their distribution is likely limited by the poor water quality and lack of fish on most of the smaller watercourses. Nonetheless, periodic movement can be expected to occur on all watercourses crossed by the Proposed Development.

3.6.1.2 Badger

Badger are afforded national protection under the Wildlife Acts (1976, 2000) and are assigned a conservation status in Ireland of Least Concern (Marnell *et al.,* 2019).

The precise locations of potential badger setts and badger evidence are described and mapped in the Confidential Badger Survey Document. To mitigate potential for persecution risk with potential sett locations entering the public domain, these details have been provided separately and confidentially to Donegal County Council and An Coimisiún Pleanála (in a document titled, 'Confidential Badger Survey Document') and exact locations are not detailed within this report.

3.6.1.2.1 Section 1

Desktop

The NBDC data search returned 67 records of badger for the C10 grid square, 31 records for the H09 grid square and 113 records for the H19 grid square. Multiple records for the H19 grid square are located within the CPO boundary.

Field Surveys

Mammal surveys carried out between 2018 and 2023 established that badger is present across Section 1 of the Proposed Development. However, a decline in badger activity between 2019 and 2023 surveys was noted in some areas (e.g. Mullaghagarry, Teevickmoy). Badger setts and other badger evidence (e.g. snuffle holes, guard hairs, and latrines) are described and mapped in the Confidential Badger Survey Document.

During detailed mammal surveys in July 2018, July 2019, and February 2020, nine active badger setts were recorded in the townlands of Drumboe Lower (Holy Well Woods), Mullaghagarry, Teevickmoy, and Knockfair, while four inactive setts were observed within the townlands of Cappry, Dunwiley, Drumboe Lower (Holy Well Woods), and Mullaghagarry. The active sett in Knockfair was located within the CPO boundary and the remaining active setts identified in 2019 were within 150 m of the CPO boundary. Three of the inactive setts were located within 150 m of the CPO boundary, with the remaining inactive sett approximately 170 m from the current CPO boundary. An additional potentially active sett was thought to be present in the woodland within the townland of Teevickmoy due to the level of badger activity within the area, however, the location of this sett could not be confirmed. Another potentially active sett was anecdotally reported in Mullandrait, however this could also not be confirmed during the surveys. Numerous other signs of badger activity such as snuffle holes, hairs, and latrines were recorded across Section 1, both within and outside the CPO boundary during this survey period.

Incidental records of snuffle holes and a potential sett were recorded during other ecological survey work in May 2021. The snuffle holes and potential sett were located adjacent to the River Finn, in the townlands of Ironworks and Drumboe Lower, respectively. The potential sett (S1-SET22) was located 60 m from the CPO boundary but was not located in the most recent surveys in 2023.

During detailed mammal surveys in July 2023, all active setts identified in previous years (between 2018 and 2021) were resurveyed. Out of nine resurveyed setts, one was still active in Drumboe Lower, one was partially still in use in Teevickmoy, three were inactive in Dumboe Lower and Mullaghagarry and four were not located, including the active sett in Knockfair located within 150 m of the CPO boundary. In the townland

of Teevickmoy, approximately 115 m from the CPO boundary, an active sett (S1-SET14) was recorded in 2018 and 2019. However, in 2023, two of the entrances were blocked with boulders and the sett was only partially used.

Additional setts and evidence of badger activity were also recorded during the updated detailed mammal surveys in 2023. A further 16 potential setts were identified, however only one of these setts was recorded as being active and was located 180 m from the CPO boundary in the townland of Mullandrait. Three further setts were reported to be partially in use in the townlands of Drumboe Lower and Teevickmoy and are all <15 m from the CPO boundary. The remaining setts reported in 2023 were all inactive and occurred within the townlands of Drumboe Lower, Teevickmoy, Cappry, Kncokfari, and Mullaghagarry.

There was a decline in badger activity between 2019 and the 2023 surveys, in the townlands of Mullaghagarry and Drumboe Lower. Revisited badger setts in Mullaghagarry were either no longer in use or were not located during the 2023 surveys and a further sett in the vicinity was also inactive. The decrease in badger activity between 2019 and 2023 may be associated with local culls. Additionally, entrances of three setts in Mullaghagarry, Drumboe Lower and Teevickmoy had been blocked with boulders. However, an active latrine site and trail in the Mullaghagarry woodland recorded during the 2023 surveys indicate that badgers were still active in the area at the time.

During the August to October 2025 badger surveys, all setts identified in previous years (between 2019 and 2023) in Section 1 were revisited. There were also five new records of setts found within the CPO boundary. In Cappry, S1-SET32 was found 35 m south of S1-SET2. It was partially used, with a single entrance with a fresh spoil heap within an earth bank, underneath a hedgerow. It was not possible to determine the presence of detritus or cobwebs at the sett entrance. Two setts were identified in the Drumboe Lower townland. The main entrance for the partially used S1-SET33 was a large opening at the base of an oak tree. The second entrance was located 10 m west at the source of a stream which drained uphill. S1-SET34 was inactive, with a single entrance at the base of a tree. In Mullaghagarry, a partially used sett (S1-SET35) was recorded. This new sett contained high leaf fall, which made it difficult to determine the level of usage. Some of the spoil heap was also unvegetated. However, the cobweb present at the entrance indicated that this sett was partially used. A final sett was identified in a stone wall in Tircallan (S1-SET36). As the hedge in this area was recently cut, disturbing the ground and vegetation, it was difficult to determine usage. However, an unvegetated spoil heap indicated partial use.

Out of 25 resurveyed setts, two setts remained active; one in Cappry approximately 25 m from the CPO boundary (S1-SET3) and one in Teevickmoy approximately 115 m from the CPO boundary (S1-SET14). One previously active sett was still in partial use in Mullandrait approximately 180 m from the CPO boundary (S1-SET20). There was a further decline in badger activity between 2023 and 2025 surveys. Seven setts were classified as inactive in Drumboe Lower, three in Cappry, two in Teevickmoy, one in Knockfair, and one in Mullaghagarry. Numerous setts could not be located during the 2025 surveys; likely having become overgrown due to inactivity. These included three in Mullaghagarry, two in the wider Drumboe Lower area, one in Dunwiley, one in Mullandrait, and one in Teevickmoy. This decrease in badger activity may be associated with local culls. However, numerous other signs of badger activity (e.g. latrine, scat, snuffle hole, trail) were found in Drumboe Lower, Cappry, Ballyraine, Dooish, and Dunwiley, which indicates that badgers were still active in these areas.

3.6.1.2.2 Section 2

Desktop

The NBDC data search returned 67 records of badger for the C10 grid square, 56 records for the C11 grid square, 35 records for the C20 grid square, and 50 records for the C21 grid square.

Field Surveys

Mammal surveys carried out between 2018 and 2023 established that badger is present across Section 2 of the Proposed Development. Badger setts and other badger evidence (e.g. snuffle holes, guard hairs, and latrines) are described and mapped in the Confidential Badger Survey Document.

During the detailed mammal surveys in 2018 and 2019, five active badger setts were observed within the townlands of Magheraboy and Dromore, while four inactive setts were observed within the townlands of Magheraboy, Aghlehard, Listellan, and Trimragh. Another sett was observed within the townland of Magheraboy, but it's level of use could not be ascertained. A further three potential setts are thought to exist within the townlands of Magheraboy, Listellan, Rossbracken, and Pluck. Two of these potential setts were indicated as being present by the respective landowners on the day, but were not confirmed by surveyors, while a third was thought to be present due to the level of badger activity observed in the area, but the location of this sett could not be confirmed. The majority of setts (ten), including active, inactive, and potential setts within the study area were over 600 m from the Section 2 CPO boundary but one inactive sett within the townland of Trimragh was within CPO boundary, while two active setts within the townland of Dromore were 100 m and 270 m from CPO boundary. Numerous other signs of badger activity such as snuffle holes, footprints, and trails have been recorded across Section 2, within and outside of the boundary line.

The active sett in Dromore 100 m from the CPO boundary was revisited during detailed mammal surveys in 2023, however the sett could not be located. There were few signs of badger activity observed in Section 2 within the 150 m buffer. Three potential badger setts were observed within the townlands of Ballyraine and Trimragh, but the level of use was low. Two were recorded as disused, and one partially used. The two potential badger sett records located in the townland of Trimragh were within the Section 2 CPO boundary, while the sett record located in the townland of Balyraine was approximately 30 m from the Section 2 CPO boundary (see mapping in the Confidential Badger Survey Document). All three records were in close proximity to the River Swilly, therefore there is potential for these burrows to be used by otter also. No other badger signs were recorded across Section 2.

All setts previously recorded in 2019 and 2023 were resurveyed between August and October 2025. Multiple setts identified in 2018 were not revisited in 2023 or 2025 as the CPO boundary changed, which put these setts over 580 m from the CPO boundary. S2-SET1 which was categorised as inactive in 2023 was actively in use in October 2025. This was located in a small woodland approximately 90 m east of River Swilly and 30 m from the CPO boundary, within the townland of Ballyraine. Five entrances were identified, including one with a fresh spoil heap and another with a fresh latrine outside. All of the entrances appeared to be well used, with no detritus present. In the townland of Trimagh, two setts (S2-SET2 and S2-SET3) were confirmed to still be inactive in 2025. These were both filled with detritus and overgrown with either cobwebs or brambles. S2-SET13 in Dromore and S2-SET15 in Trimagh could not be located in 2023, as well as 2025. There was no evidence of badger activity in the vicinity of these setts. No other signs of badger activity were recorded during the 2025 surveys of Section 2.

3.6.1.2.3 Section 3

Desktop

A small number of records exist on the NBDC database for Badger in the grid squares within which the Proposed Development sits. There is however a surprising paucity in grid square C20 along the proposed alignment. Records are mainly confined to the south along the River Finn and to the north, though many of these are over 10 years old.

Field Surveys

Signs of badger activity were recorded at very few locations along the Proposed Development during the mammal survey. A total of 6 badger setts were recorded from within the footprint of the proposed road, or close to the boundary of the CPO line, though there was evidence of occupation by badgers at only one location. A dead badger was recorded on the N14 at Ballinalecky in July 2019. Evidence of activity at setts (associated trails, fresh prints and dung latrines) was low and occupancy by rabbits would suggest they are not being used by badgers. This may be a result of badger culling in response to Bovine TB risks. There are a number of areas along the proposed route where dense scrub may conceal badger setts. Due to their sensitivity to disturbance, locations where activity and sett locations were recorded are not provided.

3.6.1.3 Bats

All Irish bat species (common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), Nathusius' pipistrelle (*Pipistrellus nathusii*), Leisler's bat (*Nyctalus leisleri*), Daubenton's bat (*Myotis daubentonii*), Natterer's bat (*Myotis nattereri*), whiskered bat (*Myotis mystacinus*), brown long-eared bat (*Plecotus auritus*), and lesser horseshoe bat (*Rhinolophus hipposideros*)) are protected under the Wildlife Acts (1976 to 2022) and by the Habitats Directive, which protects rare species, including bats, and their habitats. All bat species are listed in Annex IV of the Habitats Directive as species protected across their entire natural range and the lesser horseshoe bat is further listed, under Annex II, as a species for which core areas of their habitat must be protected within the Natura 2000 network. All bat species are assigned an Irish conservation status of Least Concern (Marnell *et al*., 2019).

3.6.1.3.1 Section 1

3.6.1.3.1.1 Desktop Survey

A search of the NBDC database was conducted for records of all bat species within the hectads outlined in Section 2.2. The results of the NBDC data search for Section 1 are presented below in Table 3-18.

Table 3-18: NBDC Records for Bats in Section 1

Species	Common Name	Grid Square	Date of Last Record
Pipistrellus pipistrellus sensu stricto	Common pipistrelle	H19, H09, C10	23/08/2019
Pipistrellus pygmaeus	Soprano pipistrelle	H19, H09, C10	23/08/2019
Plecotus auritus	Brown long-eared bat	H19, C10	12/07/2018
Myotis daubentonii	Daubenton's bat	H19, H09	19/08/2019
Myotis nattereri	Natterer's bat	C10	12/07/2018
Nyctalus leisleri	Lesser noctule	H19, H09, C10	15/08/2021
Myotis mystacinus	Whiskered bat	H19	29/05/2018

3.6.1.3.1.2 Potential Roost Features – Trees

The results of the 2025 GLTAs and tree climbing surveys are detailed in Appendix C and mapped in EIAR Drawing 9A.40. After the GLTAs, 81 trees were identified as PRFs in Section 1 (see Table 3-19). Tree climbing was carried out on 13 of these trees identified as PRF-M. After the tree climbing survey, 12 of these trees were identified as PRF-M with one downgraded to negligible. After the tree climbing survey, 68 trees were identified as PRF-I and 12 as PRF-M.

During the 2025 tree climbing surveys, a confirmed roost was identified in one tree (S1-TA5-BT17), with one soprano pipistrelle found in a compression cavity approximately 2.5 m high. Therefore, S1-TA5-BT17 was a confirmed bat roost and was assessed as a PRF-M. This same feature also had roosting bats during 2022 tree climbing surveys. On 15 and 16 September 2022, a single pipistrelle, most closely resembling a soprano pipistrelle was recorded. Three small droppings were found on vegetation directly beneath the roost entrance. On 29 September, three soprano pipistrelles were visible inside the roost. No additional roosts were identified during the 2025 or 2022 surveys.

Table 3-19: Trees Surveyed for Bat Roost Suitability in Section 1 in 2025

Wooded Area	Trees with PRFs	PRF-I	PRF-M
1	17	13	4
2	14	12	2
3	1	1	0

Wooded Area	Trees with PRFs	PRF-I	PRF-M
4	5	4	1
5	11	9	2
6	15	13	2
7	3	3	0
8	11	10	1
9	3	3	0
Total	**80**	**68**	**12**

3.6.1.3.1.3 Potential Roost Features – Structures

2025 Surveys

The 37 structures assessed in 2025 for bat roost suitability in Section 1 are detailed in Table 3-20 and mapped in EIAR Drawing 9A.36. From these surveys, no structures with high roost potential, four structures with moderate roost potential, 20 structures with low roost potential, and 13 structures with negligible roost potential were identified.

Table 3-20 Structures Surveyed for Bat Roost Suitability in Section 1 in 2025

Structure	Negligible	Low	Moderate
S1-B9a	✓		
S1-B9b		✓	
S1-B10a		✓	
S1-B10b		✓	
S1-B11a		✓	
S1-B11b		✓	
S1-B12a	✓		
S1-B12b			✓
S1-B13a		✓	
S1-B13b			✓
S1-B14a		✓	
S1-B14b			✓
S1-B15a		✓	
S1-B15b	✓		
S1-B15c		✓	
S1-B16a		✓	
S1-B16b	✓		
S1-B16c	✓		
S1-B17		✓	
S1-B18a		✓	
S1-B18b		✓	
S1-B18c	✓		

Structure	Negligible	Low	Moderate
S1-B19a	✓		
S1-B19b	✓		
S1-B20	✓		
S1-B21a		✓	
S1-B21b	✓		
S1-B21c		✓	
S1-B22a			✓
S1-B22b		✓	
S1-B23a		✓	
S1-B23b		✓	
S1-B23c	✓		
S1-B24		✓	
S1-B25		✓*	
S1-B26	✓		
S1-B27	✓		
Total	**13**	**20**	**4**

* not to be demolished

After the preliminary roost assessment, emergence surveys were carried out on all 23 structures which are scheduled to be demolished and had low or moderate roost potential. Where accessible, one emergence survey was carried out on low suitability structures, two surveys were carried out on moderate suitability structures, and three surveys were carried out if emergence was observed. The locations and dates of the emergence surveys carried out on structures within Section 1 are shown in Table 3-21 and mapped in EIAR Drawing 9A.37.

Table 3-21: Dates and Locations of 2025 Section 1 Emergence Surveys

Structure	Suitability	Emergence Survey 1	Emergence Survey 2	Emergence Survey 3
S1-B9b	Low	29/09/2025	-	-
S1-B10a	Low	18/09/2025	-	-
S1-B10b	Low	18/09/2025	-	-
S1-B11a	Low	18/09/2025	-	-
S1-B11b	Low	18/09/2025	-	-
S1-B12b	Moderate	12/08/2025	16/09/2025	-
S1-B13a	Low	08/09/2025	29/09/2025	-
S1-B13b	Moderate	13/08/2025	08/09/2025	-
S1-B14a	Low	02/09/2025	-	-
S1-B14b	Moderate	13/08/2025	02/09/2025	16/09/2025
S1-B15a	Low	28/08/2025	-	-
S1-B15c	Low	28/08/2025	-	-
S1-B16a	Low	22/09/2025	-	-
S1-B17	Low	30/09/2025	07/10/2025	-

Structure	Suitability	Emergence Survey 1	Emergence Survey 2	Emergence Survey 3
S1-B18a	Low	17/09/2025	-	-
S1-B18b	Low	17/09/2025	-	-
S1-B21a	Low	25/08/2025	08/09/2025	22/09/2025
S1-B21c	Low	25/08/2025	-	-
S1-B22a	Moderate	11/08/2025	01/09/2025	-
S1-B22b	Low	06/10/2025	-	-
S1-B23a	Low	06/10/2025	-	-
S1-B23b	Low	27/08/2025	-	-
S1-B24	Low	30/09/2025	-	-

The coordinates of the buildings surveyed and the results of the emergence surveys are shown in Table 3-22 below. Emerging bats were observed at six of the buildings.

Table 3-22: Locations of the Emergence Surveys Completed in Section 1

Structure Code	ITM X	ITM Y	Type	Emergence
S1-B09a	611504	894099	House	Negative
S1-B09b	611484	894098	Shed	Negative
S1-B10a	611433	894099	Shed	Negative
S1-B11a	611475	894130	House	Negative
S1-B11b	611459	894106	Shed	Negative
S1-B12b	612183	894486	Shed	Negative
S1-B13a	612110	894491	House	Roost confirmed: likely one bat; likely a *Pipistrelle* sp.
S1-B13b	612096	612096	Shed	Negative
S1-B14a	612144	894453	House	Roost confirmed: likely two bats; one *Pipistrelle* sp. and one unconfirmed species.
S1-B14b	612162	894457	Shed	Roost confirmed: three bats; likely two were a *Myotis* sp. and one was a *Pipistrelle* sp.
S1-B15a	612154	894574	House	Negative
S1-B15c	612181	894566	Shed	Negative
S1-B16a	613318	894230	Shed	Negative
S1-B17	612456	894952	House	Roost confirmed: likely four bats; one Leisler's bat and two confirmed and one likely soprano pipistrelle.
S1-B18a	613674	895694	Shed	Negative
S1-B18b	613680	895712	Shed	Negative
S1-B21a	613919	895902	House	Roost confirmed: three bats of unconfirmed species. No vocalisations occurred during emergence. Leisler's bat and soprano pipistrelle were heard several minutes before and after emergence, respectively.
S1-B21c	613927	895908	Shed	Negative
S1-B22a	614471	896796	House	Negative

Structure Code	ITM X	ITM Y	Type	Emergence
S1-B22b	614474	896821	Shed	Roost confirmed: one bat of an unconfirmed species. No vocalisations occurred during emergence. Soprano pipistrelle was the only species active around the time of emergence.
S1-B23a	615441	898255	House	Negative
S1-B23b	615427	898274	Shed	Negative
S1-B23c	615442	898286	Shed	Negative
S1-B24	615415	898069	House	Negative

The 2022 roost surveys did not include any additional buildings and did not identify any roosts. Therefore, the results of the 2022 surveys are not detailed in this report.

Pre-2022 Surveys

The results of the pre-2022 surveys of structures are detailed in Appendix C. Of the eight structures assessed in the 2019 to 2021 period (see EIAR Drawing 9A.28), only one is within the CPO boundary; the N13 Croghroe River Bridge (ITM 615974 900027). The bridge was assessed as having low suitability for roosting bats.

Outside the CPO boundary, two structures with bat roosts (S1B3 and S1B5) and three with potential bat roosts (S1B2, S1B6, and S1B8) were recorded. A common pipistrelle roost was identified at S1B3, approximately 35 m east of the CPO boundary. A single Leisler's bat was recorded returning to S1B5 during a re-entry survey, approximately 30 m from the CPO boundary.

A suspected roost was identified at S1B2, approximately 100 m from the CPO boundary, during 2019 dawn surveys, when a common pipistrelle was heard warbling from within S1B2. There is a potential soprano pipistrelle roost in S1B6, approximately 85 m east of the CPO boundary. No dawn/dusk surveys were conducted at this location, but static detector results indicate medium levels of soprano pipistrelle activity at dusk/dawn times. There was one potential dusk emergence of an unidentified species at S1B8, approximately 30 m from the CPO boundary.

3.6.1.3.1.4 Bat Activity Surveys

In 2025, bat activity was recorded via static detectors within the CPO boundary along watercourses, hedgerows, and treelines identified as representative samples of likely commuting and foraging routes within the Proposed Development corridor. Static detector surveys were also conducted in 2019 and 2020. Transects were conducted within the proposed route corridor between 2019 and 2021 at locations supporting hedgerows and treelines either along the local road network or traversing field boundaries. In addition, incidental bat activity records were also collated during 2025 and 2022 emergence/re-entry surveys. During the surveys, a total of seven bat species were recorded in Section 1, namely: common pipistrelle, soprano pipistrelle, Leisler's bat, brown long-eared bat, Natterer's bat, Nathusius' pipistrelle, and Daubenton's bat.

2025 Static Detector Surveys

Static detector locations from 2025 are mapped in EIAR Drawing 9A.45 and the results are detailed in Appendix C. Static detectors were deployed in 13 locations within Section 1. Each location had a static detector deployed over two periods of at least five days each. However, due to excessive triggering of the detector, in some instances, less than five days of data were captured during a deployment. The following bat species were recorded during this surveillance: soprano pipistrelle, common pipistrelle, Nathusius' pipistrelle, Leisler's bat, Daubenton's bat, Natterer's bat, and brown long-eared bat.

The activity levels of each species at each location are discussed below. Activity levels were determined based on the number of passes recorded per night. In the following 2025 survey descriptions, activity levels

of 'low', 'moderate', and 'high' indicate 0–100 passes/night, 100–400 passes/night, and >400 passes/night, respectively. The exact figures are available in Appendix C.

The activity level of each species at each location was determined based on the number of passes of the species recorded per night using the following rules:

- High – on average >100 bat passes per night for a specific bat species or >200 passes/night for local bat populations;
- Moderate – on average 20–100 bat passes per night for a specific bat species or 100–200 bat passes/night for local bat populations;
- Low – on average <20 bat passes per night for a specific bat species or <100 bat passes/night for local bat populations.

The exact figures are available in Appendix C. The following are the key findings for each species:

- During at least one deployment, high levels of common pipistrelle activity were observed at S1-SD02, S1-SD05, S1-SD06, S1-SD08, S1-SD10, S1-SD12, and S1-SD13, and during at least one deployment, moderate activity levels were observed at all other locations aside from S1-SD01 and S1-SD04. During at least one deployment, high levels of soprano pipistrelle activity were observed at S1-SD01, S1-SD02, S1-SD06, S1-SD08, S1-SD12, S1-SD13, and S1-SD14, and during at least one deployment, moderate activity levels were observed at all other locations aside from S1-SD04. Nathusius' pipistrelle was only confirmed at S1-SD02, S1-SD07, and S1-SD08, where only a single pass was recorded during a deployment. However, indeterminate *Pipistrellus* sp. were recorded at all locations (typically in moderate numbers).
- Leisler's bat typically had less than 10 passes/night, with notable exceptions at S1-SD06, S1-SD07, and S1-SD08, which recorded activity in the range of 25–75 passes/night.
- Both Daubenton's bat and Natterer's bat were only confirmed at S1-SD01 and S1-SD02; each species with extremely low activity levels (i.e. ~1 pass/night). However, indeterminate *Myotis* sp. were recorded at all locations, but with very low activity levels (i.e. 10 or fewer passes/night).
- Brown long-eared bat was recorded at S1-SD01, S1-SD02, S1-SD06, S1-SD07, S1-SD08, S1-SD10, and S1-SD14. But only S1-SD02, which averaged 4 passes/night, had activity levels greater than 1 pass/night.

Based on the above findings, the key areas of bat activity include the following.

The following static locations, listed in descending order of bat activity, recorded common pipistrelle, soprano pipistrelle, *Myotis* sp., and Leisler's bat activity:

- S1-SD14, within a treeline adjacent to the road leading through Drumboe. This had the highest activity levels and both deployments at this location recorded high activity levels.
- S1-SD12, within a treeline adjacent to the N13 and the Cloghroe stream within an agricultural field. This had the third highest activity levels and both static deployments at this location recorded high activity levels.
- S1-SD13, within a treeline south of the N15. Both static deployments at this location recorded high activity levels.

The following static locations, listed in descending order of bat activity, recorded common pipistrelle, soprano pipistrelle, *Myotis* sp., Leisler's bat, and brown long-eared bat activity:

- S1-SD08, within a hedgerow within agricultural fields behind 'The Park' housing estate in Ballybofey. This had the second highest activity levels and both deployments at this location recorded high activity levels.
- S1-SD06, within a hedgerow at the end of a road within the townland of Dunwiley. Moderate to high activity levels were recorded at this location.

- S1-SD10, within a hedgerow at the bottom of a farmyard in the townland of Drumboe. Moderate to high activity levels were recorded at this location.

  S1-SD01, within riparian woodland along the River Finn. One deployment at this location recorded high activity levels.

The following static locations, listed in descending order of bat activity, recorded common pipistrelle, soprano pipistrelle, *Myotis* sp., Leisler's bat, brown long-eared bat, and Nathusius' pipistrelle activity:

- S1-SD02, at the edge of a mixed woodland adjacent to an agricultural field within the townland of Drumboe. Both deployments at this location recorded high activity levels.
- S1-SD07, within a hedgerow in agricultural fields within the townland of Glenmore. One deployment at this location recorded moderate activity levels.

The following static locations, listed in descending order of bat activity, recorded common pipistrelle, soprano pipistrelle, *Myotis* sp., and Leisler's bat activity:

- S1-SD09, within a treeline along a stream in agricultural fields within the townland of Teevickmoy. Both deployments at this location recorded moderate activity levels.
- S1-SD05, at the edge of a coniferous woodland within the townland of Glenmore. Both deployments at this site recorded moderate activity levels.

Pre-2022 Static Detector and Transect Surveys

2019/2020 static detector locations are mapped in EIAR Drawing 9A.33 and the results are detailed in Appendix C. A total of 193 hours of audio recordings were made using static detectors across the Section 1 study area. The following bat species were recorded during this surveillance: soprano pipistrelle, common pipistrelle, Leisler's bat, brown long-eared bat, and *Myotis* spp.

The activity level of each species at each location was determined based on the number of passes of the species recorded per night. On examination of the number of bat passes at each of the static unit locations (see Appendix C), none had a high level of bat passes for any bat species while six static locations had a medium level of bat passes for bat species (common pipistrelle, soprano pipistrelle, and/or *Myotis* sp.) in 2019 and/or 2020. The following are key findings:

- Static units with a medium level of common pipistrelle bat passes in 2019 and/or 2020 were Static Detector (SD) 3 and SD5.
- Static units with a medium level of soprano pipistrelle bat passes in 2019 and/or 2020 were SD1, SD2, SD5, SD9, and SD11.
- The static unit with a medium level of Myotis sp. bat passes in 2019 and/or 2020 was SD1.
- Static detectors which recorded five or more species of bat on any one night of recording included SD4, SD6, SD7, SD9, SD10, SD11, and SD12.

Transect surveys are mapped in EIAR Drawing 9A.26 and the results are detailed in Appendix C. The following bat species were recorded during transect surveys: soprano pipistrelle, common pipistrelle, Leisler's bat, Nathusius' pipistrelle, Natterer's bat, brown long-eared bat, and Daubenton's bat.

The highest number of bat species (five species: common pipistrelle, common pipistrelle, Nathusius' pipistrelle, brown long-eared bat, and Leisler's bat) was recorded in Transect 10 in 2019, which was located in agricultural grassland bordered by hedgerows and treelines in the townland of Castlebane. Eight bat passes were recorded at this transect.

Four bat species each were recorded at Transect 3 (Natterer's bat, Nathusius' pipistrelle, common pipistrelle, and soprano pipistrelle) and Transect 9 (common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, and Leisler's bat). Transect 9 also had the highest number of bat passes (15) in any one night for any transect within Section 1. This transect was located within Tircallan woodlands and adjacent agricultural grassland

and hedgerows. Thirteen bat passes were recorded in 2019 in Transect 5, which was located in improved agricultural fields, with a semi-mature treeline and hedgerow network to the north of the River Finn and a woodland area, agricultural field, and riparian vegetation and berm associated with the River Finn within the townland of Drumboe Lower.

Static detector locations were altered during 2025 surveys to be within the CPO boundary, so direct comparisons between the years cannot be drawn. Based on the findings of the 2019–2022 surveys, the locations which support key areas of bat activity within Section 1 included:

- The riparian treeline, river, and bridge at Callan Bridge over the Croghroe River (S1B7) within the townland of Magheracorran where five bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, brown long-eared bat, and *Myotis* sp.) were recorded on SD12.
- The edge of a broadleaved and conifer woodland within the townland of Mullanchose where five bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, brown long-eared bat, and *Myotis* sp.) were recorded on SD4.
- Hedgerows, agricultural grassland (and buildings) within the townland of Cappry (Graham) where four bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, and *Myotis* sp.) were recorded on SD8. A winter building inspection was also carried out here with the associated buildings being considered to be of low–moderate suitability for roosting bats (S1B4).
- Improved and wet grassland bounded by mixed hedgerow and treelines in conjunction with roadsides bounded by low hedgerow with scattered trees within the townland of Cappry where transect surveys (Transect 6) recorded four bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, and *Myotis* sp.) and five bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, brown long-eared bat, and *Myotis* sp.) were recorded on SD7.
- Tircallan woodlands and adjacent agricultural grasslands which are bordered by hedgerow where four bat species (soprano pipistrelle, common pipistrelle, Nathusius' pipistrelle, and Leisler's bat) were recorded during transect surveys (Transect 9) and five bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, brown long-eared bat, and *Myotis* sp.) were recorded on SD11.
- A series of stone farm buildings and outhouses outside the CPO boundary (S1B3) with a surrounding habitat of a network of hedgerows and treelines bordering wet and pastoral grassland within the townland of Cappry where four bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, and *Myotis* sp.) were recorded on SD3. These building were assessed as having high suitability for roosting bats as they contained numerous cracks, crevices, and bat activity evidence. This building was confirmed to be a common pipistrelle roost.
- Improved agricultural fields, with a semi-mature treeline and hedgerow network to the north of the River Finn and a woodland area and access track, agricultural field, riparian vegetation and berm associated with the River Finn in the townlands of Ironworks (Glenmore) and Drumboe Lower where four bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, brown long-eared bat) were recorded during transect surveys (Transect 5) and three bat species (common pipistrelle, soprano pipistrelle, and *Myotis* sp.) were recorded on SD1.
- A treeline along a local road bordering a residential property within the townland of Drumboe Lower where four bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, and *Myotis* sp.) were recorded on SD13. A recording of a potential emergence of an unidentified bat species was noted from a derelict farmhouse at this location (S1B8). A mixed broadleaved woodland within the townland of Drumboe Lower where four bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, Myotis sp.) were recorded on SD2.
- A farmhouse and associated sheds outside the CPO boundary (S1B5), which are currently in use off a local road consisting of a combination of slate and galvanised roofing within the townland of Drumboe Upper where five bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, *Myotis* sp., and brown long-eared bat) were recorded on SD10. No signs of bat activity were recorded during the building inspection, but it was classed as being of moderate to high suitability for bat species as it contained numerous cracks and crevices. A single Leisler's bat was observed returning to this building during re-entry surveys in 2020.
- Agricultural grassland, hedgerows, treelines, and scattered trees within the townland of Magherapaste where two bat species (common pipistrelle and soprano pipistrelle) were recorded during transect surveys (Transect 4).

- Hedgerows and agricultural grassland within the townland of Dunwiley where five bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, brown long-eared bat, and *Myotis* sp.) were recorded on SD6.
- Buildings, agricultural grassland, hedgerows, and treelines within the townland of Teevikmoy where five bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, brown long-eared bat, and *Myotis* sp.) were recorded on SD9. Access could not be gained to these buildings outside the CPO boundary (S1B6) for an internal inspection. A potential soprano pipistrelle roost is located at these buildings as indicated by the activity of this species in the vicinity during dusk and dawn.

3.6.1.3.2 Section 2

3.6.1.3.2.1 Desktop Survey

A search of the NBDC database was conducted for records of all bat species within the hectads outlined in Section 2.2. The results of the NBDC data search for Section 2 are presented below in Table 3-23.

Table 3-23: NBDC Records for Bats in Section 2

Species	Common Name	Grid Square	Date of Last Record
Pipistrellus pipistrellus sensu stricto	Common pipistrelle	C10, C11, C20, C21	31/08/2021
Pipistrellus pygmaeus	Soprano pipistrelle	C10, C11, C20, 21	31/08/2021
Plecotus auritus	Brown long-eared bat	C10, C20, C21	31/08/2021
Myotis daubentonii	Daubenton's bat	C11, C20, C21	24/08/2021
Myotis nattereri	Natterer's bat	C10, C21	22/08/2019
Nyctalus leisleri	Lesser noctule	C10, C11, C20, C21	31/08/2021
Pipistrellus nathusii	Nathusius's pipistrelle	C21	13/05/2018

3.6.1.3.2.2 Potential Roost Features – Trees

The results of the 2025 GLTAs and tree climbing surveys are detailed in Appendix C and mapped in EIAR Drawing 9A.41. 21 trees with PRFs were recorded in Section 2 (see Table 3-24). Tree climbing was carried out on three of these trees. All three trees were identified as PRF-M following climbing survey inspections. The remaining 18 trees were identified as PRF-I. No roosts were identified in either the 2022 or 2025 tree climbing surveys.

Table 3-24: Trees Surveyed for Bat Roost Suitability in Section 2 in 2025

Wooded Area	Trees with PRFs	PRF-I	PRF-M
1	2	2	-
2	7	7	-
3	10	7	3
4	2	2	-
Total	**21**	**18**	**3**

3.6.1.3.2.3 Potential Roost Features – Structures

2025 Surveys

The 32 structures assessed in 2025 for bat roost suitability in Section 2 are detailed in Table 3-25 and mapped in EIAR Drawing 9A.38. From these surveys, no structures with high roost potential, five structures with moderate roost potential, 12 structures with low roost potential, and 15 structures with negligible roost potential were identified.

Table 3-25: Structures Surveyed for Bat Roost Suitability in Section 2 in 2025

Structure	Negligible	Low	Moderate
S2-B09a		✓	
S2-B09b			✓
S2-B10a		✓	
S2-B10b		✓ *	
S2-B11a	✓		
S2-B11b	✓		
S2-B11c	✓		
S2-B12a	✓		
S2-B12b	✓		
S2-B12c		✓	
S2-B13			✓
S2-B14a		✓	
S2-B14b			✓
S2-B16a	✓		
S2-B16b	✓		
S2-B16C/D	✓		
S2-B18a	✓		
S2-B18b		✓	
S2-B18c	✓		
S2-B18d		✓	
S2-B18e		✓	
S2-B18f	✓		
S2-B20a			✓
S2-B20b			✓
S2-B20c		✓ *	
S2-B22		✓	
S2-B24a	✓		
S2-B24b	✓		
S2-B25		✓	
S2-B26		✓	
S2-B27	✓		
S2-B28	✓		
Total	**15**	**12**	**5**

* adjacent to CPO boundary and not to be demolished

After the preliminary roost assessment, emergence surveys were carried out on 11 of the structures which are scheduled to be demolished and had low or moderate roost potential. The locations and dates of the emergence surveys carried out on structures within Section 2 are shown in Table 3-26 and mapped in EIAR Drawing 9A.39. Some buildings assessed as having roost potential could not be surveyed for emergence

due to access restriction. These were S2-B14a, S2-B14b, S2-B18e, and S2-B25. Where accessible, one emergence survey was carried out on low suitability structures, two surveys were carried out on moderate suitability structures, and three surveys were carried out if emergence was observed.

Table 3-26: Dates and locations of emergence surveys 2025 Section 2

Structure	2025 Suitability	Emergence Survey 1	Emergence Survey 2	Emergence Survey 3
B09a	Low	10/09/2025	23/09/2025	-
B09b	Moderate	10/09/2025	23/09/2025	-
B10a	Low	26/08/2025	-	-
B12c	Low	26/08/2025	-	-
B13	Moderate	14/08/2025	09/09/2025	-
B18b	Low	21/08/2025	-	-
B18d	Low	21/08/2025	-	-
B20a	Moderate	18/08/2025	02/09/2025	-
B20b	Moderate	19/08/2025	02/09/2025	17/09/2025
B22	Low	20/08/2025	-	-
B26	Low	20/08/2025	-	-

The coordinates of the buildings surveyed and the results of the emergence surveys are shown in Table 3-27 below. A single common pipistrelle was observed emerging from one building; S2-B20b.

Table 3-27: Locations of the Emergence/Re-Entry Surveys Completed in Section 2

Structure Code	ITM X	ITM Y	Type	Emergence/Re-entry
S2-B09a	618693	911954	Shed	Negative
S2-B09b	618731	911928	Shed	Negative
S2-B10a	619526	908622	House	Negative
S2-B12c	619538	908702	Shed	Negative
S2-B13	619780	911127	Shed	Negative
S2-B18b	620127	910691	House	Negative
S2-B18d	620129	910696	Shed	Negative
S2-B20a	622369	911301	Shed	Negative
S2-B20b	622396	911275	House	Roost confirmed: one common pipistrelle.
S2-B22	619493	910730	House	Negative
S2-B26	620026	910830	House	Negative

The 2022 roost surveys did not include any additional buildings and did not identify any roosts. Therefore, the results of the 2022 surveys are not detailed in this report.

Pre-2022 Surveys

The results of the pre-2022 surveys of structures are detailed in Appendix C. Of the eight structures assessed in the 2019 to 2021 period (see EIAR Drawing 9A.29), only two are within the CPO boundary;

buildings S2B5 and S2B6. S2B6 was resurveyed in 2022 and 2025 and is therefore discussed above under the label, B20a. S2B5, discussed above under the label S2-B25, was only surveyed from a distance 2025, as the surrounding lands are too overgrown to access it. During a March 2021 internal inspections, it was classified as having moderate suitability. However, an emergence survey and a re-entry survey, carried out in June and July 2020, respectively, did not identify emerging or re-entering bats.

Outside the CPO boundary, two structures with bat roosts (S2B1 and S2B3) were recorded. S2B1 is an unoccupied two-story house approximately 5–10 m outside the CPO boundary within the townland of Listellian where up to 19 soprano pipistrelles were confirmed emerging from the house. S2B3 is an old schoolhouse with roof slating adjacent to the CPO boundary in the townland of Dromore, where bats were heard warbling within the building and low numbers (two to three) of Leisler's bat were recorded emerging form the building during surveys in 2019. The weather conditions at the time of the survey were sub-optimal so there is the possibility that greater numbers of bats use this building for roosting

3.6.1.3.2.4 Bat Activity Surveys

In 2025, bat activity was recorded via static detectors within the CPO boundary along watercourses, hedgerows, and treelines identified as likely commuting and foraging routes within the Proposed Development corridor. Static detector surveys were also conducted in 2019 and 2020. Transects were conducted within the proposed route corridor between 2019 and 2021 at locations supporting hedgerows and treelines either along the local road network or traversing field boundaries. In addition, incidental bat activity records were also collated during 2025 and 2022 emergence/re-entry surveys. During the surveys, a total of six bat species were recorded in Section 2, namely: common pipistrelle, soprano pipistrelle, Leisler's bat, Nathusius' pipistrelle, brown long-eared bat, and *Myotis* sp.

2025 Static Detector Surveys

Static detector locations from 2025 are mapped in EIAR Drawing 9A.46 and the results are detailed in Appendix C. Static detectors were deployed in nine locations within Section 2. Each location had a static detector deployed over two periods of at least five days each. However, due to excessive triggering of the detector, in some instances, less than five days of data were captured during a deployment. Data of one deployment at S2-SD04 was also lost due to a hardware fault. The following bat species were recorded during this surveillance: soprano pipistrelle, common pipistrelle, Nathusius' pipistrelle, Leisler's bat, brown long-eared bat, and *Myotis* sp.

The activity level of each species at each location was determined based on the number of passes of the species recorded per night using the following rules:

- High – on average >100 bat passes per night for a specific bat species or >200 passes/night for local bat populations;
- Moderate – on average 20–100 bat passes per night for a specific bat species or 100–200 bat passes/night for local bat populations;
- Low – on average <20 bat passes per night for a specific bat species or <100 bat passes/night for local bat populations.

The exact figures are available in Appendix C. The following are the key findings for each species:

- During at least one deployment, high levels of common pipistrelle activity were observed at S2-SD02, S2-SD03, S2-SD08, and S2-SD09, and moderate levels of activity were recorded S2-SD04, S2-SD06, S2-SD07, and S2-SD10. During at least one deployment, high levels of soprano pipistrelle activity were observed at S2-SD03, S2-SD04, S2-SD06, S2-SD07, S2-SD08, S2-SD09, S2-SD10, and moderate levels of activity were recorded at the other locations: S2-SD02 and S2-SD11. Nathusius' pipistrelle was only confirmed at S2-SD08, S2-SD09, and S2-SD11, where there was less than 1 pass/night. However, indeterminate Pipistrellus sp. were recorded at all locations (typically in low to moderate numbers).
- Leisler's bat was recorded everywhere aside from S2-SD10, but typically had less than 10 passes/night, except for S2-SD06, S2-SD07, S2-SD09, and S2-SD11, which recorded activity in the range of 10–35 passes/night.

- Neither Daubenton's bat nor Natterer's bat were confirmed at any location. However, indeterminate Myotis sp. were recorded at all locations except for S2-SD10, but with very low activity levels (i.e. 10 or fewer passes/night).
- Brown long-eared bat was recorded at S2-SD02, S2-SD03, S2-SD04, S2-SD06, S2-SD07, and S2-SD09, but always with fewer than 5 passes/night.

Based on the above findings, the key areas of bat activity include:

- The following static locations, listed in descending order of activity level, recorded common pipistrelle, soprano pipistrelle, Leisler's bat, Myotis sp., and brown long-eared bat activity:
  - S2-SD03, within a mixed treeline along a road. Both deployments at this location recorded high levels of bat activity.
  - S2-SD09, within a treeline along a road. Both deployments of this location recorded high activity levels.
  - S2-SD07, within a hedgerow adjacent to a farmyard. The first deployment at this location recorded high activity levels and the second deployment recorded moderate activity levels.
  - S2-SD02, at a mixed broadleaved woodland located along a road. Both deployments at this location recorded high levels of bat activity.
  - S2-SD06, within a mixed treeline adjacent to a road. The first deployment of this location recorded high activity levels.
  - S2-SD04, at a coniferous woodland adjacent to a road. Moderate activity levels were recorded at this location.

S2-SD08 and S2-SD10 recorded moderate to high levels of activity, almost entirely from common and soprano pipistrelle.

Pre-2022 Static Detector and Transect Surveys

2019/2020 static detector locations are mapped in EIAR Drawing 9A.34 and the results are detailed in Appendix C. A total of 156 hours of audio recordings were made using bat static detectors across the Section 2 study area. The following bat species were recorded during this surveillance: soprano pipistrelle, common pipistrelle, Leisler's bat, brown long-eared bat, and *Myotis* species.

The activity level of each species at each location was determined based on the number of passes of the species recorded per night. On examination of the number of bat passes at each of the static unit locations, none had a high level of bat passes for any bat species while five static locations had a medium level of bat passes for at least one bat species (common pipistrelle and/or soprano pipistrelle) in 2019 and/or 2020. The following are the key findings:

- Static units with a medium level of common pipistrelle bat passes in 2019 and/or 2020 were SD1, SD2, and SD9;
- Static units with a medium level of soprano pipistrelle bat passes in 2019 and/or 2020 were SD2, SD7, SD8, and SD9; and
- Static detectors which recorded four species of bat on any one night of recording included SD1, SD2, SD3, SD4, SD5, and SD7.

Transect surveys are mapped in EIAR Drawing 9A.27 and the results are detailed in Appendix C. The following bat species were recorded during transect surveys: soprano pipistrelle, common pipistrelle, Leisler's bat, brown long-eared bat, *Myotis* spp, and an unidentified species.

The highest number of bat species (five species: common pipistrelle, common pipistrelle, brown long-eared bat, Leisler's bat, and an unidentified species) were recorded from Transect 2 in 2019, which was located in a mix of semi-mature treelines, broken hedgerows and a woodland strip north of the dual-carriageway in the townlands of Trimragh Lower and Drumargh Middle. 37 bat passes were recorded at this transect.

Three bat species were recorded at Transect 7 (common pipistrelle, soprano pipistrelle, and Leisler's bat), a driven transect, in 2019, but only four bat passes were recorded. This transect ranged from the Dry Arch roundabout to the N13/N14 roundabout at the eastern extent of the Section 2 alignment and back again. Adjacent habitats included woodland strips, planted treelines, hedgerows, and open mixed grasslands adjacent to the N13 dual carriageway. Twelve bat passes were recorded from Transect 10 in 2019 from two bat species (common pipistrelle and soprano pipistrelle). This transect, located in the townland of Dromore, included improved agricultural grassland bordered by hedgerows and treeline. An old railway line with scrubby and/or grassy verges was also walked for this transect.

Based on the findings of the 2019–2022 surveys, the locations which support key areas of bat activity within Section 2 included the following.

The edge of a recently partially felled conifer woodland glade within the townland of Listellian, where four bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, and *Myotis* sp.) were recorded on SD4.

A tree-lined laneway near an old farm building, with additional mature treeline and scrub nearby, including a woodland boundary at Lurgybrack, bordering an open agricultural field (SD1). In addition, low scrubby hedgerows/broken treelines bordering wet and agricultural grassland in Drumany townland (SD7).

Four bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, and *Myotis* sp.) were recorded on SD1 and SD7 while three bat species (soprano pipistrelle, common pipistrelle, and *Myotis* sp.) were identified during transect surveys (Transect 5).

A mix of semi-mature treelines, broken hedgerows and a woodland strip north of the dual-carriageway, interspersed by residential housing within the townlands of Trimragh Lower and Drumargh Middle, where five bat species (common pipistrelle, soprano pipistrelle, Leisler's bat, brown long-eared, and an unidentified species) were recorded during transect surveys (Transect 2).

Improved agricultural grassland bordered by hedgerows and treelines, an old railway line with scrub/grassy verges and an old railway stone arched bridge at Dromore where four bat species (Leisler's bat, common pipistrelle, soprano pipistrelle, and *Myotis* sp.) were recorded on SD2. Two bat species (common pipistrelle and soprano pipistrelle) were recorded during transect surveys (Transect 10).

An unoccupied two-story house approximately 5–10 m outside the CPO boundary within the townland of Listellian where up to 19 soprano pipistrelles were confirmed emerging from the house indicating the building is being used as a roost by this species (S2B1).

An old schoolhouse with roof slating adjacent to the CPO boundary in the townland of Dromore, where bats were heard warbling within the building and low numbers (two to three) of Leisler's were recorded emerging form the building during surveys in 2019 (S2B3). The weather conditions at the time of the survey were sub-optimal so there is the possibility that greater numbers of bats use this building for roosting.

3.6.1.3.3 Section 3

3.6.1.3.3.1 Desktop Survey

A search of the Bat Conservation Ireland (BCI) database was conducted for records of all bat species within a 10 km radius of two points along CPO line of Section 3. A total of four roost records, 15 transect records and 41 ad hoc records were returned for seven species of bats. The majority of the records are from the BATLAS 2020 survey. The records are summarised in Table 3-28 (please note: multiple species were recorded for many of the unique grid reference locations). Soprano pipistrelle is the most frequently recorded bat species (n=33 records) followed by common pipistrelle (n=23 records) and Daubenton's bat (n=23 records).

Table 3-28: BCI Records for Bats in Section 3

Species	Common Name	Roosts	Transects	Ad Hoc Records
Pipistrellus pipistrellus	Common pipistrelle	1 record	1 record	21 records
Pipistrellus pygmaeus	Soprano pipistrelle	2 records	1 record	30 records
Pipistrellus species			1 record	1 record
Pipistrellus nathusii	Nathusius' pipistrelle			2 records
Myotis daubentonii	Daubenton's bat	2 records	14 records	7 records
Myotis nattereri	Natterer's bat			1 record
Myotis species				2 records
Nyctalus leisleri	Leisler's bat		1 record	21 records
Plaecotus auritus	Brown long-eared bat			3 records

The BCI Landscape Favourability Model (Lundy *et al.,* 2011) was investigated as part of this desktop review. The county is divided into 5 km squares and the darker the shading of the square, the higher favourability of the 5 km square for bats. The favourability of the square is represented by a percentage range (i.e., a 5 km square may have a 0-26% favourability for the presence of bats. Each 5 km square is labelled numerically and the exact percentage favourability of each of the six squares for all species of bats is presented in Table 3-29. Overall, Section 3 has a Low to Moderate value for local bat populations.

Square No. 6 has the highest bat favourability for bats, in general and this located in the most southern length of Section 3 in the Lifford area (30% favourability for all bat species). The square also has the highest bat favourability soprano pipistrelles, Natterer's bat, common pipistrelle, Daubenton's bat, Leisler's bat, whiskered bat, and brown long-eared bat. Square No. 3 has the highest favourability for Nathusius' pipistrelle.

Table 3-29: Landscape Favourability for each 5 km square for Bats along the length of Section 3

Bat Species	Square 1 (Pluck area)	Square 2 (Drumoghill Area)	Square 3 (Moondooey to Feddyglass)	Square 4 (Feddyglass to Ballindraite)	Square 5 (Ballindarite)	Square 6 (Lifford)
All bat species	25%	20%	17%	23%	21%	30%
Soprano pipistrelle	41%	35%	29%	41%	40%	47%
Common pipistrelle	36%	30%	28%	36%	34%	45%
Nathusius' pipistrelle	3%	2%	8%	3%	3%	7%
Leisler's bat	37%	28%	23%	34%	34%	45%
Brown long-eared bat	24%	16%	12%	17%	18%	29%
Daubenton's bat	20%	18%	15%	28%	24%	30%
Natterer's bat	43%	37%	33%	37%	32%	44%
Whiskered bat	23%	15%	13%	14%	11%	24%
Lesser horseshoe bat	0%	0%	0%	0%	0%	0%

3.6.1.3.3.2 Potential Roost Features – Trees

The results of the October 2025 preliminary ground level roost assessment surveys are detailed in Appendix C. There were 43 trees/tree groups (i.e. grid referenced locations) comprising of 115 individual trees with potential roost features present in Section 3: 28 locations with individual trees and the remaining locations

with a range of 2–18 trees (n=15 locations). The locations are categorised as Low (n=8), Moderate (n=28) and High (n=7) value Potential Bat Roost (PBR) value based on the Potential Roost Features (PRFs) recorded.

Pre-2023 surveys of trees recorded 34 locations with PBRs. This included one tree that was confirmed as a bat roost (PBR 1 – hollow tree, single common pipistrelle). However, this tree is located outside the CPO and therefore was not re-surveyed in 2025. An additional two trees surveyed pre-2023 are also now located outside the CPO and were not resurveyed in 2025. All remaining 31 locations were re-surveyed in 2025 and therefore the 2025 list is a more accurate list of PBR trees within the CPO of Section 3.

3.6.1.3.3.3 Potential Roost Features – Buildings

A total of 46 buildings were surveyed over the entire duration of the bat surveys completed for Section 3. The majority of the buildings were surveyed on request from Barry Transport while a small number of buildings were surveyed as a result of bat activity recorded during walking transects (i.e. a roost was recorded due to observation of emerging / or returning bats during the surveys).

2023-2025 Surveys

24 buildings were assessed in 2023 to 2025 during the daytime with 22 of these buildings surveyed with a follow-up dusk or dawn survey. The results of the daytime assessment and dusk/dawn surveys of the buildings are detailed in Appendix C and summarised in Table 3-30. From these surveys, no building was identified as having high suitability, five were classified as moderate, 12 as low, and seven as negligible. Four of the buildings were recorded as bat roosts (Building 1, Building 2, Building 8, and Building 16). All of these buildings are located within the CPO of Section 3. Two of the buildings confirmed as bat roosts are proposed to be demolished (Building 1 and Building 8).

Table 3-30: Structures Surveyed in 2023-2025 for Bat Roost Suitability and Confirmed Bat Roosts in Section 3

Structure	Negligible	Low	Moderate	High	Roost
Building 1			✓		✓
Building 2			✓		✓
Building 3		✓			
Building 4		✓			
Building 5		✓			
Building 6		✓			
Building 7	✓				
Building 8			✓		✓
Building 9			✓		
Building 10		✓			
Building 11	✓				
Building 12	✓				
Building 13	✓				
Building 14	✓				
Building 15		✓			
Building 16			✓		✓
Building 17		✓			
Building 18		✓			
Building 19		✓			
Building 20		✓			
Building 21		✓			

Structure	Negligible	Low	Moderate	High	Roost
Building 22		✓			
Building 23	✓				
Building 24	✓				
Total	7	15	4	0	4

In relation to the four buildings recorded as bat roosts, the details of surveys completed are as follows:

- **Building 1 –** This building is an agricultural building comprised of stone walls and concrete walls, with one half of the building with a loft space. The roof is made of corrugate iron and has roof felt. Three dusk emergence surveys were completed on 28 August 2019, 23 August 2023, and 26 August 2025. Evidence of bats emerging was only recorded during the 2019 survey and this recorded six common pipistrelles and one Natterer's bat roosting in the building. During field surveys in October 2025, a static bat detector was placed in the building for one night (20 October 2025) and during this night of surveillance a single Natterer's bat was recorded roosting in the structure. Therefore, it is deemed that this building is an occasional roost for at least two species of bat and is classed as a Satellite Roost for common pipistrelles and a Daytime Roost for Natterer's bats.
- **Building 2 –** This building is a single storey shed with natural slate roof, no roof felt, and natural stone walls. Two dusk emergence surveys were completed on 28 August 2019 and 23 August 2023. Evidence of bats emerging was only recorded during the 2023 survey and this recorded three soprano pipistrelles roosting in the building. Therefore, it is deemed that this building is a Satellite/Daytime Roost for soprano pipistrelles.
- **Building 8 –** This building is comprised of two sections; a derelict building and occupied dormer residence. Limited access was permitted for surveys and therefore only one dawn survey and one dusk emergence surveys completed on 24 July 2020 and 24 August 2023, respectively. Evidence of bats emerging was only recorded during the 2023 survey and this recorded two soprano pipistrelles roosting in the building (derelict section). Therefore, it is deemed that this building is a Satellite/Daytime Roost for soprano pipistrelles.
- **Building 16 –** This building is an occupied bungalow with a tile roof. Two dusk emergence surveys were completed on 25 July 2020 and 22 August 2023. Evidence of bats emerging was only recorded during the 2020 survey and this recorded >4 Leisler's bats roosting in the building. However, between the survey years, the roof was replaced and this may have resulted in the bats abandoning the attic space post-2020. Therefore, it is deemed that this building was a Satellite Roost for Leisler's bats in 2020.

Details of all other bat surveys completed for the full list of structures surveyed in 2023-2025 are provided in Appendix C.

Pre-2023 Surveys

Of the 24 buildings surveyed in 2023–2025, only two of them were not surveyed pre-2023. An additional 22 buildings were assessed for bat roost suitability in Section 3. From these surveys, one building was identified as having high suitability, 16 were classified as moderate, and five as low. 12 of these buildings were recorded as bat roosts. All of these buildings are located outside the CPO for Section 3 and therefore were not re-surveyed in 2023–2025. Details of bat surveys completed for the full list of structures surveyed in pre-2023 are provided in Appendix C.

3.6.1.3.3.4 Potential Roost Features – Bridges & Culverts

A total of 12 additional structures (i.e. bridge and culverts) were surveyed over the entire duration of the bat surveys completed for Section 3. In 2023 and 2025, two bridges were re-surveyed (Bridge No. 8 and Bridge No. 9) as both structures were recorded to be roosts. The details of the surveys completed are as follows:

- **Bridge No. 8 –** This bridge is a single arch bridge. Four daytime inspections were completed on 28 August 2019, 25 February 2021, 26 August 2025, and 21 October 2025, covering all four seasons. A dusk emergence survey was completed on 25 August 2025 with additional static surveillance completed

in 2019, 2021, 2023, and 2025. Evidence of bats roosting was only recorded during the 2019 survey and this recorded a single Daubenton's bat roosting in a crevice while bat droppings were noted in one crevice during the daytime inspection on the 26 August 2025. Therefore, it is deemed that this structure is an occasional roost for one species of bat and is classed as a Daytime Roost for Daubenton's bats.

- **Bridge No. 9 –** This bridge is a single arch bridge. Four daytime inspections were completed on 28 August 2019, 25 February 2021, 26 August 2025, and 21 October 2025, covering all four seasons. A dusk emergence survey was completed on 25 August 2025 with additional static surveillance completed in 2019, 2021, 2023, and 2025. Evidence of bats roosting was only recorded during the 2019 survey and this recorded a single Daubenton's bat roosting in a crevice. Therefore, it is deemed that this structure is an occasional roost for one species of bat and is classed as a Daytime Roost for Daubenton's bats.

The additional 10 structures surveyed pre-2023 were not recorded as bat roosts and were deemed to have a Low value for roosting bats.

3.6.1.3.3.5 Bat Activity Surveys

Bat activity was recorded throughout the survey area as a result of transect surveys and additional records collated during dusk and dawn surveys. Linear habitats such as hedgerows, rivers, and treelines were identified as commuting and foraging routes within the Proposed Development corridor while numerous records were also collated for local road networks.

During the 2023 transect surveys, at total of 495 bat encounters were recorded for the following bat species: common pipistrelle, soprano pipistrelle and Leisler's bats. Pre-2023 transect surveys (both driven and walked transects) recorded a total of 930 bat encounters for the following bat species: brown long-eared bat, common pipistrelle, Daubenton's bat, Leisler's bat, Natterer's bat, soprano pipistrelle and *Myotis* species, Supplemented with data collated from dusk and dawn surveys, a total of seven bat species were recorded in Section 3: Leisler's bat, Daubenton's bat, Natterer's bat common pipistrelle, soprano pipistrelle, brown long-eared bat, *Myotis* sp., and an unidentified species (see Table 3-31).

Table 3-31: Total Number of Bat Encounters for Each Species of Bat Recorded by Bat Activity Surveys along Section 3

Common Name	2023 Transects	Pre-2023 Transects	Dusk & Dawn Surveys
Common pipistrelle	145 bat encounters	375 bat encounters	85 bat encounters
Soprano pipistrelle	311 bat encounters	341 bat encounters	68 bat encounters
Nathusius' pipistrelle			1 bat encounter
Daubenton's bat		7 bat encounters	3 bat encounters
Natterer's bat		2 bat encounters	4 bat encounters
Myotis species		5 bat encounters	2 bat encounters
Brown long-eared bat		22 bat encounters	4 bat encounters
Leisler's bat	39 bat encounters	178 bat encounters	23 bat encounters

Static Detector Surveys

Static detector locations are mapped in EIAR Drawings 9A.35 and 9A.47 and the results are detailed in Appendix C. A total of 1,962 hours of audio recordings were made using bat static detectors across the Section 3 study area in 2023 and 2025 at 23 locations. The following bat species were recorded during this surveillance: soprano pipistrelle, common pipistrelle, Leisler's bat, brown long-eared bat, and *Myotis* species. For static surveillance completed pre-2023, a total of 1,509 hours of audio recording at 46 locations was completed. The following bat species were recorded during this surveillance: soprano pipistrelle, common pipistrelle, Leisler's bat, brown long-eared bat, Natterer's bat, Daubenton's bat, and Nathusius' pipistrelle. Therefore, a total of 3,471 hours of audio recordings were made for all static surveillance completed.

The activity level of each species at each location was determined based on the number of passes of the species recorded per night using the following rules:

- High – on average >100 bat passes per night for a specific bat species or >200 passes/night for local bat populations;
- Moderate – on average 20–100 bat passes per night for a specific bat species or 100–200 bat passes/night for local bat populations;
- Low – on average <20 bat passes per night for a specific bat species or <100 bat passes/night for local bat populations.

On examination of the number of bat passes at each of the static unit locations in 2023 and 2025 static surveillance, overall seven static locations (30%) had a high level of bat activity while an additional five static unit locations (22%) had a moderate level of bat activity. For individual bat species, there were six static unit locations with a high level of common pipistrelle bat activity, eight static units with a high level of soprano pipistrelle bat activity, and one unit with a high level of Daubenton's bat activity.

In relation to pre-2023 static surveillance, overall, 14 static locations (30%) had a high level of bat activity for while an additional eight static unit locations (35%) had a moderate level of bat activity. For individual bat species, there were 11 static unit locations with a high level of common pipistrelle bat activity and 15 static units with a high level of soprano pipistrelle bat activity.

Due to the fact that surveys were undertaken over a number of years, the level of bat activity was compared for 2023 and 2025 verses pre-2023 static surveillance periods. As listed above, a comparable number of static locations had a high and moderate level of bat activity between the two static surveillance periods.

Table 3-32: Total Number of Bat Encounters for Each Species of Bat Recorded by Bat Activity Surveys along Section 3

Common Name	Low Activity Level	Moderate Activity Level	High Activity Level
2023 & 2025 Static Surveillance			
Common pipistrelle	9 static locations	8 static locations	6 static locations
Soprano pipistrelle	8 static locations	7 static locations	8 static locations
Leisler's bat	19 static locations	4 static locations	
Daubenton's bat	22 static locations		1 static location
For all bat species recorded	11 static locations	5 static locations	7 static locations
Pre-2023 Static Surveillance			
Common pipistrelle	18 static locations	10 static locations	11 static locations
Soprano pipistrelle	13 static locations	11 static locations	15 static locations
Leisler's bat	37 static locations	9 static locations	
Daubenton's bat	44 static locations	2 static locations	
For all bat species recorded	24 static locations	8 static unit locations	14 static unit locations

Distribution of Bat Species

All of the data collated during the array of bat surveys was compiled to produce maps for each individual bat species. These individual maps are presented in Volume E: Book of Drawings and the tables of data is presented in Appendix C. The following is a summary of the data collected:

- Common pipistrelle: 680 grid reference points. These are distributed along the majority of the proposed road route. This bat species has a similar distribution to the soprano pipistrelle. Five common pipistrelle roosts were recorded in buildings surveyed, one of which is located close to the Proposed Development. In addition, a tree roost was recorded along the local road. Common pipistrelle was the second most recorded bat species along the proposed road route of Section 3.
- Soprano pipistrelle: 796 grid reference points. These are distributed along the majority of the proposed road route. This bat species has a similar distribution to the common pipistrelle. Nine soprano pipistrelle

roosts were recorded in buildings and two of these buildings are located adjacent to the Proposed Development. Soprano pipistrelle was the most recorded bat species.

- Nathusius' pipistrelle: 10 grid reference points. This species tends to be associated with larger water bodies and therefore was recorded south of the proposed road route near the town of Lifford.
- Leisler's bat: 304 grid reference points. These are distributed along the majority of the proposed road route with concentrations in the northern sections, around Ballindrait where one roost for this species was recorded (Building 16) and in vicinity of Lifford where a high concentration of Leisler's bat activity was recorded. However, after extensive surveying in the town of Lifford to located potential roosting sites, commuting routes indicated that potential roosting sites were located further north of the town of Lifford. Leisler's bats were the third most recorded bat species.
- Daubenton's bat: 37 grid reference points (and additional 31 grid reference points for *Myotis* species). Both Daubenton's bat and Natterer's bat belong to the *Myotis* family. The Daubenton's bat records tended to be associated with water bodies such as the River Deele while Natterer's bats are more associated with woodlands and dense treelines. Therefore the 31 records for *Myotis* species are likely to be either of these two bat species. Two roost recorded were recorded in Bridges 8 and 9.
- Natterer's bat: 19 grid reference points (and additional 20 grid reference points for *Myotis* species). The two confirmed Natterer's bat roosts located within the survey area, one building located close to the proposed road route. Both Daubenton's bat and Natterer's bat belong to the *Myotis* family. Therefore the 31 records for *Myotis* species are likely to be either of these two bat species.
- Brown long-eared bat: 51 grid reference points. This species was recorded along much of the proposed road route. Records in the south are associated with a roost recorded in an agricultural building (Building 35). Records in the Crannshannagh townland are associated with a roost recorded in Building 44 while records in the Balllindrait area are associated with a roost recorded in Building 39.

Key Areas for Bat Activity

Based on the findings of the array of bat surveys completed, the locations which support key areas of bat activity within Section 3 are listed below. Bat Areas are of Local Importance (Higher Level).

- Bat Area 1: Lifford (Chainage No. 16+600 to end of scheme) – The section of the proposed road in the Lifford area has two confirmed bat roosts (common pipistrelle and brown long-eared bat – Building 44 and 46) and records for seven bat species. The majority of the movement of bats was towards the River Finn for foraging. There are also a number of trees/treelines deemed as Potential Bat Roosts (PBRs x9). A high level of bat activity was recorded on Static 55 for three species of bat (common pipistrelle, soprano pipistrelle, and Leisler's bat) and on Static 57 for two species of bat (common pipistrelle and soprano pipistrelle). There was a moderate level of common pipistrelle bat activity on Static 32 and Static 26 and Static 58. A moderate level of soprano pipistrelle bat activity was recorded on Static 32, Static 36, Static 45 and Static 56. A moderate level of Leisler's bat activity was recorded on Static 55.
- Bat Area 2: Ballinadraite (Chainage No. 13+100 to 15+100) – The section of the proposed road in the Ballindraite area covers a large area and includes the local road network both north and south of the village and proposed road route. It has seven confirmed bat roosts in buildings (Natterer's bat, common pipistrelle, Leisler's bat, soprano pipistrelle, and brown long-eared bat – Building 8, 16, 38, 39, 40, 41, and 42 and records for seven bat species. This is a large area that is located north and south of the Deele River. The majority of the movement of bats was south towards the Deele River for foraging while the majority of soprano pipistrelle movement was north towards the woodland area. There are also a number of trees/treelines deemed as Potential Bat Roosts (PBRs – x14) and one confirmed tree roost (PBR 1). A high level of bat activity was recorded on Static 59 for two species of bat (common pipistrelle and soprano pipistrelle). There was a moderate level of common pipistrelle bat activity on Static 35 and Static 61. A high level of soprano pipistrelle bat activity was recorded on Static 50 and moderate level of soprano pipistrelle bat activity was recorded on Static 39 and Static 61.
- Bat Area 3 Drumbeg (Chainage No. 9+100 to 9+500) – The section of the proposed road in the Drumbeg area has two confirmed bat roosts (one bridge (Bridge No. 8) – Daubenton's bat and one building (Building 35) – soprano pipistrelle and brown long-eared bat) and records for five bat species. The majority of the movement of bats was towards and along the Swilly Burn and the treelines along the riverbanks for foraging. There are also a number of trees/treelines deemed as Potential Bat Roosts (PBRs – x2 locations).

- Bat Area 4 Pluck (Chainage No. 0+250 to 0+900) – The section of the proposed road in the Pluck area (includes the local road network both north and south of the proposed road route) has two confirmed bat roosts (common pipistrelle, soprano pipistrelle, and Natterer's bat – Building 1 (within CPO boundary) and Building 25 (outside CPO boundary)) and records for six bat species. The majority of the movement of bats was towards the rivers (Isle Burn and Corkey River) for foraging. There is also Leisler's bat movement from the north to south direction. There was a moderate level of soprano pipistrelle bat activity on Static 4. There is one PBR tree group location.
- Bat Area 5 Drumoghill (Chainage No. 2+100 to 2+700) – The section of the proposed road in the Drumoghill area has one confirmed bat roost (soprano pipistrelle, Building 2) and three sets of PBR tree locations. There was a high level of soprano pipistrelle bat activity recorded on Static 68 and a high level of common pipistrelle bat activity on Static 13. A high level of both common and soprano pipistrelle activity was recorded on Static 10. All three units were located in the Drumoghill area. While a moderate level of common pipistrelle activity was recorded on Static 68 and a moderate level of soprano pipistrelle bat activity was recorded on Static 13. There are a large number of PBR trees located in this area associated with a woodland adjacent to Building 2. A total of five bat species were recorded in this area during the array of bat surveys undertaken.
- Bat Area 6 Dorrable (Chainage No. 4+300 to 5+200) – The section of the proposed road in the Dorrable area has two confirmed bat roosts (Building 30 and Building 31). There was a high level of soprano pipistrelle bat activity and common pipistrelle bat activity on Static 11, which was located in the Dorrable area. A moderate level of soprano pipistrelle and common pipistrelle bat activity was also recorded on Static 67. A total of five bat species were recorded in this area during the array of bat surveys undertaken.
- Bat Area 7 Feddyglass (Chainage No. 10+000 to 10+600) – The section of the proposed road in the Feddyglass area has one confirmed bat roost: Bridge No. 9 – Daubenton's bat. A moderate level of Leisler's bat activity was recorded on Static 63. Four PBR tree locations are also located in this area. A total of four bat species were recorded in this area during the array of bat surveys undertaken.

Table 3-33 summarises the importance of each of the listed areas above and also provides the details of which KERs (as listed in Section 3.3.3.2) are located in the listed important bat areas. This is because bats are a landscape species and therefore can commute long distances across the landscape (species dependent) from roosts to preferred foraging habitats along linear habitat features.

Table 3-33: Summary of Key Bat Indicators for each "Bat Area" of Section 3

Key Indicators	Area 1 Lifford Chainage 16+600 to end of scheme	Area 2 Ballinadraite Chainage 13+100 to 15+100	Area 3 Drumbeg Chainage 9+100 to 9+500	Area 4 Pluck Chainage 0+250 to 0+900	Area 5 Drumoghill Chainage 2+100 to 2+700	Area 6 Dorrable Chainage 4+300 to 5+200	Area 7 Feddyglass Chainage 10+100 to 10+600
Bat species Present	CP SP Leis Daub Natt NPip BLE Myotis	CP SP Leis Daub Natt NPip BLE Myotis	CP SP Leis Daub BLE	CP SP Leis Daub Natt BLE Myotis	CP SP Leis NPip BLE Myotis	CP SP Leis Myotis	CP SP Daub BLE
Roosts Present: within CPO		Buildings 8, 16	Bridge No. 8	Building 1	Building 2		Bridge No. 9
Roosts Present: outside CPO	Buildings 45 & 46	Buildings 38, 39, 40, 41, 42 & PBR 1	Building 35	Building 25		Buildings 30, 31	
Tree PBRs Present	PBR 22, 23, 24,25, 26, 27, 38, 39, 42	PBR 2, 3, 4, 5, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20	PBR 28, 29	PBR 43	PBR 32, 45, 46		PBR 8, 9, 10 & 40

Key Indicators	Area 1 Lifford Chainage 16+600 to end of scheme	Area 2 Ballinadraite Chainage 13+100 to 15+100	Area 3 Drumbeg Chainage 9+100 to 9+500	Area 4 Pluck Chainage 0+250 to 0+900	Area 5 Drumoghill Chainage 2+100 to 2+700	Area 6 Dorrable Chainage 4+300 to 5+200	Area 7 Feddyglass Chainage 10+100 to 10+600
Static Locations: High Level	Static 55 (CP, SP & Leis) Static 57 (CP & SP)	Static 59 (CP & SP), Static 50 (SP)			Static 10 (CP & SP) Static 13 (CP) Static 68 (SP)	Static 11 (CP & SP)	
Static Locations: Moderate Level	Static 32 (CP 7 SP) Static 26 (CP) Static 58 (CP) Static 36 (SP) Static 45 (SP) Static 56 (SP) Static 55 (Leis)	Static 35 (CP, Static 61 (CP & SP) Static 39 (SP)		Static 4 (SP)	Static 13 (SP) Static 68 (CP)	Static 67 (CP & SP)	Static 63 (Leis)
KER No.	KER 15	KER 13, KER 14 & KER 16		KER 1 located outside CPO boundary, to the SW	KER 3 & KER 4	KER 5	KER 11
Key Bat Habitats	River Finn	Deele River	Swilly Burn River	Corker River, Isle Burn River	Woodland	Linear habitats	Swilly Burn River

Note: CP = common pipistrelle, SP = soprano pipistrelle, NPip = Nathusius' pipistrelle, Leis = Leisler's bat, Daub = Daubenton's bat, Natt = Natterer's bat, BLE = brown long-eared bat, and *Myotis* = *Myotis* species

3.6.2 Other Protected Mammals

3.6.2.1 Hedgehog

Desktop Surveys

Hedgehog are presumed to occur within grassland, woodland, and hedgerow. The species is considered common and widespread in Ireland and is currently assigned a conservation status of Least Concern (Marnell *et al*., 2019) and protected under the Wildlife Acts (1976 to 2022). The NBDC online database holds records of this species for each section of the Proposed Development.

Incidental Field Survey Observations

A single roadkill hedgehog was observed during surveys on the R264 near Murlough on Section 3. No other individuals were observed, or signs identified, during surveys completed for the Proposed Development. However, it is considered likely that this species occurs within the study area due to the presence of suitable habitat. They have therefore been assumed present in optimal habitat (i.e. most habitats in the Proposed Development, excluding particularly wet habitats and conifer plantations) within the Proposed Development.

3.6.2.2 Pygmy Shrew

Desktop Surveys

Pygmy shrew nest in long grasses in dense vegetation (including damp conditions) or under rocks or logs, occurring wherever adequate insect food supplies exist. There are no known national or county population estimates for the species in Ireland as it is common and widespread and assigned a conservation status of Least Concern (Marnell *et al.,* 2019) and protected under the Wildlife Acts (1976 to 2022). Records are held for pygmy shrew by the NBDC and/or NPWS for each section of the Proposed Development. They have therefore been assumed present in optimal habitat within the Proposed Development (i.e. typically habitats with dense ground vegetation, such as grasslands and hedgerows).

Incidental Field Survey Observations

No individuals were observed, or signs identified, during the surveys completed for the Proposed Development. However, it is considered likely that this species occurs within the study area due to the presence of suitable habitat.

3.6.2.3 Pine Marten

Desktop Surveys

Pine marten are distributed throughout every county in Ireland but are a rare occurrence in Ulster. They can use a variety of habitats in forested areas for den sites such as rock crevices, tree cavities, subterranean burrows, buildings (abandoned or occupied), old bird nests, and log piles. Pine marten are assigned a conservation status of Least Concern (Marnell et al., 2019) and are protected under Annex V of the EU Habitats Directive and the Wildlife Acts (1976 to 2022). Records for pine marten are held by the NBDC for each section of the Proposed Development. They have therefore been assumed present in optimal habitat within the Proposed Development (i.e. lands with proximity to woodlands, which are typically where their dens/refuge sites are located).

Incidental Field Survey Observations

In 2023, a possible pine marten scat was identified in a conifer plantation in Teevickmoy, at the northern end of Section 1. Aside from this instance, no individuals were observed or signs identified, during the surveys completed for the Proposed Development. However, it is considered likely that this species occurs within the study area due to the presence of suitable habitat. The NBDC hold a record of pine marten near the large area of scrub/broadleaved woodland/conifer plantation mosaic located to the north of the Listellian junction in Section 2. However, 2023 surveys did not identify any evidence of pine marten in this habitat.

3.6.2.4 Irish Stoat

Desktop Surveys

Irish stoats occur in most habitats with sufficient cover, including urban areas, but they occur most often in wooded areas and readily climb trees. They are assigned a conservation status of Least Concern (Marnell *et al*., 2019) and are protected under the Wildlife Acts (1976 to 2022). The NBDC hold records of Irish stoat for each section of the Proposed Development. It is therefore considered likely that this species occurs within these sections due to the presence of suitable habitat.

Incidental Field Survey Observations

There was one potential sighting of stoat during site assessments within the WD3 woodland within Section 1 in the Teevickmoy townland. This sighting was of an animal at a distance and was noted as being either stoat or red squirrel. Other than this potential sighting, no other incidental evidence of this species was found in any other parts of the Proposed Development. This species has been assumed present in optimal habitat (e.g. woodlands) within the Proposed Development.

3.6.2.5 Red squirrel

Desktop Surveys

Red squirrel is widespread throughout Ireland, with a stronger presence in the south-east, according to NBDC records. They are woodland species, and prefer hazel, beech, and Scots pine (*Pinus sylvestris*) to build nests. Red squirrel is assigned a conservation status of Least Concern (Marnell *et al*., 2019), and is protected under the Wildlife Acts (1976 to 2022). The NBDC hold records of red squirrel for each section of the Proposed Development. It is therefore considered likely that this species occurs within these sections due to the presence of suitable habitat.

Incidental Field Survey Observations

Potential red squirrel evidence was recorded in 2023 within Section 1 of the Proposed Development utilising the mixed conifer woodlands around Drumboe Lower and within a large forestry plantation (WD3) in the townland of Teevickmoy. In 2023, numerous partially eaten conifer cones and a hazel nut, potential evidence of squirrel foraging, were identified in the southern portion of Section 1, in the townlands of Cappry and Drumboe Lower. However, this could be evidence of red or grey squirrel. Other than this potential sighting and potential foraging evidence, no other incidental evidence of this species was found in any other parts of Section 1, 2, or 3. This species has been assumed present in optimal habitat (i.e. woodlands) within the Proposed Development.

3.6.2.6 Irish Hare

Desktop Surveys

Irish hare is found in a wide range of habitats from coastal to mountain top, including upland and lowland bogs and farmland. The species is considered common and widespread in Ireland and is currently assigned a conservation status of Least Concern (Marnell et al., 2019) and is protected under the Wildlife Acts (1976 to 2022). Records for Irish hare are held by the NBDC and/or NPWS for each section of the Proposed Development.

Incidental Field Survey Observations

Incidentally, no individuals were observed, or signs identified, during the surveys completed for the Proposed Development. However, it is considered likely that this species occurs within the study area due to the presence of suitable habitat. This species has been assumed present in optimal habitat (e.g. a wide variety of grasslands) within the Proposed Development.

3.6.2.7 Deer Species

Desktop Surveys

Red deer's preferred habitat consists of semi-woodland with open fields/uplands/lowland habitats, while fallow deer prefers deciduous and mixed woodland habitats with adjacent field systems, and sika deer are typically found in commercial forests and upland/lowland habitats. Red deer and fallow deer are currently assigned a conservation status of Least Concern (Marnell et al., 2019), and are protected under the Wildlife Acts (1976 to 2022), while sika deer has not been assessed, but is protected under the Wildlife Acts (1976 to 2022). It is considered likely that these species occur within the study area due to the presence of suitable habitat. Records for deer species held by the NBDC and/or NPWS include red and sika deer in the vicinity of all sections and fallow deer in the vicinity of Section 2 only.

Field Surveys

Unidentified deer species' droppings and footprints were found within forestry plantations in the townland of Teevickmoy within Section 1, while several deer tracks and crossings were found in woodlands in the Drumany townland within and outside of the CPO boundary of Section 2. Due to the presence of suitable habitat in the vicinity of all three sections, all three deer species recorded locally are assumed present in optimal habitat within the Proposed Development.

A Deer Collision Risk Assessment (see Appendix C9A.05) of the Proposed Development was carried out by Deer Management Solutions between 4 and 8 September 2023. Potential Deer Collision Zones (PDCZs) were identified, risks were assessed, and mitigation recommended. The results are summarised in Table 3-34. Four PDCZs were identified in Section 1, one in Section 2, and two in Section 3. One PDCZ was identified as No Risk, three as Low Risk, two as Moderate Risk, and one as High Risk. Red deer was the species at risk at all but one of the PDCZs, with sika deer at risk at the remaining PDCZ.

Table 3-34: Summary of Deer Collision Risk Assessment Results

PDCZ	Section	Grid Reference	Collision Risk	Deer Species
1.1	1	H105929	Low	Red deer
1.2	1	H129955	No Risk	Red deer
1.3	1	H156983	Moderate	Red deer
1.4	1	H163991	Moderate	Red deer
2.1	2	C199088	Low	Sika
3A.1	3	H269070	High	Red deer
3B.1	3	H295015	Low	Red deer

3.6.3 Birds

3.6.3.1 Section 1

3.6.3.1.1 Desktop Surveys

Appendix D details protected bird species records from the NBDC found within the hectads that intersect Section 1.

Part of the Section 1 corridor lies in one of nine non-designated but regionally important breeding areas for hen harriers (*Circus cyaneus*), as established in the 2015 National Hen Harrier Survey. Numerous records of hen harrier were identified during the desk study, including:

- Within 3 km of the corridor of Section 1, one confirmed breeding site from 2015 and 2002 alongside 14 sightings during 2005.
- Within 3 to 5 km of the corridor of Section 1, two confirmed and one possible breeding sites during 2015, one confirmed breeding site in 2002, and six sightings during 2015.

NPWS holds a record of one peregrine falcon (*Falco peregrinus*) nest site within the vicinity of the Proposed Development which has been known since 2002 and has been recorded as an occupied breeding site in 2017.

3.6.3.1.2 Field Surveys

3.6.3.1.2.1 Breeding Bird Surveys

Breeding Bird Surveys 2020

Detailed results of the 2020 breeding bird surveys are included in Appendix E. Breeding bird surveys in 2020 recorded 39 species in Section 1. There was no evidence of either breeding hen harrier or peregrine falcon recorded during these surveys.

Two bird species recorded during line transect surveys for Section 1 are classified as red-listed species within the Birds of Conservation Concern in Ireland 2020–2026 (BoCCI) (Gilbert *et al*., 2021). These species are meadow pipit *(Anthus pratensis*) and stock dove (*Columba oenas*).

A further eight species observed (barn swallow (*Hirundo rustica*), goldcrest (*Regulus regulus*), house martin (*Delichon urbicum*), linnet (*Carduelis cannabina*), mallard (*Anas platyrhynchos*), spotted flycatcher (*Muscicapa striata*), starling (*Sturnus vulgaris*), and willow warbler (*Phylloscopus trochilus*)) are classified as amber-listed species (Gilbert *et al*., 2021).

The remaining breeding bird species recorded along the route of Section 1 are green listed (Gilbert *et al*., 2021) and comprise a range of relatively common species typically associated with the lowland agricultural grasslands with associated hedgerows/treelines (collectively referred to as “countryside birds”). These habitats typically support a range of passerines dominated by various tits, finches, warblers, thrushes, and corvids.

Two of the species recorded were SCI species; mallard and grey heron (*Ardea cinerea*).

The majority of species observed (i.e. 23 species) were recorded in relatively low numbers (<20). However, 11 species were observed in numbers greater than 50, with three of those species observed in numbers greater than 100, namely wren (*Troglodytes troglodytes*) at 198 individuals, starling at 187 individuals, and wood pigeon (*Columba palumbus*) at 132 individuals.

Breeding Bird Surveys 2023

The 2023 ornithology surveys report, including the breeding bird surveys, is included in Appendix F. Breeding bird surveys in 2023 recorded 49 species in Section 1, including two red-listed species (meadow pipit and Eurasian curlew (*Numenius arquata*)), 10 amber-listed species, and 37 green-listed species. Recorded species which are either SCIs of an Irish SPA, listed in Annex I of the Birds Directive, amber listed, or red listed are listed in Table 3-35.

A total of 36 breeding bird surveys were undertaken between 8 June and 25 June, with each transect surveyed twice. Surveys were undertaken in daylight between 05:00 am and 09:40 am (start times) and 06:00 am and 10:15 am (end times), with average survey durations of 52 minutes. 92.5% of surveys were completed by 09:00 am.

Table 3-35: Section 1 List of SCI Species, Annex I Species, and Red- and Amber-Listed Species

Common Name	Scientific Name	EU Bird Directive Annex	BoCCI	SCI
Eurasian Curlew	*Numenius arquata*	Annex II, Part B	Red	✓
Meadow pipit	*Anthus pratensis*		Red	
Barn swallow	*Hirundo rustica*		Amber	
European Herring gull	*Larus argentatus*	Annex II, Part B	Amber	✓
Goldcrest	*Regulus regulus*		Amber	
Greenfinch	*Chloris chloris*		Amber	
House Martin	*Delichon urbicum*		Amber	
House Sparrow	*Passer domesticus*		Amber	
Linnet	*Carduelis cannabina*		Amber	
Spotted flycatcher	*Muscicapa striata*		Amber	
Starling	*Sturnus vulgaris*	Annex II, Part B	Amber	
Willow warbler	*Phylloscopus trochilus*		Amber	
Great black-backed gull	*Larus marinus*	Annex II, Part B	Green	✓
Grey heron	*Ardea cinerea*		Green	✓
Little egret	*Egretta garzetta*	Annex I	Green	
Peregrine falcon	*Falco peregrinus*	Annex I	Green	✓

Red-listed Species

During 2023 breeding bird surveys in Section 1, a single curlew was observed at transect T1/1-11 and meadow pipits were recorded in six transects. There are currently fewer than five breeding pairs of curlew in County Donegal (Colhoun *et al*., 2022), none of which are in proximity to the Proposed Development.

Amber-listed Species

Ten amber-listed species were recorded during 2023 breeding bird surveys in Section 1. Of these, the presence of two aerial insectivores which are both Afro-Palearctic migrants (barn swallow and house martin) and the presence of the herring gulls (*Larus argentatus*) is inconsequential in the context of these surveys.

The herring gull sightings were either flying over the transect (thus not using habitats associated with it), or were in land adjacent to the transect. Such usage is ephemeral and the selection of habitats unimportant in a conservation sense. Three herring gulls were recorded in Section 1 in June and are likely to either be non-breeders or foraging birds exploiting farmland/urban food resources opportunistically. Similarly, for the aerial insectivores, their occurrence at or near the survey transects is largely inconsequential, as the habitats are relatively unimportant and not insect rich.

The potential for impacts is greater for populations of the remaining seven amber-listed species, which are more closely associated with the affected habitats (e.g. hedgerows, fields, field edge habitats, scrub, and woodland). These habitats are directly providing nesting, foraging, and/or resting habitats for these species, thus habitat loss is more likely to have an impact. The species concerned are all passerines (goldcrest, greenfinch (*Chloris chloris*), house sparrow (*Passer domesticus*), linnet, spotted flycatcher, starling, and willow warbler). Further details of red- and amber-listed species are in Table 3-36.

Green-listed Species

The 37 remaining species which were recorded were; blackbird (*Turdus merula*), blackcap (*Sylvia atricapilla*), blue tit (*Cyanistes caeruleus*), buzzard (*Buteo buteo*), chaffinch (*Fringilla coelebs*), chiffchaff (*Phylloscopus collybita*), coal tit (*Periparus ater*), collared dove (*Streptopelia decaocto*), cuckoo (*Cuculus canorus*) ,dunnock (*Prunella modularis*), feral pigeon (*Columba livia f. domestica*), goldfinch (*Carduelis carduelis*), grasshopper warbler (*Locustella naevia*), great black-backed gull (*Larus marinus*), great tit (*Parus major*), grey heron, hooded crow (*Corvus cornix*), jackdaw (*Coloeus monedula*), jay (*Garrulus glandarius*), little egret (*Egretta garzetta*), long-tailed tit (*Aegithalos caudatus*), magpie (*Pica pica*), mistle thrush (*Turdus viscivorus*), peregrine, pied wagtail (*Motacilla alba yarrellii*), raven (*Corvus corax*), reed bunting (*Emberiza schoeniclus*), robin (*Erithacus rubecula*), rook (*Corvus frugilegus*), sedge warbler (*Acrocephalus schoenobaenus*), siskin (*Spinus spinus*), song thrush (*Turdus philomelos*), sparrowhawk (*Accipiter nisus*), stonechat (*Saxicola rubicola*), treecreeper (*Certhia familiaris*), woodpigeon (*Columba palumbus*), and wren (*Troglodytes troglodytes*).

Peregrine is the most notable of the green-listed species. A peregrine was observed in the area at Transect 1-17. This is likely one of the two peregrines found nesting in an adjacent quarry south of the transect. This nest was located in the targeted raptor survey (see Section 3.6.3.1.2.3). As the remaining species are green listed, widespread, and relatively abundant (minimum national populations of tens of thousands), their presence in relation to the Proposed Development is relatively inconsequential.

SCI Species

Five of the species recorded were SCI species; curlew, herring gull, great black-backed gull, peregrine, and grey heron.

Table 3-36: Red- and Amber-Listed Species Recorded During Breeding Bird Surveys in Section 1 in Spring/Summer 2023. Conservation Status is as per Gilbert *et al.* (2021)

Species	Scientific Name	Category	Type	Primary Habitats	Population Estimate[23]
Red-listed					
Eurasian curlew	*Numenius arquata*	Partial migrant (breeder)	Wader	Wetlands	105 breeding pairs[24]
Meadow pipit	*Anthus pratensis*	Partial migrant (breeder)	Passerine	Various	1.463 million
Amber-listed					
Barn swallow	*Hirundo rustica*	Migrant (breeder)	Aerial insectivore	Various	4.96 million
European herring gull	*Larus argentatus*	Partial migrant (breeder)	Seabird	Coastal/inland	18,645[19]
Goldcrest	*Regulus regulus*	Resident (breeder)	Passerine	Scrub/woodland	611,280
Greenfinch	*Cardeulis chloris*	Resident (breeder)	Passerine	Gardens/farmland	693,890
House martin	*Delichon urbica*	Migrant (breeder)	Aerial insectivore	Various	537,200
House sparrow	*Passer domesticus*	Resident (breeder)	Passerine	Gardens/farmland	1.85 million
Linnet	*Carduelis cannabina*	Resident (breeder)	Passerine	Farmland/Scrub	451,430
Spotted flycatcher	*Muscicapa striata*	Migrant (breeder)	Passerine	Woodland/Gardens	37,810
Starling	*Sturnus vulgaris*	Partial migrant (breeder)	Passerine	Gardens/farmland	2.11 million
Willow warbler	*Phylloscopus trochilus*	Migrant (breeder)	Passerine	Woodland/Scrub	1.37 million

3.6.3.1.2.2 Wintering Birds

The findings of the wintering birds surveys completed in 2018/2019 found that the potential field feeding areas do not support significant numbers of regularly occurring wintering birds and, in particular, any SCI species for nearby SPAs. The findings of these surveys found occasional and sporadic occurrences of small species flocks of mute swan, coot (*Fulica atra*), great crested grebe, shoveler (*Anas clypeata*), mallard, moorhen (*Gallinula chloropus*), and grey heron within these expansive agricultural fields. The most frequently occurring wintering species were found at Lough Alaan located approximately 580 m to the west of Section 1.

Due to the lack of wintering bird activity and receptors such as SPAs in the vicinity of the Proposed Development, Section 1 wintering bird surveys were discontinued following analysis of data from the 2018/2019 survey season. There were no species of conservation concern recorded to be utilising lands within the study area the Proposed Development. A verification check was completed during September 2025 to January 2026 to re-affirm whether the baseline with respect to wintering birds could have materially changed – positively or negatively (*e.g.* due to material changes in habitats) since the 2018/19 surveys; no

[23] Unless otherwise stated, population estimates are Republic of Ireland only and from Crowe *et al*. (2014) based on a combination of 2006-10 densities and Atlas data.

[24] 105 breeding pairs was the number of confirmed and breeding pairs of Curlew in 2021 in the Republic of Ireland (Colhoun *et al*., 2022).

material changes were identified, from the previous surveys and Section 1 is still regarded as having very little potential to support significant numbers of wintering birds.

3.6.3.1.2.3 Raptor Surveys

Vantage Point Surveys (Raptors)

The 2023 ornithology surveys report, including further details of the raptor vantage point surveys, is included in Appendix F. The locations of observations of raptors, excluding buzzards are mapped in EIAR Drawing 9A.52. Buzzard observations are included in the mapping within Appendix F.

Nine species were recorded during surveys, which included raptors (buzzard, peregrine, hen harrier, sparrowhawk, and kestrel (*Falco tinnunculus*)), crows (hooded crow and raven), gulls (great black-backed gull), and grey heron. Table 3-37 shows the total number of individuals by VP and month for most species.

Buzzard was the most numerous species and, although no nests were seen, undoubtedly pairs are breeding in the broader area within the forestry areas. A single hen harrier (female/juvenile type) was observed mobbing a buzzard on June 12 in VP1 (location: 54.792°N, -7.825°E).

There was no evidence that the area of the VP surveys was used by hen harrier, kestrel, or peregrine for any purpose other than foraging. Only buzzards were considered likely to be nesting nearby.

Table 3-37: Totals of Species Recorded During VP Watches in May to August 2023. Values are summed totals of individual species during approximately 6-hour VPs per month.

VP ID	Month	Buzzard	Hen Harrier	Kestrel	Peregrine	Sparrowhawk	Hooded Crow	Raven	Grey Heron
1	May	7	0	0	0	0	2	0	0
2	May	5	0	0	1	0	3	4	1
3	May	12	0	2	0	0	6	2	0
1	June	11	1	1	0	0	0	0	1
2	June	10	0	0	0	0	2	0	0
3	June	8	0	3	0	1	2	1	0
1	July	1	0	0	0	0	0	0	0
2	July	9	0	0	0	0	0	6	0
3	July	23	0	6	0	0	0	2	0
1	Aug	5	0	0	0	0	1	0	0
2	Aug	5	0	0	0	0	0	3	1
3	Aug	7	0	0	0	0	2	2	0

Breeding Raptor Survey

The 2023 ornithology surveys report, including further details of the breeding raptor surveys, is included in Appendix F. Peregrines were located at three of the four potentially suitable breeding locations, but breeding was only confirmed at one site in Section 1. April surveys of potential areas confirmed the potential suitability of four sites (see EIAR Drawing 9A.51 and Table 3-38): two quarry sites in close proximity to each other approximately halfway between Letterkenny and Stranorlar, near Drumkeen (Sites A and B), and two sites to the north and south of Stranorlar/Ballybofey (Sites C and D).

Site D never showed any evidence of peregrine of other raptors being present. Peregrine was recorded at Sites A and B. Each site had a single peregrine but they were never recorded at both sites on the same day.

Evidence of breeding was not seen but it is possible that one of the sites was used. Site C had one to two birds present and a nest with chicks was confirmed in July.

Table 3-38: Survey Visits to Potentially Suitable Quarry Nest Sites and Observations in the Vicinity of Section 1 April to July 2023

Site ID	Site	Lat/Long	2023 Survey Dates	Comments
A	S Section 2 (Cloughroe, Drumkeen)	54.885, -7.770	20 April, 2 June, 3 July, 4 July	Active Quarry. Industrial complex (timber)
B	S Section 2 (Cloughroe II, Drumkeen)	54.872, -7.767	20 April, 3 June, 4 July	Apparently disused quarry
C	N Section 1 / S Section 2 (Gortletteragh, Stranorlar)	54.817, -7.735	20 April, 2 June, 3 July	Active Quarry
D	SE Section 1 (Near Trusk, Ballybofey)	54.757, - 7.815	20 April, 2 June, 3 July	Active Quarry

3.6.3.1.2.4 Kingfisher Surveys

The kingfisher survey results are summarised in Table 3-39. The 2023 ornithology surveys report, including further details of the kingfisher surveys, is included in Appendix F. Many of the rivers and streams in the area are unsuitable for kingfishers, for either nesting or for foraging. This was due to them being relatively small (e.g., field drains), having few or no perches, or being too fast flowing.

Within the Ballybofey transect section, no kingfishers were seen during surveys. In some areas, the river flow and width may have provided suitable foraging areas and transects 19, 24, 30, and 33 were identified as having suitable foraging areas. Locals met during surveys stated kingfishers occurred in Transect 30 occasionally. Because no suitable nesting habitat was identified in Section 1, no vantage point surveys were carried out.

Table 3-39: Results of Kingfisher Walkover and Vantage Point Surveys Undertaken in Section 1 in Summer 2023

Transect	Date	Kingfisher Seen?	Suitable Foraging?	Suitable Nesting?	Nest Found	VP Survey	Kingfisher Seen?
19	15 June	N	YES	N	N	N	
20	15 June	N	N	N	N	N	
21	15 June	N	N	N	N	N	
22	10 June	N	N	N	N	N	
23	10 June	N	N	N	N	N	
24	07 June	N	YES	N	N	N	
25	07 June	N	N	N	N	N	
26	07 June	N	N	N	N	N	
27	09 June	N	N	N	N	N	
28	09 June	N	N	N	N	N	
29	09 June	N	N	N	N	N	
30	09 June	N	YES	N	N	N	Dipper nest
31	09 June	N	N	N	N	N	
32	11 June	N	N	N	N	N	
33	11 June	N	YES	N	N	N	
34	11 June	N	N	N	N	N	

3.6.3.2 Section 2

3.6.3.2.1 Desktop Survey

Appendix D details protected bird species records from the NBDC found within the hectads that intersect Section 2. The following notable species records were received during the course of the desk study for Section 2:

- Corncrake (*Crex crex*) – one calling male recorded within 1 km of the corridor of Section 2 in 2011.
- Peregrine falcon – one occupied nest within 3 to 5 km of the corridor of Section 2 during 2017.

3.6.3.2.2 Field Surveys

3.6.3.2.2.1 Breeding Bird Surveys

Breeding Bird Surveys 2020

Detailed results of the 2020 breeding bird surveys are included in Appendix E. Breeding bird surveys in 2020 recorded 31 species in Section 2. A single species of this assemblage is red listed; grey wagtail (*Motacilla cinerea)* (Gilbert *et al*., 2021). A further six species (goldcrest, house martin, linnet, sand martin (*Riparia riparia*), starling, and willow warbler) are amber listed (Gilbert *et al*., 2021).

The remaining breeding bird species recorded along the route are green listed (Gilbert *et al*., 2021) and comprise a range of relatively common species typically associated with the lowland agricultural grasslands with associated hedgerows/treelines (collectively referred to as “countryside birds”). These habitats typically support a range of passerines dominated by various tits, finches, warblers, thrushes, and corvids.

No notable populations of one or more species or a notable assemblage of breeding bird species was identified as a result of the breeding bird surveys for Section 2.

Breeding Bird Surveys 2023

The 2023 ornithology surveys report, including the breeding bird surveys, is included in Appendix F. Breeding bird surveys in 2023 recorded 48 species in Section 2, including three red-listed species (Eurasian curlew, meadow pipit, and common snipe (*Gallinago gallinago*)), 11 amber-listed species, and 34 green-listed species. Recorded species which are either SCIs of an Irish SPA, listed in Annex I of the Birds Directive, amber listed, or red listed are listed in Table 3-40.

A total of 30 breeding bird surveys were undertaken between 20 May and 23 June, with each transect surveyed twice. Surveys were undertaken in daylight between 05:00 am and 09:40 am (start times) and 06:00 am and 10:15 am (end times), with average survey durations of 52 minutes. 92.5% of surveys were completed by 09:00 am.

Table 3-40: Section 2 List of SCI Species, Annex I Species, and Red- and Amber-Listed Species.

Common Name	Scientific Name	EU Bird Directive Annex	BoCCI	SCI
Eurasian curlew	*Numenius arquata*	Annex II, Part B	Red	✓
Meadow pipit	*Anthus pratensis*		Red	
Common snipe	*Gallinago gallinago*	Annex II, Part A; Annex III, Part B	Red	✓
Barn swallow	*Hirundo rustica*		Amber	
Black-headed gull	*Chroicocephalus ridibundus*		Amber	✓
European herring gull	*Larus argentatus*	Annex II, Part B	Amber	✓
Goldcrest	*Regulus regulus*		Amber	
Greenfinch	*Chloris chloris*		Amber	

Common Name	Scientific Name	EU Bird Directive Annex	BoCCI	SCI
House martin	*Delichon urbicum*		Amber	
House sparrow	*Passer domesticus*		Amber	
Linnet	*Carduelis cannabina*		Amber	
Mallard	*Anas platyrhynchos*	Annex II, Part A; Annex III, Part A	Amber	✓
Starling	*Sturnus vulgaris*	Annex II, Part B	Amber	
Willow warbler	*Phylloscopus trochilus*		Amber	
Great black-backed gull	*Larus marinus*	Annex II, Part B	Green	✓
Grey heron	*Ardea cinerea*		Green	✓

Red-listed Species

Small numbers of curlew were seen whilst undertaking breeding bird survey transects around Section 2. Between one and two individuals were recorded in transects T2/2-4 and T2/2-6, which were adjacent to the upper reaches of Lough Swilly. A single individual was heard flying over at transect T2/2-10. Relatively small numbers of adults (non-breeders) occur on Irish coasts during the summer months, so it is most unlikely that these individuals were foraging breeders. Adult birds do not breed until at least two years of age and breeding numbers in Donegal are so low that the likelihood is very small. The individual farther inland (T2/T2-10), several kilometres from the Swilly Estuary may have been a breeding bird commuting between breeding areas farther inland (several pairs of curlew breed farther inland, south-west of Section 2) and the estuary. There are currently fewer than five breeding pairs of curlew in County Donegal (Colhoun *et al*., 2022), none of which are in proximity to the Proposed Development.

Meadow pipits were observed in two transects; T2/2-5 and T2/2-10.

Common Snipe were very infrequently encountered, with just two individuals flushed during transect surveys at transects T2/2-5 and T2/2-7. One of these individuals was drumming (display call indicating it had a breeding territory) on 17 June (T2/2-7).

Amber-listed Species

Eleven amber-listed species were recorded during 2023 Section 2 breeding bird surveys.

In the context of these surveys, the presence of the gulls is inconsequential. Small numbers of herring gull and black-headed gull were recorded in the Section 2 study area in June and are likely to either be non-breeders or foraging birds exploiting farmland/urban food resources opportunistically. The nearest breeding black-headed gulls are at Inch Island (Inch Lake), approximately 15 km north-east of the study area. GPS tracking studies of herring gulls at two offshore breeding colonies in Donegal showed that breeding adults can commute long distances (>50 miles each way) to exploit food resources which are primarily terrestrial and not marine (Sardà-Serra *et al*., 2023).

Similarly, for the aerial insectivores (i.e. barn swallow and house martin), their occurrence at or near the survey transects is largely inconsequential as the habitats are relatively unimportant and not insect-rich.

The potential for impacts is greater for populations of the remaining seven amber-listed species, which are more closely associated with the affected habitats (e.g. hedgerows, fields, field edge habitats, scrub, and woodland). These habitats are directly providing nesting, foraging, and/or resting habitats for these species, thus habitat loss is more likely to have an impact. The species concerned comprise six passerines (goldcrest, greenfinch, house sparrow, linnet, starling, and willow warbler) and one waterbird (mallard). Further details of red- and amber-listed species are in Table 3-41.

Green-listed Species

The 34 remaining species which were recorded were; blackbird, blackcap, blue tit, bullfinch (*Pyrrhula pyrrhula*), buzzard, chaffinch, chiffchaff, coal tit, collared dove, common redpoll (*Carduelis flammea*), common whitethroat (*Sylvia communis*), dunnock, goldfinch, grasshopper warbler, great black-backed gull, great tit, grey heron, hooded crow, jackdaw, long-tailed tit, magpie, mistle thrush, pied wagtail, raven, reed bunting, robin, rook, sedge warbler, song thrush, sparrowhawk, stonechat, treecreeper, woodpigeon, and wren.

As these species are green listed, widespread, and relatively abundant (minimum national populations of tens of thousands), their presence in relation to the Proposed Development is relatively inconsequential.

SCI Species

Seven of the species recorded were SCI species; curlew, common snipe, black-headed gull, herring gull, mallard, great black-backed gull, and grey heron.

Table 3-41: Red- and Amber-Listed Species Recorded During Breeding Bird Surveys in Section 2 in Spring/Summer 2023. Conservation Status is as per Gilbert *et al.* (2021)

Species	Scientific Name	Category	Type	Primary Habitats	Population Estimate[25]
Red-listed					
Eurasian Curlew	*Numenius arquata*	Partial migrant (breeder)	Wader	Wetlands	105 breeding pairs[26]
Common Snipe	*Gallinago gallinago*	Partial migrant (breeder)	Wader	Wetlands	
Meadow Pipit	*Anthus pratensis*	Partial migrant (breeder)	Passerine	Various	1.463 million
Amber-listed					
Barn Swallow	*Hirundo rustica*	Migrant (breeder)	Aerial insectivore	Various	4.96 million
Black-headed Gull	*Chroicocephalus ridibundus*	Partial migrant (breeder)	Seabird	Coastal/inland	7,146[27]
European Herring Gull	*Larus argentatus*	Partial migrant (breeder)	Seabird	Coastal/inland	18,645
Goldcrest	*Regulus regulus*	Resident (breeder)	Passerine	Scrub/woodland	611,280
Greenfinch	*Cardeulis chloris*	Resident (breeder)	Passerine	Gardens/farmland	693,890
House Martin	*Delichon urbica*	Migrant (breeder)	Aerial insectivore	Various	537,200
House Sparrow	*Passer domesticus*	Resident (breeder)	Passerine	Gardens/farmland	1.85 million
Linnet	*Carduelis cannabina*	Resident (breeder)	Passerine	Farmland/Scrub	451,430
Mallard	*Anas platyrhynchos*	Resident (breeder)	Waterfowl	Wetlands	NA

[25] Unless otherwise stated, population estimates are Republic of Ireland only and from Crowe *et al*. (2014) based on a combination of 2006-10 densities and Atlas data.

[26] 105 breeding pairs was the number of confirmed and breeding pairs of Curlew in 2021 in the Republic of Ireland (Colhoun *et al*., 2022).

[27] Combined urban and rural breeding (Apparently Occupied Nests) numbers 2015-21 (Burnell *et al*., 2023).

Species	Scientific Name	Category	Type	Primary Habitats	Population Estimate[25]
Starling	*Sturnus vulgaris*	Partial migrant (breeder)	Passerine	Gardens/farmland	2.11 million
Willow Warbler	*Phylloscopus trochilus*	Migrant (breeder)	Passerine	Woodland/Scrub	1.37 million

3.6.3.2.2.2 Wintering Birds

The wintering birds results should be read in conjunction with EIAR Drawings 9A.54–9A.60, which map the study areas, VPs, and transects.

2017 to 2020

Section 2 surveys extended from the Port Bridge in Letterkenny, as far as Letterkenny Golf Club (VP2.1). Surveys during the 2017/2018 to 2019/2020 seasons established that the largest assemblages of SCI species of Lough Swilly SPA within the study area were constantly present where the estuary opens up at VP2.2 between Glebe Crescent and Letterkenny Golf Club, approximately 2.8 km downstream of the proposed bridge crossing location.

High Tide Counts

High tide counts targeted at the proposed bridge crossing area during 2018 to 2020 found 13 waterbird species utilising the area, ten of which are SCIs of Lough Swilly SPA (see Table 3-42). Of the 12 survey visits carried out at the proposed bridge crossing area (VP2.4), only two species occurred with relative consistency (six or more times), namely curlew (present during seven visits) and black-headed gull (present during ten visits). The maximum recorded number for these species over 12 visits was 64 and 132, respectively.

The maximum occurrence of curlew that utilised the bridge crossing area at any one time during the surveys was 64 individuals. When this figure is compared to the total population within the SPA taken from the conservation objectives supporting document (NPWS, 2011d) this equates to 3.7% of the baseline designated figure.

The black-headed gulls are an SCI for their breeding numbers, and no wintering numbers are provided within the NPWS supporting information for the Conservation Objectives (NPWS, 2011d). No All-Ireland threshold figures have been set for wintering black-headed gull and the wintering international threshold is 48,000. When compared to the international population size it equated to 0.27% of the numbers required to qualify for International Threshold Status. The conservation objective only refers to maintaining breeding numbers and therefore black headed gull can be discounted as SCI for their wintering numbers.

Teal were recorded above the 1% threshold of the SPA population on two of the five times they were recorded. The peak count for teal was 35 individuals this equates to 2.2% of the baseline population for the SPA.

The remainder of the species present during high tide counts occurred either five times or less over the 12 visits, all of which were in low numbers (below the 1% threshold) and therefore not considered to be significant in numbers as a component of the SPA or qualify for national or internationally important numbers.

Table 3-42: Lough Swilly SCI Species Recorded at the Proposed Bridge Crossing Location (VP2.4) – High Tide Count

Common Name	Species Name	Number of Individuals Recorded											
		23/10/2018	19/11/2018	10/12/2018	29/01/2019	27/02/2019	26/03/2019	23/10/2019	26/11/2019	17/12/2019	22/01/2020	20/02/2020	10/03/2020
Curlew	*Numenius arquata*	64	2	-	-	-	-	2	44	56	-	1	29
Black-headed Gull	*Chroicocephalus (Larus) ridibundus*	6	25	-	-	11	14	22	15	45	42	7	132
Grey Heron	*Ardea cinerea*	-	1	-	-	1	-	1	-	-	-	-	1
Teal	*Anas crecca*	-	-	-	-	9	-	32	6	14	35	-	-
Shelduck	*Tadorna tadorna*	-	-	-	-	-	5	-	-	-	-	-	-
Mallard	*Anas platyrhynchos*	-	1	-	-	-	2	-	-	-	-	-	-
Oyster-catcher	*Haematopus ostralegus*	-	-	-	-	-	-	-	1	-	-	-	-
Whooper Swan	*Cygnus cygnus*	-	-	-	-	-	-	-	-	-	2	-	-
Wigeon	*Mareca penelope*	-	-	-	-	-	-	-	-	-	-	-	2
Redshank	*Tringa totanus*	2	-	-	-	9	-	7	3	-	1	-	-

Dawn and Dusk Surveys

Dawn and dusk surveys carried out during the 2019/2020 wintering season showed that 11 species were present around the proposed bridge crossing (VP2.4), eight of which were SCI species of Lough Swilly SPA (see).

Five of the total 11 species occurred only once over the survey period and were in single- or low double-digit numbers, which are negligible compared to All-Ireland and International thresholds for those species (which are in 100s or 1,000s figures in order to qualify). Species using the lands associated with the proposed bridge area in relatively higher significant numbers were curlew, and teal. Curlew occasionally used the fields south of the proposed bridge crossing, namely Milk Isle directly south of the proposed bridge crossing . Curlew only occurred during dawn surveys and always flew in from downstream at full light and do not use the area for roosting activity. Curlew predominantly utilised the estuarine area approximately 200 m upstream of the proposed bridge crossing. During dawn surveys, the maximum of curlew recorded using the lands associated with the proposed bridge crossing was 3.25% of the baseline designation figure (NPWS, 2011d). Curlew were not present during the dusk counts and only recorded in significant numbers during 3 of the 12 surveys.

Teal exclusively utilised the estuary habitat at the outfall of the Swilly (Donegal)_010 watercourse meeting the main channel of the river Swilly in this area. This is within 500 m of the proposed works. For the teal recorded, the maximum count recorded during the dawn and dusk surveys was 1.1% of the baseline designation population but were only once recorded above the 1% threshold for the SPA population.

Table 3-43).

Five of the total 11 species occurred only once over the survey period and were in single- or low double-digit numbers, which are negligible compared to All-Ireland and International thresholds for those species (which are in 100s or 1,000s figures in order to qualify). Species using the lands associated with the proposed bridge area in relatively higher significant numbers were curlew, and teal. Curlew occasionally used the fields south of the proposed bridge crossing, namely Milk Isle directly south of the proposed bridge crossing . Curlew only occurred during dawn surveys and always flew in from downstream at full light and do not use the area for roosting activity. Curlew predominantly utilised the estuarine area approximately 200 m upstream of the proposed bridge crossing. During dawn surveys, the maximum of curlew recorded using the lands associated with the proposed bridge crossing was 3.25% of the baseline designation figure (NPWS, 2011d). Curlew were not present during the dusk counts and only recorded in significant numbers during 3 of the 12 surveys.

Teal exclusively utilised the estuary habitat at the outfall of the Swilly (Donegal)_010 watercourse meeting the main channel of the river Swilly in this area. This is within 500 m of the proposed works. For the teal recorded, the maximum count recorded during the dawn and dusk surveys was 1.1% of the baseline designation population but were only once recorded above the 1% threshold for the SPA population.

Table 3-43: Lough Swilly SCI Species Recorded at the Proposed Bridge Crossing Location (VP4) – Dawn/Dusk Counts

Common Name	Species Name	Number of Individuals Recorded											
		23/10/2019 Dawn	23/10/2019 Dusk	26/11/2019 Dawn	26/11/2019 Dusk	17/12/2019 Dawn	17/12/2019 Dusk	22/01/2020 Dawn	22/01/2020 Dusk	20/02/2020 Dawn	20/02/2020 Dusk	10/03/2020 Dawn	10/03/2020 Dusk
Teal	*Anas crecca*	11	6	6	-	14	2	18	7	-	6	-	-
Black Headed Gull	*Chroicocephalus (Larus) ridibundus*	3	13	52	-	45	4	26	40	53	40	132	25
Curlew	*Numenius arquata*	-	-	44	-	56	-	1	-	-	-	29	-
Redshank	*Tringa totanus*	4	2	3	-	-	2	1	-	-	1	-	
Grey Heron	*Ardea cinerea*	1	-	-	-	-	-	1	-	-	-	1	-
Oystercatcher	*Haematopus ostralegus*	-	-	1	-	-	-	-	-	-	-	-	-
Whooper Swan	*Cygnus cygnus*	-	-	-	-	-	-	1	-	-	-	-	-
Wigeon	*Mareca penelope*	-	-	-	-	-	-	-	-	-	-	2	-

From the full suite of surveys of the Proposed Development boundary from 2017 to 2020 and the additional targeted surveys of the proposed bridge crossing from 2018 to 2020, there are SCI species regularly utilising the lands associated with the proposed bridge crossing (see Table 3-42 and).

Five of the total 11 species occurred only once over the survey period and were in single- or low double-digit numbers, which are negligible compared to All-Ireland and International thresholds for those species (which are in 100s or 1,000s figures in order to qualify). Species using the lands associated with the proposed bridge area in relatively higher significant numbers were curlew, and teal. Curlew occasionally used the fields south of the proposed bridge crossing, namely Milk Isle directly south of the proposed bridge crossing . Curlew only occurred during dawn surveys and always flew in from downstream at full light and do not use the area for roosting activity. Curlew predominantly utilised the estuarine area approximately 200 m upstream of the proposed bridge crossing. During dawn surveys, the maximum of curlew recorded using the lands associated with the proposed bridge crossing was 3.25% of the baseline designation figure (NPWS, 2011d). Curlew were not present during the dusk counts and only recorded in significant numbers during 3 of the 12 surveys.

Teal exclusively utilised the estuary habitat at the outfall of the Swilly (Donegal)_010 watercourse meeting the main channel of the river Swilly in this area. This is within 500 m of the proposed works. For the teal recorded, the maximum count recorded during the dawn and dusk surveys was 1.1% of the baseline designation population but were only once recorded above the 1% threshold for the SPA population.

Table 3-43).

However, they occur in very low numbers compared to the overall SPA populations and the nationally/internationally important numbers criteria.

2020/2021

Following the 2017 to 2020 surveys**,** the 2020-2021 surveys were refined and informed by the findings of the previous three seasons of survey. The 2020-2021 surveys focussed on the relative importance of the proposed Swilly crossing, particularly the importance of terrestrial feeding/roosting areas. The locations of these can be seen in EIAR Drawing 9A.55.

Only four species were recorded using the terrestrial sites surveyed between a first reconnaissance count at the end of January 2021, and the commencement of systematic surveys twice monthly between late January and early April 2021. Surveys were undertaken on six occasions: 24 January, 6 and 7 February, 21 and 22 March, and 8 April 2021.

Curlew were recorded only once using two adjacent fields at the proposed Swilly crossing. A flock of 62 birds were using the grass fields with sheep present (marked “A” in EIAR Drawing 9A.55) adjacent to VP2.6 for approximately two hours on 6 February.

Further east, towards Big Isle, approximately 400 m to 450 m north-north-east of ‘VP2.9 (Backup Goose VP)’, a single flock of greylag geese (approximately 35 birds) were present during every survey in the fields north of the airfield (approximately at coordinates, ITM 620736 912180). In previous years, flocks of greylag geese, Greenland white-fronted geese, and brent geese were frequently counted in these fields.

Despite a single relatively high count of 62 curlew (3.6% of the baseline population) in the field at the crossing point in February 2021 this was the only occasion (during the 2020/21 survey period) when birds were observed utilising the field.

2022/2023

Vantage Point Surveys

The survey effort of the Airfield and Manorcunningham/Big Isle vantage point surveys is described in Table 3-44 and Table 3-45, respectively.

Table 3-44: Vantage Point 2.11 (Airfield) Survey Effort

Date	Start	End	Cloud (Oktas)	Visibility (Met Office)	Wind (Beaufort)	Temp. (°C)	Precip.	Tide	Sunrise
23/11/22	11:00	14:00	4/8	excellent	SW 4	8	0	Low	08:15
30/11/22	09:00	12:00	7/8	>5 km	S 2	9	0	Low-rising	08:29
14/12/22	10:00	13:00	5/8	excellent	NNE 2	1	1	High-falling	08:39
19/12/22	13:00	16:00	7/8	excellent	S 5	12	1	High	08:41
11/01/23	09:00	12:00	6/8	excellent	ENE 6	4	1	High-falling	08:50
13/01/23	13:30	16:30	2/8	excellent	W 4	7	1	Falling-low	08:48
09/02/23	08:00	11:00	3/8	excellent	NW 2	6	0	High-falling	08:07
22/02/23	11:00	14:00	3/8	excellent	NW 4	7	0	Falling-low	07:38
08/03/23	09:00	12:00	1/8	excellent	E 3	-1	0	Falling-low	07:05
31/03/23	13:00	16:00	7/8	excellent	N 2	11	0	Rising-high	07:07

Table 3-45: Vantage Point 2.10 (Manorcunningham/Big Isle) Survey Effort

Date	Start	End	Cloud (Oktas)	Visibility (Met Office)	Wind (Beaufort)	Temp. (°C)	Precip.	Tide	Sunrise
23/11/22	08:00	11:00	4/8	>5 km	SE 3	7	0	Falling	08:15
30/11/22	12:00	15:00	7/8	>5 km	S 4	10	0	High-falling	08:29
14/12/22	13:00	16:00	4/8	excellent	NE 2	2	1	Falling-low	08:39
19/12/22	10:00	13:00	7/8	excellent	S 5	12	1	Low-rising	08:41
11/01/23	13:00	16:00	6/8	excellent	W 5	6	1	Falling-low	08:50
13/01/23	10:30	13:00	2/8	excellent	W 4	6	1	High-falling	08:48
09/02/23	11:00	14:00	5/8	excellent	WSW 4	8	0	Falling-low	08:07
22/02/23	07:30	10:30	4/8	excellent	WNW 3	3	0	High-falling	07:38
08/03/23	12:30	15:30	1/8	excellent	ENE 4	4	0	Low-rising	07:05
31/03/23	09:30	12:30	8/8	excellent	NE 3	10	0	Low-rising	07:07

The peak counts, across all surveys, of the primary and secondary target species are shown in Table 3-46. The peak counts for each survey of the primary and secondary target species are displayed in Appendix G. It was noted that none of the primary target species flew towards the Proposed Development during the vantage point surveys and they showed a much higher fidelity to the fields adjacent to the Swilly Estuary and within the Lough Swilly SPA boundary.

Table 3-46: Peak Counts of Species Recorded During Vantage Point Surveys

Species	BoCCI Status	Manorcunningham/Big Isle	Airfield
Primary target species			
Canada goose	Green	2	0
Greenland white-fronted goose*	Amber (W)	475	0
Greylag goose*	Amber (W)	2,115	230
Secondary target species			
Black-headed gull*	Amber (B/W)	127	340
Buzzard	BoCCI	1	2
Common gull*	Amber (B/W)	0	3
Cormorant	Amber (B/W)	1	0
Curlew*	Red (B/W)	43	5
Dunlin*	Red (B/W)	1,400	0
Eider	Red (B/W)	10	0
Golden plover	Red (B/W)	950	0
Great black-backed gull	Amber (B/W)	0	1
Greenshank*	Amber (B/W)	2	0
Grey heron	Green	1	3
Lapwing	Red (B/W)	1,230	600
Lesser black-backed gull	Amber (B/W)	23	162
Little egret	Green	3	7
Mallard*	Amber (B/W)	60	2

Species	BoCCI Status	Manorcunningham/Big Isle	Airfield
Oystercatcher*	Red (B/W)	93	208
Raven	Green	1	1
Redshank*	Red (B/W)	12	2
Shelduck*	Amber (B/W)	250	0
Teal*	Amber (B/W)	27	0
Tufted duck	Amber (B/W)	48	0
Whimbrel	Green	0	24
Wigeon*	Amber (B/W)	152	0

Key to table: B = BoCCI listed for breeding population; W = BoCCI listed for overwintering population; **BOLD*** = Lough Swilly SPA SCI

The winter 2022/23 Vantage point surveys confirmed that the vast majority of species were utilising the areas towards Manorcunningham and the Big Isle area with smaller numbers utilising land to the north of the Letterkenny airfield.

Windscreen Survey

The survey timings and conditions of the windscreen survey is described in Table 3-47.

Table 3-47: Windscreen Survey Effort

Date	Start	End	Cloud (Oktas)	Visibility (Met Office)	Wind (Beaufort)	Temp. (°C)	Precip.	Tide
18/11/22	09:00	14:30	6/8	excellent	NW 3	9	1	Low-rising
20/12/22	10:00	15:30	6/8	excellent	SW 1	5	1	Low-rising
31/01/23	08:30	14:00	8/8	>5 km	W4	7	1	Rising
01/02/23	09:00	14:30	8/8	>5 km	W4	7	Rain showers	Low-rising
03/03/23	09:30	15:00	8/8	>10 km	E2	6	Dry	Low-rising

The total counts of the primary and secondary target species during each windscreen survey are in Table 3-48. The locations and counts of each flock recorded during windscreen surveys are in Appendix G and are also mapped in EIAR Drawing 9A.57, and detailed mapping provided for curlew, greylag goose and redshank in EIAR Drawings 9A.64, 9A.65 and 9A.66 respectively..

Table 3-48: Counts of Species Recorded During Windscreen Surveys

Species	BoCCI Status	Count				
		18/11/2022	20/12/2022	11/01/2023	01/02/2023	03/03/2023
Primary Target Species						
Greenland white-fronted goose*	Amber (W)	-	57	15	56	54
Greylag goose*	Amber (W)	57	369	203	499	138
Whooper swan* (juvenile)	Amber (W)	-	-	2	-	-
Secondary Target Species						
Black-headed gull*	Amber (B/W)	-	10	17	40	13
Black-tailed godwit	Red (W)	1	100	-	-	40
Buzzard	Green	1	-	-	-	-
Common gull*	Amber (B/W)	-	-	-	-	14
Curlew*	Red (B/W)	490	527	21	118	118
Dunlin*	Red (B/W)	-	5	-	-	-
Greenshank*	Amber (B/W)	1	-	2	-	-
Grey heron	Green	1	-	-	-	-
Herring gull	Amber (B/W)	-	67	4	10	-
Kingfisher	Amber (B)	1	-	-	-	-
Lapwing	Red (B/W)	300	640	67	880	-
Lesser black-backed gull	Amber (B/W)	-	1	-	-	-
Mallard*	Amber (B/W)	-	-	12	-	2
Oystercatcher*	Red (B/W)	1	1	-	27	6
Redshank*	Red (B/W)	-	226	1	-	-
White-tailed eagle	Red (B)	1	-	-	-	-

Key to table: B = BoCCI listed for breeding population; W = BoCCI listed for overwintering population; **BOLD*** = Lough Swilly SPA SCI

The surveys identified that 2 SCI species of the Lough Swilly SPA were recorded at levels that were above the 1% threshold of the SPA in close proximity to the Proposed Development and within a potential disturbance zone, these were for curlew and greylag goose.

Curlew were recorded at the three distinct areas above the 1% threshold, at the Milk Isle bridge crossing area, in proximity to the Letterkenny airfield and in the area of the Isle Burn close to the Manorcunningham roundabout. A peak count of 94 birds (5.5% of the baseline population) was recorded near the Manorcunningham roundabout during the March survey. At the Milk Isle bridge crossing area curlew were above the 1% threshold on three of the five survey visits, with a peak count of 33 individuals (1.9% of the baseline population).

The majority of records for greylag goose were recorded from the area to the north of Letterkenny airfield and out towards Big Isle. Numbers were recorded above the 1% threshold within the potential disturbance zone from the Proposed Development on three of the five survey months. They were recorded at the Milk Isle bridge crossing location during two months with a peak flock count of 68 birds (3.1% of the most recent population); and to the area to the north of the airfield also during two months with a peak count of 350 (16.0% of the most recent population).

No teal were recorded during the 2022/2023 survey period in numbers that were deemed significant within the potential disturbance zones for the Proposed Development.

No other significant populations of SCI birds were recorded within close proximity to the proposed works during these surveys.

2025/2026

Vantage Point Surveys

The survey effort for the vantage point surveys are shown in

Table 3-48 to

Table 3-52 below.

Table 3-48: Vantage Point Survey Effort and Weather Data September 2025

Date	VP	Start	End	Cloud (Oktas)	Wind (Beaufort)	Temp. (°C)	Precip.	Tide	Disturbance
01/09/2025	VP2.12	11:55	14:55	8/8	3	15°C	Passing heavy showers	High 13:25	None
02/09/2025	VP2.15	13:52	16:52	6/8	3	17°C	Rained for last hour	High 15:22	None
03/09/2025	VP2.12	08:25	11:25	8/8	2	14°C	Light showers	Low 09:55	None
03/09/2025	VP2.13	15:03	18:01	6/8	2	15°C	None	High 16:31	None
04/09/2025	VP2.14	15:45	18:45	6/8	2	14°C	Light	High 17:15	None
09/09/2025	VP2.13	12:22	15:22	7/8	2	16°C	None	Low 13:52	Digger sowing fields, largely ignored.
10/09/2025	VP2.15	13:00	16:00	8/8	3	16°C	Showers	Low 14:30	None
11/09/2025	VP2.14	13:41	16:41	8/8	3	15°C	Showers	Low 15:11	None

Table 3-49: Vantage Point Survey Effort and Weather Data October 2025

Date	VP	Start	End	Cloud (Oktas)	Wind (Beaufort)	Temp. (°C)	Precip.	Tide	Disturbance
06/10/2025	VP2.12	10:39	13:55	8/8	3	16°C	Light drizzle	Low 12:09	None

Date	VP	Start	End	Cloud (Oktas)	Wind (Beaufort)	Temp. (°C)	Precip.	Tide	Disturbance
07/10/2025	VP2.15	11:17	14:17	8/8	2	16°C	None	Low 12:47	Walkers at 14:00
08/10/2025	VP2.13	11:57	14:57	8/8	3 / 4	14°C	None	Low 13:27	None
09/10/2025	VP2.14	12:39	15:39	8/8	3	14°C	Occasional light drizzle	Low 14:09	None
13/10/2025	VP2.15	10:02	13:02	7/8	1	13°C	None	High 11:32	None
14/10/2025	VP2.13	11:40	14:40	8/8	0	12°C	None	High 13:10	Farmer cutting hedges
28/10/2025	VP2.12	08:16	11:16	4/8	3	12°C	None	High 09:46	None
29/10/2025	VP2.14	09:32	12:32	8/8	4	10°C	Passing showers	High 11:02	None

Table 3-50: Vantage Point Survey Effort and Weather Data November 2025

Date	VP	Start	End	Cloud (Oktas)	Wind (Beaufort)	Temp. (°C)	Precip.	Tide	Disturbance
03/11/2025	VP2.15	08:26	11:26	8/8	3	13°C	Consistant Showers	09:56	None
04/11/2025	VP2.13	09:09	12:09	6/8	2	14°C	None	10:39 LT	None
05/11/2025	VP2.12	09:53	12:53	7/8	3	13°C	None	11:23 LT	None
06/11/2025	VP2.14	10:38	01:38	8/8	3	13°C	Occasional shower	12:08 LT	None
25/11/2025	VP2.14	06:55	09:55	2/8	2	3°C	None	08:25 HT	None
26/11/2025	VP2.13	08:06	11:06	8/8	3	7°C	Occasional shower	09:36 HT	None
27/11/2025	VP2.15	09:07	12:07	8/8	5	10°C	Drizzle & passing heavy showers	10:37 HT	None
28/11/2025	VP2.12	10:10	13:10	8/8	5	11°C	heavy showers	11:40 HT	None

Table 3-51: Vantage Point Survey Effort and Weather Data December 2025

Date	VP	Start	End	Cloud (Oktas)	Wind (Beaufort)	Temp. (°C)	Precip.	Tide	Disturbance
01/12/2025	VP2.15	13:20	16:20	8/8	2	08°C	None	14:50 HT	None
01/12/2025	VP2.12	13:20	16:20	7/8	2	08°C	None	14:50 HT	None
02/12/2025	VP2.13	14:13	17:13	1/8	1	08°C	None	15:53 HT	None
02/12/2025	VP2.14	14:13	17:13	1/8	1	08°C	None	15:53 HT	None
03/12/2025	VP2.15	08:46	11:46	5/8	3	07°C	None	10:16 LT	None
03/12/2025	VP2.12	08:46	11:46	5/8	3	07°C	None	10:16 LT	None
04/12/2025	VP2.14	09:37	12:37	3/8	2	06°C	None	11:07 LT	None
04/12/2025	VP2.13	09:37	12:37	3/8	2	06°C	None	11:07 LT	None

Table 3-52: Vantage Point Survey Effort and Weather Data January 2026

Date	VP	Start	End	Cloud (Oktas)	Wind (Beaufort)	Temp. (°C)	Precip.	Tide	Disturbance
05/01/2026	VP2.15	12:06	15:06	2/8	1	02	None	13:36 LT	None

Date	VP	Start	End	Cloud (Oktas)	Wind (Beaufort)	Temp. (°C)	Precip.	Tide	Disturbance
06/01/2026	VP2.13	12:52	15:52	6/8	4	04	None	14:22 LT	None
07/01/2026	VP2.12	13:37	16:37	6/8	3	04	None	15:07 LT	None
12/01/2026	VP2.12	11:47	14:47	8/8	3	08	None	13:17 HT	None
13/01/2026	VP2.13	13:03	16:03	8/8	4	07	None	14:33 HT	None
14/01/2026	VP2.14	14:07	17:07	8/8	4	06	None	15:37 HT	None
29/01/2026	VP2.15	13:51	16:51	7/8	5	06	None	15:21 HT	None
30/01/2026	VP2.14	08:37	11:37	8/8	4	06	None	10:07 LT	None

The majority of bird sightings recorded during the 2025/2026 vantage point surveys were located within the boundaries of the Lough Swilly SPA. The findings of the VP surveys are provided within Appendix G for each VP in tables G3 to G6 and mapped in EIAR Drawings 9A.67 to 9A.70. A total of 28 species of water birds were recorded across all VPs of which 12 were SCI species.

Windscreen surveys

The survey effort for the windscreen surveys are shown in Table 3-53 below.

Table 3-53: Weather Data for Windscreen Surveys- Section 2

Date	Start	End	Cloud (Oktas)	Wind (Beaufort)	Precipitation	Temp. (°C)	Disturbance
12/09/2025	09:00	14:00	7/8	5	None	14°C	None
28/10/2025	09:00	14:00	8/8	1	Occasional light drizzle	12°C	None
18/11/2025	08:20	13:20	8	3	Occasional shower	2°C	None
05/12/2025	08:30	12:30	8	4	heavy showers at end of survey	8°C	None
15/01/2026	09:30	15:00	8	4	Light showers	8°C	None

The findings of the windscreen surveys are provided within Appendix G in table G-7 and mapped in EIAR Drawings 9A.67 to 9A.70. A total of 20 species of water birds were recorded across all surveys of which 11 were SCI species.

Overall findings

The surveys identified that 4 SCI species of the Lough Swilly SPA were recorded at levels that were above the 1% threshold of the SPA in close proximity to the Proposed Development.

These species were curlew, greylag goose, redshank and teal.

Curlew were recorded above the 1% threshold on all surveys undertaken from September to January with the majority of these sightings being located within the area to the north of the Letterkenny airfield. A peak count of 132 birds (7.7% of the baseline population) in an area to the north of the airfield. Curlew were recorded within the Milk Isle bridge crossing area above the 1% threshold during two months of the 2025/26 survey period with a peak flock count of 22 (1.3% of the baseline population) recorded.

Greylag goose were recorded above the 1% threshold during two out of the five survey months within the proposed disturbance zone of the Proposed Development. These sightings were located within the area to

the north of Letterkenny airfield with a peak flock count of 299 (13.7% of the moist recent population estimate). There were no recorded sightings of greylag goose within the Milk Isle proposed bridge crossing location during the 2025/2026 surveys.

Redshank were recorded above the 1% threshold on one occasion within the proposed disturbance zone of the Proposed Development. The majority of records are from within the SPA boundary and are located within the estuarine channel of the Swilly. The only record above the 1% threshold was of 19 birds (1.4% of the baseline population) during the September survey.

Teal were recorded above the 1% threshold within the potential disturbance zone of the proposed development during three months of five months surveyed. The majority of the records were recorded within the Lough Swilly SPA and all were of records from within the estuarine habitat. The majority of these records are located in close proximity to the proposed bridge crossing close to Milk Isle. The peak flock count of 58 birds (3.7% of the baseline population) was recorded during the December surveys.

Over-wintering Bird SCIs Relevant to disturbance

A list of overwintering bird species relevant to the potential significant disturbance was compiled to identify Special Conservation Interest (SCI) species that use the proposed development during the qualifying winter period. To do this, all SCI species of the relevant SPAs were considered.

Lough Swilly SPA (site code: 004075) has 24 SCI species. These are great crested grebe (*Podiceps cristatus*), grey heron (*Ardea cinerea*), whooper swan (*Cygnus cygnus*), greylag goose (*Anser anser*), shelduck (*Tadorna tadorna*), teal (*Anas crecca*), mallard (*Anas platyrhynchos*), scaup (*Aythya m*arila), 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 c*anus), common tern (*Sterna hirundo*), greenland white-fronted goose (*Anser albifrons flavirostris*), wigeon (*Mareca p*enelope), shoveler (*Spatula clypeata*), and sandwich tern (*Thalasseus sandvicensis*).

Lough Foyle SPA (site code: 004087) also has 24 SCI species. These are red-throated diver (*Gavia stellata*), great crested grebe, Bewick's swan (*Cygnus columbianus bewickii*), whooper swan, greylag goose, light-bellied brent goose (*Branta bernicla* hrota), shelduck, teal, mallard, eider (*Somateria mollissima*), red-breasted merganser, oystercatcher, golden plover (*Pluvialis apricaria*), lapwing (*Vanellus vanellus*), knot, dunlin, bar-tailed godwit (*Limosa lapponica*), curlew, redshank, black-headed gull, common gull, herring gull (*Larus argentatus*), and wigeon.

Lough Foyle SPA (former Natura 2000 designation, UK9020031) has 1 additional species as a selection feature cormorant (*Phalacrocorax carbo)* that does not form an SCI of the ROI SPAs.

Combining the two lists resulted in 33 SCI species that could potentially be relevant to the proposed works. Surveys were carried out over the 2017–2020, 2020/2021, and 2022–2023 winter seasons, together with the latest surveys in 2025/2026 winter season. During the full suite of surveys, 43 bird species were recorded. These were compared with the SCI species listed for the two relevant SPAs. Of the 43 species recorded, 20 were SCI species of Lough Swilly SPA and Lough Foyle SPAs. These were great grested grebe, grey Heron, whooper swan, greylag goose, shelduck, teal, mallard, coot, oystercatcher, dunlin, redshank, greenshank, black-headed gull, common gull, greenland white-fronted goose, wigeon, shoveler, bar-tailed godwit, and herring gull.

The black-headed gulls and common gulls are an SCI for their breeding numbers, and no wintering numbers are provided within the NPWS supporting information for the Conservation Objectives (NPWS, 2011d). The conservation objective only refers to maintaining breeding numbers and therefore black headed gull can be discounted as SCI for their wintering numbers

The following SCI species were not recorded using the area of the proposed scheme and were therefore considered not relevant to the EIAR: red-throated diver, Bewick's swan, light-bellied brent goose, red-breasted merganser, scaup, goldeneye, knot, common tern, cormorant and sandwich tern.

Of the 20 SCI species recorded, four species were present in numbers considered significant in relation to Lough Swilly SPA and were found within 500 m of the proposed works. A “significant number” was defined as a flock greater than the SPA’s 1% population threshold (European Environment Agency, 2024). These four species were curlew, teal, greylag goose, and redshank.

Of the 20 SCI species recorded, the same five species were regarded as being in numbers considered significant in relation to Lough Foyle SPA and was found within 500 m of the proposed works. A “significant number” was defined as a flock greater than the SPA’s 1% population threshold (NPWS, 2014d).

In total, four SCI species — curlew, teal, greylag goose and redshank were identified as holding potential for adverse effects.

3.6.3.2.2.3 Kingfisher Survey

The 2023 ornithology surveys report, including further details of the kingfisher surveys, is included in Appendix F.

Walkover Surveys

Within Section 2, a single kingfisher was observed on 2 June at Transect 14 (see EIAR Drawing 9A.50). During the wintering birds windscreen survey on 18 November 2022, a single kingfisher was incidentally observed along the same watercourse, approximately 900 m downstream of the N13.

Many of the rivers and streams in the area are unsuitable for kingfishers, for either nesting or for foraging. A general absence of suitable banks limits the availability of breeding nest holes.

There was a notable increase in the available areas in some of the tributaries of the Swilly (in Transects 3 to 9 and Transect 14; see EIAR Drawing 9A.50), but neither nest holes nor kingfishers were seen. These banks were shallow, have tidal influence, and are likely to be inundated twice per month on spring high tides. Therefore, they were generally unsuitable and are probably avoided. A summary of results for Section 2 is shown in Table 3-49.

Table 3-49: Results of Kingfisher Walkover and Vantage Point Surveys Undertaken in Section 2 in Summer 2023

Transect	Date	Kingfisher Seen?	Suitable Foraging?	Suitable Nesting?	Nest Found	VP Survey	Kingfisher Seen?
1	23 May	N	N	N	N	N	
2	23 May	N	N	N	N	N	
3	23 May	N	N	N	N	N	
4	23 May	N	N	N	N	N	
5	23 May	N	N	N	N	N	
6	23 May	N	N	N	N	N	
7	23 May	N	N	N	N	N	
8	25 May	N	N	N	N	N	
9	25 May	N	N	N	N	N	
10	25 May	N	N	N	N	N	
11	25 May	N	N	N	N	N	
12	25 May	N	N	N	N	N	
13	02 June	N	N	N	N	N	
14	02 June	YES	YES	N	N	YES; 06 June	YES
15	02 June	N	N	N	N	N	

Transect	Date	Kingfisher Seen?	Suitable Foraging?	Suitable Nesting?	Nest Found	VP Survey	Kingfisher Seen?
16	02 June	N	N	N	N	N	
17	02 June	N	N	N	N	N	
18	02 June	N	N	N	N	N	

Vantage Point Surveys (Kingfisher)

A follow-up VP survey of 2-hour duration was undertaken at Transect 14 on 6 June, observing north and south (1 hour each) sections from the N13. This area (see EIAR Drawing 9A.50) had some suitable foraging habitat and perches but although some of the banks were suitable in structure, they were very shallow above the water level (subject to tidal inundation) and no nest holes were seen. Commuting/foraging kingfisher was observed at this VP and it was also incidentally observed at this location during 2022/23 and 2025 wintering bird surveys. No other sites in the Letterkenny area appeared suitable; though it seems likely that at least on some occasions (e.g. winter) kingfishers will occur, especially on the main Swilly Estuary channel.

3.6.3.3 Section 3

3.6.3.3.1 Breeding Bird Species

Line transects were surveyed for breeding birds at predetermined key locations along the Proposed Development as detailed in Table 3-50. Breeding bird survey work was carried out between 05:30 and 10:00 to coincide with maximum bird activity and all bird locations, numbers and behaviour was recorded on field maps and data sheets. Transects lengths and segments were selected according to habitat composition and homogeny. Bird species were recorded on either side of the selected transect which was centred on the proposed alignment. All bird species were identified and recorded on either side of a transect at varying distance bands as follows:

- 25 metres on both sides of the transect line
- 25-100 metres on both sides of the transect line
- 100+ metres on both sides of the transect line
- Birds flying over or through the transect line

Table 3-50: Breeding Bird Survey Transect Locations May and June 2020

Transect	Townland	Ch. Start	Ch. End
1	Ballyboe	1800	2800
2	Doorabble	4500	4800
3	Slievebuck	6800	7800
4	Feddyglass	10100	10600
5	Broadlea	11200	11900
6	Ballindrait	14000	14500
7	Murlough	14700	15200
8	Lifford	15800	16200

The results of the breeding bird surveys completed for the Proposed Development are presented in Table 3-51. Most of the bird species identified, displayed the behavioural criteria necessary to suggest possible, probable or to confirm breeding within the habitats surveyed. Breeding status of bird species was assigned to one of the following four categories based on BTO Categories of Breeding Evidence (Bibby *et al*., 2000):

- Confirmed (Br)

- Probable (Pr)
- Possible (Po)
- Non-breeder (N)

Three species of High Conservation Concern (red listed) were identified during the breeding bird surveys, namely Meadow Pipit (*Anthus pratensis*), Grey Wagtail (*Motacilla flava*) and Yellowhammer (*Emberiza citrinella*). Meadow Pipit are a ground-nesting species and was recorded nesting at a number of wet grassland sites along the proposed route. Grey Wagtail was recorded at watercourses at Drumoghill (W3-04) and on the River Deele (W3-17) in the vicinity of the proposed crossing point and while breeding was not confirmed, it is likely at both locations. Yellowhammer was recorded at a number of locations in the vicinity of the Proposed Development between Murlough and Lifford Common, where there is a considerable amount of tillage with fields sub-divided by treelines and hedgerows.

Nine amber-listed species considered to be of Moderate conservation concern were identified during the breeding bird surveys, though some evidently only foraging were within the vicinity of the Proposed Development and not breeding, including Herring Gull (*Larus argentatus*), House martin (*Delichon urbicum*) and Swallow (*Hirundo rusticola*). Confirmed breeding amber-listed species include Goldcrest (*Regulus regulus*), Greenfinch (*Chloris chloris*), Whitethroat (*Sylvia communis*) and Robin (*Erithacus rubicola)*, while potential breeders include Kestrel (*Falco tinnunculus*) and Snipe (*Gallinago gallinago*).

The remaining breeding bird species recorded along the line of the Proposed Development are green listed and comprise a range of relatively common species typically associated with the lowland agricultural grasslands with associated hedgerows / treelines (collectively referred to as “countryside birds”). These habitats typically support a range of passerines dominated by various tits, finches, warblers, thrushes and corvids.

Areas of grassland and in particular wet grassland, provide feeding opportunities for seed-eating species such as Goldfinch (*Carduelis carduelis*), Siskin (*C. spinus*) and Linnet (*C. cannabina*). A number of wet grassland / wet woodland sites (KER 3-5. KER 3-6, KER 3-7 and KER 3-10) also supported breeding Reed Bunting (*Emberiza schoeniclus*) and Sedge Warbler (*Acrocephalus schoenobaenus*).

The deciduous woodland habitats along the length of the Proposed Development, most notably at Ballyboe (KER 3-2), Drumoghill (KER 3-3) and Tullyrap (KER 3-11), provide breeding habitat for a variety of birds. Goldcrest, Song thrush (*Turdus philomelos*), Blackbird (*Turdus merula*), Woodpigeon (*Columba palumbus*) and Dunnock (*Prunella modularis*) were recorded at all three sites, but are also likely to occur in hedgerow / treeline habitats elsewhere along the scheme. A rookery containing c60 nests is present at a woodland copse at Drumoghill (KER 3-4) whilst another smaller one (outside of the footprint of the Proposed Development) occurs in the woodland along the Swilly Burn tributary (W3-13) at Tullyrap.

Dry scrub habitat at Drumoghill supports breeding by Whitethroat while Willow Warbler (*Phylloscopus trochilus*), Chiff-chaff (*Phylloscopus collybita*) and Blackcap (*Sylvia atricapilla*) were recorded at numerous locations along the length of the Proposed Development, primarily in areas of wet woodland but also in some of the hedgerows and treelines. Solitary Cuckoos (*Cuculus canorus*) was heard calling in the vicinity of Drumoghill (KER 3-3) and at Doorabble (KER 3-5) during the May survey.

A rookery occurs at a copse of mixed broad-leaved woodland at Drumoghill (KER 3-4) adjacent to the existing N14. An estimated 60 pairs of Rook (*Corvus frugilegus*) were present during both May and June surveys, along with a smaller number of Jackdaws (*Coloeus monedula*). This site will be partially removed as part of the Proposed Development. A rookery also occurs in the mixed broad-leaved woodland along the Swilly Burn tributary (KER 3-11) at Tullyrap, though this will be unaffected by the Proposed Development.

The watercourses crossed by the Proposed Development are mainly small and generally do not provide suitable breeding habitat for water-birds. The deep and well-vegetated drainage ditches flanking the Swilly Burn (W3-14) and the River Deele (W3-017) flood embankments may however support both Moorhen (*Gallinula chloropus*) and Mallard (*Anas platyrhynchos*). Kingfisher (*Alcedo athis*), a piscivorous species typically feeding on slow moving waters, are afforded protection on Annex I to the Birds Directive and are amber listed under the Birds of Conservation Concern in Ireland (BoCCI) by BirdWatch Ireland (Gilbert *et al*. 2021). Their nesting requirements are quite specific, preferring a steep to over-hanging bank of exposed clay

or sand adjacent to water. No nest sites were recorded on or in the immediate vicinity of the Proposed Development on any watercourses. No Kingfishers were observed during the surveys and there was no evidence of nests recorded on any of these rivers in the vicinity of the proposed crossing points. Periodic occurrence of Kingfisher can be expected during winter when kingfisher utilise estuarine waters on the lower sections of the Lesliehill Stream tributary (W3-12 and W3-03), the Swilly Burn (W3-14), River Deele (W3-17) and the River Finn (W3-18).

Dipper (*Cinclus cinclus*) nest sites were recorded on the Swilly Burn tributary (W3-13) at two bridge locations on the N14 Bridge at Tullyrap. There was no evidence of Dipper recorded on the Lesliehill Stream tributary at Ballyboe (W3-04) though the watercourse provides potentially suitable habitat for the species.

A small colony of Heron (*Ardea cinerea*) were confirmed breeding at a coniferous plantation approximately 200 m to the west of the Proposed Development by the Swilly Burn (W3-14). There were 6 nests observed though it was not determined if all were active during the current season. Herons utilise the same nest sites over several years.

Raptors observed during breeding bird field surveys include Kestrel (*Falco tinnunculus*) and Buzzard (*Buteo buteo*), both of which typically nest in mature trees or woodland habitat. Buzzard nest sites were recorded at Slievebuck (at a distance of several hundred meters from the Proposed Development) and at Murlough where the nest is in a tree on the proposed alignment. A single bird was also observed at Ballyboe (KER 3-2) in June. A solitary Sparrowhawk (*Accipiter nisus*) was seen at woodland in Tullyrap (KER 3-11) in February 2020 during the mammal survey. While breeding was not confirmed the habitat at KER 3-11 is potentially suitable for nesting. There was no evidence of breeding Long-eared Owl (*Asio otus*) which typically utilise old Grey Crow nest sites and frequently occur in coniferous plantations. However, there is anecdotal evidence of breeding in a small plantation to the west of the alignment at Drumcarn.

There are no records of breeding by Peregrine Falcons (*Falco peregrinus*), Hen Harrier (*Circus cyaneus*) or Merlin (*Falco columbarius*) from within the vicinity of the Proposed Development and the habitats are unsuited for breeding by these Annex I listed species. The lands along the Proposed Development do not provide typical wintering habitat for these species but occasional occurrences cannot be ruled out.

No evidence of breeding waders was recorded in the wet grassland habitats in the vicinity of the Proposed Development during the breeding bird surveys. However, the amber-listed Snipe (*Gallinago gallinago*) may utilise wet grassland for breeding at KER 3-5. KER 3-6, KER 3-7 and KER 3-10. Woodcock (*Scolopax scolopax)* was recorded at Tullyrap (KER 3-11) during the mammal survey undertaken in February 2020. This species occurs in large numbers as a winter visitor from mainland Europe but also breeds in Ireland, typically using forestry and woodland. It is a red-listed species for breeding.

Table 3-51: Results of Breeding Bird Survey Transects May and June 2020 and April, May and June 2023

Transect	Common Name	No of Individuals Recorded					BoCCI	Breeding Status
		2020		2023				
		May	June	April	May	June		
Transect 1	Song thrush	2	3	3	4	3	Green	Pr
	Whitethroat	1	2	-	1	-	Amber	Pr
	Dunnock	2	4	5	4	4	Green	Pr
	Wren	6	4	5	6	7	Green	Br
	Blackbird	3	3	4	3	4	Green	Br
	Coal tit	2	4	3	3	2	Green	Pr
	Long-tailed tit	7	-	-	0	2	Green	Po
	Willow warbler	4	2		3	5	Green	Pr
	Chiffchaff	-	-	5	4	3	Green	Pr
	Linnet	-	-	1	3	-	Amber	Pr
	Goldcrest	2	-	2	2	1	Amber	Pr

Transect	Common Name	No of Individuals Recorded					BoCCI	Breeding Status
		2020		2023				
		May	June	April	May	June		
	Greenfinch	1	-	-	-	-	Amber	Pr
	Sedge warbler	-	-	-	1	-	Green	Pr
	Blackcap	-	-	-	-	2	Green	Pr
	Redpoll	-	-	-	-	3	Green	Po
	Cuckoo	1	-	-	-	-	Green	Po
	Robin	2	4	3	4	3	Amber	Pr
	Wood pigeon	3	5	4	3	4	Green	Br
	Swallow	7	-	-	6	4	Amber	N
	House martin	-	2	-	-	-	Amber	N
	Sand Martin	-	-	12	-	-	Amber	N
	Grey wagtail	-	1	-	-	-	Red	Po
	Rook	Est 60	Est 60	Est 100	Est 100	Est 100	Green	Br
	Jackdaw	17	12	16	16	16	Green	Po
	Buzzard	-	1	-	-	1	Green	Po
	Raven	2	-	-	-	-	Green	N
Transect 2	Sedge warbler	1	1	-	-	-	Green	Br
	Chiffchaff	2	1	2	2	1	Green	Pr
	Willow warbler	2	3	3	2	4	Green	Pr
	Wren	3	1	2	4	3	Green	Pr
	Dunnock	-	1	-	2	1	Green	Pr
	Song thrush	1	1	1	3	2	Green	Pr
	Linnet	-	-	2	-	2	Amber	Pr
	Blackcap	1	-	1	1	-	Green	Pr
	Yellowhammer	-	-	-	2	-	Red	Po
	Blackbird	2	1	3	3	2	Green	Pr
	Robin	3	3	2	3	2	Amber	Pr
	Cuckoo	1	-	-	-	-	Green	Po
	Wood pigeon	1	1	2	-	1	Green	Pr
Transect 3	Sedge warbler	1	1	-	-	-	Green	Pr
	Chiffchaff	1	2	-	2	2	Green	Pr
	Willow warbler	-	1	-	2	1	Green	Po
	Wren	2	3	2	2	2	Green	Pr
	Dunnock	-	1	1	1	-	Green	Po
	Song thrush	1	1	2	1	1	Green	Pr
	Blackcap	-	1	-	-	-	Green	Po
	Linnet	-	-	2	-	-	Amber	Po
	Blackbird	2	2	3	2	2	Green	Pr
	Robin	1	2	1	2	3	Amber	Pr
	Stonechat	-	-	-	2	1	Green	Pr
	Meadow pipit	-	-	-	2	3	Green	Pr
	Reed Bunting	-	-	-	1	1	Green	Pr
	Cuckoo	1	-	-	-	-	Green	Po

Transect	Common Name	No of Individuals Recorded					BoCCI	Breeding Status
		2020		2023				
		May	June	April	May	June		
	Wood pigeon	-	1	-	2	1	Green	Po
	Buzzard	-	2	-	-	2	Green	N
	Rook	7	20	15	15	12	Green	N
Transect 4	Blackcap	3	2	-	-	-	Green	Pr
	Chaffinch	2	4	2	2	3	Green	Pr
	Wren	2	1	4	2	3	Green	Pr
	Blackbird	1	2	3	2	2	Green	Pr
	Song thrush	2	1	1	2	2	Green	Pr
	Wood pigeon	2	1	2	1	1	Green	Pr
	Blue tit	1	-	-	-	-	Green	Po
	Gold crest	1	-	-	-	-	Amber	Po
	Willow warbler	1	1	2	2	3	Green	Pr
	Tree Sparrow	-	-	8	-	-	Amber	Po
	Spotted flycatcher	-	-	-	1	1	Amber	Po
	Chiffchaff	-	1	-	1	1	Green	Po
	Rook	5	17	12	11	8	Green	Br
	Yellowhammer	-	1	-	-	-	Red	N
Transect 5	Hooded crow	2	4	2	2	3	Green	Pr
	Magpie	2	-	2	-	1	Green	Po
	Chaffinch	1	3	1	1	3	Green	Pr
	Blackbird	2	1	3	3	2	Green	Pr
	Goldcrest	1	-	2	2	2	Amber	Po
	Heron	6	4	4	4	4	Green	Br
	Blackcap	1	2	1	1	3	Green	Pr
	Redpoll	-	-	-	-	3	Green	Po
	Mallard	4	2	1	1	1	Green	Pr
	Wren	1	2	3	3	2	Green	Pr
	Song thrush	2	1	2	2	3	Green	Pr
	Lesser back-backed gull	-	6	-	-	-	Amber	N
	Pied wagtail	2	2	2	2	1	Green	Pr
	Wood pigeon	4	3	5	2	3	Green	Pr
	Raven	-	2	-	-	-	Green	N
	Buzzard	-	-	-	1	-	Green	Po
Transect 6	Sand martin	-	5	2	-	-	Amber	N
	Swallow	-	3	3	3	3	Amber	N
	Yellowhammer	-	1	-	-	-	Red	Po
	Grey wagtail	1	-	-	-	-	Red	Po
	Lon-tailed tit	5	-	-	-	-	Green	N
	Mallard	2	-	1	1	1	Green	N
	Dunnock	1	1	0	0	0	Green	Pr
	Tree Sparrow	-	-	2	2	2	Amber	Po
	Wren	2	2	2	3	2	Green	Pr

Transect	Common Name	No of Individuals Recorded					BoCCI	Breeding Status
		2020		2023				
		May	June	April	May	June		
	Blackbird	1	1	2	2	1	Green	Pr
	Hooded crow	2	-	-	2	1	Green	N
Transect 7	Buzzard	2	2	1	1	1	Green	Br
	Wood pigeon	3	2	3	3	3	Green	Pr
	Great tit	1	1	2	1	2	Green	Pr
	Chaffinch	2	1	2	3	2	Green	Pr
	Goldcrest	-	-	-	1	-	Amber	Po
	Willow warbler	-	-	1	-	1	Green	Po
	Blackcap	-	-	-	1	-	Green	Po
	Blackbird	3	1	2	2	2	Green	Pr
	Song thrush	1	1	1	2	1	Green	Pr
	Robin	1	2	1	2	1	Amber	Pr
	Dunnock	-	1	-	1	-	Green	Pr
Transect 8	Yellowhammer	1	2	-	1	2	Red	Pr
	Wood pigeon	2	7	4	5	3	Green	Pr
	Great tit	-	2	-	2	1	Green	Po
	Chaffinch	4	2	3	5	2	Green	Pr
	Willow warbler	-	-	1	-	1	Green	Po
	Blackbird	2	2	2	3	3	Green	Pr
	Song thrush	1	3	1	1	2	Green	Pr
	Meadow pipit	-	-	1	-	2	Amber	Pr
	Robin	-	2	4	2	4	Amber	Pr
	Dunnock	1	-	-	1	1	Green	Po

3.6.3.3.2 Wintering Water-birds

Apart from the Swilly Burn floodplain which was found to support a wintering flock of whooper swan (see below), there were no important bird areas identified within the Proposed Development boundary and the habitats present are unsuited to supporting significant aggregations of wintering birds or likely flyways for wintering species. Flocks of golden plover (*Pluvialis apricaria*), listed on Annex I of the EU Birds Directive) and lapwing (*Vanellus vanellus*), a Red Listed species on Birds of Conservation Concern 2014-2019, may utilise agricultural grasslands throughout the Proposed Development boundary during the winter. Areas of wet grassland will also provide suitable habitat for dispersed populations of wintering snipe (*Gallinago gallinago*), None of these species are SCIs for the Lough Swilly SPA or Lough Foyle SPAs. .

Whooper swan is known to utilise low-lying fields of improved agricultural grassland along the Swilly Burn floodplain in the townlands of Mulnaveagh and Tullyrap. A series of monthly surveys were undertaken during the winter periods 2018/2019 and 2020/2021 to determine whooper swan occurrence within the vicinity of the proposed route alignment. The results of the surveys found that Swilly Burn floodplain is the only significant foraging area in the vicinity of the scheme with the foraging being concentrated approximately 1 km to the east of the Proposed Development. There were no sightings or records of swans foraging along or in the immediate vicinity of the proposed alignment at the Swilly Burn crossing. A number of other sites in the general vicinity of the Swilly Burn are also used on a sporadic basis, with occurrence dependant on foraging suitability in any one year as determined by the farming activity (i.e. whether under grassland, tillage, potatoes, etc.). A field regularly planted with potatoes immediately east of the proposed alignment at Tullyrap is foraged over by whooper swan after harvesting.

During the surveys undertaken in the winter 2019-2020, swans were observed flying along the Swilly Burn in both an east-west and west-east orientation to and from the direction of Lough Foyle, as well as flying in a north-south orientation. While the watercourses may act as the main flyways, in view of the large populations of whooper swan wintering within the Swilly and Foyle estuaries, movement of birds could occur in any direction between core foraging and roosting areas and secondary sites further afield.

Bird surveys of the N14 and environs were undertaken in the winter period 2020-21, building on the survey work undertaken in previous winters. This comprised a full 'winter' season of bi-monthly counts in the area documenting the numbers, distribution, and movement patterns of whooper swan within the area which would form the basis of an evaluation of the relative importance of areas within the footprint of the scheme for the species (Appendix H: Lifford Whooper Swan Report).

In the area within the N14 corridor there were two main areas of usage by whooper swan, see Figure 2 in Appendix H: Lifford Whooper Swan Report for the location of the main flocks and subsites within the Swilly Burn area. The arrow shows in Figure 2 of Appendix H: Lifford Whooper Swan Report the main movement corridor of birds in the vicinity when moving between foraging on potatoes at Feddyglass (Site 1) and other grassland sites (Site 2/3).

Site 1 is in two adjacent potato fields at Drumbeg while Site 2 is the Swilly Burn floodplain at Feddyglass, both of these sites are within 500m of the Proposed Development. A number of other grassland sites are used along the lower floodplain of the Swilly Burn and east and west of the river Foyle (Sites 3 to 6), these sites are all over 1.3km from the Proposed Development works. The utilisation of potato fields for foraging at Drumbeg (as elsewhere) is considered ephemeral and opportunistic when this habitat is available anywhere within traditional sites the swans will exploit them temporarily.

In the floodplain of the Swilly Burn whooper swan numbers peaked in February 2021 (n=282 birds) at Site 5, approximately 4.8km from the proposed works, when numbers were highest for a period of ~ four weeks.

For the two sites that are within 500m of the proposed works areas (Sites 1 and 2), smaller numbers of swans were recorded. Site 1 held birds during counts in December 2020 and during 1 count in January 2021. The peak count within site one was of 42 birds in December and 11 birds in January. For Site 2 birds were recorded during visits in December 2020, and in January, February and March 2021. Peak monthly counts for Site 2 were 2 in December, 54 in January, 36 in February and 39 in March.

Therefore, during the 2020 to 2021 survey period the peak count of whooper swan was 54 (3.2% of the Lough Swilly baseline population) within 500m of the Proposed Development.

No other SCI species were recorded in significant numbers within 500m of the Proposed Development, during the 2020/2021 survey season. Greylag goose was recorded during these surveys, but they were located in the Sites that are over 4km from the Proposed Development.

2025/2026 Surveys

The survey timings and conditions of the windscreen survey undertaken during the 2025/2026 surveys are described in Table 3-52.

Table 3-52: Weather Data for Windscreen Surveys- Section 3

Date	Start	End	Cloud (Oktas)	Wind (Beaufort)	Precipitation	Temp. (°C)	Disturbance
29/10/22025	13:00	17:00	8/8	3	None	12	None
17/11/2025	08:15	13:15	8/8	2	None	7°C	None
19/11/2025	08:30	13:30	8/8	2	Occasional shower	0°C	None
15/12/2025	11:30	16:30	2/8	2	None	6°C	None
16/12/2025	09:00	13:00	2/8	2	None	5°C	None
08/01/2026	10:00	15:00	4/8	2	None	2°C	None

Date	Start	End	Cloud (Oktas)	Wind (Beaufort)	Precipitation	Temp. (°C)	Disturbance
16/01/2026	08:30	14:00	4/8	3	None	6	None

The survey results of the Windscreen Survey are shown in

Table 3-53 below and in EIAR Drawing C9A.72.

Table 3-53: Species Counts for Windscreen Surveys - Section 3

Species	BoCCI	29/10/25	17/11/25	19/11/25	05/12/25	16/12/26	08/01/26	16/01/26	Peak Flock Count
Black-headed gull*	Amber	-	-	122	-	-	-	53	122
Common Gull*	Amber	-	-	-	-	-	-	5	5
Herring gull	Amber	-	-	46	147	78	152	5	152
Grey Heron*	Green	-	-	-	7	-	-	-	7
Greylag Goose*	Amber	-	-	-	-	-	287	-	287
Lesser Black-backed Gull	Amber	-	-	-	-	-	-	4	4
Whooper swan*	Amber	-	-	-	-	-	95	8	51

BOLD* = Lough Swilly SPA SCI

The results show that the majority of species recorded are located at a distance that is further than 500m from the Proposed Development. Black-headed gull were recorded three times within 500m of the Proposed Development and common gull once. However, black-headed gull and common gull are both SCIs for their breeding numbers, and no wintering numbers are provided within the NPWS supporting information for the Conservation Objectives (NPWS, 2011d). The conservation objectives only refer to maintaining breeding numbers and therefore black headed gull and common gull can be discounted as SCI for their wintering numbers. Greylag goose was recorded on one occasion in the January surveys with a flock of 287 birds present in a field approximately 0.7km to the Proposed Development at its closest point, and therefore outside of the potential zone of disturbance. Whooper swans were recorded only during the January surveys and were mainly located within the Swilly Burn floodplain. The was only one location where whooper swans were recorded within 500m of the Proposed Development where a count of 8 birds (0.48% of the baseline population) approximately 480m from the proposed works area.

The area identified as Site 1 during the 2020/2021 surveys was no longer in potato production in the 2025/2026 survey and no swans were recorded in this location. The Site identified as Site 2 during the 2020/2021 surveys is consistent with the location of the 8 birds recorded during the 2025/2026 surveys.

Therefore, there were no occurrence during the 2025/2026 surveys where SCI species of birds were recorded above the 1% of importance for wintering birds within the Section 3 development works outside those areas within the Lough Swilly surveys.

3.6.3.4 Barn Owl Surveys

A full discussion of the barn owl survey results is included in the barn own survey report in Appendix I. There was no evidence of barn owl recorded in the survey area during the survey period (2021 to 2023). A total of 52 sites which were identified to be suitable or potentially suitable for barn owl within 5 km of Sections 1, 2, and 3 were surveyed for the presence of barn owl in 2021 and 2023 and no signs to indicate the presence of barn owl were confirmed. Four sites, which were identified as potentially suitable for barn owl, were not accessible to assess for their presence and barn owl occupancy could not be determined in these sites. However, collation of existing records also indicates that barn owls were not breeding within the survey area during the time of the survey (2021 to 2023). The location of all sites deemed to be potentially suitable and which were assessed for the presence of barn owl (n = 52) and the sites which were not possible to obtain permissions to access to conduct the survey (n = 4) across both survey years (2021 and 2023) are mapped in Appendix I.

3.6.3.4.1 Section 1

Of the 52 sites deemed to be potentially suitable for barn owl and which were assessed for the presence of barn owl, 19 were within 5 km of Section 1. Of the four sites which could not be accessed, two were within 5 km of Section 1.

No incidental records of barn owls were recorded during any of the other survey work completed for Section 1 to inform the Proposed Development, including the bat roosting survey; most recently completed during 2025,

3.6.3.4.2 Section 2

Of the 52 sites deemed to be potentially suitable for barn owl and which were assessed for the presence of barn owl, 16 were within 5 km of Section 2. Of the four sites which could not be accessed, one was within 5 km of Section 2.

No incidental records of barn owls were recorded during any of the other survey work completed for Section 1 to inform the Proposed Development, including the bat roosting survey; most recently completed during 2025,

3.6.3.4.3 Section 3

The NBDC database records the possible presence of Barn Owls from hectad C20 within the study area. Records of known breeding sites from the study area were also obtained from BirdWatch Ireland. While Barn Owls are widespread and recorded breeding in every county, their numbers vary considerably throughout the country, with Munster and, in particular, the south-west being the national stronghold (Lusby and O'Clery, 2014). An undocumented report of past occurrence was reported by a landowner from farm buildings in the vicinity of CH14+700 at Murlough, though no evidence of activity was recorded during the current surveys.

During the breeding bird surveys undertaken during May and June 2020, potential breeding sites (barns, derelict buildings, etc.) in the immediate vicinity of the Proposed Development were surveyed for evidence of Owl activity. No evidence of breeding or other activity (pellets, feathers and droppings) was recorded at any of the sites. In 2021, an assessment was undertaken by John Lusby in early spring to identify all potentially suitable structures for Barn Owl within a 5 km radius of the Proposed Development. The suitability of all buildings and other potentially suitable structures within this area were visually assessed for their suitability for breeding use by Barn Owl based on the criteria outlined in 'Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects' (TII, 2021).

At all sites identified as potentially suitable (for which permissions to access were granted) field surveys were conducted between 28th April and 4th June 2021 to confirm Barn Owl occupancy and breeding status. Despite the availability of suitable and potentially suitable nesting sites throughout the survey area, the extensive searches of these sites both via day-time inspections and nocturnal surveys yielded no evidence of Barn Owl activity.

3.6.1 Amphibians and Reptiles

Desktop Study

Smooth newt and common lizard (*Lacerta vivipara*) are protected under the Wildlife Acts (1976 to 2022), and common frog is protected under Annex V of the EU Habitats Directive and the Wildlife Acts (1976 to 2022). Common frog and smooth newt are widespread and common nationally, and the NBDC online database holds records of smooth newt and common frog for each section of the Proposed Development. The NBDC does not holds records of common lizard for any section of the Proposed Development.

Field Survey

Evidence of common frog was found in Section 1, where frog spawn was identified in field drains. In 2023, three frogs were identified in the townlands of Cappry, Ballybofey, and Drumboe Lower. In 2023 in Section 2, a frog was identified on the north bank of the Swilly, Estuary downstream of the proposed crossing. No incidental evidence of smooth newt was recorded during field surveys in Sections 1 and 2, but aquatic and terrestrial habitats are present which could potentially support this species. Both species are therefore assumed present within the vicinity of Sections 1 and 2.

In 2023, a single common lizard was recorded at the southern end of Section 1, north of the N15 in Dooish, and the species could be present within suitable habitat within the Proposed Development, albeit at low population levels.

In Section 3, potential spawning sites for amphibians are limited to drainage ditches which are widespread. The best potential ditches occur along both sides of the Swilly Burn (W3-14) and Rive Deele (W3-17) on the outer side of the flood embankments. A section of the old railway cutting at Ballyboe (KER3) has shallow ponding where frog spawn was recorded in small quantities in May 2020.

Areas with high potential for common lizard along the route are confined mainly to habitats supporting wet grassland and wet woodland which are encompassed within the KER sites.

3.6.2 Invertebrates

Desktop Study

Records of rare and/or protected invertebrate species were identified during the course of the desk study within the vicinity of the Proposed Development; however, none specifically within the footprint of the Proposed Development. Of the records received, the records of marsh fritillary butterfly were considered of potential relevance to the Proposed Development because a small number of areas of habitat (e.g. wet heath), which could potentially support the conditions for this species, were present within Sections 1 and 2. They are currently assigned a conservation status of Vulnerable (Regan *et al*., 2010) and protected under Annex II of the EU Habitats Directive.

Field Survey

Marsh fritillary can occur in a wide variety of habitats, but no larval web sites were found during the habitat surveys completed and no incidental records of the species, or its larval food plan (devil's bit scabious) were made during the course of the survey work for the Proposed Development. The species is considered likely to be absent from the potentially suitable habitats identified.

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Appendix A
Invasive Alien Plant Species Survey Results

APPENDIX A: INVASIVE ALIEN PLANT SPECIES SURVEY RESULTS

The following should be read in conjunction with Invasive Alien Plant Species (IAPS) mapping in **EIAR Drawings 9A.17, 9A.18,** and **9A.19** in **Volume D: Book of Drawings**.

Table A-1: IAPS Identified Within the Section 1 Study Area

Species	Infestation ID	Description	Location (ITM)
Japanese knotweed	S1-JK01	Small infestation along the roadside within the grass verge. Infestation is 7 m in length.	Outside CPO boundary 610256 893480
Japanese knotweed	S1-JK02	Large dead stands with new growth of small shoots present. Infestation extent: 108 m^2.	Outside CPO boundary 610239 893434
Japanese knotweed	S1-JK03	Large infestation on grass embankment. Mixture of large stands and smaller shoots. Infestation extent: 1022 m^2.	Outside CPO boundary 610286 893438
Japanese knotweed	S1-JK04	Multiple small shoots growing outside boundary fence.	Outside CPO boundary 611447 893483
Japanese knotweed	S1-JK05	Japanese knotweed shoots growing up through vegetation. Infestation 30 m in length.	Outside CPO boundary 611578 893517
Japanese knotweed	S1-JK06	Japanese knotweed growth within grassy verge adjacent to by-road. Approximately 20 m in length and 1 m in width.	Outside CPO boundary 611788 894012
Japanese knotweed	S1-JK07	Japanese knotweed growth along northern bank of the River Finn. Close to the water's edge. Infestation extent: 149 m^2.	Outside CPO boundary 611803 895337
Japanese knotweed	S1-JK08	Japanese knotweed growth on an island in the River Finn	Outside CPO boundary 611929 895228
Japanese knotweed	S1-JK09	Japanese knotweed interspersed with Himalayan balsam on the southern (right-hand) bank of the River Finn. Numerous scattered immature stems of Japanese knotweed are present. Infestation extent: 38 m^2	Outside CPO boundary 612184 895102
Japanese knotweed	S1-JK10	Japanese knotweed within heavy vegetation along with Himalayan balsam. Numerous Japanese knotweed plants scattered throughout rocky outcrops. Infestation extent: 387 m^2.	Outside CPO boundary 612196 895098
Japanese knotweed	S1-JK11	Japanese knotweed growth on left bank of the River Finn. Infestation extent: 36 m^2.	Outside CPO boundary 612385 895109
Japanese knotweed	S1-JK12	Japanese knotweed shoots growing on the left bank of the River Finn. Infestation extent: 1.9 m^2.	Outside CPO boundary 612385 895062
Japanese knotweed	S1-JK13	Japanese knotweed shoots growing along the left bank of the River Finn. Shoots are within 1 m of the River Finn.	Outside CPO boundary 612575 895011
Japanese knotweed	S1-JK14	Japanese knotweed stands mixed with Himalayan balsam (S1-HB41) on the left bank of the River Finn. Infestation 40 m in length.	Outside CPO boundary 612721 895032
Japanese knotweed	S1-JK15	Heavy infestation along the left bank of the River Finn Infestation extent: 239 m^2.	Outside CPO boundary 612749 895047
Japanese knotweed	S1-JK16	Multiple Japanese knotweed stands on the right bank of the River Finn. Area looks to have been treated previously with a few surviving stands. Infestation extent: 39 m^2.	Outside CPO boundary 613096 895177
Japanese knotweed	S1-JK17	Single Japanese knotweed shoot growing within vegetation along eastern side of a local road.	Outside CPO boundary 614751 896448
Japanese knotweed	S1-JK18	Japanese knotweed stands that have been previously sprayed and are currently retreating along eastern side of a local road. 70 m in length.	Outside CPO boundary 614730 896623

Species	Infestation ID	Description	Location (ITM)
Japanese knotweed	S1-JK19	Single Japanese knotweed shoot in vegetation on western side of a local road.	Outside CPO boundary 614855 897008
Japanese knotweed	S1-JK20	Dispersed Japanese knotweed on western side of a local road. Infestation extent: 124 m^2.	Outside CPO boundary 614873 897013
Japanese knotweed	S1-JK21	Large infestation that has been previously treated as evidenced by the dead canes present, however, new growth is also visible. Infestation on eastern side of a local road. Infestation extent: 11 m^2.	Outside CPO boundary 614888 897022
Japanese knotweed	S1-JK22	Japanese knotweed infestation on eastern side of a local road. Infestation extent: 27 m^2.	Outside CPO boundary 614897 897039
Japanese knotweed	S1-JK23	Japanese knotweed stands located in a field adjacent to N13. Himalayan balsam (S1-HB07) also present. Infestation extent: 134 m^2.	615984 899681
Japanese knotweed	S1-JK29	Japanese knotweed stands along edge of River Finn. Two 6×6 m stands. Recorded in 2025.	Outside CPO boundary 613080 895192
Himalayan knotweed	S1-HK01	Small Himalayan knotweed stand adjacent to N13 on small side road.	616025 899715
Himalayan knotweed	S1-HK19	Recorded in 2023. Himalayan knotweed stand in an area of recolonising bare ground.	616184 899646
Himalayan balsam	S1-HB01	Single Himalayan balsam stand near River Finn.	Outside CPO boundary 611937 895223
Himalayan balsam	S1-HB02	Single Himalayan balsam stand near River Finn.	Outside CPO boundary 612157 895090
Himalayan balsam	S1-HB03	Himalayan balsam stands present within Japanese knotweed infestation (S1-JK09). Infestation extent: 38 m^2.	Outside CPO boundary 612196 895098
Himalayan balsam	S1-HB04	Himalayan balsam stands in heavy vegetation mosaic along with Japanese knotweed (S1-JK10). Infestation extent: 387 m^2.	Outside CPO boundary 612196 895098
Himalayan balsam	S1-HB05	Multiple Himalayan balsam stands within proximity to the River Finn. 10 m in length.	612504 895020
Himalayan balsam	S1-HB06	Multiple small Himalayan balsam stands within proximity to the River Finn.	Outside CPO boundary 613086 895185
Himalayan balsam	S1-HB07	Himalayan balsam stands adjacent to N13. Japanese knotweed (S1-JK23) also present. Infestation extent: 130 m^2	615984 899681
Himalayan balsam	S1-HB40	Recorded in 2023 and updated in 2025. Himalayan balsam stands at varying density within a drainage ditch approximately 15 m from the River Finn. Infestation extent: 150 m long and 3 m wide	Outside CPO boundary 616393 894963
Himalayan balsam	S1-HB41	Japanese knotweed stands (S1-JK14) mixed with Himalayan balsam on the left bank of the River Finn. Infestation 40 m in length.	Outside CPO boundary 612721 895032
Himalayan balsam	S1-HB42	Himalayan balsam growing sparsely along an approximately 30 m-long stretch of the northern riverbank.	Outside CPO boundary 612661 895017
Himalayan balsam	S1-HB43	Recorded in 2025. An approximately 8 m × 2 m area of Himalayan balsam along a wall, with the northern end <3 m from the CPO boundary. Near S1-HB44 and S1-HB45.	Outside CPO boundary 616331 895108
Himalayan balsam	S1-HB44	Recorded in 2025. An approximately 10 m × 10 m area of Himalayan balsam.	Outside CPO boundary 616326 895101
Himalayan balsam	S1-HB45	Recorded in 2025. An approximately 20 m × 3 m area of Himalayan balsam along a drainage ditch.	Outside CPO boundary 616339 895103
Himalayan balsam	S1-HB46	Recorded in 2025. Large Himalayan balsam infestation approximately 544 m^2 on edge of CPO just outside CPO in farmyard waste area.	Outside CPO boundary 616102 897125

Species	Infestation ID	Description	Location (ITM)
Rhododendron	S1-RH01	Rhododendron within hedgerow along road. Infestation extent: 32 m^2.	613053 895347
Rhododendron	S1-RH02	Rhododendron infestation in woodland. Infestation extent: 81 m^2.	613076 895320
Rhododendron	S1-RH03	Large rhododendron infestation within woodland. Infestation extent: 203 m^2.	Outside CPO boundary 613103 895286
Rhododendron	S1-RH04	Large rhododendron infestation within woodland. Infestation extent: 291 m^2.	Outside CPO boundary 613099 895273
Rhododendron	S1-RH05	Rhododendron within hedgerow along road. Infestation extent: 852 m^2.	Outside CPO boundary 613162 895248
Rhododendron	S1-RH06	Large rhododendron infestation growing within woodland. Infestation extent: 1,113 m^2.	Outside CPO boundary 613162 895110
Rhododendron	S1-RH07	Large rhododendron infestation growing within woodland. Infestation extent: 126 m^2.	Outside CPO boundary 613161 895108
Rhododendron	S1-RH08	Dense rhododendron infestation within woodland. Infestation extent: 304m^2. Extent estimated due to access issues.	Outside CPO boundary 616358 896977
Rhododendron	S1-RH09	Dense rhododendron within woodland. Infestation extent: 35 m^2.	Outside CPO boundary 616164 897707
Rhododendron	S1-RH14	Along roadside.	Outside CPO boundary 614713 896625
Rhododendron	S1-RH15	Recorded in 2025. Rhododendron along approximately 30 m of roadside at property perimeter.	613821 896174
Giant rhubarb	S1-GR01	Large giant rhubarb stands both sides of access road. Infestation extent: 63 m^2.	614355 896742
Giant rhubarb	S1-GR02	Infestation described as 3×3 m. No further notes. Record from 2025	614463 896778
Snowberry	S1-SN01	Snowberry infestation along an approximately 45 m-long stretch of roadside. Approximately 4 m of the length is within the CPO.	616340 899652
Snowberry	S1-SN02	Along roadside.	Outside CPO boundary 614713 896625
Old man's beard	S1-OM01	Along roadside.	614348 896831
Monkey flower	S1-MF01	On rocks in a stream.	616178 896991
Cherry laurel	S1-CL01	Small area of cherry laurel in a woodland.	Outside CPO boundary 612896 895490
Cherry laurel	S1-CL02	Cherry laurel present in the large rhododendron infestation (S1-RH03) within woodland.	Outside CPO boundary 613103 895286
Cherry laurel	S1-CL03	Approximately 14 m-long line of cherry laurel along a roadside.	614358 896747
Cherry laurel	S1-CL04	Along roadside.	Outside CPO boundary 614721 896624
Winter heliotrope	S1-WH01	Large infestation of winter heliotrope within a farmyard. Infestation extent: 181 m^2.	Outside CPO boundary 615461 898024

Table A-2: IAPS Identified Within the Section 2 Study Area

Species	Infestation ID	Description	Location
Butterfly bush	S2-BB01	A single butterfly bush at the roadside.	Outside CPO boundary 619592 908553
Butterfly bush	S2-BB02	In farmyard.	Outside CPO boundary 619873 909910
Butterfly bush	S2-BB03	Single plant in tree line adjoining school grounds.	Outside CPO boundary 619522 909463
Japanese knotweed	S2-JK24	Large Japanese knotweed infestation behind shed. Infestation extent: 5070 m^2.	619470 909214
Japanese knotweed	S2-JK25	Japanese knotweed infestation along southern side of local road. Infestation extent: 79 m^2.	621494 911491
Japanese knotweed	S2-JK26	Small Japanese knotweed infestation along N13. Infestation extent: 1.8 m^2.	622944 910942
Japanese knotweed	S2-JK27	Small Japanese knotweed infestation along N13. Infestation extent: 1.1 m^2.	622986 910923
Himalayan knotweed	S2-HK02	Himalayan knotweed stands adjacent to N13. Infestation extent: 16 m^2.	Outside CPO boundary 619464 908847
Himalayan knotweed	S2-HK03	Large Himalayan knotweed infestation near shed. Infestation extent: 104 m^2.	619469 908871
Himalayan knotweed	S2-HK04	Very large, extensive Himalayan knotweed infestation around farm sheds. Infestation extent: 4429 m^2.	619857 909821
Himalayan knotweed	S2-HK05	Himalayan knotweed infestation behind sheds. Infestation extent: 127 m^2.	Outside CPO boundary 619869 909821
Himalayan knotweed	S2-HK06	Himalayan knotweed infestation behind sheds. Infestation extent: 157 m^2.	619874 909902
Himalayan knotweed	S2-HK07	Small Himalayan knotweed infestation behind sheds.	Outside CPO boundary 619869 909909
Himalayan knotweed	S2-HK08	Himalayan knotweed infestation behind sheds. Infestation extent: 3 m^2.	Outside CPO boundary 619859 909913
Himalayan knotweed	S2-HK09	Small Himalayan knotweed infestation behind sheds.	Outside CPO boundary 619860 909923
Himalayan knotweed	S2-HK10	Himalayan knotweed stands. Infestation extent: 76 m^2.	619510 910595
Himalayan knotweed	S2-HK11	Small Himalayan knotweed stands. Infestation extent: <2 m^2.	Outside CPO boundary 620669 910862
Himalayan knotweed	S2-HK12	Small Himalayan knotweed stands. Infestation extent: <2 m^2.	Outside CPO boundary 620667 910874
Himalayan knotweed	S2-HK13	Small Himalayan knotweed stands. Infestation extent: <2 m^2.	Outside CPO boundary 620679 910889
Himalayan knotweed	S2-HK14	Himalayan knotweed infestation along N13. Infestation extent: 28 m^2.	621484 911522
Himalayan knotweed	S2-HK15	Himalayan knotweed infestation along N13. Infestation extent: 5 m^2.	610256 893480
Himalayan knotweed	S2-HK16	Himalayan knotweed infestation along N13. Infestation extent: 255 m^2.	621569 911558
Himalayan knotweed	S2-HK17	Himalayan knotweed infestation along N13. Infestation extent: 0.5 m^2.	621610 911549
Himalayan balsam	S2-HB08	Himalayan balsam stands behind shed. Infestation extent: 4998 m^2.	619470 909214

Species	Infestation ID	Description	Location
Himalayan balsam	S2-HB09	Himalayan balsam stands behind house. Infestation extent: 986 m^2.	Outside CPO boundary 619459 910605
Himalayan balsam	S2-HB10	Large infestation of Himalayan balsam. Infestation extent: 422 m^2.	619390 910649
Himalayan balsam	S2-HB11	Large infestation of Himalayan balsam. Infestation extent: 370 m^2.	619511 910595
Himalayan balsam	S2-HB12	Large Himalayan balsam infestation. Infestation extent: 1663 m^2.	619627 911070
Himalayan balsam	S2-HB13	Himalayan balsam infestation on both banks of Leslie Hill stream. 40 m in length.	622657 911086
Rhododendron	S2-RH10	Rhododendron stands within gorse scrub. Infestation extent: 13 m^2.	619786 909529
Rhododendron	S2-RH11	Rhododendron infestation growing directly behind sheds. Infestation extent: 91 m^2.	Outside CPO boundary 619878 909881
Rhododendron	S2-RH12	Dense rhododendron infestation growing directly behind shed and encroaching on sheds roof. Infestation extent: 157 m^2.	619884 909909
Rhododendron	S2-RH13	Rhododendron infestation growing beside N13. Infestation extent: 76 m^2.	619509 910607
Salmonberry	S2-SA01	Recorded in 2023. Scattered through scrub.	618811 911893
Salmonberry	S2-SA02	Recorded in 2023. Mixed in with gorse within scrub.	619695 910934
Salmonberry	S2-SA03	Recorded in 2023. Salmonberry stand approximately 3 m high.	620151 910478
Salmonberry	S2-SA04	Recorded in 2023. Salmonberry throughout wooded stream corridor.	621230 911180
Salmonberry	S2-SA05	Recorded in 2025. Notes state 10×10 m extent.	618801 911888
Salmonberry	S2-SA06	Recorded in 2025. Mixed in with gorse and bramble. 3×2 m extent.	618945 911833
Salmonberry	S2-SA07	Recorded in 2025. In a stand with gorse and bramble. Extent is 2×2 m plus another 2×2 m.	Outside CPO boundary 618988 911655
Salmonberry	S2-SA08	Recorded in 2025. Edge of scrub. Extent 1×1 m.	619919 911208
Salmonberry	S2-SA09	Recorded in 2025. In close proximity to S2-SA08.	621242 911177
Snowberry	S2-SN03	Approximately 12 m-long line of snowberry along a roadside.	620064 910655
Snowberry	S2-SN04	Approximately 16 m-long line of snowberry along a roadside.	621467 911479
Snowberry	S2-SN05	Approximately 40 m-long line of snowberry.	621887 911638
Snowberry	S2-SN06	Approximately 110 m-long line of snowberry.	619705 909433

Table A-3: IAPS Identified Within the Section 3 Study Area

Species	Infestation ID	Description	Location
Japanese knotweed	S3-JK28	Large Japanese knotweed infestation within wooded area in an agricultural field. Infestation extent: 178 m^2.	632512 897899
Japanese knotweed	S3-JK30	Infestation on the north side of N14 at Drumcarn. Treated and potentially gone.	Outside CPO boundary 625263 909808
Japanese knotweed	S3-JK31	South side L2374 at Drumbeg. Large stand (>200 m^2) to the south of the road and extending along the stream to south.	628959 904015

Species	Infestation ID	Description	Location
Himalayan balsam	S3-HB14/ HB15	Himalayan balsam in scrub adjacent to N14. Two infestation records are present in close proximity but are not connected. Infestation extent: 534 m^2. Infestation adjacent to Leslie Hill stream extent: 4219 m^2.	624041 910513
Himalayan balsam	S3-HB16	Small Himalayan balsam stands in proximity to N14. Adjacent to Leslie Hill stream.	624477 910308
Himalayan balsam	S3-HB17	Small Himalayan balsam stands in proximity to N14. Infestation 44 m in length.	625420 909974
Himalayan balsam	S3-HB18	Large Himalayan balsam infestation within agricultural field adjacent to N14. Infestation extent: 3111 m^2	627339 907105
Himalayan balsam	S3-HB19	Small Himalayan balsam stands in proximity to N14. Infestation extent: 33 m^2.	627336 907006
Himalayan balsam	S3-HB20	Small Himalayan balsam stands in proximity to N14. Infestation extent: 12 m^2.	627355 907010
Himalayan balsam	S3-HB21	Small Himalayan balsam stands in proximity to N14. Infestation 56 m in length.	627334 906962
Himalayan balsam	S3-HB22	Himalayan balsam stands in proximity to N14 within agricultural field margin. Infestation 442 m in length.	627673 906542
Himalayan balsam	S3-HB23	Himalayan balsam stands growing in hedging along link road (L5604). Infestation 37 m in length.	627940 906015
Himalayan balsam	S3-HB24	Large Himalayan balsam infestation within hedging along link road (L5604). Infestation extent: 915 m^2.	627796 905885
Himalayan balsam	S3-HB25	Small Himalayan balsam stand within agricultural field in proximity to N14. Adjacent to Swilly burn stream.	628076 905785
Himalayan balsam	S3-HB26	Small Himalayan balsam stand within agricultural field in proximity to N14. Adjacent to Swilly burn stream.	628072 905749
Himalayan balsam	S3-HB27	Himalayan balsam stands in proximity to N14 within agricultural field margin. Infestation extent: 50 m^2. Adjacent to Swilly burn stream.	628921 904018
Himalayan balsam	S3-HB28	Himalayan balsam stands in proximity to N14 within agricultural field margin. Infestation extent: 443 m^2. Adjacent to Swilly burn stream. Area historically infested with Japanese knotweed.	628931 904016
Himalayan balsam	S3-HB29	Himalayan balsam infestation, 486 m in length, within agricultural field margin. Adjacent to Swilly burn stream	629257 903447
Himalayan balsam	S3-HB30/ HB31	Infestation of Himalayan balsam stands north and south of drainage ditch. South of drainage ditch infestation extent: 5 m^2. North of drainage ditch infestation is 81 m in length.	629233 903369
Himalayan balsam	S3-HB32	Infestation of Himalayan balsam stands adjacent to Swilly burn stream. Infestation extent: 320 m^2.	629278 903282
Himalayan balsam	S3-HB33	Himalayan balsam present on right bank of stagnant drain. Infestation 10 m in length.	629431 902066
Himalayan balsam	S3-HB34	Small Himalayan balsam stands along the Deele southern riverbank edge.	631104 899718
Himalayan balsam	S3-HB35	Small Himalayan balsam stand within agricultural field.	632417 898393
Himalayan balsam	S3-HB36	Himalayan balsam stands within agricultural field margin. Infestation extent: 257 m^2.	Outside CPO boundary 632313 898188
Himalayan balsam	S3-HB37	Large Himalayan balsam infestation within agricultural field margin. Infestation extent: 1005 m^2.	632328 898195

Species	Infestation ID	Description	Location
Himalayan balsam	S3-HB38	Large Himalayan balsam infestation within agricultural field margin. Infestation extent: 4726 m^2.	Outside CPO boundary 632343 898166
Himalayan balsam	S3-HB39	Himalayan balsam stands within agricultural field margin. Infestation extent: 171 m^2.	Outside CPO boundary 632058 898028
Himalayan balsam	S3-HB47	Himalayan balsam abundant along the road edge of L2444 in the vicinity of the old railway line.	630644 900096
Himalayan balsam	S3-HB48	Extensive infestation of Himalayan balsam along the south side of the River Finn and extending along the treeline to the west.	632576 896866
Rhododendron	S3-RH15	Occasional rhododendron along the south side of B85 (Urney Road) as understorey to a mature treeline.	632741 896871

Appendix B
Otter Field Survey Results

APPENDIX B: OTTER FIELD SURVEY RESULTS

The following should be read in conjunction with otter evidence mapping in **EIAR Drawings 9A.20** to **9A.23** in **Volume D: Book of Drawings**.

Section 1

Table B-1: Section 1 – Survey Evidence of Otter Holts

Figure ID	Field Sign	Date	Description	ITM Coordinates
2025 evidence				
S1 - HLT1	Potential holt	03/07/2023; 08/10/2025	2023: Potential holt site between rocks and opening to cavity under bank. Could not determine how deep. Assumed to not be currently active. 2025: Holt located and categorised as disused due to lack of spoil heap and cobwebs present at entrance.	610868 893106 (within CPO boundary)
S1 - HLT2	Potential holt	05/07/2023; 08/10/2025	2023: Large tunnel into bank between rocks with another possible entrance in area. Not currently active but signs of use. Spraint on rock just at entrance and possible bedding at end. Cobwebs over entrance. Camera trap (TC3) deployed in August 2023. 2025: Potential holt with no evidence of regular use present.	613085 895230 (37 m from CPO boundary)
S1 - HLT3	Potential holt	2020 05/07/2023; 08/10/2025	2020: Potential holt/couch but undisturbed sand/ground outside along banks indicates a lack of usage. 2023: Large hole in bank, extends far back with other holes in the area. Suitable otter habitat. This holt was identified while resurveying for the previously identified holt described in 2020. 2025: Potential holt with interconnected tunnel system. Does not appear used however sprint located 2m from hole.	613052 895228 (40 m from CPO boundary)
S1 - HLT4	Holt-inactive	05/07/2023; 08/10/2025	2023: Disused otter holt on bank with slide running into River Finn. 2025: Hole has almost entirely sealed and is no longer considered a potential holt.	612578 895007 (22 m from CPO boundary)
S1 - HLT5	Potential holt	05/07/2023; 08/10/2025	2023: Possible holt under large sycamore just to the west of the bridge. 2025: Hole was found and considered to small to act as a holt.	612418 895053 (33 m from CPO boundary)
2023 evidence				
S1 -HLT6	Potential holt	05/07/2023	Potential holt site 10 m from water edge. 20 cm wide and 20 cm tall. Not in use. Survey was not carried out in 2025 due to limited access.	612013 895172 (52 m from CPO boundary)
Pre-2023 evidence				
S1 - HLT7	Holt – active	15/12/2020; 08/10/2025	Pre-2023: Active holt in bank with extensive stand of Japanese knotweed, currently being treated. 2025: The area of the holt was inaccessible during 2025 surveys.	614396 894878 (1,023 m from CPO boundary)
S1 - HLT9	Potential Holt	04/03/2020	Potential holt/couch but undisturbed sand/ground outside along banks indicates a lack of usage.	613581 895088 (423 m from CPO boundary)
HP1	Holt Potential	18/02/2020	Two good holt potential locations but undisturbed sand/ground outside along banks indicates a lack of usage.	610660 893120 (within CPO boundary)
HP2	Holt Potential	13/12/2017	West of bridge both banks with dense WL1/WL2. hawthorn (A), ash (F), willow (F). Slightly better potential for holts, good coverage of bramble (D) on lower bank.	612360 893470 (806 m from CPO boundary)

Figure ID	Field Sign	Date	Description	ITM Coordinates
HP3	Holt Potential	13/12/2017	North bank is a high clay bank. South bank is low with fencing. Both banks have holt potential.	612470 893680 (575 m from CPO boundary)
HP4	Holt Potential	13/12/2017	Steep banks (clay) with a cobble base. Good holt potential.	615200 894590 (1,112 m from the CPO boundary)
HP5	Holt Potential	13/12/2017	Banks have potential for holts. Good coverage throughout.	619580 895200 (2,519 m from the CPO boundary)

Table B-2: Section 1 – Survey Evidence of Otter Activity

Field Sign	Date	Description	ITM Coordinates
Spraint	08/10/2025	Mammal spraint found on large rock on bank of River Finn.	613050 895222 (60 m form CPO boundary)
Spraint	23/09/2025	Mammal spraint found on boundary of conifer plantation approx. 250m east of Burn Daurnett_010 watercourse.	611146 893817 (within CPO boundary)
Live sighting	31/07/2019	Disused railway, Landowner information: individual observed along river and along stream.	616540 895000 (135 m from CPO boundary)
Slide	19/08/2020	Slide grades into rough wet grassland area near Cloghroe 12 stream.	616065 899973 (8 m from CPO boundary)
Slides	30/07/2019	Activity, slides numerous, *Centaurea* (F).	612660 895000 (65 m from CPO boundary)
Slide	13/12/2017	Underpass and slide. Note series of tracks along track and potential slides.	615200 894600 (1,107 m from CPO boundary)
Print	27/08/2020	Print record.	616606 895147 (within CPO boundary)
Print	27/08/2020	Print record.	616578 895099 (44 m from CPO boundary)
Print	04/03/2020	Print on exposed sand and slide on disturbed ground. Couch potential 10 m east.	612559 895099 (3 m from CPO boundary)
Print	05/12/2019	Print under Ballybofey Bridge.	614401 894836 (1042 m from CPO boundary)
Print	30/07/2019	Prints under bridge.	612420 895099 (24 m from CPO boundary)
Track	29/07/2019	Stream has signs – used for commuting. No holts seen. Sand deposits and runs along banks evident.	610660 893120 (within CPO boundary)
Track	25/09/2018	Tracks under Logue's Bridge.	611639 895446 (306 m from CPO boundary)
Spraint	04/07/2023	Spraint on rocks.	616024 899942 (within CPO boundary)
Spraint	-	Spraint of various ages on rock.	613051 895211 (56 m from CPO boundary)
Spraint	05/07/2023	On rock by bridge.	612417 895050 (32 m from CPO boundary)
Spraint	05/07/2023	Otter spraint on bank of river.	612405 895053 (40 m from CPO boundary)
Spraint	-	Large amounts of spraint on rock.	611919 895237 (36 m from CPO boundary)
Spraint & Slide	-	Clear area on bank with various bits of spraint with slide leading into river.	612440 895006 (within CPO boundary)

Field Sign	Date	Description	ITM Coordinates
Spraint	05/07/2023	Otter spraint on rock at side of River Finn.	611890 895218 (3 m from CPO boundary)
Spraint	05/07/2023	Otter spraint on rock on bank of River Finn.	611917 895192 (4 m from CPO boundary)
Spraint	05/07/2023	Fresh and old otter spraint on rock on bank of River Finn.	611947 895163 (5 m from CPO boundary)
Spraint	10/07/2023	Spraint on rock.	616562 896125 (within CPO boundary)
Spraint	July 2023	Fresh spraint on rock still with jelly. Some evidence of older spraint.	611999 895162 (35 m from CPO boundary)
Scat	28/08/2020	Scat record.	613984 896666 (177 m from CPO boundary)
Scat	28/08/2020	Scat record.	613965 896666 (153 m from CPO boundary)
Scat	28/08/2020	Scat record.	613025 895323 (within CPO boundary)
Scat	25/09/2018	Scat/droppings present. Located on top of a rock a few metres from the River Finn.	612385 895075 (48 m from CPO boundary)
Scat	13/12/2017	Densely vegetated, overhanging vegetation/trees providing prominent high points and spraints.	619580 895075 (2,519 m from CPO boundary)

Table B-3: Section 1 – Survey Evidence of Possible Otter Activity

Field Sign	Date	Description	ITM Coordinates
Live sighting	13/12/2017	Potential mammal approximately 100 m east of bridge.	612510 895222 (646 m from CPO boundary)
Track	03/07/2023	Potential otter trail leading into river.	610848 893066 (within CPO boundary)
Track	11/07/2023	Potential otter trail running along river bank, with trails turning off at multiple points towards the river.	616505 894997 (135 m from CPO boundary)
Track	05/12/2019	Run under fence to FW4 and crossing potentially otter. Hairs on fence 10 m south of crossing.	615590 898466 (within CPO boundary)
Track	31/07/2019	Large, culverted stream. Low flow. Good potential, but no evidence. Likely signs at stream.	616610 896880 (15 m from CPO boundary)
Track	30/07/2019	Riparian habitat very good potential.	613120 895210 (72 m from CPO boundary)
Track	30/07/2019	Native section of TN14, Track clearance works ongoing. Stream has high potential.	613070 895260 (4 m from CPO boundary)
Track	25/09/2018	Mammal track.	612424 895048 (27 m from CPO boundary)
Track	25/09/2018	Mammal track.	611873 895301 (79 m from CPO boundary)
Track	13/12/2017	Potential mammal tracks at bridge.	612500 893660 (589 m from CPO boundary)
Track	13/12/2017	Potential mammal track at west of bridge at bottom of pitch.	615180 894580 (1,130 m from CPO boundary)
Track	13/12/2017	Potential mammal track to river on north bank/west side.	614340 894290 (942 m from CPO boundary)

Field Sign	Date	Description	ITM Coordinates
Spraint	03/07/2023	On rock in stream possibly semi washed away.	611065 893215 (2 m from CPO boundary)
Spraint	11/07/2023	Possible spraint rock in suitable stream but recent rains will have washed evidence away.	616176 896988 (within CPO boundary)
Couch	25/09/2018	Potential Couch.	611723 895398 (230 m from CPO boundary)
Print	25/09/2018	Potential otter print.	611701 895409 (247 m from CPO boundary)

Section 2

Table B-4: Section 2 – Survey Evidence of Otter Holts

Figure ID	Field Sign	Date	Description	ITM Coordinates
2025 Evidence				
S2 - HLT1	Potential holt	13/07/2023; 13/10/2025	**2023:** Large opening with good sized tunnel. Could not see the tunnel end. Entrance not very clear but no cobwebs and track to river 30 m away. Camera trap (TC2) deployed in August 2023. **2025:** Distinct fox scent from hole however otter evidence (print) found in close proximity to hole.	618985 911646 (5 m from CPO boundary)
S2 - HLT2	Potential holt	13/07/2023; 07/10/2025	**2023:** Potential otter holt on bank of drainage ditch. Fallen pine leaves indicate that it was not used recently/frequently. Camera trap (TC1) deployed in August 2023. **2025:** Potential holt which appears disused. Cobwebs present in entrance with spoil heap absent and no otter signs recorded in the area.	619129 911372 (89 m from CPO boundary)
S2 - HLT3	Holt - partially active	13/07/2023; 07/10/2025	**2023:** Potential for otter/badger. Vegetation blocking entrance, close to river. **2025:** Straw bedding at entrance however vegetation and cobwebs present at entrance. Partially used holt.	619176 911410 (19 m from CPO boundary)
S2 - HLT4	Holt – partially used	13/07/2023; 07/10/2025	**2023:** Potential for otter/badger to use. Approximately 6 m from other entrance towards river. Vegetation blocking entrance. **2025:** Bedding is present by was not considered fresh and spoil heap is unvegetated. Indicated partially used holt.	619186 911413 (30 m from CPO boundary)
S2 - HLT5	Holt – disused/absent	13/07/2023; 01/10/2025	**2023:** Potential holt site 5 m from stream. Probable fox den, originally. **2025:** Holt has completely closed and no evidence of otter activity in the area.	621240 911167 (within CPO boundary)
S2 - HLT6	Holt – disused/absent	03/12/2019; 13/07/2023 01/10/2025	**2019:** Soil scrapings at entrance. Stream quality appears poor with effluent run off present. **2023:** Could not be located as vegetation growth was too dense. However, otter trail running into the watercourse was recorded nearby. **2025:** No holt present and no otter signs recorded in the area.	619843 910224 (18 m from CPO boundary)
S2 - HLT7	Holt – disused/absent	05/12/2019; 10/10/2025	**2019:** Potential Holt at drain FW4 and WL1/WS1 on bank. Western bank, south of board. **2025**: No holt present and no otter signs recorded in the area.	618292 911091 (776 m from CPO boundary)

Table B-5: Section 2 – Survey Evidence of Otter Activity

Field Sign	Date	Description	ITM Coordinates
Prints	13/10/2025	Trail of otter prints in estuarine mud of River Swilly.	619008 911654 (17m from CPO boundary)
Live sighting	29/08/2020	Live otter sighting on edge of River Swilly	619354 911710 (158 m from CPO boundary)
Slide	05/12/2019	Mammal trail down to estuary with otter slide.	618204 911187 (731 m from CPO boundary)
Slide	05/12/2019	Quad track located at crossing. Footprints (otter) and distinct runs into adjacent WS1 at ITM coordinates: 061906 0911795. Fenced and cannot check for holt. Slide at outfall pipe.	619060 911795 (489 m from CPO boundary)
Slide	05/12/2019	Footprints (otter) and distinct runs into adjacent WS1.	618906 911795 (within CPO boundary)
Slide	05/12/2019	Slide to river.	618294 911062 (803 m from CPO boundary)
Slide and Couch	05/12/2019	Slide and potential couch.	618433 911204 (623 m from CPO boundary)
Prints	05/12/2019	Otter prints in estuary mudflats.	618286 911471 (772 m from CPO boundary)
Prints	05/12/2019	Finish location and otter prints.	618403 910966 (858 m from CPO boundary)
Prints	05/12/2019	Prints in mud. Eastern bank north of the existing N56 bridge. Frequent otter prints noted along mudflats.	618324 911250 (618 m from CPO boundary)
Prints	05/12/2019	Otter prints estuary mudflats.	618209 911471 (508 m from CPO boundary)
Prints	05/12/2019	Large amount of otter prints (mudflats) entering along River Swilly.	619075 911769 (within CPO boundary)
Prints	05/12/2019	Otter prints and slide.	619039 911689 (3 m from CPO boundary)
Prints	05/12/2019	Outfall pipe at opposite bank. Faint print.	618739 911464 (248 m from CPO boundary)
Prints	05/12/2019	Prints – Not as frequent at this stretch.	618663 911251 (456 m from CPO boundary)
Prints	29/08/2020	Otter prints on edge of River Swilly.	619031 911532 (80 m from CPO boundary)
Prints	29/08/2020	Otter prints on edge of River Swilly.	619118 911766 (25 m from CPO boundary)
Trail	12/07/2019	WS1/WD1 bordering brackish water. Heronry present. Otter tracks.	622992 910580 (246 m from CPO boundary)
Spraint	13/07/2023	Spraint seen under bridge with binoculars difficult to access safely.	623089 910891 (4 m from CPO boundary)
Spraint	13/07/2023	A couple of bits of spraint on edge of scrub on bank of river Swilly slide to river present.	619532 911773 (323 m from CPO boundary)
Spraint	13/07/2023	On bank of river Swilly. Old.	619862 911332 (69 m from CPO boundary)
Spraint	13/07/2023	Regular spraint if point at end of culvert under N13.	621200 911366 (within CPO boundary)
Spraint	14/07/2023	Washed out spraint on rock just to north of culvert.	621265 911068 (within CPO boundary)
Spraint	July 2023	Prominent area crustaceans visible.	619044 911321 (188 m from CPO boundary)

Table B-6: Section 2 – Survey Evidence of Possible Otter Activity

Field Sign	Date	Description	ITM Coordinates
Trail	01/10/2025	Well worn, large mammal trails leading up and down riverbank.	621329 911299 (2m from CPO boundary)
Trail	01/10/2025	Numerous mammal trails crossing scrub habitat.	621335 911193 (25m from CPO boundary)
Trail	01/10/2025	Mammal trail with flattened vegetation leading to gap in hedgerow	.619867 910265 (51 m from CPO boundary)
Trail and Slide	11/09/2025	Trail in agricultural field leading to slide at riverbank.	623099 910913 (25m from CPO boundary)
Trail	21/08/2025	Mammal trail running south to northeast through woodland.	620098 910503 (within CPO boundary)
Print	13/07/2023	Tracks into soft mud. Unclear but larger than fox that was also present.	618939 911473 (139 m from CPO boundary)
Trail	13/07/2023	Potential otter trail running into watercourse. Otter holt record in vicinity but vegetation too dense to get through.	619840 910223 (17 m from CPO boundary)
Trail	13/07/2023	Potential otter trail running from field, down into ditch. Vegetation too dense to walk along ditch.	619416 908756 (within CPO boundary)
Trail	13/07/2023	Potential otter trail running from field into watercourse.	619669 910937 (35 m from CPO boundary)
Trail	13/07/2023	Potential otter trail running from field into watercourse.	619641 910911 (15 m from CPO boundary)
Trail	13/07/2023	Potential otter trails running from field, under fence, and into watercourse. Dense vegetation present.	619533 911091 (within CPO boundary)
Trail	13/07/2023	Additional trails running into watercourse. Potential for otter.	619545 911073 (within CPO boundary)
Trail	13/07/2023	Potential otter trail/slide.	620095 911343 (within CPO boundary)
Trail	19/05/2021	Mammal track crossing a ditch.	619828 908043 (within CPO boundary)
Trail	04/12/2019	Mammal crossing at stream/drain.	619418 908752 (within CPO boundary)
Trail	04/12/2019	Mammal run at fence line. Southern boundary drain/ditch.	619551 908424 (45 m from CPO boundary)
Trail	04/12/2019	Numerous mammal tracks along southeast boundary at drain/ditch.	619617 908448 (83 m from CPO boundary)
Trail	04/12/2019	Potential mammal crossing at drain adjacent to ESB substation.	619686 908982 (within CPO boundary)
Trail	04/12/2019	Potential mammal run down and across ditch. More sheep also access.	619736 908443 (78 m from CPO boundary)
Trail	05/12/2019	Potential mammal crossing and drain adjacent to ESB substation.	619362 908500 (107 m from CPO boundary)
Trail	03/12/2019	Mammal track western boundary crossing to FW4 ×2.	619878 910270 (47 m from CPO boundary)
Trail	03/12/2019	Mammal track western boundary crossing to FW4.	619938 910270 (2 m from CPO boundary)
Trail	03/12/2019	Woodland/WS1 bordering GA1 and dual carriage way. Mammal track. FW4 steady flow with otter potential. No real evidence of otter.	622311 911190 (21 m from CPO boundary)
Trail	03/12/2019	Run same field. Crossing ditch/ flowing stream. Overgrown yet good flow available.	622369 910985 (174 m from CPO boundary)

Field Sign	Date	Description	ITM Coordinates
Trail	03/12/2018	Birch tree clump/ wooded area. Flooded area. Mammal trail evident entering area. Otter potential at FW4 running through GA1/GS4.	622369 910985 (180 m from CPO boundary)
Trail	31/07/2019	Mammal run.	621224 911171 (within CPO boundary)
Trail	31/07/2019	Mammal run down to WS1/river.	621256 911065 (within CPO boundary)
Trail	30/07/2019	Potential mammal crossing at overgrown FW4/ditch.	619870 901267 (52 m from CPO boundary)
Potential couch	31/07/2019	Potential couch near open section.	621251 911087 (within CPO boundary)

Appendix C
Bat Survey Details and Results

APPENDIX C: BAT SURVEY DETAILS AND RESULTS

The following should be read in conjunction with otter evidence mapping in **EIAR Drawings 9A.26–9A.47** in **Volume D: Book of Drawings**.

C.1 Section 1

C.1.1 2025 Surveys

C.1.1.1 Bat Roost Surveys – Structures

Table C-1: Section 1 – Structures Bat Roost Assessment (2025 Surveys)

ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B09a	611514 894090		Modern bungalow, two chimneys, plastic soffits and gutters, pebbledash exterior, roof slates in good condition and all in place, surrounded by tall coniferous hedgerow. Owner granted internal access but was not at dwelling when survey was performed.	Negligible	No		No
S1 - B09b	611487 894097		Small shed to south-west of house, no chimney, with three small openings in roof slates. Identical surroundings to B9a.	Low	No		Yes: 29/09/2025 – no emergence recorded.

ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B10a	611415 894091		Single-story concrete building with galvanised metal roof, surrounded by mixed woodland. B10a and B10b attached, both used as a commercial furniture building, owner stated starlings had previously gained access.	Low	Accessible in 2022 but not 2025. In 2022, the corners were sealed with negligible potential. However, landowner noted two dead bats several years ago.		Yes: 18/09/2025 – no emergence recorded.
S1 - B10b	611499 894090		Single-story concrete building adjoining B10a, west side facing small coniferous shrubs, mixed woodland to the south.	Low	No – Shares an internal structure with B10a. In 2022 no features were identified inside.		Yes: 18/09/2025 – no emergence recorded.
S1 - B11a	611462 894126		Bungalow, pebble dashed walls, coniferous trees to the east of building, one chimney. B10b and B10b approximately 30 m south-west of the dwelling.	Low	No		Yes: 18/09/2025 – no emergence recorded.

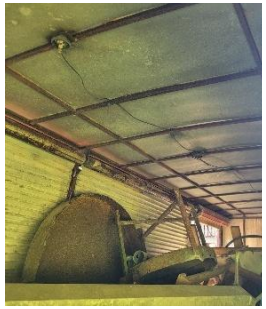
ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B11b	611462 894120		Small shed to south-west of the house, metal roof, no features present.	Low	Yes		Yes: 18/09/2025 – no emergence recorded.
S1 - B12a	612139 894517		Small bungalow, soffit and fascia appear to have been refurbished recently, one chimney, all tiles appear in place, mixed woodland east of house, open faced north, west, and south, no identified features.	Negligible	No		No
S1 - B12b	612181 894494		Concrete block storage shed with metal roof, deteriorating slightly, high ceiling inside, mixed woodland (with some large sycamores) east of the building. Modifications made to the roofing and some walls reinforced since 2022 surveys.	Moderate	No		Yes: 12/08/2025 and 16/09/2025 – no emergence recorded.

ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B13a	612111 894501		Bungalow, pebbledash walls, wooden fascia and soffit, mixed woodland approximately 50 m south of the building, owner stated that they found a bat in the water tank in the attic about five years previous.	Low	No		Yes: 08/09/2025 and 29/09/2025 – a single bat emerged each time; likely a *Pipistrelle* sp.
S1 - B13b	612109 894498		Wooden soffit much like the house, no vegetation surrounding the building.	Moderate	No		Yes: 13/08/2025 and 08/09/2025 – no emergence recorded.
S1 - B14a	612139 894462		Bungalow, north, east, and south sides surrounded by mixed woodland, seven large sycamores to the north with some potential roost features present. Work done to repair damage to windows, removing a previously identified feature.	Low	No		Yes: 02/09/2025 – two emergences recorded. One of an unknown species and the other recorded a *Pipistrelle* sp. which was then recorded re-entering.

ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B14b	612151 894459		Shed to the east of B14a, multiple entrance possibilities as windows are smashed, door appears to be left permanently open, half of shed is open sided, metal roof with wooden rafters, ivy growth inside.	Moderate	Yes – Although multiple entry points into building, no noticeable features noted inside, wooden roof with thin wooden rafters meant little or no openings or crevices.	 	Yes: 13/08/2025, 02/09/2025, and 16/09/2025 – three roosting bats. Likely two were *Myotis* sp. and one was a *Pipistrelle* sp.
S1 - B15a	612147 894577		Bungalow, plastic soffit and fascia with concrete on the gable end, small coniferous shrubs to the south, mixed woodland (25% coniferous) approximately 100 m to the east.	Low	No		Yes: 28/08/2025 – No emergence recorded.

ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B15b	612161 894573		Small add on storage area for B15a, east of house. No features identified.	Negligible	No		No
S1 - B15c	612175 894571		Storage area for farm equipment, metal roof, partially open sided facing north.	Low	Accessible in 2022 and partial access in 2025. Metal roof with wooden rafters, one low feature where a gap in the brickwork created a small opening.		Yes: 28/08/2025 – No emergence recorded.
S1 - B16a	613321 894242		Small bungalow, in close proximity to busy N15 road, within relative urban setting, plastic soffit, no vegetation surrounding, one chimney. All features open to the south, towards the busy national road. connectivity to good foraging habitat is moderate.	Low	No		Yes: 22/09/2025 – No emergence recorded.

ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B16b	613310 894238		Small shed located north of B16a. with corrugated metal walls and concrete reinforcement. No features identified.	Negligible	No		No
S1 - B16c	613310 894245		Shed located north of B16c. All corners sealed with no features identified.	Negligible	No		No
S1 - B17	612462 894939		Bungalow, plastic soffit, two chimneys, abundant cobwebs across most soffit and facia structures.	Low	No		Yes: 30/09/2025 – likely four bats emerged; one Leisler's bat, two confirmed soprano pipistrelle, and one likely soprano pipistrelle. 07/10/2025 – one potential emergence of a *Pipistrelle* sp.

ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B18a	613667 895706		Large slatted shed, concrete lower half of walls with metal cladding further up, metal room with centre section open. North-facing wall has wooden cladding which has openings max 5 cm across, metal roof with metal girders, no wood. Young birch forest to the west, mixed woodland north-west of the building.	Low	No – 2022 internal inspection identified no roost features.		Yes: 17/09/2025 – No emergence recorded.
S1 - B18b	613674 895714		Smaller shed beside B18a, metal roof and walls, wooden rafters, openings either side where wall adjoins to roof. As with B18a, mixed woodland to the north-west, and young birch woodland to the west.	Low	No		Yes: 17/09/2025 – No emergence recorded.
S1 - B18c	613677 895708		Small metal storage container located west of B18b. No features identified.	Negligible	Yes – metal roof with supports, no features identified.		No

ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B19a	613744 895758		Two storey, plastic soffit, one chimney, well-sealed, large coniferous shrubs surrounding house. No potential features identified.	Negligible	No		No
S1 - B19b	613736 895745		Shed to the south-west of house, as with house surrounded by coniferous shrubs. No potential features identified.	Negligible	No		No
S1 - B20	613800 895745		Bungalow, pebbledash walls, plastic soffit and fascia, one chimney, well-sealed, four corner slates have small opening underneath, unsure whether leads to internal structure. Surrounded by coniferous shrubs.	Negligible	No		No

ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B21a	613921 895894		Small bungalow with wooden soffit and facia, all tiles appear in place, one chimney, no trees within 100 m.	Low	No		Yes: 25/08/2025,– three bats of unconfirmed species emerged. No vocalisations occurred during emergence. Leisler's bat and soprano pipistrelle were heard several minutes before and after emergence, respectively. 22/09/2025 – no emergence recorded.
S1 - B21b	613923 895894		Mobile home, metal structure. South of house. No potential features identified.	Negligible	No		No
S1 - B21c	613925 895903		Concrete, metal, and wooden walls, metal roof. Wooden rafters inside. East of house. Four bird boxes present on structure.	Low	No		Yes: 25/08/2025 – no emergence recorded.

ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B22a	614417 896789		Bungalow with converted attic space, pebbledash walls, one chimney, plastic soffit and facia, mixed coniferous woodland (WD2) to north-west of house, owner states bat in attic last winter.	Moderate	No		Yes: 11/08/2025 and 01/09/2025 – no emergence recorded.
S1 - B22b	614468 896819		Partially open sided shed, wooden rafters, concrete walls up to 2 m with metal from thereon as well as metal roof, north-west side is completely open which faces young ash trees and hawthorn shrubbery.	Low	Yes – Although open access to shed, very few roosting features within.		Yes: 06/10/2025 – one emergence recorded, with no vocalisation at time of emergence. The only species recorded around this time was soprano pipistrelle.
S1 - B23a	615437 898265		Bungalow, plastic soffit and fascia, roof tiles appear to have been recently refurbished, some large trees north-west of property.	Low	No		Yes: 06/10/2025 – no emergence recorded.

ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B23b	615432 898265		Metal roof, porch with wooden rafters, broken windows give access to internal structure, north of house, coniferous trees approximately 100 m north-west. No obvious signs of roosting inside the shed.	Low	Yes – Metal roof with no noticeable roosting features, some of the roof lined with felt covered in chicken wire.	 	Yes: 27/08/2025 – no emergence recorded.
S1 - B23c	615443 898274		Shed located east of B23b with wooden supports and corrugated metal roofing. No roosting potential noted.	Negligible			Yes: 27/08/2025 – no emergence recorded.

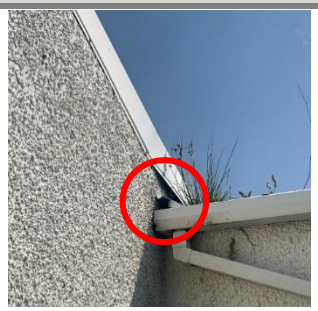
ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B24	615414 898070		Bungalow with pebbledash walls and two chimneys. Flat roofed extension located on the south-west side of the building.	Low	No		Yes: 30/09/2025 – no emergence recorded.
S1 - B25a	613602 895546		Small concrete shed with sealed metal roof.	Low	No		No. Within the CPO but it is not scheduled for demolition.
S1 - B26a	610988 893793		Steel framed barn with concrete block and steel sheet walls and steel sheet roof. No voids or cladding.	Negligible	No		No

ID	Coordinates (ITM)	Overall Photo	Description	Structure Roost Suitability	Internal Access	Internal Photos	Emergence Survey
S1 - B27a	610974 893373		Shed adjacent to road, corrugated sheets surrounding outside, internal access gained, although access points surrounding large sliding doors, no obvious roosting feature within the internal structure.	Negligible	Yes	 	No

Table C-2: Section 1 – Structure Features Suitable for Bat Entrance (2025 Surveys)

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
S1 - B09a		PRF-I	A corner ridge tile is broken but it appears unlikely that there is an entry point for bats. Located on the north-east corner, 3 m high.			
S1 - B09b		PRF-I	Small opening in slates facing north, ranging from 5 – 10 cm in size. Located at 3 m above ground.		PRF-I	The corner ridge tile is broken but it appears unlikely that there is an entry point for bats. Located north-east corner, 3 m high.
		PRF-I	A corner tile is broken with a potential roost space beneath the above corner tile. Located 5 m above ground on the south-west corner.		PRF-I	Small opening in slates facing south, ranging from 5 cm high, located at 3 m above ground.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
S1 - B10a		PRF-I	Gap behind the metal soffit facing west.		PRF-I	Gap behind the metal soffit facing south.
		PRF-I	Gap behind the metal soffit facing east.			

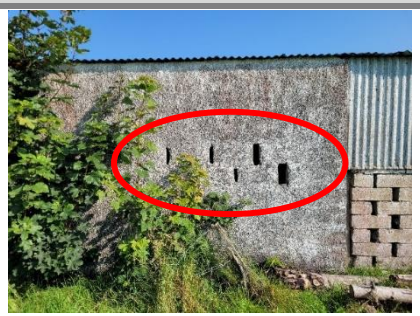
ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
S1 - B10b		PRF-I	Small opening in fascia where it meets the wall, <5 cm across, facing south.		PRF-I	Gap above gutters facing west.
		PRF-I	Gaps between the metal gutter and wall Located 3 m above the ground facing north-west.		PRF-I	Gaps between the metal gutter and wall. Located 3 m above the ground facing north-east.
S1 - B11a		PRF-I	Two small openings via pipes fitted through soffit, unsure of what access this gives to the buildings internal structure, facing south. Located at back right of house.		PRF-I	Gaps under bottom tiles revealed by fallen gutter facing south.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
S1 - B11b		PRF-I	Located on the front of building and internally there are gaps between corrugated iron and wall, facing west.			
S1 - B12b		PRF-M	Gap in blockwork into building, facing north-west.		PRF-M	Holes between metal roofing and stone wall located west at the front of the shed.
		PRF-M	Gap between gutter, ceiling facing south-west.		PRF-M	Gap between gutter, ceiling facing north-east.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
		PRF-M	Open window into shed. Located on the north side of shed.			
S1 - B13a		PRF-I	Small gap in wooden soffit, facing north-west.		N/A	During emergence surveys, emergence of a single *Pipistrelle* sp. was observed from a previously unrecorded feature, below the chimney between the flashing and the tiles on the west side.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
S1 - B13b		PRF-M	Gap in wooden soffit, north-facing, no vegetation to this side of the building just an open field.			
S1 - B14a		PRF-I	Peeling flashing, missing wood cover, facing north-east toward large sycamore trees.		N/A	During the 25/09/2025 emergence survey, two emergences recorded were recorded from a previously unrecorded feature above the window near the south-east corner. One of an unknown species and the other recorded a P*ipistrelle sp*. which was then recorded re-entering.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
S1 - B14b		PRF-M	Door of shed appears to be left permenatly open, facing west toward B14a. During emergence surveys, bats were emerging and re-entering through this door Three roosting bats were recorded; two were likely a *Myotis* sp. and one was a *Pipistrelle* sp.		PRF-M	Multiple entrance points; window smashed, garage door appears permanently open. Both west facing.
S1 - B15a		PRF-I	Small opening between end of tiled roof and gutter, unsure where it leads to. South-west facing.		PRF-I	Small opening between end of tiled roof and gutter, unsure where it leads to. north-west facing.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
S1 - B15C		PRF-I	Large gaps in bricks provide access to the shed. Facing south.		PRF-I	Potential gaps in bricks where beams go through them on east and west side of the internal shed.
S1 - B16a		PRF-I	Small opening in soffit, south-east facing, facing busy N15 road.		PRF-I	Raised tile at south-west corner producing potential entry point.
		PRF-I	Gaps under the apex tiles producing potential entry points. facing south.		PRF-I	Raised tile at south-east corner producing potential entry point.

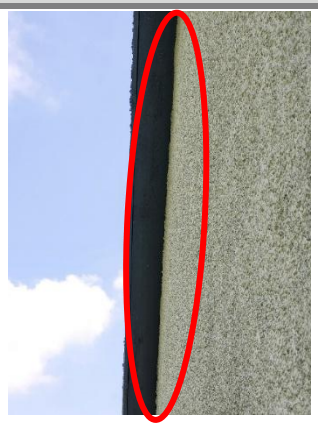
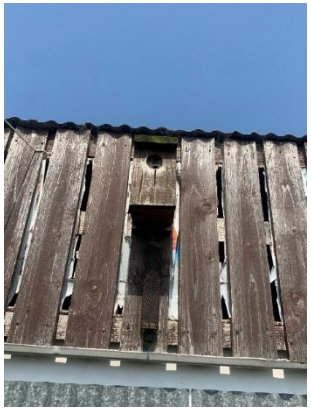
ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
S1 -B17		PRF-I	Small gap between soffit and wall, north-west facing During the 30/09/2025 emergence survey, one Leisler's Bat emerged from this feature.		PRF-I	Small opening in soffit, hole for pipe but no pipe present, approximately 4 cm across, south facing.
		PRF-I	Small opening in fascia, unsure whether leads to internal structure, south-west facing.		PRF-I	Small gap between soffit and wall at the north-west corner.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
		PRF-I	Small gap between soffit and wall, north-east facing.		PRF-I	During the 30/09/2025 emergence survey, emergence occurred at an unidentified feature at the south end of the flat-roofed part of the house. Three emergences were recorded. Soprano Pipistrelle (*Pipistrellus pygmaeus*) calls were recorded at the time of the first and third emergences and no vocalisation was recorded at second emergence. However, Soprano Pipistrelle vocalisation was recorded one minute after. Two re-entrys were recorded, the first a Soprano Pipistrelle and the other unidentified.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
S1 - B18a		PRF-I	Openings in wooden cladding on north facing wall, direct access to inside of shed.		PRF-I	Opening in roof approximately 30 cm, 10 m above ground, north facing.
		PRF-I	Gap through side of door into barn.			
S1 - B18b		PRF-I	Opening approximately 300 cm × 10 cm along entire wall/roof joining, entry into shed, from limited visuals of inside the shed appears to be no noticalbe roosting features. South facing.		PRF-I	As with feature 1, opening across width of building, north facing.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
		PRF-I	Large hole in plastic sheeting on wall. South facing.			
S1 -B20		Negligible	Small opening on corner slates of building. Unlikely to enter into building.		Negligible	Small opening on corner slates of building. Unlikely to enter into building.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
		Negligible	Small opening on corner slates of building. Unlikely to enter into building.			
S1 - B21a		PRF-I	Small opening in soffit, maximum 5 cm across, west facing.		PRF-I	Gap between soffit and wall. Potential entry point but currently very clean and not likely used. Located on north-west corner. During the 25/08/2025 emergence survey, one bat emerged from here. No vocalisations occurred during emergence. Leisler's bat and soprano pipistrelle were heard several minutes before and after emergence, respectively.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
		PRF-I	Gap between soffit and fascia of soffit, potential entry point.		PRF-I	Gaps between the soffit and the fascia along the northern side. During the 25/08/2025 emergence survey, two bats emerged from here. No vocalisations occurred during emergence. Leisler's bat and soprano pipistrelle were heard several minutes before and after emergence, respectively.
S1 -B21c		PRF-I	Bird box, south facing, 2 m above ground. Moved since 2022 survey.		PRF-I	Bird box 3 m above ground, south facing.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
		PRF-I	Bird box 3 m above ground, south facing.		PRF-I	Bird box 3 m above ground, south facing.
		PRF-I	Bird box 3 m above ground, south facing.		PRF-I	Gaps between metal grating on ceiling allowing for access into sheds. South facing.
S1 - B22a		PRF-M	Gap under roof tile to top right of velux window, south facing. Probably covered by plastic underneath.		PRF-I	Gap under roof tile ridge, south facing.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
		PRF-I	Gap under roof tile ridge, south facing.		PRF-I	Gap between stone slates.
		PRF-I	Lead flashing gap.		PRF-I	Gap under roof tile ridge, south facing.
		PRF-I	Gap in middle of soffit. West facing.		PRF-I	Gap in soffit, east facing.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
		PRF-I	Gap in tiles right of window. North facing.		PRF-I	Gap under roof tile ridge, south facing.
		PRF-I	Facia broken away producing gap and potential route to cavity, facing south-west.		PRF-I	Gaps in facia at north-east side of building.
		PRF-I	Gaps in facia at north-east side of building.		PRF-I	Facia broken away producing gap and potential route to cavity, facing north.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
		PRF-I	Gaps in facia at north-east side of building.		PRF-I	Facia broken away producing gap and potential route to cavity, facing south.
		PRF-I	Gap behind gutter. low potential for single bat.			
S1 - B22b		PRF-I	Open access to shed. During the 06/10/2025 emergence survey, one bat emerged from the south side of the building, with no vocalisation at time of emergence. The only species recorded around this time was Soprano Pipistrelle.		PRF-I	Narrow space between outer wall and an internal structure. Located near south-east corner.

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
		PRF-I	Gap in wall between beams offers low roosting potential. Located on the south side of the building 2 m high.		PRF-I	Gaps between beams and metal wall/chimney provide roosting opportunities for small numbers. Located throughout the building at 5 m high.
		PRF-I	Gaps between beams and metal wall/chimney provide roosting opportunities for small numbers. Located throughout the building at 5 m high.			
S1 - B23a		PRF-I	Two apex tiles have been replaced and left a gap due to the different shape. potential entry point. Located in the centre of the house.			

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
S1 - B23b	 	PRF-I	Holes in material under roof.		PRF-I	Wooden slots and roof/wall.
		PRF-I	Bird box built into roof facing south.			

ID	Feature	Suitability	Notes and Recorded Emergences	Feature	Suitability	Notes
S1 -B24		PRF-I	Small gap under apex tile. Facing north at west end.		PRF-I	Small gap in flashing at west end of house with small possibility of leading to cavity.
S1 - B25a		PRF-I	Gap at gable end where roof corner meets wall.		PRF-I	Small gap in flashing at west end of house with small possibility of leading to cavity.
					PRF-I	Gap in stonework located above door south facing.

C.1.1.2 Bat Roost Surveys – Trees

Table C-3: Section 1 – Trees Bat Roost Assessment (2025 Surveys)

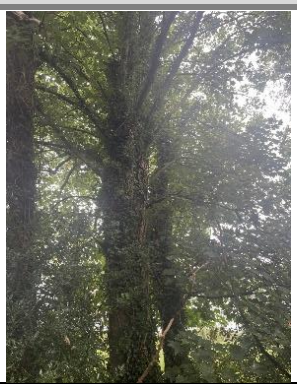
Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA1					
S1-TA1-BT1	611166	893397		Tall Spruce, sitting in a row of multiple trees. Thick ivy growing from base.	PRF-I
S1-TA1-BT3	611162	893395		Tall spruce tree, third tree from right when facing the road.	PRF-I
S1-TA1-BT6	612091	894430		Sycamore with extensive ivy cover.	PRF-I
S1-TA1-BT7	611106	893437		In 2022 was a tall cypress with two trunks. Tree has since fallen in large ground upheaval which has also caused the falling of adjacent trees to the immediate south.	PRF-I

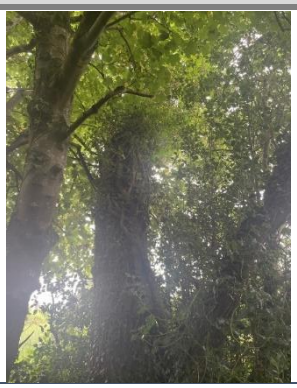
Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA1-BT9	611112	893416		Small ash with significant signs of dieback.	PRF-I
S1-TA1-BT10	611119	893544		Small hawthorn found along a ditch, covered in ivy.	PRF-I
S1-TA1-BT11	611105	893425		Tree died since last survey. Bird box now present.	PRF-M
S1-TA1-BT12	610892	893522		Spruce tree with two bat boxes 3 m above ground level facing south and east.	PRF-M

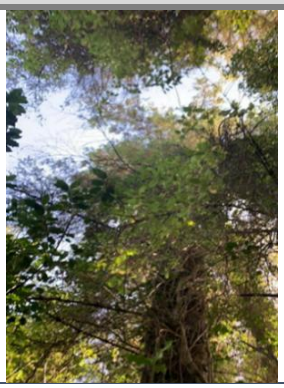
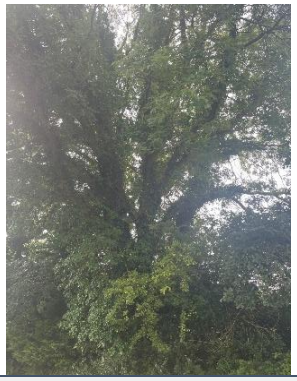
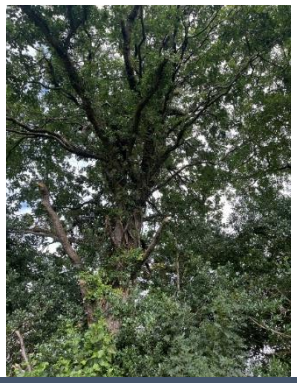
Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA1-BT13	611101	893449		Most westerly cyprus tree in small clump surrounding large ash.	PRF-I
S1-TA1-BT15	611082	893470		Cypress with multiple trunks standing at north-westside of access point connecting fields to the south-west and north-east.	PRF-I
S1-TA1-BT18	611024	893525		Deceased willow tree with stems covered in ivy (since fallen). Was alive in 2022. Although willow is deceased ivy is still present in knots and may represent PRF-I.	PRF-I
S1-TA1-BT20	611009	893534		Ash growing along field bounds with small stream running beneath it.	PRF-I

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA1-BT21	611098	893437		Hawthorn standing on south-west side of grassy path which borders two fields.	PRF-I
S1-TA1-BT22	611101	611101		Spruce tree on field boundary with two bat boxes installed on opposing sides.	PRF-M
S1-TA1-BT23	610919	893561		Thin dead tree with a bat box installed approximately 2 m above ground level.	PRF-M
S1-TA1-BT24	611143	893760		Three spruce trees along field boundary, ivy growth on two trees to the south-east.	PRF-I

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA1-BT25	611124	893295		Large ash tree on field boundary, covered in ivy. Only viewed tree from field to the south-west but can be presumed the tree is much the same with regards ivy cover on the opposite side.	PRF-I
S1-TA2					
S1-TA2-BT1	612135	894431		Hawthorn with thick ivy canopy located alongside roadway in the townland of Capry	PRF-I
S1-TA2-BT3	612135	894419		Thick ivy growth along trunks representing multiple potential PRFIs, although moderate ivy canopy diminishes probability slightly.	PRF-I
S1-TA2-BT4	612091	894439		Large sycamore within small, wooded patch adjacent to a roadway and farmyard.	PRF-I

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA2-BT5	612092	894445		Sycamore with thick wrist of ivy growing concentrically along multiple trunks.	PRF-I
S1-TA2-BT7	612141	894387		Tall ash tree along gravel road, with ivy growing along trunk. Tree is lightly dressed in leaves to the west, likely due to ongoing cutting to clear roadway and powerline overhead on the western face.	PRF-I
S1-TA2-BT8	612088	894428		Holly tree along wooded boundary, cavity with main trunk has created large opening, needs to be inspected with endoscope, can be done from ground level.	PRF-M
S1-TA2-BT9	612141	894396		Hawthorn with significant ivy growth along gravel road.	PRF-I

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA2-BT10	612082	894415		Large alder leaning into field on corner of wooded area.	PRF-I
S1-TA2-BT11	612120	894420		Tall spruce within group of other spruce trees Ivy growth present over the trunk.	PRF-I
S1-TA2-BT14	612099	894406		Ash bordering road and wooded area, significant ash dieback present.	PRF-I
S1-TA2-BT15	612114	894414		Spruce within group of other spruce trees, ivy growth covering trunk.	PRF-I

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA2-BT17	612102	894386		Tall spruce, with significant ivy covering.	PRF-I
S1-TA2-BT19, S1-TA2-BT21, S1-TA2-BT23, S1-TA2-BT27	612108	894386		Group of mainly spruce group is inclusive of all individual trees previously assessed. All trees have maximum of PRF-I.	PRF-I
S1-TA2-BT24	612150	894504		Mature ash tree with large amount of ivy growth within a dense hedgerow.	PRF-M
S1-TA3					
S1-TA3-BT5	612261	894612		South facing tall individual alder.	PRF-I

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA4					
S1-TA4-BT1	612443	895030		Old ash tree with significant ivy stem growth on trunks, particularly on south-eastern trunk.	PRF-I
S1-TA4-BT6	612504	895071		Large two forked beech tree with detached ivy growth, tree approximately 20 m in height.	PRF-I
S1-TA4-BT7	612474	895033		Multiple stands of red cypress which exhibit peeling bark, typically exposing shallow vertical splits. Some of these splits may represent PRF-Is or temporary roosting features. The cypress is field-facing, while a line of deciduous trees sit further to the south, along the immediate riparian zone of the River Finn.	PRF-I
S1-TA4-BT8	612520	895065		Large beech tree, no ivy growth, detached from surrounding vegetation, tree is approximately 20–30 m tall.	PRF-M

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA4-BT12	611896	895110	-	Tall ash tree with significant ivy growth on main trunk, which is open in parts, potentially constituting a roost feature. Ivy however appears predominantly tightly bound to the trunk.	PRF-I
S1-TA5					
S1-TA5-BT2	613134	895296		Tall dual trunk beech with significant ivy growth on the northern face of trunks.	PRF-I
S1-TA5-BT3	613161	895309		Tall ash tree with holly adjacent to the north.	PRF-I
S1-TA5-BT5	613179	895318		Tall beech tree 3 m outside of CPO boundary to the east.	PRF-I

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA5-BT7	613211	895386		Fallen willow which has cavity at ground level, located within a mixed woodland nearby the river Finn.	PRF-I
S1-TA5-BT9	613278	895474		Beech tree with two bat boxes located on field border between agricultural fields.	PRF-M
S1-TA5-BT10	613103	895459		Standalone tree in hedgeline between two fields covered in ivy.	PRF-I
S1-TA5-BT11	613286	895480		Large ash within hedgerow along field boundary.	PRF-I

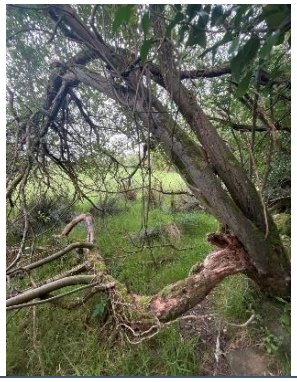
Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA5-BT13	613289	895487		Ash within hedgerow along boundary of field.	PRF-I
S1-TA5-BT15	613293	895494		Ash within hedgerow along field boundary.	PRF-I
S1-TA5-BT17	613272	895415		Large beech standing solitary in field, with large dead patches creating cavities, confirmed roost from last climb.	PRF-M (Confirmed bat roost)
S1-TA5-BT18	613090	895405		Deceased stump directly adjacent to hawthorn, growing in hedgerow facing west.	Negligible (downgraded from PRF-M after tree climbing surveys)

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA5-BT19	613137	895289		Tall sycamore in tree line on north-east side of road. Two primary trunks with significant ivy growth.	PRF-I
S1-TA6					
S1-TA6-BT1	613823	896174	-	Tall Beech tree with rhododendron growing at the base	PRF-I
S1-TA6-BT3	613824	896172		Tall lime tree with some ivy growth located on the edge of an active farmyard.	PRF-I
S1-TA6-BT5	613824	896157		Double forked horse chestnut on perimeter of property.	PRF-I
S1-TA6-BT7	613800	896158		Medium sized hawthorn located adjacent to an active farmyard.	PRF-I

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA6-BT8	614094	896351		Ash tree located within hedgerow within an agricultural field.	PRF-M
S1-TA6-BT10	614115	896325		Tall ash with dense ivy growth, located within hedgerow within an agricultural field.	PRF-I
S1-TA6-BT12	614216	896180		Tall beech within wooded area recorded in 2022. Very difficult to see feature through foliage but presumed to still be there.	PRF-I
S1-TA6-BT13	613902	895951		Sycamore tree within hedgerow, ivy covering trunk. Recorded adjacent to roadway.	PRF-I

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA6-BT15	614037	896206		Tall ash with ivy cover, recorded within a growth of mixed woodland.	PRF-I
S1-TA6-BT17	614020	896177		Beech tree, recorded within a growth of mixed woodland.	PRF-I
S1-TA6-BT18	614043	896215		Ash tree. Previously identified ivy is present along north-west facing trunk side and is not suitable for roosting due to lack of cover on its lower section (previously identified as 2 m above ground). However, there are potential features higher up along the trunk where the ivy binds a bit more tightly.	PRF-I
S1-TA6-BT19	614016	896169		Ash within hedgerow situated to the south-west of the access field adjacent to the house. Primary trunk splits into multiple at circa 5 m height.	PRF-I

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA6-BT21	614210	896177		Two adjacent beech trees, both with bat boxes 3 m above ground and facing to the north-east.	PRF-M
S1-TA6-BT23	613004	895380		Line of beech and ash trees alongside road, some ivy cover, nothing more than PRF-I, selective soft fell for entire tree line.	PRF-I
S1-TA6-BT24	613805	896163		Mixture of hawthorn, alder, pine species, beech and hazel. Located adjacent to an active farmyard.	PRF-I
S1-TA7					
S1-TA7-BT2	614435	896812		Alder on edge of conifer plot, a number of alders have been knocked down in area presumably due to storm.	PRF-I
S1-TA7-BT9	614387	896812	-	Ivy growth surrounding the trunks of several alder trees.	PRF-I

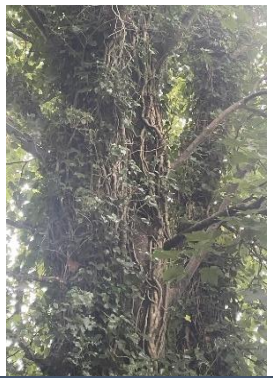
Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA7-BT12	614312	896657		Alder on roadside, underneath electricity line.	PRF-I
S1-TA8					
S1-TA8-BT1	616431	896096		Alder with large primary trunk and branches covered densely with ivy, however there are sections of detached ivy stem with little foliage.	PRF-I
S1-TA8-BT3	616448	896084		Multibranching scouler willow, with low hanging branches forming a moderately dense low thicket to the south-west	PRF-M
S1-TA8-BT4	616381	896085		15 m high ash, roadside. Dead and extensively covered in bushy ivy.	PRF-I

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA8-BT5	616476	895990		Sycamore alongside stream, with considerable ivy growth on trunk.	PRF-I
S1-TA8-BT8	616563	896193		Alder beside road, ivy growth on trunk.	PRF-I
S1-TA8-BT10	616725	896251		Tall alder covered in dense ivy foliage along primary trunk. Sitting on southern side of the roadway.	PRF-I
S1-TA8-BT11	616432	895992		Alder along hedgerow dominated by alder, a few small knotholes across various branches on the tree with most leading to no cavity, this feature appears large enough to accommodate one roosting bat.	PRF-I

Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA8-BT12	616658	896193		Hawthorn standing at north-west side of riparian zone of tree-lined ditch, in a saturated field. Previously identified ivy is thin and likely not suitable alone, however there is a cavity which is semi-covered in the main trunk.	PRF-I
S1-TA8-BT17	616392	895944		Large thick willow, with some ivy growth around trunk.	PRF-I
S1-TA8-BT19	616489	896072		Large willow within a hedgerow alongside an agricultural field.	PRF-I
S1-TA8-BT21	616568	896140		Tall willow. The 2022 surveys identified feature “gaps between branches 6 m above ground level” not visible, however the ivy foliage has increased significantly in density since the last survey, based off previous imagery. Therefore, there is potential for the previously identified feature to be hidden by foliage, decreasing its likelihood of use by bats.	PRF-I

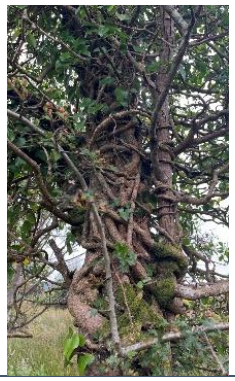
Tree Code	Coordinates (ITM)		Overall Photo	Description	Tree Roost Suitability
	X	Y			
S1-TA9					
S1-TA9-BT2	616012	900005		Small hawthorn beside stream, low overhanging branches creating potential space for roosting opportunities.	PRF-I
S1-TA9-BT4	616015	899968		Willow lying on immediate western riparian edge of adjacent stream.	PRF-I
S1-TA9-BT5	616022	899950		Alder with multiple broken branches along the main trunk in the 4–6 m range.	PRF-I

Table C-4: Section 1 – Tree Features Potentially Suitable for Bat Roosts (2025 Surveys)

Tree Code	Feature	Suitability	Notes
S1-TA1			
S1-TA1-BT1		PRF-I	Ivy creating likely shallow roost 4 m above ground facing north-west.
S1-TA1-BT3		PRF-I	Ivy growth on main stem leading to small cavities. On main stem facing north-west, 1–4 m high.
S1-TA1-BT6		PRF-I	Ivy growth over entire tree. On main trunk mainly, with predominant area facing north-east.
S1-TA1-BT7		PRF-I	Ivy growth present along the dual trunks, both along stump and along remaining broken top trunk.

Tree Code	Feature	Suitability	Notes
S1-TA1-BT9		PRF-I	Ivy growth providing some small PRF-I opportunities. Located on entirety of tree, with some small cavities north-west facing.
S1-TA1-BT10		PRF-I	Ivy growth on main trunk, allowing for some PRF-I opportunities. Facing all directions.
S1-TA1-BT11		PRF-M	Bird box 2 m high, facing west.
S1-TA1-BT12		PRF-M	Bat box facing south.

Tree Code	Feature	Suitability	Notes
		PRF-M	Bat box facing east.
S1-TA1-BT13		PRF-I	Crack formed between the fork of the main stem, 5 m above the ground facing south-west.
S1-TA1-BT15		PRF-I	Deceased trunk on the north-east aspect of tree has developed a cavity which appears to have significant depth.
S1-TA1-BT18		PRF-I	Ivy covering the fallen trunks and branches, lying on a south to north axis.

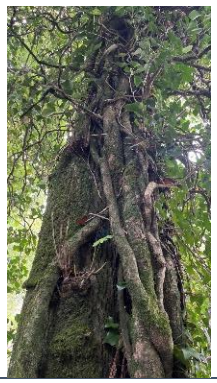
Tree Code	Feature	Suitability	Notes
S1-TA1-BT20		PRF-I	Small knot hole 3.5 m above ground. north-west facing, stump of knot hole branch still visible protruding out from trunk.
S1-TA1-BT21		PRF-I	Significant ivy growth enveloping much of the main stem, with PRF-Is visible from 2 m height to the top of the canopy on the main stem. Covering entire main stem, and south-east facing branch.
S1-TA1-BT22		PRF-M	Two bat boxes 2.5 m above the ground.
S1-TA1-BT23		PRF-M	Bat box 2 m high on dead tree facing south.
S1-TA1-BT24		PRF-I	Ivy growth on the two south-east facing trunks.

Tree Code	Feature	Suitability	Notes
S1-TA1-BT25		PRF-I	Ivy growth on entirety of main trunk.
S1-TA2			
S1-TA2-BT1		PRF-I	Thick ivy growing along dual trunks, visible from south-west looking north.
S1-TA2-BT3		PRF-I	Thick ivy growth along core dual trunks, visible from north-east aspect and is south-west facing.
S1-TA2-BT4		PRF-I	Ivy growth on main trunk, thickest section facing south-east.

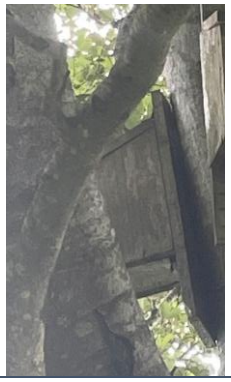
Tree Code	Feature	Suitability	Notes
S1-TA2-BT5		PRF-I	Thick ivy is partially detached towards the canopy of the most south-west trunk, and is likely a potential temporary roost, albeit shallow.
S1-TA2-BT7		PRF-I	Overlapping banding of thick ivy stem located 8 m in height on the most north-west facing trunk, visible from the south-east aspect.
S1-TA2-BT8		PRF-M	Large cavity with trunk, cannot see full extent even with flashlight. Located 2 m above ground, facing south.
S1-TA2-BT9		PRF-I	Knotting of ivy on easterly branch, 5 m above ground. Likely shallow and solely a potential temporary roosting feature, visible from south-east aspect and additional likely roosts may be visible from other aspects.
S1-TA2-BT10		PRF-I	Ivy growth on main stem from ground level to 4 m above ground, facing north-east.

Tree Code	Feature	Suitability	Notes
S1-TA2-BT11		PRF-I	Ivy covering trunk of tree.
S1-TA2-BT14		PRF-I	Ivy growth on main trunk of tree facing all directions.
S1-TA2-BT15		PRF-I	Ivy growth on tree trunk 1–4 m above ground facing south-west.
S1-TA2-BT17		PRF-I	Ivy, 5 m above ground, facing west.

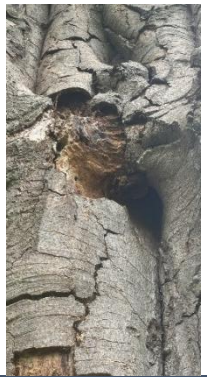
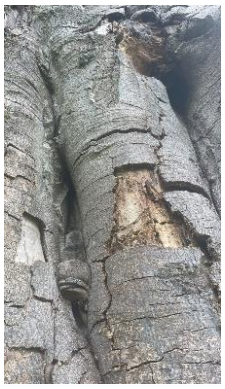
Tree Code	Feature	Suitability	Notes
S1-TA2-BT19, S1-TA2-BT21, S1-TA2-BT23, S1-TA2-BT27		PRF-I	Ivy across the trunks of these trees and the surrounding trees.
S1-TA2-BT24		PRF-M	Vertical crack/split 7–9 m high on a limb off the main stem, north facing, long tear out feature, dry inside, 10 cm deep, ivy growth around branch.
S1-TA3			
S1-TA3-BT5		PRF-I	Knot hole from shed branches. Potential downward knothole 6 m from ground level, where a large stem meets the main trunk, south facing.
		PRF-I	Ivy along main trunk, potential feature situated 8 m above ground level, facing south.

Tree Code	Feature	Suitability	Notes
S1-TA4			
S1-TA4-BT1		PRF-I	Two trunks of the ash have significant bare ivy stem on their north-facing side, which has the potential to be an individual roosting feature. Located on the north face of the south-east trunks.
		PRF-I	Previously identified knot hole not visible- may be overgrown with ivy or holly.
S1-TA4-BT6		PRF-I	Ivy growth all over main stems, with best roosting potential facing north-east.
S1-TA4-BT7		PRF-I	Multiple stands of red cypress which exhibit peeling bark, typically exposing shallow vertical splits. Some of these splits represent PRF-Is.

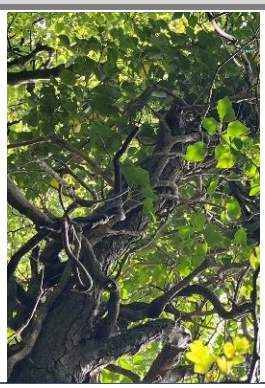
Tree Code	Feature	Suitability	Notes
S1-TA4-BT8		PRF-M	Large cavity within centre of tree, multiple entrances. Various entrances from ground level to 2.5 m above ground, facing south-west and north-east.
S1-TA4-BT12		PRF-I	Open ivy stem circa 7 m above ground level, southern (road facing) aspect.
S1-TA5			
S1-TA5-BT2		PRF-I	Overlapping and bunched stems of thick ivy situated 6.5 m above ground, where one of the primary trunk's forks. Facing north.
S1-TA5-BT3		PRF-I	Ivy along north face of main trunk, with bunching potentially constituting a PRF-I 6 m above ground level. Facing north.

Tree Code	Feature	Suitability	Notes
S1-TA5-BT5		PRF-I	Thick stemmed ivy slightly detached on both southerly and easterly face of the tree, approximately 3–5 m above the ground, across the south and east face.
S1-TA5-BT7		PRF-I	Large open crack, very exposed, facing east at ground level.
S1-TA5-BT9		PRF-M	Box 1 – south facing, 4.5 m high.
		PRF-M	Box 2 – east facing, 4.5 m high, no evidence of bats, slugs and woodlice present.
S1-TA5-BT10		PRF-I	Cavity created by rot. Facing south-east 1 m above ground level.

Tree Code	Feature	Suitability	Notes
S1-TA5-BT11		PRF-I	Ivy growth 5 m above ground, west facing.
S1-TA5-BT13		PRF-I	Ivy growth on main trunk of tree.
S1-TA5-BT15		PRF-I	Ivy growth on main trunk of tree, 2 m above ground facing east.
S1-TA5-BT17		PRF-M	South facing knot hole 3.5 m above ground, low to moderate roosting suitability, small cavity under bracket fungus which is relatively exposed to the wind.

Tree Code	Feature	Suitability	Notes
		PRF-M	South facing compression feature, 3 m off ground, low to moderate, cavity approximately 25 cm deep, 14 cm high below bracket fungus.
		PRF-M	South-east facing. Compression 3.5 m above ground on main stem, external entrance 6.5 cm × 6.5 cm, cavity travels upwards – 18 cm high, dry on inside, bobbled texture, domed apex shape, branches off to small chamber (very narrow). South-east facing.
		PRF-M	South-east facing compression 2.5 m above ground on main stem facing south-east. Confirmed Bat Roost – Cavity is approximately 20 cm deep travelling upwards. Three small droppings were found on grass directly beneath the roost entrance. A single bat was recorded on first visit in August 2022. Three bats visible on second visit in mid-September, likely a single male and his breeding harem, given the time of year. The bats most closely resemble soprano pipistrelle (*P. pygmaeus*).
S1-TA5-BT18		Negligible (downgraded from PRF-M after tree climbing surveys)	Large cavity which appears to have a smaller entrance to what could potentially be a roosting feature at its back. Feature is located on ground level on the western side.

Tree Code	Feature	Suitability	Notes
S1-TA5-BT19		PRF-I	Dense ivy growth on the south-west to the south-east face of trunks. Primarily potential roosting features lie 5 m above ground level.
S1-TA6			
S1-TA6-BT1	-	PRF-I	Ivy, west facing, 1.5 m above rhododendron hedge line. Facing west
S1-TA6-BT3		PRF-I	Knot hole that appears shallow at top side, but potentially deeper and extends down into stem at low side. 8.2 m high and south-west facing.
S1-TA6-BT5		PRF-I	West facing – crack up main stem of tree, linear feature, 2.5 m in height, exterior average width 8–10 cm, no actual cavity upon inspection, overhanging bark is relatively exposed – limited potential for individual bats as a day roost.
		PRF-I	East facing crack on main stem of tree, linear feature, 2.5 m in height, exterior width average 8–10 cm, small cavity at top of split, overhanging bark is relatively exposed – limited potential for individual bats as a day roost.

Tree Code	Feature	Suitability	Notes
S1-TA6-BT7		PRF-I	East facing ivy 4 m above ground level. Ivy is quite detached from tree, leaving moderately exposed, shallow protection.
		PRF-I	Cavity located on the underside of the main stem, directly above ground level. Appears shallow although may be moderately suitable. Facing eastward.
S1-TA6-BT8		PRF-M	Cavity created by rot. East facing – butt rot at base of ash tree, external – 12 cm × 14 cm, internal 18 cm × 15 cm cavity travels downwards, 15 cm upwards, rough inside, domed apex, crumbly bark texture, semi-damp.
S1-TA6-BT10		PRF-I	Previously identified dense ivy is unlikely to provide suitable roosting along much of the ash tree, however there is one potential open area with some clear stems along the eastern face, 8 m above ground level.

Tree Code	Feature	Suitability	Notes
S1-TA6-BT12		PRF-I	Overlapping branches 5 m above ground, facing east.
S1-TA6-BT13		PRF-I	Ivy growth all over the main trunk.
S1-TA6-BT15		PRF-I	Ivy growth on main trunk of tree. All over main trunk, facing all directions.
S1-TA6-BT17		PRF-I	Gap between two trunks in the beech, likely shallow but not confirmed. 2 m above ground on the west face of trunk.

Tree Code	Feature	Suitability	Notes
		PRF-I	Cavity between two trunks facing south. Likely extends far enough inwards due to rot to be a suitable roost feature. 1.2 m height, southern facing aspect of beech (facing woodland, not the field).
S1-TA6-BT18		PRF-I	Previously identified ivy is present along west facing trunk side. Not suitable for roosting due to lack of cover on its lower section (previously identified as 2 m above ground). However, there are potential features higher up along the trunk where the ivy binds a bit more tightly.
		PRF-I	Tightly bound ivy with potential for roosting. Located on the north-west face of trunk.
S1-TA6-BT19		PRF-I	Branches compress to create narrow slit which is dark to the eye in its bottommost section, and as such its extent in terms of depth cannot be effectively gauged from ground level- however pictures taken with binoculars show shading on interior bottom. 5 m above the ground and facing north-east.

Tree Code	Feature	Suitability	Notes
S1-TA6-BT21		PRF-M	Bat box, topside covered in ivy. In woodland, north-east facing.
		PRF-M	Bat box, on the most south-west tree south-east facing, 3.5 m in height.
S1-TA6-BT23	-	PRF-I	Ivy growth across multiple trees representing PRF-Is.
S1-TA6-BT24	-	PRF-I	Ivy growth across multiple trees.
S1-TA7			
S1-TA7-BT2		PRF-I	Ivy growth on main trunk, 1–6 m above ground, facing all directions.

Tree Code	Feature	Suitability	Notes
S1-TA7-BT9		PRF-I	Ivy growth over the trees with gaps between bark and ivy.
S1-TA7-BT12		PRF-I	Ivy growth on main trunk and large branches.
S1-TA8			
S1-TA8-BT1		PRF-I	Section of partially detached ivy 4.3 m above ground level on primary trunk facing east, likely creating a book between it, the trunk and an offshoot branch directly above it.
S1-TA8-BT3		PRF-M	Deceased branch has semi-fallen and split partially to create a deep cavity which runs downward into the main trunk of the willow. 0.8 m above ground level, south facing.

Tree Code	Feature	Suitability	Notes
		PRF-I	Knot hole facing upwards which likely connects with a vertical split opening 20 cm downward of it. South-west facing, 1 m above ground level.
S1-TA8-BT4		PRF-I	Small knot hole 3 × 3 cm across. 3.5 m above ground, facing south-east.
S1-TA8-BT5		PRF-I	Ivy growth on main trunk, facing north-west.
S1-TA8-BT8		PRF-I	Ivy growth on main trunk. 1–4 m above ground, predominantly facing north.

Tree Code	Feature	Suitability	Notes
S1-TA8-BT10		PRF-I	Although generally dense, there are indeed patches along the main trunk with exposed stems of semidetached ivy which could potentially be suitable features. 6–8 m above ground level, east to north facing.
S1-TA8-BT11		PRF-I	Knothole 3 × 3 cm. 4 m above ground, facing south-west.
S1-TA8-BT12		PRF-I	North-east facing cavity which is partially covered by ivy stem (little foliage present as of current survey). Potentially could extend into the primary trunk. Located 1.7 m above ground level.
S1-TA8-BT17		PRF-I	Ivy growth covering the central trunk.

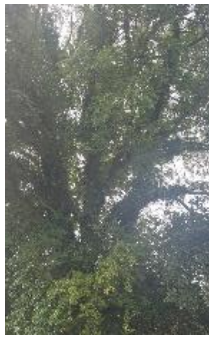
Tree Code	Feature	Suitability	Notes
S1-TA8-BT19	 	PRF-I	Previously identified features no longer present. There is evidence of limb removal which may have resulted in a loss of these features. There are horizontal cracks which are south facing on two limbs which extend to the north of the primary trunk; however, they appear shallow and exposed and unlikely constitute highly used roosting features. However, it is noted that the limbs appear partially deceased and are likely to crack and split more within the near future, potentially expanding to create roost features.
S1-TA8-BT21		PRF-I	Covered densely in ivy foliage. Branch and stem pointing westward.
S1-TA9			
S1-TA9-BT2		PRF-I	Gap between branch and stem, only viewed from other side of stream so unable to rule out. 1 m above ground, facing west.
S1-TA9-BT4		PRF-I	Multiple knot hole cavities visible along both primary dual trunks.

Tree Code	Feature	Suitability	Notes
S1-TA9-BT5		PRF-I	Cavity present within the remaining stump of a branch along the main trunk. 4 m above ground level, southern aspect.

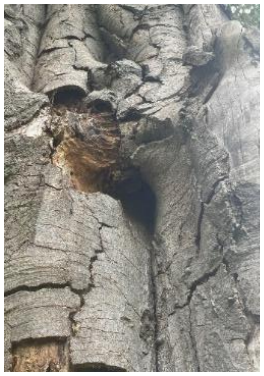
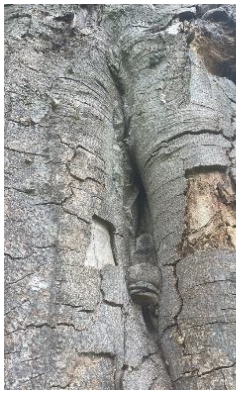
Table C-5: Section 1 – Tree climbing Inspection Results (2025 Surveys)

Tree Code	Tree Photo	Tree	Roost Suitability after PRF Close Inspection	Feature	Notes	Feature	Notes
S1 -TA1							
S1-TA1-BT11		Deceased	PRF-M	See previous photo	Bird box, no need for ladder, can be inspected from ground. Chambered dry interior. Bird nesting material with confirmed bird.		
S1-TA1-BT12		Spruce	PRF-M	See previous photo	Bird box inspected from the ground. Chambered dry interior clear from debris.	See previous photo	Bat box 2 m high on the eastern face. Inspected from the ground. Chambered dry interior clear from debris.

Tree Code	Tree Photo	Tree	Roost Suitability after PRF Close Inspection	Feature	Notes	Feature	Notes
S1-TA1-BT22		Spruce	PRF-M	See previous photo	Bat box, with a chambered dry interior clear from debris with slugs present.	See previous photo	Bat boxes at 2.5 m high, facing north. Chambered dry interior clear from debris with slugs present.
S1-TA1-BT23		Deceased	PRF-M	See previous photo	Bird box with chambered clean dry interior.		

Tree Code	Tree Photo	Tree	Roost Suitability after PRF Close Inspection	Feature	Notes	Feature	Notes
S1 -TA2							
S1-TA2-BT8		Holly tree along wooded boundary.	PRF-M	See previous photo	Dry Large cylinder like cavity extending to maximum depth of 1m, empty bird nest beside cavity entrance.		
S1-TA2-BT24		Mature ash tree with large amount of ivy growth within a dense hedgerow.	PRF-M		Dry tube-shaped cavity created from ivy and bark growth.		

Tree Code	Tree Photo	Tree	Roost Suitability after PRF Close Inspection	Feature	Notes	Feature	Notes
S1 -TA4							
S1-TA4-BT8		Large beech tree within field.	PRF-M		Damp double entranced chambered cavity. Created from the rotten centre of the trunk, can be accessed from either side of the tree.		
S1 -TA5							
S1-TA5-BT9		Beech tree with three wooden bat boxes.	PRF-M	See previous photo	Damp and chambered cavity with slugs present.	See previous photo	Damp and chambered cavity with slugs present.

Tree Code	Tree Photo	Tree	Roost Suitability after PRF Close Inspection	Feature	Notes	Feature	Notes
S1-TA5-BT17		Large beech, with large dead patches creating cavities, confirmed roost from last climb.	PRF-M Confirmed Bat Roost		Flat shaped damp cavity, fungus grown over leaving some underneath cavity, checked on second inspection.		Fungus grown out and engulfed cavity, no need for recheck. Reclassified to negligible after first visit.
					Dry peak/wedge-shaped cavity.		Confirmed Bat Roost- One likely soprano pipistrelle found in 2025 surveys. Cavity is approximately 20 cm deep travelling upwards. Three small droppings were found on grass directly beneath the roost entrance. A single bat was recorded on first visit in August 2022. Three bats visible on second visit in mid-September, likely a single male and his breeding harem, given the time of year. The bats most closely resemble soprano pipistrelle (*P. pygmaeus*) Peak/wedge shaped cavity. Smooth, dry and clean.

Tree Code	Tree Photo	Tree	Roost Suitability after PRF Close Inspection	Feature	Notes	Feature	Notes
S1-TA5-BT18		Deceased	Downgraded to negligible from PRF-M		Damp and tube shaped, completely open at the back. Reclassified to negligible after first visit.		
S1 -TA6							
S1-TA6-BT8		15 m high ash tree among dense hedges.	PRF-M		Dome shaped damp and dirty cavity.		
S1-TA6-BT21		Two adjacent beech trees.	PRF-M		Clean, dry and chambered cavity.		Clean and chambered cavity with cobwebs present.

Tree Code	Tree Photo	Tree	Roost Suitability after PRF Close Inspection	Feature	Notes	Feature	Notes
S1 -TA8							
S1-TA8-BT3		Multi-branching scouler willow, with low hanging branches forming a moderately dense low thicket to the south-west.	PRF-M		Tubed shaped damp and dirty cavity. Extends to about 15 cm deep.		Tubed shaped dry cavity with debris and cobwebs. Extends to about 50 cm deep. Deceased branch has fallen to create the cavity running downward into the willow trunk. A section of the branch sits above the entrance and provides shelter.

C.1.1.3 Static Detectors Surveys 2025

Table C-6: Static Detectors Survey Details – Section 1

Detector ID	Location Description	Location (ITM)	Dates and Nights	Approximate Times
S1 - SD01	In wooded area immediately adjacent to a roadway and waterway	612432 895001	21 August – 24 August (4 nights)	20:00 – 07:00
			10 September – 13 September (4.5 nights)	19:00 – 07:30
S1 - SD02	Located on the edge of a mixed woodland adjacent to an agricultural field	613290 895541	21 August – 25 August (5 nights)	20:30 – 06:00
			3 September – 9 September (7 nights)	20:30 – 06:00
S1 - SD04	Located on the edge of a mixed broadleaved woodland	611151 893812	27 September – 1 August (6 nights)	20:00 – 07:00
			17 September – 23 September (7 nights)	20:30 – 07:00
S1 - SD05	Located on the edge of a coniferous woodland	610954 893567	27 August – 31 August (5.3 nights)	20:00 – 07:00
			17 September – 23 September (7 nights)	19:00 – 07:00
S1 - SD06	Located within hedgerow at the end of a roadway	614520 896717	12 August – 14 August (2.8 nights)	20:30 – 10:00
			3 September – 8 September (6 nights)	20:00 – 11:00
S1 - SD07	Located within hedgerow within agricultural fields	611885 894738	21 August – 25 August (5 nights)	20:30 – 07:00
			10 September – 11 September (1.6 nights)	19:30 – 07:30
S1 - SD08	Located within hedgerow within agricultural fields	612621 894271	21 August – 25 August (5 nights)	20:00 – 07:00
			10 September – 15 September (6 nights)	19:30 – 07:00
S1 - SD09	Located within tree line within agricultural fields	615259 897894	12 August – 14 August (2.6 nights)	19:30 – 07:30
			27 August – 1 September (6 nights)	20:30 – 07:00
S1 - SD10	Located within hedgerow at the bottom of a farmyard	613835 896152	12 August – 18 August (7 nights)	21:00 – 06:00
			3 September – 4 September (1.3 nights)	19:00 – 04:00

Detector ID	Location Description	Location (ITM)	Dates and Nights	Approximate Times
S1 - SD11	Located within a treeline adjacent to agricultural fields	616206 896988	12 August – 14 August (2.8 nights)	20:30 – 06:30
			3 September – 5 September (2.7 nights)	19:45 – 07:00
S1 - SD12	Located within a treeline adjacent to roadway	616007 900011	12 August – 18 August (7 nights)	20:30 – 06:30
			27 August – 30 August (3.8 nights)	20:00 – 07:00
S1 - SD13	Located within a treeline adjacent to roadway	611027 893189	27 August – 1 September (5.4 nights)	20:00 – 07:00
			17 September – 19 September (2.2 nights)	19:00 – 08:00
S1 - SD14	Located within a treeline adjacent to roadway	613017 895372	21 August – 24 August (3.4 nights)	20:00 – 07:00
			3 September – 8 September (6 nights)	20:00 – 06:00

Table C-7: Bat Activity Results Per Static Placement – Section 1

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
S1 - SD01	21 – 24 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	571	68.4	142.8
		Myotis daubentonii (Daubenton's bat)	105	12.6	26.3
		Nyctalus leisleri (Leisler's bat)	52	6.2	13.0
		Pipistrellus pipistrellus (common pipistrelle)	42	5.0	10.5
		Myotis sp.	29	3.5	7.3
		Pipistrellus sp.	27	3.2	6.8
		Myotis natterei (Natterer's bat)	7	0.8	1.8
		Plecotus auritus (brown long-eared bat)	2	0.2	0.5
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Rhinolophus hipposideros (lesser horseshoe bat)	0	0.0	0.0
		Total	**835**	**100**	**209**
	10 – 13 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	25	65.8	5.6
		Pipistrellus pipistrellus (common pipistrelle)	7	18.4	1.6
		Myotis daubentonii (Daubenton's bat)	2	5.3	0.4
		Myotis sp.	2	5.3	0.4
		Nyctalus leisleri (Leisler's bat)	1	2.6	0.2
		Pipistrellus sp.	1	2.6	0.2
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		Rhinolophus hipposideros (lesser horseshoe bat)	0	0.0	0.0
		Total	**38**	**100**	**8**
S1 - SD02	21 August – 25 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	849	65.4	169.8
		Pipistrellus pipistrellus (common pipistrelle)	254	19.6	50.8
		Pipistrellus sp.	84	6.5	16.8
		Myotis sp.	41	3.2	8.2
		Nyctalus leisleri (Leisler's bat)	36	2.8	7.2

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		Plecotus auritus (brown long-eared bat)	29	2.2	5.8
		Myotis daubentonii (Daubenton's bat)	5	0.4	1.0
		Pipistrellus nathusii (Nathusius' pipistrelle)	1	0.1	0.2
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Rhinolophus hipposideros (lesser horseshoe bat)	0	0.0	0.0
		Total	**1299**	**100**	**260**
	3 September – 9 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	2203	67.9	314.7
		Pipistrellus pipistrellus (common pipistrelle)	876	27.0	125.1
		Myotis sp.	61	1.9	8.7
		Pipistrellus sp.	57	1.8	8.1
		Plecotus auritus (brown long-eared bat)	20	0.6	2.9
		Nyctalus leisleri (Leisler's bat)	15	0.5	2.1
		Myotis daubentonii (Daubenton's bat)	10	0.3	1.4
		Myotis natterei (Natterer's bat)	4	0.1	0.6
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Rhinolophus hipposideros (lesser horseshoe bat)	0	0.0	0.0
		Total	**3246**	**100**	**464**
S1 - SD04	27 August – 1 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	61	48.0	10.2 (Low
		Pipistrellus pipistrellus (common pipistrelle)	33	26.0	5.5
		Nyctalus leisleri (Leisler's bat)	28	22.0	4.7
		Pipistrellus sp.	5	3.9	0.8
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Myotis sp.	0	0.0	0.0
		Rhinolophus hipposideros (lesser horseshoe bat)	0	0.0	0.0
		Total	**127**	**100**	**21**
		Pipistrellus pipistrellus (common pipistrelle)	95	45.0	13.6

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
	17 September – 23 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	82	38.9	11.7
		Pipistrellus sp.	19	9.0	2.7
		Nyctalus leisleri (Leisler's bat)	12	5.7	1.7
		Myotis sp.	3	1.4	0.4
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		Rhinolophus hipposideros (lesser horseshoe bat)	0	0.0	0.0
		Total	**211**	**100**	**30**
S1 - SD05	27 August – 31 August	*Pipistrellus pipistrellus* (common pipistrelle)	588	85.0	110.9
		Pipistrellus pygmaeus (soprano pipistrelle)	50	7.2	9.4
		Pipistrellus sp.	34	4.9	6.4
		Myotis sp.	15	2.2	2.8
		Nyctalus leisleri (Leisler's bat)	5	0.7	0.9
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		Rhinolophus hipposideros (lesser horseshoe bat)	0	0.0	0.0
		Total	**692**	**100**	**131**
	17 September – 23 September	*Pipistrellus pipistrellus* (common pipistrelle)	644	79.1	92.0
		Pipistrellus pygmaeus (soprano pipistrelle)	141	17.3	20.1
		Myotis sp.	13	1.6	1.9
		Pipistrellus sp.	9	1.1	1.3
		Nyctalus leisleri (Leisler's bat)	7	0.9	1.0
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		Rhinolophus hipposideros (lesser horseshoe bat)	0	0.0	0.0
		Total	**814**	**100**	**116**
S1 - SD06	12 August – 14 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	219	44.5	78.2
		Pipistrellus pipistrellus (common pipistrelle)	202	41.1	72.1
		Pipistrellus sp.	69	14.0	24.6
		Myotis sp.	2	0.4	0.7
		Nyctalus leisleri (Leisler's bat)	0	0.0	0.0
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**492**	**100**	**176**
	3 September – 8 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	1858	57.6	309.7
		Pipistrellus pipistrellus (common pipistrelle)	876	27.2	146.0
		Pipistrellus sp.	260	8.1	43.3
		Nyctalus leisleri (Leisler's bat)	211	6.5	35.2
		Myotis sp.	14	0.4	2.3
		Plecotus auritus (brown long-eared bat)	6	0.2	1.0
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**3225**	**100**	**538**
S1 - SD07	21 August – 25 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	260	44.2	52.0
		Nyctalus leisleri (Leisler's bat)	143	24.3	28.6
		Pipistrellus pipistrellus (common pipistrelle)	106	18.0	21.2

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		Myotis sp.	45	7.7	9.0
		Pipistrellus sp.	31	5.3	6.2
		Plecotus auritus (brown long-eared bat)	2	0.3	0.4
		Pipistrellus nathusii (Nathusius' pipistrelle)	1	0.2	0.2
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**588**	**100**	**118**
	10 September – 11 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	42	73.7	26.3
		Nyctalus leisleri (Leisler's bat)	9	15.8	5.6
		Myotis sp.	4	7.0	2.5
		Pipistrellus pipistrellus (common pipistrelle)	1	1.8	0.6
		Pipistrellus sp.	1	1.8	0.6
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**57**	**100**	**36**
S1 - SD08	21 August – 25 August	*Pipistrellus pipistrellus* (common pipistrelle)	4293	76.9	858.6
		Pipistrellus pygmaeus (soprano pipistrelle)	780	14.0	156.0
		Nyctalus leisleri (Leisler's bat)	351	6.3	70.2
		Pipistrellus sp.	138	2.5	27.6
		Myotis sp.	17	0.3	3.4
		Pipistrellus nathusii (Nathusius' pipistrelle)	1	0.0	0.2
		Plecotus auritus (brown long-eared bat)	1	0.0	0.2
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		Total	**5581**	**100**	**1116**
	10 September – 15 September	*Pipistrellus pipistrellus* (common pipistrelle)	4928	71.6	821.3
		Pipistrellus pygmaeus (soprano pipistrelle)	1241	18.0	206.8
		Pipistrellus sp.	634	9.2	105.7
		Nyctalus leisleri (Leisler's bat)	76	1.1	12.7
		Pipistrellus nathusii (Nathusius' pipistrelle)	1	0.0	0.2
		Myotis sp.	1	0.0	0.2
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**6881**	**100**	**1147**
S1 - SD09	12 August – 14 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	226	44.8	86.9
		Pipistrellus pipistrellus (common pipistrelle)	209	41.5	80.4
		Pipistrellus sp.	65	12.9	25.0
		Nyctalus leisleri (Leisler's bat)	2	0.4	0.8
		Myotis sp.	2	0.4	0.8
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**504**	**100**	**194**
	27 August – 1 September	*Pipistrellus pipistrellus* (common pipistrelle)	343	54.1	57.2
		Pipistrellus pygmaeus (soprano pipistrelle)	147	23.2	24.5
		Pipistrellus sp.	131	20.7	21.8
		Nyctalus leisleri (Leisler's bat)	13	2.1	2.2
		Myotis sp.	0	0.0	0.0
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**634**	**100**	**106**
S1 - SD10	12 August – 18 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	632	59.3	90.3
		Pipistrellus sp.	160	15.0	22.9
		Pipistrellus pipistrellus (common pipistrelle)	146	13.7	20.9
		Myotis sp.	74	6.9	10.6
		Nyctalus leisleri (Leisler's bat)	52	4.9	7.4
		Plecotus auritus (brown long-eared bat)	1	0.1	0.1
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**1065**	**100**	**152**
	3 September – 4 September	*Pipistrellus pipistrellus* (common pipistrelle)	240	77.4	184.6
		Pipistrellus sp.	50	16.1	38.5
		Pipistrellus pygmaeus (soprano pipistrelle)	20	6.5	15.4
		Nyctalus leisleri (Leisler's bat)	0	0.0	0.0
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Myotis sp.	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**310**	**100**	**238**
S1 - SD11	12 August – 14 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	226	43.8	80.7
		Pipistrellus pipistrellus (common pipistrelle)	212	41.1	75.7

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		Pipistrellus sp.	75	14.5	26.8
		Myotis sp.	2	0.4	0.7
		Nyctalus leisleri (Leisler's bat)	1	0.2	0.4
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**516**	**100**	**184**
	3 September – 5 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	89	42.4	33.0
		Pipistrellus pipistrellus (common pipistrelle)	77	36.7	28.5
		Pipistrellus sp.	44	21.0	16.3
		Nyctalus leisleri (Leisler's bat)	0	0.0	0.0
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Myotis sp.	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**210**	**100**	**78**
S1 - SD12	12 August – 18 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	1276	69.6	182.3
		Pipistrellus sp.	277	15.1	39.6
		Pipistrellus pipistrellus (common pipistrelle)	155	8.5	22.1
		Nyctalus leisleri (Leisler's bat)	120	6.5	17.1
		Myotis sp.	6	0.3	0.9
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**1834**	**100**	**262**
	27 August – 30 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	2706	53.2	712.1
		Pipistrellus pipistrellus (common pipistrelle)	2023	39.8	532.4
		Pipistrellus sp.	350	6.9	92.1
		Nyctalus leisleri (Leisler's bat)	6	0.1	1.6
		Myotis sp.	4	0.1	1.1
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**5089**	**100**	**1339**
S1 - SD13	27 August – 1 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	751	65.7	139.1
		Pipistrellus pipistrellus (common pipistrelle)	300	26.2	55.6
		Pipistrellus sp.	61	5.3	11.3
		Nyctalus leisleri (Leisler's bat)	25	2.2	4.6
		Myotis sp.	6	0.5	1.1
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**1143**	**100**	**212**
	17 September – 19 September	*Pipistrellus pipistrellus* (common pipistrelle)	739	47.2	335.9
		Pipistrellus pygmaeus (soprano pipistrelle)	683	43.6	310.5
		Pipistrellus sp.	141	9.0	64.1
		Nyctalus leisleri (Leisler's bat)	4	0.3	1.8
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Myotis sp.	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**1567**	**100**	**712**
S1 - SD14	21 August – 24 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	6501	89.0	1912.1
		Pipistrellus sp.	625	8.6	183.8
		Pipistrellus pipistrellus (common pipistrelle)	126	1.7	37.1
		Nyctalus leisleri (Leisler's bat)	33	0.5	9.7
		Myotis sp.	18	0.2	5.3
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**7303**	**100**	**2148**
	3 September – 8 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	3790	85.7	631.7
		Pipistrellus sp.	363	8.2	60.5
		Pipistrellus pipistrellus (common pipistrelle)	214	4.8	35.7
		Nyctalus leisleri (Leisler's bat)	30	0.7	5.0
		Myotis sp.	25	0.6	4.2
		Plecotus auritus (brown long-eared bat)	2	0.0	0.3
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**4424**	**100**	**737**

C.1.2 Pre-2022 Surveys

C.1.2.1 Bat Roost Surveys – Structures

Table C-8: Section 1 – Structures Survey Details (Pre-2022 Surveys)

Structure ID & Description	Location/ (ITM)	Survey Type	Date	Time	Notes
S1B1 - River Finn Bridge	612424 895034 Outside CPO boundary	Static Detector SD1	31 July 2019	21.00 – 06.00	
		Static Detector SD1	29 Aug 2020	20.30 – 06.30	
		Internal	03 March 2021	N/A	No Inspection – concrete structure
S1B2 – Stone farm buildings	615772 898391 Outside CPO boundary	Dawn	18 Sept 2019	05:40 – 07:20	
		Dusk	02 July 2020	21:40 – 23:40	
		Dawn	11 July 2020	03:30 – 05:50	
		Internal	03 March 2021	N/A	
S1B3 – Stone farm buildings	612081 894672 Outside CPO boundary	Static Detector SD3	16 Sept 2019	19.00 – 07.00	
		Dusk	01 July 2020	21:40 – 23:40	
		Dusk	10 July 2020	21:45 – 23:45	
		Internal	03 March 2021	N/A	
S1B4 – Farm buildings and unoccupied old house	612578 894191 Outside CPO boundary	Static Detector SD8	01 Oct 2019	19.00 – 07.30	
		Dusk	01 July 2020	21:40 – 23:40	
		Dawn	10 July 2020	03:40 – 05:25	
		Internal	03 March 2021	N/A	Internal inspection but no access to loft
S1B5 – Stone barn and farm buildings	613945 896222 Outside CPO boundary	Static Detector SD10	02 Oct 2019	19.00 – 08.00	
		Dusk	02 July 2020	21:40 – 23:40	
		Dawn	11 July 2020	03:30 – 05:50	
		Internal	03 March 2021	N/A	
S1B6 - Stone farm buildings with galvanise roofing	615485 898050 Outside CPO boundary	Static Detector SD9	07 Oct 2019	19.00 – 08.00	
		Static Detector SD9	31 Aug 2020	20.30 – 06.40	
		Internal	03 March 2021	N/A	No access for internal inspection
S1B7 – Croghroe River Bridge	615976 900024	Static Detector SD12	30 Aug 2020	20.30 – 06.40	
		Internal	03 March 2021	N/A	No Internal Inspection – concrete structure

Structure ID & Description	Location/ (ITM)	Survey Type	Date	Time	Notes
S1B8 – Derelict farmhouse	610276 892728 Outside CPO boundary	Static Detector SD14	17 May 2021	21.30 – 05.30	
		Dawn	18 May 2021	03:50 – 05:30	
		Dusk	18 May 2021	21:50 – 22:40	
		Internal	03 March 2021	N/A	No access for internal inspection

Table C-9: Section 1 – Night-time Structures Survey Results (Pre-2022 Surveys)

Code	Townland	Description	Survey Type	Date & Time	No of Surveyors[1]	Weather Conditions	Results
S1B2	Teevickmoy	Stone Farm Buildings	Dawn	18.09.19 5.40hr to 7.20hr	2	No cloud cover, 4–5'c, cold & clear	2019: Suspected CP warbling heard from within largest building. CP & BLE foraging at the rear of sheds and front yard.
			Dusk	02.07.20 21.40hr – 23.40hr			2020: No species were recorded emerging or re-entering the building during dusk and dawn surveys.
			Dawn	11.07.20 3.30hr to 5.50hr		Dry, calm, wind direction west-south-west, temp°11	
S1B3	Cappry	Stone farm buildings and outhouses	Static Detector	16.09.19 19.30hr to 7.00hr	NA		2019: Analysis of acoustic recordings would indicate a Common Pipistrelle roost at this location. Species recorded included: LEIS, CP, SP, MYO sp.
			Dusk	01.07.20 21.40hr – 23.40hr			2020: No species were recorded emerging or re-entering the building during dusk surveys. CP, SP and Lies recorded foraging in the area.
			Dusk	10.07.20 21.45hr to 23.45hr		Dry, light wind, direction west-north-west, temp°4c	
S1B4	Cappry (Graham)	Farm buildings and unoccupied old house	Static Detector	01.10.19 19.00hr to 8.00hr	NA		2019: Species identified included: Leis, CP, SP, MYO sp.
			Dusk	01.07.20 21.40hr – 23.40hr	2		2020: No species were recorded emerging or re-entering the building during dusk and dawn surveys.
			Dawn	10.07.20 03.40hr to 05.25hr	2	Dry, light wind, direction west-north-west, temp°4c	
S1B5	Drumboe Upper	Old stone barn and associated farm buildings	Static Detector	02.10.19 19.00hr to 8.00hr	NA		2019:.Species recorded included: Leis, CP, SP, MYO sp, BLE
			Dusk	02.07.20 21.40hr – 23.40hr	2		2020: A single Leisler's bat noted returning during re-entry survey. CP, SP and Lies recorded foraging/commuting in the area.
			Dawn	11.07.20 3.30hr to 5.50hr	2	Dry, calm, wind direction west-south-west, temp°11	

[1] Dawn/Dusk Surveys 2019 – RPS, Dawn/Dusk Surveys 2020 - Nelson Ecology Ltd.

Code	Townland	Description	Survey Type	Date & Time	No of Surveyors[1]	Weather Conditions	Results
S1B6	Teevickmoy	A series of stone farm buildings with galvanise roofing.	Static Detector	07.10.19 19.00hr to 08.00hr	NA		2019: Species recorded included: CP
			Static Detector	31.08.20 20.00hr to 7.00hr	NA		2020: Species recorded included: LEIS, CP, BLE, MYO and moderate SP activity.
S1B8	Goland	Old derelict farmhouse and associated sheds	Dawn Dusk	18.05.21 03.50hr to 05.30hr 21.50hr to 22.40hr	2	Dry, cold 4°c (dawn). Dry, clear cloud cover 10–20%, Temp 9°c (dusk).	2021: No activity recorded at dawn. Dusk, two SP passes. One bat (unidentified) potential emergence. Access restricted, survey had to take place from roadside.

Table C-10: Section 1 – Structures Identified with Potential to Support Roosting Bats (Pre-2022 Surveys)

ID	Coordinates (ITM)	Description	Internal Inspection – March 2021[2]	Structure Images
S1B1	612424 895034	Bridge at River Finn (Mill Cottage)	Concrete structure, no potential for bat roosting opportunity. Low suitability for roosting bats.	
S1B2	615772 898391	Stone farm buildings with galvanise roofing located at the end of a farm track; the buildings are surrounded by mature trees to the rear. The gable end to the north-west supports a partial fallen in building with dense ivy growth. Surrounding habitat of improved agricultural grassland. Located within the townland of Teevickmoy.	Internal inspection of old stone barn/hay shed. The stonework on the gable has potential to support bats, however no evidence of activity. The roof is galvanised with wooden rafters. The walls/stonework of this building holds Moderate suitability for roosting bats as it contains numerous cracks and crevices. The roof has low potential to support roosting bats.	 

[2] Internal inspection of buildings/structures was conducted where possible, access permission and health and safety depending, during March 2021.

ID	Coordinates (ITM)	Description	Internal Inspection – March 2021[2]	Structure Images
S1B3	612081 894672	A series of stone farm buildings and outhouses in a farmyard adjacent to farmhouse. The main farm building has a slate roof, loft and wooden rafters. Surrounding habitat consists of a network of hedgerows and treelines bordering wet and pastoral grassland, in the townland of Cappry. Bats noted using building by landowner.	Roost previously identified at this location. Hay shed/barn with loft. Slate roof and stone barn. Old, not fresh droppings identified on the loft floor. High potential to be a support roost. High suitability for roosting bats, supporting numerous cracks and crevices with bat activity evidence also present.	 
S1B4	612578 894191	Farm buildings and an old unlived in house with slate roof located at the end of a lane with one-off residential houses. Located on the periphery of Ballybofey. The surrounding lands consist of agricultural grassland, broken hedgerows and urban buildings.	An old stone barn with loft with potential, small shed on the bottom with limited roost potential. No access to the loft. The roof is slate and wooden rafters. Additional derelict cottage adjoining sheds. Low to Moderate Suitability for roosting bats.	 
S1B5	613945 896222	Farmhouse, associated sheds and early 1900s barn off local road, located in Drumboe Upper. Combination of slate and galvanise roofing, currently in use.	An old stone barn with a loft and numerous sheds beneath. Bat activity was previously noted here during 2020 dawn/dusk survey. An internal inspection of the loft was undertaken, no evidence of bat activity was noted. The roof is galvanised. Moderate to high suitability for roosting bats as the structure supports numerous cracks and crevices.	 

ID	Coordinates (ITM)	Description	Internal Inspection – March 2021[2]	Structure Images
S1B6	615485 898050	A series of stone farm buildings with galvanise roofing. Surrounding habitat of pastoral grassland, low maintained hedgerow and broken treelines. Located within the townland of Teevikmoy.	No access for external/internal inspection.	
S1B7	615976 900024	Croghroe River Bridge consists of pre-cast concrete structure with limited ability to support bats. However, mature riparian treeline provides excellent foraging and commuting habitat.	Concrete structure, no potential for bat roosting opportunity. Low suitability for roosting bats.	
S1B8	610276 892728	An old derelict farmhouse located on the N15, supporting an intact slate roof. Numerous out buildings are also present with some partially boarded up. Active farmyard sheds to the rear.	External inspection only of derelict old house and adjoining outhouses. Limited access to farmyard. House supports a slate roof. Adjoining sheds supporting galvanise roofing and stonewalls. No internal access to survey the building. Moderate to high suitability for roosting bats as the structures support numerous cracks and crevices.	 

C.1.2.2 Static Detectors Surveys

Table C-11: Section 1 – Static Detectors Survey Details (Pre-2022 Surveys)

Detector ID	Structure Code (if applicable) & Description	Location (ITM)	Date	Time
SD1	S1B1 – River Finn Bridge	612424 895034	31 July 2019	21:00 – 06:00
			29 Aug 2020	20:30 – 06:30
SD2	Within mixed broadleaved woodland	613321 895614	01 Aug 2019	21:00 – 06:00
			31 Aug 2020	20:30 – 06:40
SD3	S1B3 – Stone farm buildings	612081 894672	16 Sept 2019	19:00 – 07:00
SD4	Edge of broadleaf woodland	611092 893854	17 Sept 2019	19:45 – 07:10
SD5	Edge of conifer woodland	610954 893567	17 Sept 2019	No info*
			29 Aug 2020	20:30 – 06:30
SD6	Hedgerow adjacent to agricultural grassland	614513 896715	18 Sept 2019	19:40 – 07:10
SD7	Treeline/hedgerow along a farm track	611859 894739	19 Sept 2019	19:30 – 07:30
			01 Sept 2020	20:30 – 06:40
SD8	S1B4 – Farm buildings and unoccupied old house	612578 894191	01 Oct 2019	19:00 – 07:30
SD9	S1B6 – Stone farm buildings with galvanise roofing	615485 898050	07 Oct 2019	19:00 – 08:00
			31 Aug 2020	20:30 – 06:40
SD10	S1B5 – Stone barn and farm buildings	613945 896222	02 Oct 2019	19:00 – 08:00
SD11	Tircallan woods	615976 900024	30 Aug 2020	20:30 – 06:40
SD12	S1B7 – Croghroe River Bridge	612898 895495	30 Aug 2020	20:30 – 06:40
SD13	Treeline bordering residential garden	612898 895495	17 May 2021	21:30 – 05:30
SD14	S1B8 – Derelict farmhouse	610271 892746	17 May 2021	21:30 – 05:30

*SD5 did not work in 2019 when it was deployed, hence no information

Table C-12: Section 1 – Static Detector Survey Results (Pre-2022 Surveys)

Static Detector	Survey Dates 2019- 2021	Unit	Townland	Habitat Description	Bat Species (Activity Level) 2019*	Bat Species (Activity Level) 2020*
SD1	31.07.19 21.00hr to 06.00hr	Song Meter 2M+	Ironworks (Mill Cottage Rd)	At River Finn Bridge	CP (Low), SP (Moderate) MYO (Moderate)	CP (Low), SP (Moderate) MYO (Low)
	29.08.20 20.30hr to 06.30hr	Song Meter 2M+				
SD2	01.08.19 21.00hr to 06.00hr	Song Meter 2M+	Drumboe Lower	Within woodland (Mixed broadleaf woodland).	LEIS (Low) CP (Low), SP (Moderate)	SP (Low) MYO (Low)
	31.08.20 20.30hr to 06.40hr	Song Meter 2M+				
SD3	16.09.19 19.00hr to 07.00hr	Song Meter 2M+	Cappry	A series of stone farm buildings and outhouses in farmyard adjacent to farmhouse. Surrounding habitat consists of a network of hedgerows and treelines bordering wet and pastoral grassland.	LEIS (Low) CP (Moderate) SP (Low) MYO (Low)	NA
SD4	17.09.19 19.45hr to 07.10hr	Song Meter SM4BAT	Mullanchose	Edge of woodland (Broadleaf).	LEIS (Low) CP (Low) SP (Low) BLE (Low) MYO (Low)	NA
SD5	17.09.19	Song Meter 2M+	Mullanchose	Edge of conifer woodland	Recorder deployed at SD5 in 2019 however failed to record	LEIS (Low) CP (Moderate) SP (Moderate) MYO (Low)
	29.08.20 20.30hr to 6.30hr	Song Meter SM4BAT				
SD6	18.09.19 19.40hr to 07.10hr	Song Meter SM4BAT	Dunwiley	Low hedgerow adjoining improved agricultural field.	LEIS(Low) CP (Low) SP (Low) BLE (Low) MYO(Low)	NA
SD7	19.09.19 19.30hr to 07.30hr	Song Meter SM4BAT	Cappry	Treeline/ hedgerow along a farm track.	LEIS(Low) CP (Low)	LEIS(Low) CP (Low)

Static Detector	Survey Dates 2019- 2021	Unit	Townland	Habitat Description	Bat Species (Activity Level) 2019*	Bat Species (Activity Level) 2020*
	01.09.20 20.30hr to 06.40hr	Song Meter 2M+			SP (Low) BLE (Low) MYO(Low)	SP (Low) BLE (Low) MYO(Low)
SD8	01.10.19 19.00hr to 07.30hr	Song Meter SM4BAT	Cappry (Graham)	Farm buildings and an unoccupied house with slate roof, surrounding area consisting of agricultural grassland, broken hedgerows and urban buildings.	LEIS (Low) CP (Low) SP (Low) MYO(Low)	NA
SD9	07.10.19 19.00hr to 08.00hr	Song Meter SM4BAT	Teevikmoy.	A series of stone farm buildings with galvanise roofing. Surrounding habitat of pastoral grassland, low maintained hedgerow and broken treelines	CP (Low)	LEIS(Low) CP (Low) SP (Moderate) BLE (Low) MYO(Low)
	31.08.20 20.30hr to 6.40hr	Song Meter SM4BAT				
SD10	02.10.19 19.00hr to 08.00hr	Song Meter SM4BAT	Drumboe Upper	Farmhouse and associated sheds off local road. Combination of slate and galvanise roofing, currently in use.	LEIS(Low) CP(Low) SP(Low) BLE(Low) MYO (Low)	NA
SD11	30.08.20 20.30hr to 6.40hr	Song Meter SM4BAT	Tircallan	Tirecallan Woods	NA	LIES(Low) CP(Low) SP (Moderate) BLE(Low) MYO(Low)
SD12	30.08.20 20.30hr to 6.40hr	Song Meter 2M+	Magheracorran	Croghroe River (IE_NW_01C050400) – Callan Bridge	NA	LEIS(Low) CP(Low) SP (Low) BLE(Low) MYO(Low)
SD13	17.05.21 21.30hr to 05.30hr	Song Meter SM4BAT	Drumboe Lower	At treeline along local road bordering the bottom garden of house informed to be a PBR at public consultation.	NA	CP(Low) SP(Low) LEIS(Low) MYO(Low)

Static Detector	Survey Dates 2019- 2021	Unit	Townland	Habitat Description	Bat Species (Activity Level) 2019*	Bat Species (Activity Level) 2020*
SD14	17.05.21 21.30hr to 05.30hr	Song Meter 2M+	Goland (Glenmore)	Old farmhouse and sheds on main N15. Code S1B8.	NA	CP(Low) SP(Low) LEIS(Low)

*SP – soprano pipistrelle; CP – common pipistrelle; Leis – Leisler's bat; BLE – brown long-eared bat; NP – Nathusius' pipistrelle; NAT – Natterer's bat; DAUB – Daubenton's bat.; MYO – *Myotis* sp.

C.1.2.3 Transect Surveys

Table C-13: Section 1 – Transect Survey Details (Pre-2022 Surveys)

Transect No.	Location	Date	Time
1	Teevickmoy	18 Sept 2019	05:23 – 05:40
		07 July 2020	01:00 – 01:16
2	Teevickmoy	19 Sept 2019	23:40 – 00:05
		08 July 2020	01:30 – 01:52
3	Drumboe Upper	18 Sept 2019	23:37 – 00:27
		08 July 2020	23:00 – 23:44
4	Magherapaste	18 Sept 2019	23:00 – 23:15
		08 July 2020	00:17 – 00:55
5	Ironworks (Glenmore), Drumboe Lower	18 Sept 2019	21:06 – 22:05
		07 July 2020	01:23 – 01:53
6	Cappry	18 Sept 2019	22:40 – 23:54
		07 July 2020	00:38 – 01:10
7	Ballybofey	18 Sept 2019	20:33 – 20:46
		07 July 2020	23:37 – 23:55
8	Cappry (Graham)	18 Sept 2019	20:11 – 20:14
		07 July 2020	22:00 – 23:14
9	Tircallan Woods	19 Sept 2019	21:13 – 22:10
10	Castlebane	19 Sept 2019	20:40 – 21:01
11	Treanamullin	19 Sept 2019	20:08 – 20:24
12	Holywell Woods	18 Sept 2019	22:25 – 22:40
13	Backlees/Dunwiley	19 Sept 2019	00:41 – 00:46
14	Dooish Townland	17 Sept 2019	21:53 – 22:04
15	Lisnaree	19 Sept 2019	22:53 – 23:16
16	N15, Goland	17 Sept 2019	21:20 – 21:22
17	Cappry R252	17 Sept 2019	21:07 – 21:11

Transect No.	Location	Date	Time
18	Lisnaree N13	17 Sept 2019	20:28 – 20:36

Table C-14: Section 1 – Transect Survey Results[3] (Pre-2022 Surveys)

Transect No.	Location	Habitat Description	Activity	2019 Species*	No. Passes	2020 Species*	No. Passes
1	Teevickmoy	Improved agricultural grassland, bound to the west by a conifer woodland, and scattered broken treeline/hedgerows. Mature tree clump at farmyard. Note: 2020 transect surveyed access track and not fields.	Foraging	CP	3	SP, CP	3
2	Teevickmoy	Conifer woodland, local road access with low maintained hedgerow	Foraging	SP	5	LEIS, SP	9
3	Drumboe Upper	Improved grassland with mature hedge/treelines, and local road with low maintained hedgerows and scattered trees.	Foraging/ Commuting	NAT, NP, CP, SP	9	CP, SP, DAUB	5
4	Magherapaste	Low maintained hedgerows and open agricultural land.	Foraging/ Commuting	SP	4	CP, SP	4
5	Ironworks (Glenmore), Drumboe Lower	Improved agricultural fields, with semi-mature treeline and hedgerow network to the north of the River Finn. Woodland area and access track, agricultural field and riparian vegetation and berm associated with the River Finn.	Foraging/ Commuting	SP, BLE, LEIS	13	CP, SP	3
6	Cappry	Improved and wet grassland bound by mixed hedgerow and treelines, roadside verges support low maintained hedges with scatter semi-mature trees.	Commuting	SP, CP. LEIS	4	CP, SP, DAUB	6
7	Ballybofey	Rough farm track with semi-mature treeline.	Foraging/ Commuting	SP	1	No Bats	0
8	Cappry (Graham)	Access road to residential house and associated farmyard.	Commuting	CP	2	SP	6
9	Tircallan Woods	Tircallan Woodlands and adjoining agricultural grasslands, bound by hedgerows.	Foraging/ Commuting	CP, SP, NP, LEIS	15	Not Surveyed	
10	Castlebane	Agricultural grassland bordered by hedgerow/treelines	Foraging/ Commuting	SP, CP, BLE, LEIS, NP	8	Not Surveyed	
11	Treanamullin	Agricultural grassland with low hedgerows, and a semi-mature treeline to the east of the land parcel and associated sheds	Foraging	SP	4	Not Surveyed	
12	Holywell Woods	Mixed Broadleaved Woodland	Foraging	SP, BLE	5	Not Surveyed	
13	Backlees /Dunwiley	Open agricultural landscape with local road bordered by hedgerows and scattered semi-mature trees	Commuting	CP, SP	2	Not Surveyed	

[3] Transects 1 to 15 were walked and transects 16 to 18 were driven.

Transect No.	Location	Habitat Description	Activity	2019 Species*	No. Passes	2020 Species*	No. Passes
14	Dooish Townland	Local by-road with residential housing, road partially lined with hedgerow and treeline, wider surrounding habitat of wet grassland and scrub development to the south-west.	Commuting/ Foraging	SP, LEIS, BLE	11	Not Surveyed	
15	Lisnaree	Agricultural grassland with hedgerow/treeline boundaries	Foraging	LEIS, SP, CP	4	Not Surveyed	
16	N15, Goland/	N15 national road, open agricultural fields with limited to absent hedgerow/treeline boundaries.	Commuting	SP	1	Not Surveyed	
17	Cappry R252	Regional road supporting low maintained hedges with scatter semi-mature trees.	None	NA	NA	Not Surveyed	
18	Lisnaree N13	N13 bordered by agricultural grassland with hedgerow/treeline boundaries	None	NA	NA	Not Surveyed	

*SP – soprano pipistrelle; CP – common pipistrelle; Leis – Leisler's bat; BLE – brown long-eared bat; NP – Nathusius' pipistrelle; NAT – Natterer's bat; DAUB – Daubenton's bat.

C.2 Section 2

C.2.1 2025 Surveys

C.2.1.1 Bat Roost Surveys – Structures

Table C-15: Section 2 – Structures Bat Roost Assessment (2025 Surveys)

ID	Coordinates (ITM)	Overall P hoto	Description	Structure Roost Suitability	Internal Access	Internal Photo	Emergence Survey
S2 - B09a	618687 911980		Large building being used as a mechanic. Large tent and metal walls on the side potentially new since last survey and potentially blocking previously identified features. It consists of block walls, some conifers nearby but mostly surrounded by roads, constant traffic, composed of flat roofs or metal slanted roofs.	Low	Yes. Internal sections of the east side of the building were accessible		Yes: 10/09/2025 and 23/09/2025 – No emergence recorded.
S2 - B09b	618711 911919		Flat roofed block building.	Moderate	Yes		Yes: 10/09/2025 and 23/09/2025 – No emergence recorded.

ID	Coordinates (ITM)	Overall P hoto	Description	Structure Roost Suitability	Internal Access	Internal Photo	Emergence Survey
S2 - B10a	619523 908621		Bungalow, plastic soffit and fascia, large coniferous hedgerow to the north and south of the property, proximity to busy N13 road.	Low	No		Yes: 26/08/2025 – No emergence recorded.
S2 - B10b	619534 908611		Small shed with attached porch, metal roof with no openings, all roof to wall connections appears to be sealed with sealant.	Low	No		No – Outside CPO
S2 - B11a	619318 911242		Large commercial metal building, 2.5 m of block wall with metal wall on top of this and metal roof, good condition with no apparent entrance points. B11a, B11b and B11c are all similar buildings within the same complex.	Negligible	N		No

ID	Coordinates (ITM)	Overall P hoto	Description	Structure Roost Suitability	Internal Access	Internal Photo	Emergence Survey
S2 - B11b	619354 911230		Large commercial building similar to B11a, used as gym, car garage, and day care. Metal roof. Good condition.	Negligible	N		No
S2 - B11c	619392 911216		As with B11a and B11b, large metal building in good condition. Used by value storage company.	Negligible	N		No
S2 - B12a	619544 908721		Two story house, plastic soffit, all roof tiles in place, 6 Sikta spruce south of structure, open other directions, beside busy N13 road.	Negligible	N		No

ID	Coordinates (ITM)	Overall P hoto	Description	Structure Roost Suitability	Internal Access	Internal Photo	Emergence Survey
S2 - B12b	619534 908728		Small shed north of house, plastic soffit, all roof tiles in place.	Negligible	N		No
S2 - B12c	619540 908704		Small out shed south-east of house, metal roof, wood storage shed, wooden rafters inside.	Low	Yes - Granted access by owner, no roost features present.		Yes: 26/08/2025 – No emergence recorded.
S2 - B13	619765 911095		Large metal structure, concrete walls on lower half, metal roof, agricultural land surrounding structure with intermittent hedgerows. Some features recorded in 2022 have since been covered due to structural repairs.	Moderate	No		Yes: 14/08/2025 and 09/09/2025 – No emergence recorded.

ID	Coordinates (ITM)	Overall P hoto	Description	Structure Roost Suitability	Internal Access	Internal Photo	Emergence Survey
S2 - B14a	620084 910675		Two story house, plastic soffit, all roof tiles appear in place, two chimneys, surrounded by coniferous shrubbery.	Low	No		No
S2 - B14b	620105 910678		Small shed west of house, coniferous shrubs in close proximity.	Moderate	No		No
S2 - B16a	620150 910692		Bungalow, wooden soffit with sealant around all edges, any gap at roof tile endings appears to be filled with cement, coniferous shrubbery north-west of house.	Negligible	No		No

ID	Coordinates (ITM)	Overall P hoto	Description	Structure Roost Suitability	Internal Access	Internal Photo	Emergence Survey
S2 - B16B	620176 910719		Small metal shed located west of B16a. No roost features identified.	Negligible	No		No
S2 - B16C /D	620165 910694		Two small metal sheds located east of B16a. No roost features identified.	Negligible	No		No
S2 - B18a	620123 910692		Owned by same individual as B16, wooden facia and soffit, all fixtures appear to be sealed or filled with cement, coniferous vegetation north-west of property.	Negligible	N		No

ID	Coordinates (ITM)	Overall P hoto	Description	Structure Roost Suitability	Internal Access	Internal Photo	Emergence Survey
S2 - B18b	620140 910693		Wooden fascia and soffit, coniferous shrubs to north-west, metal roof, sealant applied between roof and wall joint.	low	N		Yes: 21/08/2025 – No emergence recorded.
S2 - B18c	620135 910685		Small wooden tool shed. Easily accessible with oldbut it would not offer adequate shelter for roosting.	Negligible	Yes		No
S2 - B18d	620128 910696		Small wooden shed with access via door. Located north of B18a. No features identified.	Low	No		Yes: 21/08/2025 – No emergence recorded.

ID	Coordinates (ITM)	Overall P hoto	Description	Structure Roost Suitability	Internal Access	Internal Photo	Emergence Survey
S2 - B18e	620121 910681		Wooden shed located south of B18a. No clear entrance or features identified.	low	No		No
S2 - B18f	620128 910682		Small metal shed with no clear access routes. Located south of B18b.	Negligible	No		No
S2 - B20a	622361 911303		Note that this was surveyed in previous years with the ID, S2B6. Uninhabited bungalow, wooden fascia and soffit showing signs of decay, group of alder trees to the west, larger ash and mixed woodland to south-west. Sits slightly above farmyard, in which there are two smaller sheds (B20b and B20c), as well as a larger shed not within the CPO.	Moderate	No		Yes: 18/08/2025 and 02/09/2025 – No emergence recorded.

ID	Coordinates (ITM)	Overall P hoto	Description	Structure Roost Suitability	Internal Access	Internal Photo	Emergence Survey
S2 - B20b	622394 911289		Deteriorating shed, many large entrance points across structure, metal roof, mixed woodland directly behind (south-west), south-east gable end covered in ivy which has enveloped much of the internal structure also.	Moderate	Yes – Wooden rafters inside, abundant ivy growth inside of building, some cavities between wall and roof		Yes: 19/08/2025 – No emergence recorded. 02/09/2025 – One emergence recorded, a common pipistrelle (*Pipistrellus pipistrellus*) 17/09/2025 – No emergence recorded
S2 - B20c	586442 6089953		Large metal and concrete shed located north-east of B20a.	Low	Yes – No internal photo taken.		No
S2 - B22	619510 910716		Unused building with metal garage door structure on front face, wooden soffits on remainder of building, mixed woodland north-west of building, with busy Dry Arch roundabout to the south of structure.	Low	No		Yes: 20/08/2025 – No emergence recorded.

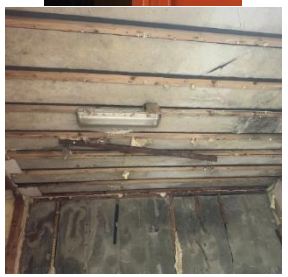
ID	Coordinates (ITM)	Overall P hoto	Description	Structure Roost Suitability	Internal Access	Internal Photo	Emergence Survey
S2 - B24a	619516 910757		Two story house, plastic fascia and soffit, coniferous to the west, alder to the east, mixed woodland to the south, alder to the north, swallow nests present on house.	Negligible	No		No
S2 - B24b	619511 910767		Small block wall garage, slate roof, conifer trees overhanging structure, flat ceiling inside fully sealed.	Negligible	No		No
S2 - B25	622193 911434		Bungalow with slate tiles roof. Abandoned and overgrown making it inaccessible.	Low	No		No

ID	Coordinates (ITM)	Overall P hoto	Description	Structure Roost Suitability	Internal Access	Internal Photo	Emergence Survey
S2 - B26	620033 910833		Old barn. Stone walls and tin sheet roof over timber (part collapsed) have a floor with basement below but completely rotten building could not be entered safely though viewed from the doors. No voids some dense ivy but not thick stemmed. Only potential are minor cracks in the stone and brick around windows and eaves.	Low	No		Yes: 20/08/2025 – No emergence recorded.
S2 - B27	619692 909457		Concrete block walls steel sheet roof wooden rafters. No voids or locations where bats could roost. Ivy covering at end but not for roosting just filling gaps and over roof.	Negligible	Yes		No
S2 - B28	620057 910490		Concrete block walls with timber joists and tin sheet roof (part collapsed). Very minor crack around joists that were full of cobwebs so no real roosting opportunities.	Negligible	Yes		No

Table C-16: Section 2 – Structure Features Suitable for Bat Entrance (2025 Surveys)

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
S2 - B09a		PRF-I	Gap in wall for gutter, 4 m above ground, north-east facing.		PRF-I	Gap in soffit, 4 m above ground, north facing, flat roofed section of the building.
		PRF-I	Opening for drainpipe, 3 m above ground, west facing.		PRF-I	Gap between wall and facia, flat roof internally, 4 m above ground, north facing.
		PRF-I	Gap between walls, 8 m above ground, north facing.		PRF-I	Gap between roof and wall, 5 m above ground, east facing.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	Gap between roof and wall, 5 m above ground, east facing.		PRF-I	Gap underneath galvanised metal roof, 5 m above ground, east facing.
		PRF-I	Hole in window, attic trapdoor open inside leading to wooden roof, spider web across the whole window, not used. Ceiling within has caved in to allow access into the insulation and potential features.		PRF-I	Vent into building, approximately 2.1 m above ground, south facing.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	Vent into building, 3 m above ground, south facing.	 	PRF-I	Gap above door, 2 m above ground. Leading into shed with a space between the ceiling boards and insulation above. South-east facing.
		PRF-I	Hole into building, approximately 3 m high. South-east facing.			

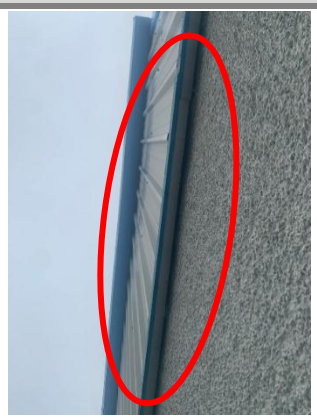
ID	Feature	Suitability	Notes	Feature	Suitability	Notes
S2 - B09b		PRF-I	Hole in blocks leading into space between walls. 2 m high, west facing.		PRF-I	Hole in blocks leading to space between walls. 2 m high, west facing.
		Negligible	Holes in door. West facing. Door closed since last survey.		PRF-I	Gap above and below metal beam under soffit. 3 m high, east facing.

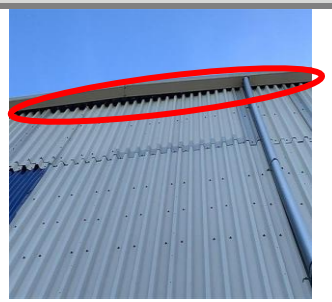
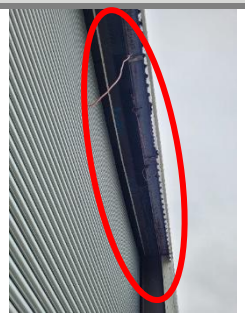
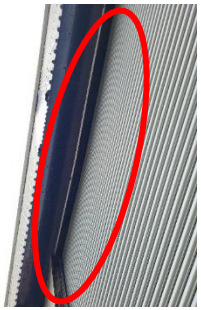
ID	Feature	Suitability	Notes	Feature	Suitability	Notes
	 	PRF-I	Rotting wooden soffit and facia creates significant openings, unclear if they lead to a suitable cavity. Facing north-west.		PRF-I	Window open. 2.5 m high. North facing.
		PRF-I	Rotting wooden facia creates an opening, but unclear if it leads to a suitable cavity. Facing west.		PRF-I	Facia separating from soffit, creating a opening. unclear if it leads to a suitable cavity. The facia is partially separated from the soffit over the length of the south side of the building, creating potential feature. Facing south-west.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	Facia separating from soffit, producing an opening. unclear if it leads to a suitable cavity. Facing east.		PRF-I	Open window. covered by metal grate with 18 mm square holes, gap between the grate and the wall at the top represents a possible entry point. Above window the gap between the wall and soffit represents another feature.
		PRF-I	Hole in window leading into building with large hole in ceiling leading into insulation.			
S2 - B10a		PRF-I	Missing ridge tile, unsure of what entry into the structure this gives, unable to contact the owner.		PRF-I	Soffit has been pulled down slightly from fascia, producing an opening. Located 2.5 m high on east side.

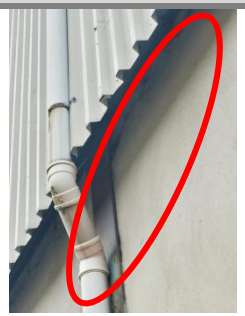
ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	roof material has lifted slightly from facia, producing small possibility for access. Located on east side.			
S2 - B10b		PRF-I	Gap between corrugated roof and wall may allow entrance. Facing north-west.		PRF-I	Gap between corrugated roof and wall would allow entrance. Facing east.
S2 - B11a		Negligible	Gap between soffit and metal roof, 10 m above ground, east facing.		Negligible	Gaps between facia and metal roof, north facing.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
S2 - B11b		Negligible	Gaps under fascia, south facing, metal, 10 m above ground.		Negligible	Gaps along building between soffit and metal wall, east facing, 10 m above ground.
		Negligible	Gap between soffit and wall, west facing, 10 m above ground.		Negligible	Gap between concrete wall and metal cladding. 10 m above ground.
		Negligible	Gap between concrete wall and metal. 10 m above ground.		Negligible	Gap between concrete wall and metal cladding. 10 m above ground.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
S2 - B11c		Negligible	Gap between block wall and soffit, 3 m above ground, south facing.		Negligible	Gap at top of blocks behind metal cladding, 3 m above ground, north facing.
S2 - B12c		PRF-I	Small opening that appears to be partially stuffed with timber, west facing.		PRF-I	Gap between corrugated door and wall would allow entrance. Facing south.
		PRF-I	Inside shed, space between corrugated roof and fabric could allow roosting.			

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
S2 - B13		Negligible	Gap between soffit and wall, 15 m above ground, west facing.		Negligible	Gap above door in corrugated metal panelling, allowing access into the main shed. East facing15 m above ground, facing west.
		Negligible	Since 2022 note. the gaps at the tops of doors have been blocked with metal mesh. middle door does not have hole Gap above door into building, 15 m above ground, west facing.		PRF-I	Gap between wall and I-beam strut. May not lead to a significant cavity. Facing south-west.
		PRF-I	Gap between wall and metal cladding, 5 m above ground, east facing.		PRF-I	Gap in blocks below metal sheeting, 5 m above ground, south facing.

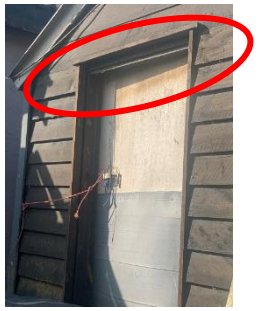
ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	Gaps in corrugated metal panelling on east side of the building, approximately 9 m high.		PRF-I	Gaps in corrugated metal panelling on east side of the building, approximately 9 m high.
		PRF-I	Gaps in corrugated metal panelling on east side of the building, approximately 9 m high.		PRF-I	Gaps in corrugated metal panelling on east side of the building, approximately 9 m high.
		PRF-I	Gaps in corrugated metal panelling on east side of the building, approximately 9 m high.		PRF-I	The gaps at the tops of doors have been blocked with metal mesh. however, the southern-most door has a gap in the mesh. Located on the west side 6 m high.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	Gap between wall and I-beam strut. May not lead to a significant cavity. Located on the west side.		PRF-I	Gap between wall and I-beam strut. May not lead to a significant cavity. Located on the west side.
		PRF-I	Gap in stonework approximately 5 m above ground, at point where vertical and horizontal metal supports meet. Difficult to see in photo as it is in shadow. East facing.		PRF-I	Gap in stonework approximately 5 m above ground, at point where vertical and horizontal metal supports meet. Difficult to see in photo as it is in shadow. East facing.
		PRF-I	Gap in metal mesh between wall and metal cladding. Facing south.		PRF-I	Gap in stone blocks below metal sheeting, 5 m above the ground.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	Gap in stonework approximately 5 m above ground, at point where vertical and horizontal metal supports meet.		PRF-I	Gap in stonework approximately 5 m above ground, at point where vertical and horizontal metal supports meet.
		PRF-I	Gap in stonework approximately 5 m above ground, at point where vertical and horizontal metal supports meet. East-facing.		PRF-I	Gap in stonework approximately 5 m above ground, at point where vertical and horizontal metal supports meet.
		PRF-I	Gap in stonework approximately 5 m above ground, at point where vertical and horizontal metal supports meet.		PRF-I	Gap in stonework approximately 5 m above ground. Difficult to see in photo as it is in shadow. East facing.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	Gap in corrugated metal panelling, allowing access into the main shed. Approximately 5 m high, east-facing.		PRF-I	Gaps in corrugated metal panelling on east side of the building, approximately 9 m high.
		PRF-I	Gaps in corrugated metal panelling on east side of the building, approximately 9 m high.		PRF-I	Gaps in corrugated metal panelling on east side of the building, approximately 9 m high.
		PRF-I	Gaps in corrugated metal panelling on east side of the building, approximately 9 m high.			

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
S2 - B14a		PRF-I	Small gap approximately 10 cm between pipe and fascia.			
S2 - B14b		PRF-I	Small gap in stonework just below soffit, north-west facing, approximately 2 m above ground.		PRF-M	tile came off on south side of the building.
		PRF-I	Gap between stone cladding and soffit. numerous gaps, particularly on the west side.		PRF-I	Gap between concrete block wall and stone cladding. appears somewhat deep but likely does not lead to a large cavity and would only be suitable for a small number of bats.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	Gap between stonework and soffit could lead to significant cavity on the south-east side.			
S2 - B18b		PRF-I	Small (10cm) gap between each slate tile leading into shed, present on both sides. Unlikely to lead into any sizeable cavity.			
S2 - B18d		PRF-I	Gap in door leading into shed, not apparent if always accessible.			

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
S2 - B18e		PRF-I	Gap in wooden panel door could allow access.			
S2 - B20a		PRF-I	Hole in soffit, appears to be smoothed out by repetitive friction, facing west toward alder trees.		PRF-I	Soffit partially rotten, unsure whether opening leads to internal structure or empty cavity between roof and soffit, facing east into the farmyard.
		PRF-I	Hole in soffit.		PRF-I	5 cm hole straight through wall leads to inside house and to wall cavity.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	Opening in soffit, large enough for 1–2 bats, facing east into farmyard.		PRF-I	Opening between top of garage sliding door and wall, approximately 40 cm in length and about 5 cm at its widest point, gives access to internal structure.
		PRF-I	Two openings for pipe inlets about 30 cm above ground, facing south-west.			

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
S2 - B20b		PRF-I	Opening between wall and roof approximately 10 cm across, north-east facing into farmyard.		PRF-M	Access to shed through large opening in door, north-east facing into farmyard.
		PRF-M	Access into shed through broken window, facing north-east into farmyard.		PRF-M	Large opening in roof giving access into shed, facing north-east into farmyard.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	Internal feature, gap between stone wall and metal roof.	 	PRF-I	Internal feature, abundant ivy growth on south-east side of building, possible features within, limited access inside due to layout of shed.
		PRF-I	Opening between wall and roof approximately 10 cm across, north-east facing into farmyard.		PRF-I	Door with gaps at the bottom which may allow entrance.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	Gap between stone walls and ceiling material. Facing south-west.		PRF-I	Opening between wall and roof approximately 10 cm across, north-east facing into farmyard/
S2 - B20c		PRF-I	Potential throughout the building for individual bats to roost between the beams and corrugated iron, but the entire building is open to the elements and there is no space for numerous bats to shelter.			
S2 - B22		PRF-I	Opening above shutter, 5 cm across at widest part, south facing.		Negligible	Small opening between roof tile and window, south facing.

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
		PRF-I	Gap under roof felt is unlikely to lead to a significant cavity. Facing south-east.		Negligible	Gap between concrete wall and metal facade. would be of low potential, but cobwebs are proof that it is not in use. Facing south-east.
S2 - B24a		Negligible	Small crack in the wall. North facing.			

ID	Feature	Suitability	Notes	Feature	Suitability	Notes
S2 - B26		PRF-I	Gaps in stone work around window and eaves on west of building.			

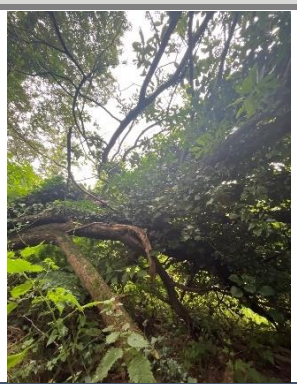
C.2.1.2 Bat Roost Surveys – Trees

Table C-17: Section 2 – Trees Bat Roost Assessment (2025 Surveys)

Tree Code	Coordinates (ITM) X	Y	Overall Photo	Description	Tree Roost Suitability
S2-TA1					
S2-TA1-BT2	619669	909060		Ash tree appears to have fallen somewhat, ivy growth on trunk.	PRF-I
S2-TA1-BT7	619612	909122		Ash tree. Tree was downgraded from moderate to low after 2022 climb, ivy growth on several stems of multi trunk ash.	PRF-I
S2-TA2					
S2-TA2-BT1	619620	909017		Multi stemmed willow within wooded area, two crack features.	PRF-I
S2-TA2-BT3	619499	909210		Tall slender deceased ash sitting on western roadside. Thick foliage of ivy covers much of the primary trunk.	PRF-I

Tree Code	Coordinates (ITM) X	Y	Overall Photo	Description	Tree Roost Suitability
S2-TA2-BT4	619511	909139		Beech tree, 15 m high, within small, wooded area, covered on all sides by vegetation.	PRF-I
S2-TA2-BT6	619501	909160		Beech tree within small, wooded area, approximately 15 m in height.	PRF-I
S2-TA2-BT8	619492	909147		Previously recorded dying ash tree has fallen, with the trunk broken into multiple pieces.	PRF-I
S2-TA2-BT10	619501	909156		Beech tree approximately 15 m high, within wooded area.	PRF-I

Tree Code	Coordinates (ITM) X	Y	Overall Photo	Description	Tree Roost Suitability
S2-TA2-BT12	619496	909178		Since previous survey the sycamore which stood has since fallen. However, it is still entangled in ivy and boasts potential as a roosting feature.	PRF-I
S2-TA3					
S2-TA3-BT1	620092	910488		Tall ash with broad canopy reach, although thin in foliage overall. Primary trunk is densely covered in ivy foliage.	PRF-I
S2-TA3-BT5	620120	910497		Partially fallen willow located within a small mixed woodland.	PRF-I
S2-TA3-BT6	620118	910464		Ash tree with overgrown ivy located within a small mixed woodland. It was recorded in 2022 and was inaccessible in 2025. It was recorded as having low roosting potential in 2022, and using the notes from the assessment, it has been reclassified as a PRF-I in 2025.	PRF-I

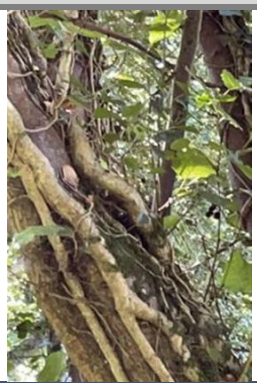
Tree Code	Coordinates (ITM) X	Y	Overall Photo	Description	Tree Roost Suitability
S2-TA3-BT7	620116	910509		Previously recorded as a willow, with many branches reaching toward the ground. A recently fallen ash tree has fallen on BT7, enlarging the cavity identified in the previous survey. The tree is lying on a north-east-south-west axis.	PRF-M
S2-TA3-BT11	620160	910504		Willow, with crack in the base located within a small mixed woodland.	PRF-I
S2-TA3-BT13	620163	910508		Old willow standing towards the north-east side of the clearing. Two primary trunks which branch off forming a distinctive fork.	PRF-I
S2-TA3-BT17	620139	910462		Large multi stemmed willow, ivy growth on trunk.	PRF-I

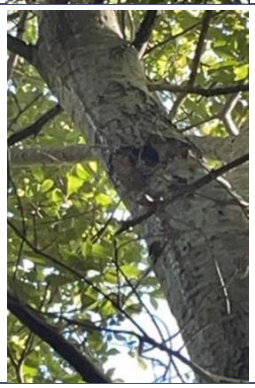
Tree Code	Coordinates (ITM) X	Y	Overall Photo	Description	Tree Roost Suitability
S2-TA3-BT18	620058	910427		Birch with bat box.	PRF-M
S2-TA3-BT19	220103	410416		Birch with bat box.	PRF-M
S2-TA3-BT21	619809	907681		Tall ash tree in line of scrub/treeline on the south-west roadside.	PRF-I
S2-TA4					
S2-TA4-BT1	619529	910794		Sideways growing willow, with gap between two branches, downgraded after inspection with flashlight, no roosting opportunity, far to open and exposed.	PRF-I
S2-TA4-BT2	219796	410648	—	Treeline along north side of existing dual carriageway which contains some trees with moderate ivy growth. Selective soft felling is	PRF-I

Table C-18: Section 2 – Tree Features Potentially Suitable for Bat Roosts (2025 Surveys)

Tree Code	Feature	Suitability	Notes
S2-TA1			
S2-TA1-BT2		PRF-I	Ivy growth on several of the multi stems. All over trunks, predominantly facing north-west.
S2-TA1-BT7		PRF-I	Extensive ivy growth, tight to tree, 3 m high small cavity, matted ivy has come away from main stem, 10 cm – daylight visible through in parts.
S2-TA2			
S2-TA2-BT1		PRF-I	Crack 30 cm across branch, quite open and exposed. 3 m above ground, on the east of tree, with crack opening to both north-east and south-west.
		PRF-I	Crack 1 m across in total, lots of splinters from broken branch, very exposed. Located 2 m above ground, on east of tree, crack openings facing north-east and south-west.

Tree Code	Feature	Suitability	Notes
S2-TA2-BT3		PRF-I	Ivy capable of supporting roosting features visible from the eastern aspect. Eastern aspect, patches between 3 m to 9 m above ground level.
S2-TA2-BT4		PRF-I	Detached ivy, along bottom half of trunk.
S2-TA2-BT6		PRF-I	Ivy growth approximately 3 m above ground.
S2-TA2-BT8		PRF-I	Large knot hole near the base of the stump, 50 cm above where the trunk splits into two dual trunks (of which now solely both stumps remain). The opening is exposed and low to the ground. Facing the east.

Tree Code	Feature	Suitability	Notes
S2-TA2-BT10		PRF-I	Ivy growth, 2 m above ground, facing north.
S2-TA2-BT12		PRF-I	Fallen tree lies on north-west-south-east plain, and one must venture past the first treeline from the roadway to view it.
S2-TA3			
S2-TA3-BT1		PRF-I	Previously identified ivy feature. Given the significant foliage density on the main trunk, it is unlikely bats are utilizing any stem-derived crannies present, although it will remain a precautionary PRF-I.
S2-TA3-BT5		PRF-I	Branch broken off main stem leaving a shallow tear out wound. West facing.

Tree Code	Feature	Suitability	Notes
S2-TA3-BT6		PRF-I	Two branches overlapping, 3 m above ground, facing south-east. This tree was recorded in 2022 and was inaccessible in 2025. It was recorded as having low roosting potential in 2022, and using the notes from the assessment, it has been reclassified as a PRF-I in 2025.
		PRF-I	Knot hole, facing south, 4 m above ground. This tree was recorded in 2022 and was inaccessible in 2025. It was recorded as having low roosting potential in 2022, and using the notes from the assessment, it has been reclassified as a PRF-I in 2025.
S2-TA3-BT7		PRF-M	Initially a knot hole created by a broken branch, the feature has been enlarged by rot and by the fallen ash tree which has widened it. North-west facing, 40 cm above ground level.
S2-TA3-BT11		PRF-I	Previously identified knot hole not found- precautionary advice being selectively classified as PRF-I.

Tree Code	Feature	Suitability	Notes
S2-TA3-BT13		PRF-I	Crack split which appears shallow but may extend slightly downward towards the base, open on both east and west sides of the branch.
S2-TA3-BT17		PRF-I	Ivy growth on main trunk. Extends ground level to 3m, facing all directions.
S2-TA3-BT18		PRF-M	Bat box .5 m above the ground.
S2-TA3-BT19		PRF-M	Bird box 4 m above ground.

Tree Code	Feature	Suitability	Notes
S2-TA3-BT21		PRF-I	Large stemmed semidetached ivy located 5 m above ground level, east facing.
S2-TA4			
S2-TA4-BT1		PRF-I	In 2022 gaps were recorded between overlapping branches. 1.5 m high, north-east facing. Downgraded from PRF-M after inspection with flashlight, no roosting opportunity, far to0 open and exposed.
S2-TA4-BT2	—	PRF-I	Moderate ivy growth over trees.

Table C-19: Section 2 –Tree climbing Inspection Results (2025 Surveys)

Tree Code	Tree Photo	Tree	Roost Suitability after PRF Close Inspection	Feature	Notes
S2-TA3					
S2-TA3 BT7		Deceased	PRF-M		Cavity is Damp and peak/wedged shaped with mildew and cobwebs. Tapers down into a narrow point, very exposed.
S2-TA3-BT18		Birch	PRF-M	See previous photo	Birch with dry chambered cavity with cobwebs and bird nesting material present, presumed to have fledged.
S2-TA3-BT19		Birch	PRF-M	See previous photo	Bird box can be accessed by ladder. Dry chambered cavity with woodlice.

C.2.1.3 Static Detectors Surveys 2025

Table C-20: Static Detectors Survey Details – Section 2

Detector ID	Location Description	Location (ITM)	Dates and Nights	Approximate Times
S2 - SD02	Located within mixed broadleaved woodland	620110 910491	21 August – 25 August (5 nights)	21:00 – 07:00
			10 September – 15 September (6 nights)	19:30 – 07:30
S2 - SD03	Located within treeline adjacent to roadway	619700 909421	12 August – 20 August (9 nights)	21:30 – 06:30
			3 September – 9 September (7 nights)	19:30 – 07:00
S2 - SD04	Located within a coniferous woodland adjacent to roadway	619699 908816	2 September – 8 September (7 nights)	19:30 – 07:00
S2 - SD06	Located within a mixed treeline adjacent to a roadway	620625 910943	21 August – 25 August (5 nights)	20:30 – 06:00
			11 September – 15 September (5 nights)	19:30 – 07:30
S2 - SD07	Located within a hedgerow adjacent to a farmyard	619840 909825	21 August – 25 August (5 nights)	19:30 – 07:30
			10 September – 15 September (6 nights)	19:30 – 07:00
S2 - SD08	Located within hedgerow adjacent to the estuary	618981 911647	27 August – 30 August (3.1 nights)	20:00 – 07:00
			17 September – 20 September (3.1 nights)	19:00 – 07:30
S2 - SD09	Located within a treeline alongside roadway	619510 908319	12 August – 20 August (9 nights)	20:30 – 06:00
			3 September – 9 September (7 nights)	19:30 – 07:00

Detector ID	Location Description	Location (ITM)	Dates and Nights	Approximate Times
S2 - SD10	Located within a mixed woodland adjacent to the roadway	621209 911373	27 August – 28 August (1.3 nights)	20:00 – 07:00
			17 September – 19 September (2.4 nights)	19:00 – 07:30
S2 - SD11	Located alongside roadway adjacent to the estuary	623075 910838	27 August – 1 September (6 nights)	20:00 – 07:00
			17 September – 23 September (6 nights)	19:00 – 07:30

Table C-21: Bat Activity Results Per Static Placement – Section 2

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
S2 - SD02	21 August – 25 August	*Pipistrellus pipistrellus* (common pipistrelle)	847	53.1	169.4
		Pipistrellus pygmaeus (soprano pipistrelle)	473	29.7	94.6
		Pipistrellus sp.	234	14.7	46.8
		Nyctalus leisleri (Leisler's bat)	34	2.1	6.8
		Myotis sp.	6	0.4	1.2
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**1594**	**100**	**319**
	10 September – 15 September	*Pipistrellus pipistrellus* (common pipistrelle)	638	47.2	106.3
		Pipistrellus pygmaeus (soprano pipistrelle)	530	39.2	88.3
		Pipistrellus sp.	152	11.2	25.3
		Nyctalus leisleri (Leisler's bat)	31	2.3	5.2
		Plecotus auritus (brown long-eared bat)	2	0.1	0.3
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Myotis sp.	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**1353**	**100**	**226**
S2 - SD03	12 August – 20 August	*Pipistrellus pipistrellus* (common pipistrelle)	2003	55.4	222.6
		Pipistrellus pygmaeus (soprano pipistrelle)	1097	30.3	121.9
		Pipistrellus sp.	419	11.6	46.6
		Nyctalus leisleri (Leisler's bat)	88	2.4	9.8

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		Plecotus auritus (brown long-eared bat)	4	0.1	0.4
		Myotis sp.	4	0.1	0.4
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**3615**	**100**	**402**
	3 September – 9 September	*Pipistrellus pipistrellus* (common pipistrelle)	1668	67.1	238.3
		Pipistrellus pygmaeus (soprano pipistrelle)	430	17.3	61.4
		Pipistrellus sp.	362	14.6	51.7
		Nyctalus leisleri (Leisler's bat)	23	0.9	3.3
		Plecotus auritus (brown long-eared bat)	2	0.1	0.3
		Myotis sp.	1	0.0	0.1
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**2486**	**100**	**355**
S2 - SD04	2 September – 8 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	807	69.3	115.3
		Pipistrellus pipistrellus (common pipistrelle)	239	20.5	34.1
		Pipistrellus sp.	68	5.8	9.7
		Nyctalus leisleri (Leisler's bat)	21	1.8	3.0
		Myotis sp.	19	1.6	2.7
		Plecotus auritus (brown long-eared bat)	10	0.9	1.4
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**1164**	**100**	**166**
S2 - SD06	21 August – 25 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	538	37.3	107.6
		Pipistrellus sp.	479	33.2	95.8
		Pipistrellus pipistrellus (common pipistrelle)	243	16.8	48.6
		Nyctalus leisleri (Leisler's bat)	143	9.9	28.6
		Plecotus auritus (brown long-eared bat)	24	1.7	4.8
		Myotis sp.	16	1.1	3.2
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**1443**	**100**	**289**
	11 September – 15 September	*Pipistrellus* sp.	53	45.3	10.6
		Pipistrellus pipistrellus (common pipistrelle)	28	23.9	5.6
		Pipistrellus pygmaeus (soprano pipistrelle)	23	19.7	4.6
		Nyctalus leisleri (Leisler's bat)	13	11.1	2.6
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		Myotis sp.	0	0.0	0.0
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**117**	**100**	**23**
S2 - SD07	21 August – 25 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	1358	57.2	271.6
		Pipistrellus sp.	555	23.4	111.0
		Pipistrellus pipistrellus (common pipistrelle)	302	12.7	60.4

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		Nyctalus leisleri (Leisler's bat)	143	6.0	28.6
		Plecotus auritus (brown long-eared bat)	9	0.4	1.8
		Myotis sp.	6	0.3	1.2
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**2373**	**100**	**475**
	10 September – 15 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	474	56.8	79.0
		Pipistrellus pipistrellus (common pipistrelle)	195	23.4	32.5
		Pipistrellus sp.	103	12.4	17.2
		Nyctalus leisleri (Leisler's bat)	62	7.4	10.3
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Myotis sp.	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**834**	**100**	**139**
S2 - SD08	27 August – 30 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	584	78.0	188.4
		Pipistrellus pipistrellus (common pipistrelle)	90	12.0	29.0
		Pipistrellus sp.	63	8.4	20.3
		Nyctalus leisleri (Leisler's bat)	10	1.3	3.2
		Pipistrellus nathusii (Nathusius' pipistrelle)	2	0.3	0.6
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Myotis sp.	0	0.0	0.0

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**749**	**100**	**242**
	17 September – 20 September	*Pipistrellus pipistrellus* (common pipistrelle)	430	51.9	138.7
		Pipistrellus pygmaeus (soprano pipistrelle)	341	41.1	110.0
		Pipistrellus sp.	51	6.2	16.5
		Nyctalus leisleri (Leisler's bat)	6	0.7	1.9
		Myotis sp.	1	0.1	0.3
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**829**	**100**	**267**
S2 - SD09	12 August – 20 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	2048	61.0	227.6
		Pipistrellus pipistrellus (common pipistrelle)	715	21.3	79.4
		Nyctalus leisleri (Leisler's bat)	317	9.4	35.2
		Pipistrellus sp.	255	7.6	28.3
		Myotis sp.	15	0.4	1.7
		Plecotus auritus (brown long-eared bat)	5	0.1	0.6
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**3355**	**100**	**373**
	3 September – 9 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	1199	50.4	171.3
		Pipistrellus pipistrellus (common pipistrelle)	1031	43.4	147.3

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		Nyctalus leisleri (Leisler's bat)	87	3.7	12.4
		Pipistrellus sp.	57	2.4	8.1
		Pipistrellus nathusii (Nathusius' pipistrelle)	2	0.1	0.3
		Myotis sp.	2	0.1	0.3
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**2378**	**100**	**340**
S2 - SD10	27 – 28 August	*Pipistrellus pygmaeus* (soprano pipistrelle)	143	53.6	110.0
		Pipistrellus sp.	66	24.7	50.8
		Pipistrellus pipistrellus (common pipistrelle)	58	21.7	44.6
		Nyctalus leisleri (Leisler's bat)	0	0.0	0.0
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis sp.	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**267**	**100**	**205**
	17 September – 19 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	166	62.6	69.2
		Pipistrellus sp.	81	30.6	33.8
		Pipistrellus pipistrellus (common pipistrelle)	18	6.8	7.5
		Nyctalus leisleri (Leisler's bat)	0	0.0	0.0
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0

Detector	Date(s)	Scientific Name (Common Name)	Number of Passes	% of Total Passes	Total Passes per Night
		Myotis sp.	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**265**	**100**	**110**
S2 - SD11	27 August – 1 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	149	45.6	24.8
		Nyctalus leisleri (Leisler's bat)	75	22.9	12.5
		Pipistrellus sp.	65	19.9	10.8
		Pipistrellus pipistrellus (common pipistrelle)	30	9.2	5.0
		Myotis sp.	8	2.4	1.3
		Pipistrellus nathusii (Nathusius' pipistrelle)	0	0.0	0.0
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**327**	**100**	**55**
	17 September – 23 September	*Pipistrellus pygmaeus* (soprano pipistrelle)	177	49.0	29.5
		Nyctalus leisleri (Leisler's bat)	54	15.0	9.0
		Pipistrellus sp.	48	13.3	8.0
		Pipistrellus pipistrellus (common pipistrelle)	46	12.7	7.7
		Myotis sp.	33	9.1	5.5
		Pipistrellus nathusii (Nathusius' pipistrelle)	3	0.8	0.5
		Myotis daubentonii (Daubenton's bat)	0	0.0	0.0
		Myotis natterei (Natterer's bat)	0	0.0	0.0
		Plecotus auritus (brown long-eared bat)	0	0.0	0.0
		*Rhinolophus hipposideros (*lesser horseshoe bat*)*	0	0.0	0.0
		Total	**361**	**100**	**60**

C.2.2 Pre-2022 Surveys

C.2.2.1 Bat Roost Surveys – Structures

Table C-22: Section 2 – Structures Survey Details (Pre-2022 Surveys)

Structure ID & Description	Location (ITM)	Survey type	Date	Time	Notes
S2B1 – Unoccupied two-story house	619485 909215 Outside CPO boundary	Dusk	31 July 2019	21:35 – 23:30	
		Dusk	17 June 2020	21:55 – 23:45	
		Dawn	07 July 2020	03:30 – 05:20	
		Dusk	10 July 2020	21:45 – 23:45	
		Internal	04 March 2021	N/A	
S2B2 – Old stone cottage and farmyard buildings	619878 909895 Adjacent to CPO boundary	Dusk	29 July 2019	21:39 – 23:35	
		Dusk	10 June 2020	21:50 – 23:40	
		Dawn	09 July 2020	03:30 – 05:15	
		Internal	4 March 2021	N/A	No access for internal inspection
S2B3 – Old schoolhouse/shed	620153 910338 Adjacent to CPO boundary	Dusk	30 July 2019	21:10 – 23:40	
		Dusk	10 June 2020	21:50 – 23:40	
		Dawn	9 July 2020	03:30 – 05:15	
		Internal	4 March 2021	N/A	No access to main building for internal inspection
S2B4 – Farmyard shed	619939 909558 Outside CPO boundary	Dawn	10 Sept 2019	05:40 – 06:40	Previously surveyed for dawn/dusk (2018). Not surveyed in 2020 – outside corridor.
		Internal	04 March 2021	N/A	Not surveyed – outside corridor
S2B5 – Unoccupied cottage	622185 911423	Dusk	16 Sept 2019	19:35 – 21:15	
		Dusk	09 June 2020	21:50 – 23:20	
		Dawn	08 July 2020	03:30 – 05:30	
		Internal	04 March 2021	N/A	External survey only of cottage, internal inspection of outbuildings where possible
S2B6 – Unoccupied bungalow and farmyard buildings	622359 911297	Dawn	11 Sept 2019	05:55 – 07:05	
		Dusk	09 June 2020	21:50 – 23:20	
		Dawn	08 July 2020	03:30 – 05:30	

Structure ID & Description	Location (ITM)	Survey type	Date	Time	Notes
		Internal	04 March 2021	-	
S2B7 – Railway bridge arch	620354 910544 Outside CPO boundary	Static Detector SD5	10 Sept 2019	20:00 – 07:00	
		Static Detector SD5	26 Aug 2020	20:00 – 06:30	
		Internal	04 March 2021	N/A	No Internal Inspection/not surveyed
S2B8 – Stone outbuilding	619724 908556 Outside CPO boundary	Internal	04 March 2021	N/A	

Table E -23: Section 2 – Night-time Structures Survey Results (Pre-2022 Surveys)

Code	Townland	Description	Survey Type	Date & Time	No. of Surveyors[4]	Weather Conditions	Results
S2B1	Listellian	Unoccupied two storey house.	Dusk	31.07.19 21.35hr to 23.30hr	2	Temp 14°, mild conditions, slight breeze, no rain, 90% cloud cover clearing to 15–20%.	2019: Emergence from rear of house at north-east corner above window eaves. Five SP individuals noted emerging. Constant foraging and circling of wooded area/scrub surrounding building. BLE foraging.
			Dusk	17.06.20 21.55hr to 23.45hr		Dry, temp 14°, winds calm north-west.	2020: Up to 19 SP recorded emerging from the rear of the house, under the gutter. Leisler's and CP recorded foraging/commuting in the area.
			Dawn	07.07.20 03.30hr to 05.20hr		Dry temp 10°, winds calm north-west.	
			Dusk	10.07.20 21.45hr to 23.45hr		Dry, temp 14°, winds light west north-west	
S2B2	Drumany	Old stone cottage and associated farmyard buildings	Dusk	29.07.19 21.39hr to 23.35hr	2	Cloud cover 100%, temp 15°, mild, no wind, no rain.	2019: No emergence. SP and CP foraging in surrounding vegetation.
			Dusk	10.06.20 21.50hr to 23.40hr		Light rain, temp 11°, winds calm north-east	2020: No species were recorded emerging or re-entering the building during dusk and dawn surveys.
			Dawn	09.07.20 03.30hr to 05.15hr		Dry, temp 10°, winds calm north-west	
S2B3	Dromore	An old schoolhouse with slate roofing.	Dusk	30.07.19 21.10hr to 23.40hr	2	Temp 16c, slight to moderate breeze, 95% cloud cover. Finish temp 14c, higher winds and increased wind chill.	2019: Stain noted in shed/house gable. Bats heard warbling within at south facing corners & north-east. Some Leisler individuals emerged (low no. 2–3), low emergence numbers possible due to wind increase & chill. Foraging in area, SP, CP and LEIS.
			Dusk	10.06.20 21.50hr to 23.40hr		Light rain, temp 11°, winds calm north-east	2020: No species were recorded emerging or re-entering the building during dusk and dawn surveys.
			Dawn	09.07.20 03.30hr to 05.15hr		Dry, temp 10°, winds calm north-west	
S2B4	Drumany	An old farmyard shed with a fallen in slate roof.	Dawn	10.09.19 05.40hr to 06.40hr	2	Temp 6°, clear and dry, 80% cloud cover and no breeze.	2019: No re-entry visible. It does not appear to support a roost. Bats foraging in area. Bats heading in the direction of Drumany at dawn.

[4] Dawn/Dusk Surveys 2019 – RPS, Dawn/Dusk Surveys 2020 - Nelson Ecology Ltd.

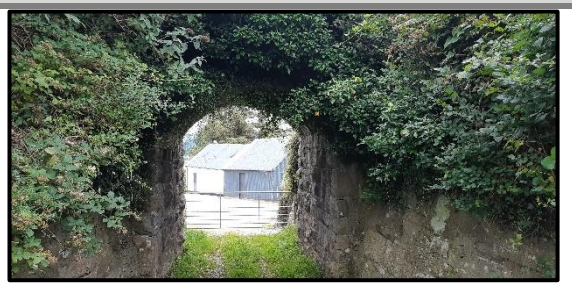
Code	Townland	Description	Survey Type	Date & Time	No. of Surveyors[4]	Weather Conditions	Results
							Due to the nature of the building, and in conjunction with a dawn/dusk survey it is determined it is not suitable for bat roosting activity.
S2B5	Rossbracken	An unoccupied cottage.	Dusk	16.09.19 19.35hr to 21.15hr	2	100% cloud cover, no rain, very slight breeze, temp 14°	2019: CP noted foraging at the rear of the house, no bats seen emerging from the front or chimney.
			Dusk	09.06.20 21.50hr to 23.20hr		Light, temp 12°, winds calm south	2020: No species were recorded emerging or re-entering the building during dusk and dawn surveys. Leisler's recorded foraging/commuting in the area.
			Dawn	08.07.20 03.30hr to 05.30hr		Dry, temp 10°, winds, calm north-west	
S2B6	Rossbracken	Unoccupied bungalow surrounded by farmyard and associated buildings.	Dawn	11.09.19 05.55hr to 07.05hr	2	Temp 13°, approximately 10–20% cloud cover, moderate-strong breeze	2019: LEIS and CP bats detected in the area however none seen entering the building.
			Dusk	09.06.20 21.50hr to 23.20hr		Light, temp 12°, winds calm south	2020: No species were recorded emerging or re-entering the building during dusk and dawn surveys.
			Dawn	08.07.2020 03.30hr to 05.30hr		Dry, temp 10°, winds calm north-west	

Table C-23: Section 2 – Structures Identified with Potential to Support Roosting Bats (Pre-2022 Surveys)

ID	Coordinates (ITM)	Description	Internal Inspection – March 2021[5]	Structure Images
S2B1	619485 909215	An unoccupied, two-storey house with slate roof. Surrounding area consists of mature tree stands and scrub.	Previously identified as a roost in 2019 and 2020. Internal inspection of the building was carried out, however due to the high density of goat droppings throughout the building it was difficult to establish if any bat droppings present. High suitable for roosting bats, supporting numerous entry points at the roof eaves and previous bat activity evidence recorded.	
S2B2	619878 909895	Old stone cottage and associated farmyard buildings, with slate roofing on cottage, area highly vegetated surrounding the building consisting of mature tree stands and scrub thickets. Additional farmyard buildings consist of open shed with galvanised roofing.	Abandoned slate old cottage, highly overgrown with no internal access available. Difficult to survey externally due to overgrown nature, no internal access. Bat activity recorded in the area previously, in 2019, however not emerging from the structure. Slate roof but highly vegetated with ivy to western half of the building. Low to Moderate suitability for roosting bats, building is highly vegetated which may hinder flight access for bats. Additional sheds in the yards of Low suitability.	

[5] Internal inspection of buildings/structures was conducted where possible, access permission and health and safety depending, during March 2021.

ID	Coordinates (ITM)	Description	Internal Inspection – March 2021[5]	Structure Images
S2B3	620153 910338	An old schoolhouse with slate roofing, currently unlived in with adjoining outhouse attached to main building. Attached outhouses have corrugated iron roofing.	Old schoolhouse now partially a shed. No internal access to main building, external inspection only. The south-east corner appears to have lost slates since previous surveys in 2019 and fascia repaired with cement. Bat previously emerged at this location of the building (2019). Potential staining in open shed. Moderate to High bat roosting suitability.	 
S2B4	619939 909558	An old farmyard shed with a fallen in slate roof, surrounded by dense ivy.	Outside of Corridor. Previously surveyed for dawn/dusk (2018). Low bat roosting suitability.	
S2B5	622185 911423	An unoccupied cottage with dense vegetation surrounding and growing from the house. The building supports an intact slate roof.	External survey only of the cottage. Overgrown with vegetation. Internal inspection of outbuildings where possible, with no evidence of bat activity noted. Outbuildings to the front support galvanise roofing, buildings to the rear have galvanise and felt roofing, limited potential for PBR in outbuildings. The cottage is of Moderate bat roosting suitability, with the outbuilding to the rear of Low bat roosting suitability.	 
S2B6	622359 911297	Note that this was surveyed in 2022 with the ID, B20a. Unoccupied bungalow surrounded by farmyard and associated buildings, currently in use. Treelines bordering house and farmyard providing potential foraging and commuting habitat.	Internal inspection of the house was conducted. No evidence of bat activity noted. The attic door was open, and space was noted to be felt lined. Roofing consists of tiles. External inspection identified a hole in the corner of the fascia but appeared to be used by birds. Low to Moderate bat roosting suitability due to intact attic space, however limited access from eaves.	

ID	Coordinates (ITM)	Description	Internal Inspection – March 2021[5]	Structure Images
S2B7	620354 910544	Railway bridge arch at Dromore located in a farmyard. The bridge is partially pointed, or crack/crevices infilled in areas. Cracks/crevices inspected with a torch, with no evidence of bat activity visible. Bridge also wet in areas.	Underwent previous daytime inspection in 2018 and 2019. Deemed not suitable as PBR. Low bat roosting suitability due to pointed nature of the stonework.	
S2B8	619724 908556	Stone outbuilding with slate roof located in farmyard, surrounding by wet grassland, and hedgerows.	Slate roof on an open shed with stonewall gables. The shed appears too open and exposed to support bats, supporting primarily pointed stonework. Low bat roosting suitability.	 

C.2.2.2 Static Detectors Surveys

Table E -25: Section 2 – Static Detectors Survey Details (Pre-2022 Surveys)

Detector ID	Structure Code (if applicable) & Description	Location (ITM)	Date	Time
SD1	Treelined laneway near old farm building, with an additional mature treeline and scrub nearby	619932 909613	29 July 2019	21:30 – 05:30
SD2	Edge of scrub opening along unused railway	620081 910485	30 July 2019	21:40 – 05:40
			26 Aug 2020	20:30 – 06:30
SD3	Woodland boundary at Lurgybrack, bordering an open agricultural field	619754 909331	09 Sept 2019	20:00 – 07:00
			27 Aug 2020	20:30 – 06:30
SD4	The edge of conifer woodland glade, which had recently been partially felled	619702 908954	09 Sept 2019	20:00 – 07:00
SD5	S2B7 – An old railway stone arched bridge at Dromore, limited vegetation surrounding, primarily open pastoral grassland	620354 910544	10 Sept 2019	20:00 – 07:00
			26 Aug 2020	20:00 – 06:30
SD6	Mature woodland strip along the N13 dual carriageway with an absent understory	620623 910929	10 Sept 2019	20:00 – 07:00
			25 Aug 2020	20:40 – 06:30
SD7	A treeline boundary, bounding an area of wet grassland in Drumany townland	619735 909969	16 Sept 2019	19:50 – 07:10
			27 Aug 2020	20.30 – 06:30
SD8	This area is relatively sparse however some mature treelines at the edge of the field to the north	618825 911674	25 Aug 2020	20.40 – 06:30
SD9	Treeline at extended southern link	619507 908339	28 Aug 2020	20:30 – 06:30

Table C-24: Section 2 – Static Detector Survey Results (Pre-2022 Surveys)

Static Detector Location Code	Survey Dates 2019- 2021	Unit	Townland	Habitat Description	Bat Species (Activity Level) 2019	Bat Species (Activity Level) 2020
SD1	29.07.19 21.30hr to 05.30hr	Song Meter 2M+	Drumany	Treelined laneway near old farm building, with an additional mature treeline and scrub nearby.	LEIS (Low) CP(Moderate) SP (Low) MYO (Low)	NA
SD2	30.07.19 21.40hr to 05.40hr	Song Meter 2M+	Dromore	Edge of scrub opening along unused railway.	LEIS(Low) CP(Low) SP(Moderate)	CP(Moderate) SP (Moderate) LEIS(Low) MYO(Low)
	26.08.20 20.30hr to 06.30hr	Song Meter SM4BAT				
SD3	09.09.19 20.00hr to 07.00hr	Song Meter SM4BAT	Dromore	Woodland boundary at Lurgybrack, bordering an open agricultural field.	LEIS(Low) CP(Low) SP(Low) MYO(Low)	CP(Low) SP(Low) LEIS(Low)
	27.08.20 20.30hr to 06.30hr	Song Meter 2M+				
SD4	09.09.19 20.00hr to 07.00hr	Song Meter 2M+	Listellian	The edge of conifer woodland glade, which had recently been partially felled.	LEIS(Low) CP(Low) SP(Low) MYO(Low)	NA
SD5	10.09.19 20.00hr to 07.00hr	Song Meter 2M+	Dromore	An old railway stone arched bridge at Dromore, limited vegetation surrounding, primarily open pastoral grassland.	LEIS(Low) CP(Low) SP(Low) MYO(Low)	CP(Low) SP(Low) LEIS(Low) MYO(Low)
	26.08.20 20.00hr to 06.30hr	Song Meter 2M+				
SD6	10.09.19 20.00hr to 07.00hr	Song Meter SM4BAT	Dromore	Mature woodland strip along the N13 dual carriageway with an absent understory.	LEIS(Low) CP(Low)	CP(Low) SP(Low) LEIS(Low)
	25.08.20 20.40hr to 06.30hr	Song Meter 2M+				
SD7	16.09.19 19.50hr to 07.10hr	Song Meter SM4BAT	Drumany	A treeline boundary, bounding an area of wet grassland in Drumany townland.	LEIS(Low) CP(Low) SP(Low) MYO(Low)	CP(Low) SP(Moderate) MYO(Low)
	27.08.20 20.30hr to 06.30hr	Song Meter SM4BAT				

Static Detector Location Code	Survey Dates 2019- 2021	Unit	Townland	Habitat Description	Bat Species (Activity Level) 2019	Bat Species (Activity Level) 2020
SD8	25.08.20 20.40hr to 06.30hr	Song Meter SM4BAT	Bunagee	This area is relatively sparse, however some mature treelines at the edge of the field to the north.	NA	CP(Low) SP(Moderate) LEIS(Low)
SD9	28.08.20 20.30hr to 06.30hr	Song Meter SM4BAT	Listellian	Treeline at extended southern link	NA	CP(Moderate) SP(Moderate) MYO(Low)

C.2.2.3 Transect Surveys

Table C-25: Section 2 – Transect Survey Details (Pre-2022 Surveys)

Transect No.	Location	Date	Time	Notes
1	Dromore Upper	09-Sep-19	23:20 – 23:52	
		06-Jul-20	21:50 – 23:05	
2	Trimragh Lower/ Drumargh Middle	11-Sep-19	05:15 – 05:54	
		06-Jul-20	23:29 – 23:59	
3	L1114 Dromore	09-Sep-19	01:48 – 01:53	
		07-Jul-20	22:39 – 23:29	
4	L1114 Dromore	09-Sep-19	22:15 – 22:21	Driving transect
		07-Jul-20	21:55 – 22:25	
5	Drumany	10-Sep-19	05:08 – 05:23	
		06-Jul-20	00:15 – 00:43	
6	Listellian No.1	11-Sep-19	05:16 – 05:54	
		06-Jul-20	01:00 – 01:49	
7	N13 Dual Carriageway	09-Sep-19	21:20 – 21:42	Driving transect
8	Milk Isle	09-Sep-19	21:09 – 21:12	Driving transect
9	Listellian No.2	16-Sep-19	21:37 – 21:51	
10	Dromore	17-Sep-19	00:15 – 00:53	
11	Bunagee	17-Sep-19	01:05 – 01:08	
12	Drumany	16-Sep-19	22:45 – 22:52	
13	Drumany	16-Sep-19	22:15 – 22:30	
14	N13 Listellan	09-Sep-19	21:09 – 21:12	Driving transect

Table C-26: Section 2 – Transect Survey Results (Pre-2022 Surveys)

Transect No.	Location	Habitat Description	Activity	2019 Species	No. Passes	2020 Species	No. Passes
1	Dromore Upper	Mixed landscape of hedgerow/treelines, improved and wet grasslands, along with residential housing and associated planting.	Foraging/ Commuting	Not surveyed	NA	CP, SP	8
2	Trimragh Lower/ Drumargh Middle	Mix of semi-mature treelines, broken hedgerows and a woodland strip north of the dual-carriage way. Interspersed by residential housing.	Foraging/ Commuting	CP, SP, Leis, BLE, UnID	37	CP, SP, Leis	9
3 – 4	L1114 Dromore	Local road with broken hedgerow/treelines dominated by residential ribbon housing development and open grasslands.	Foraging	SP, CP	6	SP, CP	2
5	Drumany	Predominately low scrubby hedgerows/broken treelines bordering wet and agricultural grassland. One large area of scrub/mature treeline down farm track.	Commuting	MYO, CP	2	SP	3
6	Listellian No.1	A local road with residential housing supporting a mixed habitat of hedgerows, treelines and open agricultural fields.	Commuting	Leis	1	SP	3
7	N13 Dual Carriageway	Woodland strip, planted treelines and interspersed by hedgerows and open mixed grasslands (agricultural, wet and arable).	Foraging/ commuting	Leis, CP, SP	4	Not Surveyed	NA
8	Milk Isle	Industrial estate within a semi-urban landscape, with open reclaimed agricultural grassland to the west.	NA	None recorded	0	Not Surveyed	NA
9	Listellian No.2	Improved agricultural grassland bordered by conifer plantation.	Commuting	CP, SP	2	Not Surveyed	NA
10	Dromore	Improved agricultural grassland, bordered by hedgerows and treelines. The old railway line is included in this transect supporting scrub/grassy verges.	Foraging	CP, SP	12	Not Surveyed	NA
11	Bunagee	Industrial and urban environment with scattered trees and amenity area.	Foraging/ Commuting	Leis	1	Not Surveyed	NA
12	Drumany	Treelines and hedgerows bordering improved agricultural fields.	Commuting	CP, SP	3	Not Surveyed	NA
13	Drumany	Treelines and hedgerows bordering improved agricultural fields.	Foraging	CP, SP	5	Not Surveyed	NA
14	N13 Listellian	National road, bordered by agricultural fields, broken hedgerows/treelines, residential housing and commercial businesses.	None recorded	NA	NA	Not Surveyed	NA

C.3 Section 3

Table C-27: Section 3 Static Locations (2023 & 2025)

Static Code	ITM Easting	ITM Northing	Date Deployed	No. Of Nights	Chainage (approx)	Within CPO
Static 47	632612	897419	22/08/2023	1	17+400	Yes
Static 48	632424	897152	22/08/2023	2	End of scheme	Yes
Static 49	631497	899337	22/08/2023	2	14+950	Yes
Static 50	631021	899943	22/08/2023	2	0+000 (14+200)	Yes
Static 51	629377	901922	22/08/2023	2	11+600	No
Static 52	629296	903262	22/08/2023	2	10+250	Yes
Static 53	628799	904070	22/08/2023	2	9+250	Yes
Static 54	625308	910087	22/08/2023	1	2+000	Yes
Static 55	632613	897042	07/10/2025	7	End of scheme	Yes
Static 56	632529	897446	07/10/2025	10	17+400	Yes
Static 57	632426	898423	07/10/2025	7	16+400	Yes
Static 58	632285	898889	07/10/2025	14	15+900	Yes
Static 59	631410	899386	07/10/2025	14	14+850	Yes
Static 60	631141	899698	07/10/2025	14	14+450	Yes
Static 61	630866	900268	07/10/2025	14	13+800	Yes
Static 62	629382	901925	07/10/2025	14	11+600	No
Static 63	629411	903153	07/10/2025	14	10+350	Yes
Static 64	628798	904067	07/10/2025	14	9+250	Yes
Static 65	628034	905924	07/10/2025	14	7+200	Yes
Static 66	627338	907191	07/10/2025	14	5+850	Yes
Static 67	626674	908196	07/10/2025	7	4+500	Yes
Static 68	625618	909655	07/10/2025	14	2+550	Yes
Static 69	625312	910081	07/10/2025	14	2+000	Yes

Table C-28: Section 3 Static Locations (Pre-2023)

Static Code	ITM Easting	ITM Northing	Date Deployed	No. Of Nights	Chainage (approx)	Within CPO
Static 1	627882	906006	31/08/2018	1	7+150	No
Static 2	626943	907758	31/08/2018	1	5+200	No
Static 3	623422	910210	31/08/2018	1	Outside scheme (private land)	No
Static 4	623827	909669	31/08/2018	1	Outside scheme (private land)	No
Static 5	628851	903960	01/09/2018	1	9+400	Yes
Static 6	629684	902952	01/09/2018	1	10+600	No
Static 7	630415	900618	01/09/2018	1	13+350	No
Static 8	631030	899732	01/09/2018	1	14+350	No
Static 9	628798	904060	23/08/2019	1	9+300	Yes
Static 10	625550	909654	22/08/2019	2	0+250 (2+550)	Yes
Static 11	626625	908019	23/08/2019	2	4+600	No

Static Code	ITM Easting	ITM Northing	Date Deployed	No. Of Nights	Chainage (approx)	Within CPO
Static 12	629858	903050	22/08/2019	2	10+500	No
Static 13	625448	910022	23/08/2019	2	2+100	Yes
Static 14	630738	900053	10/2/2020	2	0+700 (13+950)	No
Static 15	631504	899083	10/2/2020	2	15+050	No
Static 16	630398	900555	23/7/2020	1	13+400	No
Static 17	630735	900035	23/7/2020	1	0+700 (13+950)	No
Static 18	632265	898186	23/7/2020	1	16+600	No
Static 19	632297	898191	24/7/2020	1	16+600	No
Static 20	631369	899409	24/7/2020	1	14+800	Yes
Static 21	631103	899710	24/7/2020	1	14+400	Yes
Static 22	628619	904133	25/7/2020	1	9+150	No
Static 23	629829	903045	25/7/2020	1	10+500	No
Static 24	628559	904862	25/7/2020	1	8+400	No
Static 25	632298	897248	25/2/2021	7	End of scheme	Yes
Static 26	632534	897449	25/2/2021	7	17+400	Yes
Static 27	630916	900030	25/2/2021	7	14+050	Yes
Static 28	630630	900107	25/2/2021	7	0+550 (13+900)	Yes
Static 29	629239	903339	25/2/2021	7	10+150	No
Static 30	628659	904132	25/2/2021	7	9+200	Yes
Static 31	628726	904062	25/2/2021	7	9+250	Yes
Static 32	632812	897187	22/4/2021	6	End of scheme	No
Static 33	632278	897268	22/4/2021	6	End of scheme	Yes
Static 34	632529	897814	22/4/2021	6	17+000	Yes
Static 35	630883	900411	22/4/2021	6	13+600	No
Static 36	632528	897440	22/4/2021	6	17+400	Yes
Static 37	630871	900164	22/4/2021	6	13+900	Yes
Static 38	631036	899754	22/4/2021	6	14+350	Yes
Static 39	630914	900025	22/4/2021	6	14+050	Yes
Static 40	633270	898262	10/7/2021	5	Along river (Lifford)	No
Static 41	633276	898050	15/7/2021	1	Along river (Lifford)	No
Static 42	632304	897229	21/08/2021	4	End of scheme	Yes
Static 43	632614	897229	23/08/2021	4	End of scheme	Yes
Static 44	632553	896934	21/08/2021	4	End of scheme	No
Static 45	632814	897122	24/08/2021	4	End of scheme	No
Static 46	631321	900245	21/08/2021	2	Outside scheme (private land)	No

Table C-29: Section 3 Tree Survey Results (Potential Bat Roosts)

PBR No.	ITM Co-ordinates	Tree Details	2025 Survey Details	PRF Value	Chainage (approx)	Within CPO
PBR 1	630873 900318	Hollow tree	Not surveyed in 2025 as it is outside the CPO	Confirmed tree roost	13+700	No
PBR 2	630934 900042	Early Mature Beech Trees x2	26/8/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate value.	14+050	Yes
PBR 3	630895 900037	Early Mature Beech Tree	26/8/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate value.	14+050	Yes
PBR 4	630878 900075	Mature Beech Tree	26/8/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate value.	14+400	Yes
PBR 5	630726 900067	Mature Ash Tree	26/8/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate value.	0+600 (14+000)	Yes
PBR 6	630461 900641	Mature Ash Tree	26/8/2025 - ground inspection with endoscope and torch.	Low value	0+100 (13+300)	Yes
PBR 7	629540 903187	Tree Group	No longer present	No longer present	1+350 (10+350)	Yes
PBR 8	629377 903168	Mature Beech tree	21/10/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate value.	10+350	Yes
PBR 9	629639 903113	Tree Group	No longer present	No longer present	1+450 (10+400)	Yes
PBR 10	629243 903381	Mature Ash tree	21/10/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate value.	10+100	Yes
PBR 11	631162 899502	Mature Ash Tree	22/10/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate value.	0+100 (14+600)	Yes
PBR 12	631327 899536	Mature Sycamore Tree	22/10/2025 - ground inspection with endoscope and torch.	Low value	0+200 (14+600)	Yes
PBR 13	631341 899539	Mature Sycamore Tree	22/10/2025 - ground inspection with endoscope and torch.	Low value	0+200 (14+600)	Yes
PBR 14	631350 899610	Mature Ash Tree	22/10/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate value.	14+600	Yes
PBR 15	631388 899392	Mature Ash Tree	22/10/2025 - ground inspection with endoscope and torch. 22/10/2025 - dusk survey coupled with thermal imagery filming.	PRF-M features. Moderate value.	14+800	Yes
PBR 16	631409 899386	Mature Sycamore Tree	22/10/2025 - ground inspection with endoscope and torch. 22/10/2025 - dusk survey coupled with thermal imagery filming.	PRF-M features. Moderate value.	14+850	Yes

PBR No.	ITM Co-ordinates	Tree Details	2025 Survey Details	PRF Value	Chainage (approx)	Within CPO
PBR 17	631477 899350	Mature Ash tree	22/10/2025 - ground inspection with endoscope and torch. 22/10/2025 - dusk survey coupled with thermal imagery filming.	PRF-M features. Moderate value.	14+900	Yes
PBR 18	631472 899327	Mature Ash tree	22/10/2025 - ground inspection with endoscope and torch. 22/10/2025 - dusk survey coupled with thermal imagery filming.	PRF-M features. Moderate value.	14+900	Yes
PBR 19	631503 899323	Mature Treeline (Ash trees)	22/10/2025 - ground inspection with endoscope and torch. 22/10/2025 - dusk survey coupled with thermal imagery filming.	PRF-M features. Moderate value.	15+000	Yes
PBR 20	631572 899357	Mature Ash Tree	22/10/2025 - ground inspection with endoscope and torch. 22/10/2025 - dusk survey coupled with thermal imagery filming.	PRF-M features. Moderate value.	15+000	Yes
PBR 21	632416 898398	Sycamore tree and 3 Ash trees	20/10/2025 - ground inspection with endoscope and torch.	Dense ivy growth prevented ground inspection.	16+400	Yes
PBR 22	632348 898184	Treeline of mature Ash, Beech & Alder trees	20/10/2025 - ground inspection with endoscope and torch. 20/10/2025 - dusk survey coupled with thermal imagery filming.	Mix of PRF-I and PRF-M features. Moderate to High values.	16+600	Yes
PBR 23	632471 897992	Mature Sycamore Tree	20/10/2025 - ground inspection with endoscope and torch.	Low value, due to isolation in field and light ivy growth	16+850	Yes
PBR 24	632507 897878	Treeline of mature Ash, Beech & Horse chestnut trees	21/10/2025 - ground inspection with endoscope and torch. 21/10/2025 - dusk survey coupled with thermal imagery filming.	Mix of PRF-I and PRF-M features. Moderate to High values.	16+950	Yes
PBR 25	632514 897441	Treeline of mature trees	20/10/2025 - ground inspection with endoscope and torch. 20/10/2025 - dusk survey.	Mix of PRF-I and PRF-M features. Moderate to High values.	17+400	Yes
PBR 26	632372 897145	Mature Ash Tree	20/10/2025 - ground inspection with endoscope and torch. 20/10/2025 - dusk survey coupled with thermal imagery filming.	PRF-M features. Moderate value.	End of scheme	Yes
PBR 27	632456 897153	Treeline of early mature Ash	20/10/2025 - ground inspection with endoscope and torch.	Low value	End of scheme	Yes
PBR 28	628761 904061	Early mature Ash tree	21/10/2025 - ground inspection with endoscope and torch.	Dense ivy growth prevented ground inspection. Dead tree to potentially have PRF-M features.	9+250	Yes

PBR No.	ITM Co-ordinates	Tree Details	2025 Survey Details	PRF Value	Chainage (approx)	Within CPO
PBR 29	628878 904056	Early mature Ash tree	21/10/2025 - ground inspection with endoscope and torch.	Dense ivy growth prevented ground inspection. Dead tree to potentially have PRF-M features.	9+300	Yes
PBR 30	627068 907608	Mature Ash Tree	21/10/2025 - ground inspection with endoscope and torch.	Low value	0+200 (5+400)	Yes
PBR 31	625895 908699	Tree Group	Not inspected as in private farmyard	Low value	3+600	Yes
PBR 32	625296 909930	Mature Ash Tree	21/10/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate Value	2+150	Yes
PBR 33	625120 910172	3 mature trees (2 Ash, 1 Sycamore)	21/10/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate Value	1+800	Yes
PBR 34	624742 910394	18 beech trees (mixed ages)	21/10/2025 - ground inspection with endoscope and torch. 21/10/2025 - dusk survey coupled with thermal imagery filming.	Mix of PRF-I and PRF-M features. Moderate to High values	1+400	Yes
PBR 35	624966 910136	Mature Sycamore tree	21/10/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate Value	0+000 (1+800)	Yes
PBR 36	625114 910286	Dead Ash tree	21/10/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate Value	1+800	No
PBR 37	625174 910205	Mature Ash tree	21/10/2025 - ground inspection with endoscope and torch.	Dense ivy growth prevented ground inspection. Tree of age to potentially have PRF-M features.	1+800	Yes
PBR 38	632298 897256	Early mature Ash tree	20/10/2025 - ground inspection with endoscope and torch.	Dense ivy growth prevented ground inspection. Tree of age to potentially have PRF-M features.	End of scheme	Yes
PBR 39	632415 898170	Mature Alder, Early mature Ash (x4)	20/10/2025 - ground inspection with endoscope and torch.	Ivy growth - Low value	16+650	Yes
PBR 40	629292 903289	Mature Beech treeline	26/8/2025 - ground inspection with endoscope and torch. Dusk survey 26/8/2025	Mix of PRF-I and PRF-M features. Moderate to High values	10+200	Yes
PBR 41	632454 898517	Mature Beech tree	21/10/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate Value	16+300	Yes
PBR 42	632332 897208	Treeline of Ash (early mature x3)	20/10/2025 - ground inspection with endoscope and torch.	Dense ivy growth prevented ground inspection. Heavy ivy growth.	End of scheme	Yes

PBR No.	ITM Co-ordinates	Tree Details	2025 Survey Details	PRF Value	Chainage (approx)	Within CPO
PBR 43	623798 910792	Treeline of Beech and Ash mixed ages)	21/10/2025 - ground inspection with endoscope and torch.	Dense ivy growth prevented ground inspection of Ash trees. Heavy ivy growth. Early mature trees considered to be of Low value. Mature Beech Tree - PRF-M featues. Moderate Value	0+020.909 (0+300)	Yes
PBR 44	624966 910136	Mature Sycamore Tree	21/10/2025 - ground inspection with endoscope and torch.	PRF-M features. Moderate Value	0+000 (1+800)	Yes
PBR 45	625618 909647	Mature Oak, Beech, Ash and Sycamore trees (x5)	21/10/2025 - ground inspection with endoscope and torch. 21/10/2025 - dusk survey coupled with thermal imagery filming.	Mix of PRF-I and PRF-M features. Moderate to High values	2+550	Yes
PBR 46	625678 909638	Mature Oak, Beech, Ash and Sycamore trees (x5)	21/10/2025 - ground inspection with endoscope and torch. 21/10/2025 - dusk survey coupled with thermal imagery filming.	Mix of PRF-I and PRF-M features. Moderate to High values	2+550	Yes

Table C-30: Section 3 Building Survey Results (2023 to 2025)

Leis = Leisler's bat, SP = Soprano pipistrelle, CP = Common pipistrelle, Natt = Natterer's bat

Building No.	Description	Survey Details	Survey Results	Chainage (approx)
Building 1 **Located in field off L1154 (Pluck Rd.)** ITM 623655 910472 ROOST TYPE = Satellite Roost (Common pipistrelle) & Day & Night Roost (Natterer's bat)	Agricultural building, single storey section and section with loft. Concrete floor. Natural stone wall with suitable crevices. Corrugated iron roof, roof felt.	Daytime Inspections 28/8/2019 (summer), 10/2/2020 (winter), 23/8/2023 (summer), 26/8/2025 (summer), 20/10/2025 (autumn). Dusk Survey 28/8/2019 Dusk Survey 23/8/2023 & 26/8/2025 (coupled with thermal imagery filming) Static Surveillance: 20/10/2025 (1 night)	Moderate suitability for roosting bat. Daytime inspections: no bats recorded, no evidence of bats in the form of droppings etc. Dusk Surveys: 2019 - Roosting: CP x6, Natt x1 (in loft of building) 2023 & 2025 – No bats recorded roosting Foraging & Commuting: Leis, CP, Natt Static Surveillance (2025): night roost for a single Natterer's bat	0+050 (0+300)
Building 2 **Off N14 (Drumcarn)** ITM 625567 909679 ROOST TYPE = Satellite/Daytime Roost	Single storey cottage, slate roost (no felt), natural stone walls (crevices). 2 exit points recorded in 2023	Daytime Inspection 28/8/2019, 23/8/2023 Dusk Survey 28/8/2019 Dusk Survey 23/8/2023 (coupled with thermal imagery filming)	Moderate suitability for roosting bat. 2019: Roosting – None 2023: Roosting – Yes (Soprano pipistrelles x3 individuals) Foraging & Commuting: Yes in 2023: SP	2+500

Building No.	Description	Survey Details	Survey Results	Chainage (approx)
Building 3 **Off N14 (Drumcarn)** ITM 625567 909672 NO ROOST	Shed to rear of Building 2. Single storey, corrugated roof.	Daytime Inspection 28/8/2019, 23/8/2023 Dusk Survey 28/8/2019 Dusk Survey 23/8/2023 (coupled with thermal imagery filming)	Low suitability for roosting bats 2019: Roosting – None 2023: Roosting – None Foraging & Commuting: 2023: SP	2+500
Building 4 **N14, Cranshannagh** ITM 628676 904135 NO ROOST	Single storey shed, natural stone walls, partial slate roof. Treelines and hedgerows, river adjacent.	Daytime Inspection 24/7/2020 (external, summer) & 25/2/2021 (internal, winter), 24/8/2023 (summer) Dusk Survey 24/7/2020 Dusk Survey 24/8/2023	Low suitability for roosting bat. Roosting: None Foraging & Commuting: SP	0+050 (9+150)
Building 5 **Beside Whitecross Rd., located in adjacent field** ITM 628870 904010 NO ROOST	Single storey agricultural building, corrugated roof, (no felt). Treelines and hedgerows, river adjacent.	Daytime Inspection 22/8/2019, 23/8/2023 Dusk Survey 22/8/2019 Dusk Survey 23/8/2023 (coupled with thermal imagery filming)	Low suitability for roosting bat. Roosting: None Foraging & Commuting: CP	9+350
Building 6 **Beside Whitecross Rd. on roadside.** ITM 628822 903957 NO ROOST	2-storey derelict house, slate roof. Treelines and hedgerows, river adjacent.	Daytime Inspection 22/8/2019, 23/8/2023 Dusk Survey 22/8/2019 Dusk Survey 23/8/2023 (coupled with thermal imagery filming)	Low suitability for roosting bat. Roosting: None Foraging & Commuting: SP	9+400
Building 7 **NW of Ballindraite, adjacent to road** ITM 630223 900431 NO ROOST	Open shelter along roadside No linear habitats to connect to the landscape.	Daytime Inspection 24/8/2023	Negligible suitability for roosting bat. Roosting: None	0+050 (13+500)
Building 8 **NW of Ballindraite, adjacent to road** ITM 630373 900268 ROOST TYPE = Daytime Roost	Dormer house and adjacent derelict section Treelines with good connectivity in the landscape	Daytime Inspection 24/8/2023 (summer, external only) Dawn Survey 24/7/2020 – dawn survey undertaken along road away between Building 8 and Building 38. Dusk survey 24/8/2023 coupled with thermal imagery filming	Moderate suitability for roosting bat. Roosting: Yes (SP – 2 individuals) Foraging & Commuting: SP	0+250 (13+600)

Building No.	Description	Survey Details	Survey Results	Chainage (approx)
Building 9 **Ballindrait (adjacent to local road, north of River Deele)** ITM 630925 900025 NO ROOST	Cottage/shed in farmyard. Single storey structure with slate roof and one exposed natural stone wall. Located north of River Deel with linear habitat to connect in the landscape.	Daytime Inspection 25/2/2021, 8/7/2021, 22/8/2023 Static surveillance 25/2/2021 to 4/3/2021 Dusk Survey 8/7/2021 Dusk Survey 22/8/2023 (2 surveyors)	Moderate suitability Static results: CP, SP Roosting: None Foraging & Commuting: CP, Leis, SP	14+000
Building 10 **Ballindrait (adjacent to local road, north of River Deele)** ITM 625564 909676 NO ROOST	Agricultural shed in farmyard. Located north of River Deel with linear habitat to connect in the landscape.	Daytime Inspection 25/2/2021, 8/7/2021, 22/8/2023 Static surveillance 25/2/2021 to 4/3/2021 Dusk Survey 8/7/2021 Dusk Survey 22/8/2023 (2 surveyors)	Low suitability Static results: CP, SP Roosting: None Foraging & Commuting: CP, Leis, SP	14+000
Building 11 **Ballindrait (adjacent to local road, north of River Deele)** ITM 625564 909676 NO ROOST	Agricultural shed in farmyard. Located north of River Deel with linear habitat to connect in the landscape.	Daytime Inspection 25/2/2021, 8/7/2021, 22/8/2023 Static surveillance 25/2/2021 to 4/3/2021 Dusk Survey 8/7/2021 Dusk Survey 22/8/2023 (2 surveyors)	Negligible suitability Static results: CP, SP Roosting: None Foraging & Commuting: CP, Leis, SP	14+050
Building 12 **Ballindrait (adjacent to local road, north of River Deele)** **ITM 625564 909676** NO ROOST	Agricultural shed in farmyard. Located north of River Deel with linear habitat to connect in the landscape.	Daytime Inspection 25/2/2021, 8/7/2021, 22/8/2023 Static surveillance 25/2/2021 to 4/3/2021 Dusk Survey 8/7/2021 Dusk Survey 22/8/2023 (2 surveyors)	Negligible suitability Static results: CP, SP Roosting: None Foraging & Commuting: CP, Leis, SP	14+000
Building 13 **Ballindrait (adjacent to local road, north of River Deele)** **ITM 625564 909676** NO ROOST	Agricultural shed in farmyard. Located north of River Deel with linear habitat to connect in the landscape.	Daytime Inspection 25/2/2021, 8/7/2021,22/8/2023 Static surveillance 25/2/2021 to 4/3/2021 Dusk Survey 8/7/2021 Dusk Survey 22/8/2023 (2 surveyors)	Negligible suitability Agricultural buildings – Low suitability Static results: CP, SP Roosting: None Foraging & Commuting: CP, Leis, SP	14+050
Building 14 **Ballindrait (adjacent to local road, north of River Deele)** **ITM 625564 909676** NO ROOST	Agricultural shed in farmyard. Located north of River Deel with linear habitat to connect in the landscape.	Daytime Inspection 25/2/2021, 8/7/2021, 22/8/2023 Static surveillance 25/2/2021 to 4/3/2021 Dusk Survey 8/7/2021 Dusk Survey 22/8/2023 (2 surveyors)	Negligible suitability Agricultural buildings – Low suitability Static results: CP, SP Roosting: None Foraging & Commuting: CP, Leis, SP	14+000

Building No.	Description	Survey Details	Survey Results	Chainage (approx)
Building 15 **Ballindrait (adjacent to local road, north of River Deele)** **ITM 631089 90044** NO ROOST	Modern bungalow No linear habitat features to connect to landscape	Daytime Inspection & Dusk survey 8/7/2021 Daytime Inspection & Dusk survey 22/8/2023 (thermal imagery filming)	Low suitability Roosting: None Foraging & Commuting: SP, CP, Leis	1+100 (14+000)
Building 16 **Ballindrait (adjacent to local road, south of River Deele)** ITM 631319 899568 NO ROOST in 2023	Modern bungalow with tile roof. Roof works since 2020. Treeline with good landscape connectivity	Daytime Inspection – external only on 25/7/2020, 22/8/2023 Dusk Survey 25/7/2020 (2 surveyors) Daytime Inspection & Dusk survey 22/8/2023 (coupled with thermal imagery)	Moderate suitability for roosting bat. Roosting: Leis >4 individuals **ROOST TYPE = Satellite (recorded in 2020) No bat roost recorded in 2023** Foraging & Commuting: SP, Leis, CP	14+600
Building 17 **Ballindrait (adjacent to local road, south of River Deele)** **ITM 631366 899538** NO ROOST	Single storey agricultural shed Treeline with good landscape connectivity	Daytime Inspection & Dusk Survey 25/7/2020 (2 surveyors) Daytime Inspection & Dusk survey 22/8/2023	Low suitability for roosting bat. Roosting: None Foraging & Commuting: SP, Leis, CP	14+600
Building 18 **Ballindrait (adjacent to local road, south of River Deele)** **ITM 631381 899527** NO ROOST	Single storey agricultural shed Treeline with good landscape connectivity	Daytime Inspection & Dusk Survey 25/7/2020 (2 surveyors) Daytime Inspection & Dusk survey 22/8/2023	Low suitability for roosting bat. Roosting: None Foraging & Commuting: SP, Leis, CP	14+600
Building 19 **Lifford, off N15** **ITM 632590 897545** NO ROOST	Modern 2-storey house No treeline vegetation to connect to landscape	Daytime Inspection & Dusk survey 30/8/2022 (coupled with thermal imagery) Daytime Inspection & Dusk survey 22/8/2023	Low suitability Roosting: None	17+300
Building 20 **Lifford, off N15** **ITM 632608 987534** NO ROOST	Single storey garage to rear of Building 19 No treeline vegetation to connect to landscape	Daytime Inspection & Dusk survey 30/8/2022 (coupled with thermal imagery) Daytime Inspection & Dusk survey 22/8/2023	Low suitability Roosting: None	17+300
Building 21 **Lifford, off N15** **ITM 632569 897525** NO ROOST	Modern 2-storey house No treeline vegetation to connect to landscape	Daytime Inspection & Dusk survey 30/8/2022 (coupled with thermal imagery) Daytime Inspection & Dusk survey 22/8/2023	Low suitability Roosting: None	17+300

Building No.	Description	Survey Details	Survey Results	Chainage (approx)
Building 22 **Lifford, off N15** **ITM 635572 897507** NO ROOST	Single storey garage to rear of Building 21 No treeline vegetation to connect to landscape	Daytime Inspection & Dusk survey 30/8/2022 (coupled with thermal imagery) Daytime Inspection & Dusk survey 22/8/2023	Low suitability Roosting: None	17+300
Building 23 **Lifford, off N15 (in agricultural field)** **ITM 632608 897414** NO ROOST	Single storey corrugate iron shed. Treelines and hedgerows adjacent.	Daytime Inspection 25/2/2021, 22/8/2023 Static Surveillance (one unit in shed and one unit in adjacent hedgerow)	Low suitability for roosting bat. Roosting: None	17+400
Building 24 **Raphoe, off R236 Junction, N14** **ITM 628254 905584** NO ROOST	Modern bungalow 9slate roof), 2 prefabricated sheds/offices. Little tall vegetation present in immediate surroundings. Street lighting present.	Daytime inspection 5/9/2024 Dusk survey 5/9/2024 (1 surveyor, thermal imagery filming	Negligible suitability for roosting bat. Roosting: None	0+500 (7+600)

Table C-31: Section 3 Building Survey Results (Pre-2023)

Leis = Leisler's bat, Cp = Common pipistrelle, Sp = Soprano pipistrelle, BLE = brown long-eared bat, *Myotis* spp = *Myotis* species.

Building No.	Description	Survey Details	Survey Results	Chainage (approx)
Building 25 **Pluck (adj to Corker River)** **ITM 623423 910244** ROOST TYPE = Maternity	Modern 2-storey house Adjacent to river, linear habitat with good landscape connectivity **Located 227m from CPO**	Daytime Inspection 28/8/2019 Dusk Survey 28/8/2019	Moderate suitability for roosting bats. Roosting: Yes (SP – in roof space) Foraging & Commuting: None	0+300
Building 26 **Carrickballydooey Rd.** **ITM 624814 910147**	Single storey cottage, slate roof (no felt), natural stone walls (crevices).	Daytime Inspection 28/8/2019 Dusk Survey 28/8/2019	Moderate suitability for roosting bats. Roosting: None Foraging & Commuting: None	1+600
Building 27 **N14, Drumcairn** **ITM 625523 909646**	2-storey derelict house, slate roof in poor condition.	Daytime Inspection 28/8/2019 Dusk Survey 28/8/2019	Low suitability for roosting bats. Roosting: None Foraging & Commuting: None	2+500
Building 28 **N14, Drumoghill Junction** **ITM 625814 909576**	Derelict (collapsed roof) bungalow, slate roof	Daytime Inspection 22/8/2019 Dawn Survey 23/8/2019	Low suitability for roosting bat. Roosting: None Foraging & Commuting: CP	2+650

Building No.	Description	Survey Details	Survey Results	Chainage (approx)
Building 29 **Mondoney Lower** **ITM 625894 909646**	Number of agricultural buildings with corrugated iron roofs, natural stone walls (crevices).	Daytime Inspection 24/8/2019, 29/9/2020 Dawn Survey 24/8/2019 Dusk Survey 29/9/2020	Low suitability for roosting bats. Roosting: None Foraging & Commuting: Leis, SP	3+500
Building 30 **N14 – Doorable** **ITM 626715 908084** ROOST TYPE = Daytime Roost	Two agricultural buildings, natural stone. One with slate roof, second with corrugated roof. **Located 10m from CPO**	Daytime Inspection 23/8/2019 Dusk Survey 23/8/2019	Moderate suitability for roosting bats. Roosting: SP x1 Foraging & Commuting: SP	4+700
Building 31 **N14 - Doorable** **ITM 626936 907826** ROOST TYPE = Satellite	White cottage, unoccupied, slate roof. **Located 34m from CPO**	Daytime Inspection 23/8/2019 (external) Dusk Survey 23/8/2019	Moderate suitability for roosting bats. Roosting: SP (in roof space, exit point at facia/soffit). Foraging & Commuting: SP, Leis, *Myotis* spp.	5+100
Building 32 **N14, Slievebuck** **ITM 627799 905868**	2-storey ruins, natural stone walls, no roof. Overgrown with vegetation.	Daytime Inspection 28/8/2019 & 10/2/2020 Dawn Survey 30/9/2019	Moderate suitability for roosting bat. Roosting: None Foraging & Commuting: CP	6+950
Building 33 **N14, Slievebuck** **ITM 627799 905868** ROOST TYPE = Daytime Roost	Agricultural building in farmyard **Located 152m from CPO**	Roost recorded during walking transect in 2018	Moderate suitability for roosting bat. Roosting: CP Foraging & Commuting: CP	7+250
Building 34 **North of N14** **ITM 628608 904860**	Farmyard with stone ruins and modern corrugated iron sheds. Treelines and hedgerows adjacent.	Daytime Inspection 25/7/2020 Dusk Survey 25/7/2020 Static Surveillance 25/7/2020	Low suitability for roosting bats. Roosting: None Foraging & Commuting: CP, Leis, SP	8+400
Building 35 **N14, Cranshannagh** **ITM 628639 904137** ROOST TYPE = Satellite	Series of single storey agricultural buildings, mixed roof materials. **Located 26m from CPO**	Daytime Inspection 28/8/2019 Dusk Survey 28/8/2019 Static Surveillance 25/7/2020 Static Surveillance (25/2/2021 to 4/3/2021)	Moderate suitability for roosting bats. Roosting: SP, BLE Foraging & Commuting: SP, CP, Leis Static Surveillance (25/2/2021 to 4/3/2021): SP, BLE	9+150
Building 36 **On N14 (Tullyrap)** **ITM 629237 904137**	Derelict cottage, slate roof along road (close to bridge). Treelines and hedgerows, river adjacent.	Daytime Inspection 24/7/2020 (external) & 25/2/2021 (internal) Dusk Survey 24/7/2020 Static Surveillance at bridge. Static surveillance inside cottage (25/2/2021 to 4/3/2021)	Moderate suitability for roosting bats. Roosting: None Foraging & Commuting: SP Static surveillance (25/2/2021 to 4/3/2021): No bats recorded	10+050

Building No.	Description	Survey Details	Survey Results	Chainage (approx)
Building 37 **Crossroads off N14, Adjacent to bridge** **ITM 629829 903045**	Series of buildings in derelict condition (mixed roof materials). Treelines and hedgerows, river adjacent.	Daytime Inspection 28/8/2019 (external) & 25/2/2021 Dusk Survey 28/8/2019 Dawn Survey 24/8/2019 Static Surveillance of buildings (25/2/2021 to 4/3/2021)	Moderate suitability for roosting bats. Roosting: None Foraging & Commuting: SP Static Surveillance (25/2/2021 to 4/3/2021): SP, BLE	10+500
Building 38 **L2414** **ITM 630449 900547** ROOST TYPE = Night Roost	Single storey building with slate roof (felt) and natural stone walls (crevices). Treelines and hedgerows adjacent. **Located 27m from CPO**	Daytime Inspection 23/7/2020 Dawn Survey 24/7/2020 Static Surveillance 23/7/2020	Moderate suitability for roosting bats. Roosting: SP Foraging & Commuting: SP, CP, Leis	0+000 (13+400)
Building 39 **Ballindrait** **ITM 630368 900342** ROOST TYPE = Satellite	Estate house and converted out-buildings (slate roofs). **Located 16m from CPO**	Daytime Inspection & Dusk survey 25/8/2021 Thermal imagery filming IR filming (x2 cameras) Static Surveillance (4 units during dusk survey).	Moderate suitability for roosting bats. Roosting: SP (2 roosts), *Myotis* spp. (Natterer's bat), brown long-eared bat.	0+200 (13+600)
Building 40 **Ballindrait** **ITM 630813 900022** ROOST TYPE = Satellite	Large natural stone building with slate roof (Old Railway Building – storage). Treelines and hedgerows leading to Deele River. **Located 65m from CPO**	Daytime Inspection 10/2/2020 & 23/7/2020 Dusk Survey 23/7/2020 Static Surveillance 10/2/1010 & 23/7/2020	High suitability for roosting bats. Roosting: SP x3 Foraging & Commuting: SP, Leis, *Myotis* spp.	14+000
Building 41 **Ballindrait** **ITM 630861 900011** ROOST TYPE = Maternity	Natural stone loft building with slate roof and timber facia/soffit Old railway building – Station House). Treelines and hedgerows leading to Deele River. **Located 21m from CPO**	Daytime Inspection – None (no access to internal space) Dusk Survey 28/8/2019	Moderate suitability for roosting bats. Roosting: SP >20 individuals Foraging & Commuting:	14+000
Building 42 **R264** **ITM 631359 899573** ROOST TYPE = Satellite	Series of large natural stone loft buildings with slate or corrugated roofs. Modern farm sheds on opposite side of road. Treelines and hedgerows leading to Deele River. **Located 22m from CPO**	Daytime Inspection 10/2/2020 & 25/7/2020 Dusk Survey 25/7/2020 (2 surveyors)	Moderate suitability for roosting bats. Roosting: CP x3 (in older buildings) Foraging & Commuting: SP, CP, Leis	14+600

Building No.	Description	Survey Details	Survey Results	Chainage (approx)
Building 43 **Murlough** **ITM 631501 899065**	Large natural stone and brick wind mill structure. Open farmyard. Woodland to the south of farmyard.	Daytime Inspection 10/2/2020 Dusk Survey 10/2/2020 Static Surveillance 10/2/2020	Moderate suitability for roosting bats. Roosting: None Foraging & Commuting: None	15+100
Building 44 **Unnamed road** **ITM 632342 898180** ROOST TYPE = Daytime Roost	Single storey farm building with slate roof in poor condition. Treelined local road. **Located 152m from CPO82m**	Daytime Inspection 28/8/2019, 24/7/2020 Dusk Survey 29/9/2019 Dawn Survey 24/7/2020 Static Surveillance 23/7/2020	Moderate suitability for roosting bats. Roosting: BLE x1 Foraging & Commuting: CP, Leis, BLE	16+650
Building 45 **Unnamed road** **ITM 632157 897824**	Series of agricultural buildings with mixed roofs. Treelined local road.	Daytime Inspection 25/7/2020 Dusk Survey 25/7/2020	Low suitability for roosting bats. Roosting: None Foraging & Commuting: CP, Leis, BLE	17+000
Building 46 **Farmyard off N15** **ITM 631940 897025** ROOST TYPE = Satellite	Mixed agricultural buildings **Located 65m from CPO**	Daytime Inspection & Dusk Survey 22/4/2021	Moderate suitability Roosting: x2 CP Foraging: CP & Leis	End of scheme

Table C-32: Section 3 Bridge Survey Results

Bridge No.	Description	Survey Details	Survey Results	Chainage (approx)
Bridge No. 1 Chainage 0+650 ITM 624042 910475	Modern culvert on N14 (Townland – Kincraigy)	Daytime Inspection 25/2/2021	Low Suitability for roosting. Good foraging and commuting habitat. Bridge Value: 0	0+650
Bridge No. 2 L1154 Chainage 0+300 sideroad (0+200, mainline) ITM 623461 910475	Modern culvert (Local road) Pluck	Daytime Inspection 25/2/2021	Low Suitability for roosting. Good foraging and commuting habitat. Bridge Value: 0	0+300 (0+200)
Bridge No. 3 Chainage 0+500 L1154 ITM 623736 910213	Bridge (sealed, local road) Pluck	Daytime Inspection 25/2/2021	Low Suitability for roosting. Good foraging and commuting habitat. Bridge Value: 0	0+500
Bridge No. 4 Chainage 1+200 N14 ITM 624498 910240	Modern culvert (1.5m x 3m) on N14 (Townland – Carrickballydooey)	Daytime Inspection 25/2/2021	Low Suitability for roosting. Good foraging and commuting habitat. Bridge Value: 0	1+200

Bridge No.	Description	Survey Details	Survey Results	Chainage (approx)
Bridge No. 5 Chainage 2+200 N14 ITM 625138 909800	2-arch 1m sealed on N14 (Townland – Drumoghill)	Daytime Inspection 25/2/2021	Low Suitability for roosting. Good foraging and commuting habitat. Bridge Value: 1	2+200
Bridge No. 6 Chainage 4+500 ITM 626599 908191	Modern culvert (1.0m) on N14 (Townland – Woodhill)	Daytime Inspection 25/2/2021	Low Suitability for roosting. Good foraging and commuting habitat. Bridge Value: 0	4+500
Bridge No. 7 Chainage 7+100 ITM 628048 906088	Road culvert sealed (1.0m) on N14 (Townland – Slievebuck)	Daytime Inspection 25/2/2021	Low Suitability for roosting. Bridge Value: 0 Good foraging and commuting habitat south of N14, vegetation cleared north of N14.	7+100
Bridge No. 8 Chainage 9+550 ITM 628724 904043	Single arch bridge (2.5m in height) on N14 (Townland – Drumbeg)	Daytime Inspections: 28/8/2019 (summer) 25/2/2021 (winter) 26/8/2025 (summer) 21/10/2025 (autumn) Static Surveillance at bridge (Winter) – Static 31 (25/2/2021 to 4/3/2021) Dusk Survey (coupled with thermal imagery) 25/8/2025 Additional static surveillance along river channel (downstream): Static 9 (23/8/2019) for 1 night Static 53 (22/8/2023) for 2 nights Static 64 (7/10/2025) for 14 nights	High Suitability for roosting. Three crevices retained post works for bats (marked with red paint) (26/8/2025). Good foraging and commuting habitat. Static surveillance (25/2/2021 to 4/3/2021): No bats recorded. Dusk survey – no bats recorded emerging from structure on 25/8/2025. ROOST: Daubenton's bat (single) in crevice retained for bats post works during 28/8/2019 survey Bat droppings were noted in one crevice during 26/8/2025 inspection. Daytime Roost Additional static surveillance: common pipistrelle, soprano pipistrelle, Daubenton's bat and Leisler's bat	9+550
Bridge No. 9 Chainage 10+200 ITM 629292 903289	Single arch bridge (2.5m) on N14 (Townland – Tullyrap)	Daytime Inspection 28/8/2019 (summer), 25/2/2021 (winter), 26/8/2025 (summer) 21/10/2025 (autumn) Static Surveillance (25/2/2021 to 4/3/2021) Dusk Survey (coupled with thermal imagery) 25/8/2025 Additional static surveillance along river channel (downstream): Static 29 (23/8/2019) for 7 nights (adjacent building – Building 39) Static 52 (22/8/2023 for 2 nights (failed to record) Static 64 (7/20/2025 for 14 nights)	High Suitability for roosting. One crevice marked with red paint while 4 additional crevices suitable for roosting bats (26/8/2025). Good foraging and commuting habitat with additional potential roosts in mature beech trees. Static surveillance (25/2/2021 to 4/3/2021): No bats recorded. Dusk survey – no bats recorded emerging from structure on 25/8/2025. ROOST: Daubenton's bat (single) in crevice retained for bats post works recorded during 28/8/2029 survey. Daytime Roost Additional static surveillance: common pipistrelle, soprano pipistrelle, Daubenton's bat and Leisler's bat	10+200

Bridge No.	Description	Survey Details	Survey Results	Chainage (approx)
Bridge No. 10 Chainage 10+500 ITM 629907 903026	2-arch bridge sealed (1.5m) on N14 (Townland – Tullyrap)	Daytime Inspection 28/8/2019, 25/2/2021 Dusk Survey 28/8/2019	Low Suitability for roosting. Good foraging and commuting habitat. Bridge Value: 0	10+500
Bridge No. 11 Chainage 11+150 ITM 630315 902549	Large single arched bridge sealed (4.0m) on N14 (Townland – Feddyglass)	Daytime Inspection 25/2/2021	Low Suitability for roosting. Poor foraging habitat. Bridge Value: 0	11+150
Bridge No. 12 Chainage 0+550 sideroad (14+000 mainline) ITM 630619 900070	Railway bridge walls (Ballindrait)	Daytime Inspection 25/2/2021 Static Surveillance (No. 28) (25/2/2021 to 4/3/2021)	Low Suitability for roosting. Good foraging and commuting habitat. Static Surveillance (25/2/2021 to 4/3/2021): common pipistrelle, soprano pipistrelle and Leisler's bat. Bridge Value: 1	0+550 (14+000)

Table C-33: Section 3 Static Locations (2023 & 2025) – Average number of bat passes (Total number of bat passes divided by the number of nights of surveillance)

Green Highlight = High level of bat activity; Yellow Highlight = Moderate level of bat activity.

Static Code	No. of Nights	Common pipistrelle	Soprano pipistrelle	Nathusius' pipistrelle	Leisler's bat	Daubenton's bat	Natterer's bat	Brown long-eared bat
Static 47	1	0.0	7.0	0.0	0.0	0.0	0.0	0.0
Static 48	2	69.5	90.5	0.0	15.5	1.0	5.0	0.0
Static 49	2	103.0	68.5	0.0	11.0	0.0	0.5	1.0
Static 50	2	106.5	626.0	0.0	22.0	2.0	0.0	1.0
Static 51	2	22.5	54.0	0.0	47.5	3.0	0.0	1.0
Static 52	2	Failed						
Static 53	2	Failed						
Static 54	1	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Static 55	7	108.9	127.6	0.0	73.0	106.9	0.1	0.4
Static 56	10	346.8	615.4	0.0	0.3	0.0	0.0	0.2
Static 57	7	448.3	251.6	0.0	0.0	0.0	0.0	0.0
Static 58	14	94.9	113.4	0.0	3.2	0.0	0.1	0.1
Static 59	14	119.9	205.6	0.0	5.7	0.2	0.0	0.1
Static 60	14	12.2	18.1	0.1	4.4	11.8	0.4	0.2
Static 61	14	58.0	30.7	0.0	14.0	0.1	0.1	0.4
Static 62	14	10.9	13.4	0.6	5.4	1.8	0.6	0.1
Static 63	14	15.3	14.1	0.0	22.1	0.3	0.4	0.4
Static 64	14	1.2	1.7	0.0	0.3	0.1	0.0	0.0
Static 65	14	33.3	33.2	0.0	10.4	0.6	0.4	0.7
Static 66	14	23.6	60.6	0.0	2.1	0.4	0.7	1.0
Static 67	7	33.3	23.6	0.0	3.0	0.4	0.0	0.6

Static Code	No. of Nights	Common pipistrelle	Soprano pipistrelle	Nathusius' pipistrelle	Leisler's bat	Daubenton's bat	Natterer's bat	Brown long-eared bat
Static 68	14	38.6	184.2	0.0	2.8	1.1	0.0	0.2
Static 69	14	2.1	104.2	0.1	7.8	0.1	0.0	0.1

Table C-34: Section 3 Static Locations (2023 & 2025) – Average number of bat passes (Total number of bat passes divided by the number of nights of surveillance)

Green Highlight = High level of bat activity; Yellow Highlight = Moderate level of bat activity.

Static Code	No. of Hrs	Common pipistrelle	Soprano pipistrelle	Nathusius' pipistrelle	Leisler's bat	Daubenton's bat	Natterer's bat	Brown long-eared bat
Static 1	1	1151.0	185.0	0.0	6.0	0.0	0.0	0.0
Static 2	1	101.0	110.0	0.0	3.0	0.0	0.0	0.0
Static 3	1	4.0	10.0	0.0	0.0	0.0	0.0	0.0
Static 4	1	56.0	102.0	0.0	21.0	0.0	0.0	0.0
Static 5	1	6.0	10.0	0.0	2.0	0.0	0.0	0.0
Static 6	1	7.0	127.0	0.0	11.0	0.0	0.0	0.0
Static 7	1	37.0	24.0	0.0	8.0	0.0	0.0	0.0
Static 8	1	208.0	319.0	0.0	38.0	0.0	0.0	0.0
Static 9	1	26.0	5.0	0.0	1.0	0.0	0.0	0.0
Static 10	2	194.0	616.5	0.0	9.5	0.0	0.0	4.5
Static 11	2	115.0	508.5	0.0	2.0	0.0	0.0	0.0
Static 12	2	4.5	18.0	0.0	0.5	0.0	0.0	0.0
Static 13	2	509.0	28.0	0.0	3.0	0.0	0.0	0.0
Static 14	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Static 15	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Static 16	1	44.0	1.0	0.0	2.0	0.0	0.0	0.0
Static 17	1	108.0	4.0	0.0	0.0	0.0	0.0	0.0
Static 18	1	10.0	0.0	0.0	4.0	0.0	0.0	0.0
Static 19	1	45.0	28.0	0.0	10.0	0.0	0.0	0.0
Static 20	1	15.0	12.0	0.0	0.0	0.0	0.0	0.0
Static 21	1	27.0	595.0	0.0	48.0	11.0	0.0	0.0
Static 22	1	8.0	7.0	0.0	4.0	0.0	0.0	0.0
Static 23	1	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Static 24	1	99.0	166.0	0.0	38.0	0.0	0.0	0.0
Static 25	7	0.9	1.7	0.0	0.6	0.0	0.0	0.0
Static 26	7	1.1	11.6	0.0	0.1	0.0	0.0	0.0
Static 27	7	0.9	3.7	0.0	0.0	0.0	0.0	0.0
Static 28	7	7.3	24.9	0.0	0.3	0.0	0.0	0.0
Static 29	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Static 30	7	0.0	1.7	0.0	0.0	0.0	0.0	0.1
Static 31	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Static 32	6	165.3	244.0	1.0	43.8	90.0	0.3	0.0

Static Code	No. of Hrs	Common pipistrelle	Soprano pipistrelle	Nathusius' pipistrelle	Leisler's bat	Daubenton's bat	Natterer's bat	Brown long-eared bat
Static 33	6	87.0	60.8	0.0	9.5	0.0	0.0	0.2
Static 34	6	323.2	25.2	0.0	1.0	0.0	0.0	0.0
Static 35	6	197.2	638.2	0.0	18.3	0.2	0.0	0.3
Static 36	6	341.0	431.2	0.0	12.3	0.0	0.0	0.0
Static 37	6	87.7	84.2	0.0	11.7	0.0	0.2	0.0
Static 38	6	13.0	44.8	0.0	2.8	0.3	0.0	0.0
Static 39	6	15.0	179.0	0.0	7.0	0.3	0.0	0.0
Static 40	5	9.4	18.4	0.8	0.0	3.4	0.6	0.6
Static 41	1	30.0	114.0	0.0	0.0	0.0	0.0	0.0
Static 42	4	9.3	7.5	0.0	0.8	0.0	0.0	0.0
Static 43	4	7.8	42.8	0.3	26.0	54.8	0.0	0.0
Static 44	4	17.3	37.8	0.5	50.5	20.5	0.0	0.5
Static 45	4	32.8	139.0	0.5	70.0	1.5	0.0	1.0
Static 46	2	6.0	30.0	0.5	28.5	0.0	0.0	3.0

Appendix D
Protected Bird Species NBDC Records

APPENDIX D: PROTECTED BIRD SPECIES NBDC RECORDS

Table D-1: Section 1 Bird Species Designations

Latin Name	Common Name	Grid Square			Designations[1]
Actitis hypoleucos	Common sandpiper		H09		Amber List, AEWA
Alauda arvensis	Sky lark	C10	H09	H19	Amber List
Anas acuta	Northern pintail	C10			SCI, II(A) III(B) (EU BD), Amber List, AEWA
Anas crecca	Eurasian teal		H09	H19	SCI, II(A) III(B) (EU BD), Amber List, AEWA
Anas penelope	Eurasian wigeon			H19	SCI, II(A) III(B) (EU BD), Amber List, AEWA
Anas platyrhynchos	Mallard	C10	H09	H19	SCI, II(A) III(A) (EU BD), Amber List, AEWA
Anthus pratensis	Meadow pipit	C10	H09	H19	Red List
Apus apus	Common swift	C10	H09	H19	Red List
Ardea cinerea	Grey heron	C10	H09	H19	SCI, AEWA
Bucephala clangula	Common goldeneye			H19	SCI, II(B) (EU BD), Red List, AEWA
Carduelis cannabina	Common linnet	C10	H09	H19	Amber List
Carduelis chloris	European greenfinch	C10	H09	H19	Amber List
Circus cyaneus	Hen harrier		H09		SCI, I (EU BD), Amber List
Columba livia	Rock pigeon	C10	H09	H19	II(A) (EU BD)
Columba palumbus	Common wood pigeon	C10	H09	H19	II(A) III(A) (EU BD)
Cygnus cygnus	Whooper swan		H09	H19	SCI, I (EU BD), Amber List, AEWA
Cygnus olor	Mute swan			H19	Amber List, AEWA
Delichon urbicum	House martin	C10	H09	H19	Amber List
Falco columbarius	Merlin	C10			SCI, I (EU BD), Amber List
Falco peregrinus	Peregrine falcon		H09	H19	I (EU BD), SCI
Falco rusticolus	Gyr falcon		H09		I (EU BD)
Falco tinnunculus	Common kestrel	C10	H09	H19	Red List
Fulica atra	Common coot			H19	SCI, II(A) III(B) (EU BD), Amber List, AEWA
Gallinago gallinago	Common snipe	C10	H09	H19	II(A) III(B) (EU BD), Red List, AEWA
Gallinula chloropus	Common moorhen			H19	AEWA
Hirundo rustica	Barn swallow	C10	H09	H19	Amber List
Lagopus lagopus	Red grouse	C10	H09		II(A) III(A) (EU BD), Red List
Larus fuscus	Lesser black-backed gull			H19	SCI, Amber List, AEWA
Larus ridibundus	Black-headed gull	C10	H09		SCI, Amber List, AEWA
Motacilla cinerea	Grey wagtail	C10	H09	H19	Red List
Muscicapa striata	Spotted flycatcher	C10	H09	H19	Amber List
Numenius arquata	Eurasian curlew	C10		H19	SCI, II(B) (EU BD), Red List, AEWA
Oenanthe oenanthe	Northern wheatear	C10	H09		Amber List
Passer domesticus	House sparrow	C10	H09	H19	Amber List
Phalacrocorax carbo	Great cormorant		H09	H19	SCI, Amber List, AEWA
Phasianus colchicus	Common pheasant	C10	H09	H19	II(A) III(A) (EU BD)
Phylloscopus trochilus	Willow warbler	C10	H09	H19	Amber List
Pluvialis apricaria	European golden plover	C10			SCI, I II(B) III(B) (EU BD), Red List, AEWA

[1] Conservation status follows criteria set out in *Birds of Conservation Concern in Ireland 2020 – 2026* (Gilbert *et al.*, 2021). Red-listed species are those of highest conservation priority, Amber-listed species are those which are of lesser priority, and Green-listed species those of least conservation priority. Species listed in EU Birds Directive Annexes I, II Part A, II Part B, III Part A, and III Part B are denoted by: I, II(A), II(B), III(A), and III(B) (EU BD), respectively. Species listed under the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) Convention (1999) are denoted by "AEWA".

Latin Name	Common Name	Grid Square			Designations[1]
Regulus regulus	Goldcrest	C10	H09	H19	Amber List
Riparia riparia	Sand martin		H09	H19	Amber List
Saxicola rubetra	Whinchat	C10			Red List
Scolopax rusticola	Eurasian woodcock	C10	H09	H19	SCI, II(A) III(B) (EU BD), Red List, AEWA
Sturnus vulgaris	Common starling	C10	H09	H19	Amber List
Tachybaptus ruficollis	Little grebe		H09	H19	SCI, AEWA
Turdus iliacus	Redwing	C10	H09	H19	Red List
Tyto alba	Barn owl			H19	Red List

Table D-2: Section 2 Bird Species Designations

Latin Name	Common Name	Grid Square				Designations
Alauda arvensis	Sky lark	C10	C11	C20	C21	Amber List
Alca torda	Razorbill				C21	SCI, Red List, AEWA
Anas acuta	Northern pintail	C10			C21	SCI, II(A) III(B) (EU BD), Amber List, AEWA
Anas clypeata	Northern shoveler				C21	SCI, II(A) III(B) (EU BD), Red List, AEWA
Anas crecca	Eurasian teal		C11		C21	SCI, II(A) III(B) (EU BD), Amber List, AEWA
Anas penelope	Eurasian wigeon				C21	SCI, II(A) III(B) (EU BD), Amber List, AEWA
Anas platyrhynchos	Mallard	C10	C11	C20	C21	SCI, II(A) III(A) (EU BD), Amber List, AEWA
Anser albifrons	Greater white-fronted goose				C21	I II(B) III(B) (EU BD), Amber List, AEWA
Anser albifrons subsp. flavirostris	Greenland white-fronted goose				C21	SCI, I (EU BD), Amber List
Anser anser	Greylag goose		C11		C21	SCI, II(A) III(B) (EU BD), Amber List, AEWA
Anser brachyrhynchus	Pink-footed goose				C21	II(B) (EU BD), AEWA
Anthus pratensis	Meadow pipit	C10	C11	C20	C21	Red List
Apus apus	Common swift	C10	C11	C20		Red List
Ardea cinerea	Grey heron	C10	C11	C20	C21	SCI, AEWA
Arenaria interpres	Ruddy turnstone				C21	SCI, Amber List, AEWA
Aythya fuligula	Tufted duck				C21	SCI, II(A) III(B) (EU BD), Amber List, AEWA
Aythya marila	Greater scaup				C21	SCI, II(B) III(B) (EU BD), Red List, AEWA
Branta bernicla	Brent goose				C21	SCI, Amber List, AEWA
Branta leucopsis	Barnacle goose				C21	SCI, I (EU BD), Amber List, AEWA
Bucephala clangula	Common goldeneye				C21	SCI, II(B) (EU BD), Red List, AEWA
Calidris alba	Sanderling				C21	SCI, AEWA
Calidris alpina	Dunlin				C21	SCI, I (EU BD), Red List, AEWA
Calidris canutus	Red knot				C21	SCI, Red List, AEWA
Carduelis cannabina	Common linnet	C10	C11	C20	C21	Amber List
Carduelis chloris	European greenfinch	C10	C11	C20	C21	Amber List
Charadrius hiaticula	Ringed plover				C21	SCI, Amber List, AEWA
Clangula hyemalis	Long-tailed duck				C21	II(B) (EU BD), Red List, AEWA
Columba livia	Rock pigeon	C10	C11	C20	C21	II(A) (EU BD)
Columba oenas	Stock pigeon				C21	Red List
Columba palumbus	Common wood pigeon	C10	C11	C20	C21	II(A) III(A) (EU BD)
Cygnus cygnus	Whooper swan		C11	C20	C21	SCI, I (EU BD), Amber List, AEWA
Cygnus olor	Mute swan				C21	Amber List, AEWA

Latin Name	Common Name	Grid Square				Designations
Delichon urbicum	House martin	C10	C11	C20	C21	Amber List
Egretta garzetta	Little egret				C21	I (EU BD), AEWA
Emberiza citrinella	Yellowhammer		C11	C20	C21	Red List
Falco columbarius	Merlin	C10				SCI, I (EU BD), Amber List
Falco peregrinus	Peregrine falcon		C11		C21	I (EU BD), SCI
Falco rusticolus	Gyr falcon			C20		I (EU BD)
Falco tinnunculus	Common kestrel	C10	C11	C20	C21	Red List
Gallinago gallinago	Common snipe	C10	C11	C20	C21	II(A) III(B) (EU BD), Red List, AEWA
Gallinula chloropus	Common moorhen			C20	C21	AEWA
Gavia arctica	Black-throated diver				C21	SCI, I (EU BD), Amber List, AEWA
Gavia immer	Great northern diver				C21	SCI, I (EU BD), Amber List, AEWA
Gavia stellata	Red-throated Diver				C21	SCI, I (EU BD), Amber List, AEWA
Haematopus ostralegus	Eurasian oystercatcher				C21	SCI, Red List, AEWA
Hirundo rustica	Barn swallow	C10	C11	C20	C21	Amber List
Lagopus lagopus	Red grouse	C10				II(A) III(A) (EU BD), Red List
Larus argentatus	Herring gull				C21	SCI, Amber List, AEWA
Larus canus	Mew gull		C11		C21	SCI, Amber List, AEWA
Larus fuscus	Lesser black-backed gull				C21	SCI, Amber List, AEWA
Larus glaucoides	Iceland gull				C21	AEWA
Larus marinus	Great black-backed gull				C21	SCI, AEWA
Larus ridibundus	Black-headed gull	C10	C11		C21	SCI, Amber List, AEWA
Limosa lapponica	Bar-tailed godwit				C21	SCI, I (EU BD), Red List, AEWA
Limosa limosa	Black-tailed godwit				C21	SCI, Red List, AEWA
Mergus serrator	Red-breasted merganser				C21	SCI, II(B) (EU BD), Amber List, AEWA
Motacilla cinerea	Grey wagtail	C10	C11	C20	C21	Red List
Muscicapa striata	Spotted flycatcher	C10		C20		Amber List
Numenius arquata	Eurasian curlew	C10	C11	C20	C21	SCI, II(B) (EU BD), Red List, AEWA
Numenius phaeopus	Whimbrel				C21	AEWA
Oenanthe oenanthe	Northern wheatear	C10				Amber List
Passer domesticus	House sparrow	C10	C11	C20	C21	Amber List
Passer montanus	Eurasian tree sparrow		C11	C20	C21	Amber List
Phalacrocorax carbo	Great cormorant				C21	SCI, Amber List, AEWA
Phasianus colchicus	Common pheasant	C10	C11	C20	C21	II(A) III(A) (EU BD)
Phylloscopus trochilus	Willow warbler	C10	C11	C20	C21	Amber List
Pluvialis apricaria	European golden plover	C10			C21	SCI, I II(B) III(B) (EU BD), Red List, AEWA
Pluvialis squatarola	Grey plover				C21	SCI, Red List, AEWA
Podiceps auritus	Slavonian grebe				C21	SCI, I (EU BD), Red List, AEWA
Podiceps cristatus	Great crested grebe				C21	SCI, Amber List, AEWA
Regulus regulus	Goldcrest	C10	C11	C20	C21	Amber List
Riparia riparia	Sand martin		C11	C20		Amber List
Saxicola rubetra	Whinchat	C10				Red List
Scolopax rusticola	Eurasian woodcock	C10	C11		C21	SCI, II(A) III(B) (EU BD), Red List, AEWA
Sturnus vulgaris	Common starling	C10	C11	C20	C21	Amber List
Tachybaptus ruficollis	Little grebe				C21	SCI, AEWA

Latin Name	Common Name	Grid Square				Designations
Tadorna tadorna	Common shelduck				C21	SCI, Amber List, AEWA
Tringa nebularia	Common greenshank				C21	SCI, AEWA
Tringa totanus	Common redshank		C11		C21	SCI, Red List, AEWA
Turdus iliacus	Redwing	C10	C11	C20	C21	Red List
Tyto alba	Barn owl		C11	C20	C21	Red List
Uria aalge	Common guillemot				C21	SCI, Amber List, AEWA
Vanellus vanellus	Northern lapwing		C11	C20	C21	SCI, II(B) (EU BD), Red List, AEWA

Appendix E
2020 Breeding Bird Surveys

APPENDIX E: 2020 BREEDING BIRD SURVEYS

The following should be read in conjunction with breeding bird survey mapping in **EIAR Drawings 9A.48** and **9A.49** in **Volume D: Book of Drawings**.

Table E-1: Section 1 Breeding Bird Transect Dates and Times

Transect	Date	Time	Transect	Date	Time
1	22 May 2020	08:15 – 08:45	10	25 May 2020	07:55 – 09:15
	23 June 2020	05:30 – 06:00		24 June 2020	08:20 – 09:10
2	22 May 2020	07:30 – 08:05	11	28 May 2020	07:30 – 08:15
	23 June 2020	06:20 – 06:50		21 June 2020	05:40 – 06:20
3	22 May 2020	05:30 – 06:45	12	26 May 2020	05:40 – 06:15
	23 June 2020	07:10 – 08:10		21 June 2020	06:35 – 07:00
4	24 May 2020	05:30 – 06:15	13	26 May 2020	06:40 – 07:40
	20 June 2020	05:40 – 06:10		21 June 2020	07:15 – 07:55
5	24 May 2020	06:25 – 07:55	14	25 May 2020	07:50 – 09:30
	20 June 2020	06:25 – 07:45		26 June 2020	08:00 – 09:10
6	24 May 2020	08:30 – 09:20	15	27 May 2020	05:45 – 06:30
	20 June 2020	08:00 – 08:50		25 June 2020	05:40 – 06:20
7	25 May 2020	05:30 – 06:10	16	27 May 2020	06:50 – 07:50
	24 June 2020	05:45 – 07:00		27 June 2020	06:50 – 07:50
8	25 May 2020	06:20 – 06:50	17	27 May 2020	08:00 – 09:30
	23 June 2020	08:35 – 09:00		25 June 2020	07:50 – 09:10
9	25 May 2020	07:00 – 07:50	18	28 May 2020	05:35 – 06:55
	24 June 2020	07:20 – 08:10		26 June 2020	08:40 – 09:50

Table E-2: Section 2 Breeding Bird Transect Dates and Times

Transect	Date	Time	Transect	Date	Time
1	26 May 2020	07:00 – 08:00	5	25 May 2020	08:00 – 09:20
	24 June 2020	07:10 – 08:00		26 June 2020	08:00 – 09:10
2	25 May 2020	07:00 – 07:45	6	26 May 2020	10:30 – 11:35
	24 June 2020	08:20 – 09:20		26 June 2020	09:20 – 10:20
3	24 May 2020	07:30 – 08:45	7	26 May 2020	09:00 – 10:00
	24 June 2020	09:35 – 10:20		29 June 2020	08:15 – 09:15
4	24 May 2020	09:15 – 10:15			
	29 June 2020	07:00 – 07:55			

Table E-3: Section 3 Breeding Bird Transect Dates and Times

Transect	Date	Time	Transect	Date	Time
1	20 May 2020	06:00 – 07:00	5	21 May 2020	06:00 – 07:00
	10 June 2020	06:10 – 07:20		11 June 2020	06:30 – 07:40
2	20 May 2020	07:00 – 07:30	6	21 May 2020	07:10 – 08:40
	10 June 2020	07:30 – 08:40		11 June 2020	07:50 – 08:50
3	20 May 2020	07:30 – 08:30	7	21 May 2020	08:45 – 09:30
	10 June 2020	08:50 – 09:45		11 June 2020	09:00 – 09:55
4	20 May 2020	08:45 – 09:45	8	21 May 2020	09.45 – 10.45
	10 June 2020	09.55 – 11.00		11 June 2020	10.00 – 11.00

Table E-4: Section 1 Breeding Bird Survey Results

Common Name	Scientific Name	BoCCI∞	Transects	Total Count	Breeding Evidence*	Visit^
Barn Swallow	*Hirundo rustica*	Amber	3, 4, 7, 8, 9, 10, 11, 15, 17, 18,	75	Yes – 10 No – 3, 4, 7, 8, 9, 11, 15, 17, 18	L, E
Blackbird	*Turdus merula*	Green	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	63	Yes – all transects	L, E
Black cap	*Sylvia atricapilla*	Green	3, 7, 13,	10	Yes – all transects	L, E
Blue tit	*Cyanistes caeruleus*	Green	3, 4, 5, 6, 7, 9, 10, 11, 13, 15, 16, 17, 18	65	Yes – all transects	L, E
Bullfinch	*Pyrrhula pyrrhula*	Green	3, 16	6	Yes – all transects	L, E
Buzzard	*Buteo buteo*	Green	7, 10, 15, 16, 18	8	Yes – 7, 15, 16, 18 No - 10	L, E
Chaffinch	*Fringilla coelebs*	Green	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	97	Yes – all transects	L, E
Chiffchaff	*Phylloscopus collybita*	Green	3, 4, 5, 6, 7, 12, 13, 14, 16, 18	28	Yes – all transects	L, E
Coal tit	*Periparus ater*	Green	1, 2, 3, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17	43	Yes – all transects	L, E
Dunnock	*Prunella modularis*	Green	4, 5, 13, 15	6	Yes – all transects	L, E
Feral pigeon	*Columba livia domestica*		7	1	No – all transects	E
Goldcrest	*Regulus regulus*	Amber	1, 2, 4, 5, 6, 7, 12, 13, 14, 15, 16	63	Yes – 1, 2, 4, 5, 6, 7, 12, 13, 14, 16 No – 15	L, E
Goldfinch	*Carduelis carduelis*	Green	3, 6, 13	5	Yes – all transects	E
Great tit	*Parus major*	Green	3, 4, 5, 6, 7, 8, 9	19	Yes – all transects	E, L
Grey heron	*Ardea cinerea*	Green	4	1	No – all transects	E
Hooded crow	*Corvus cornix*	Green	2, 3, 4, 9, 11, 15, 17, 18	16	Yes – 16 No – 2, 3, 4, 9, 11, 17, 18	E, L
House martin	*Delichon urbicum*	Amber	3, 6, 7, 10, 15, 16, 18	15	No – all transects	E, L
Jackdaw	*Corvus monedula*	Green	3, 5, 7, 9, 10, 11, 15, 17, 18	81	Yes – 3, 5, 7, 9, 11, 15, 17, 18 No – 10	E, L
Jay	*Garrulus glandarius*	Green	4, 15	2	Yes – all transects	E, L
Linnet	*Carduelis cannabina*	Amber	16, 17	2	Yes – all transects	E, L
Long tailed tit	*Aegithalos caudatus*	Green	3, 16, 17	11	Yes – all transects	E, L
Magpie	*Pica pica*	Green	2, 3, 4, 5, 7, 8, 9, 15, 16, 17, 18	48	Yes – all transects	E, L

Common Name	Scientific Name	BoCCI∞	Transects	Total Count	Breeding Evidence*	Visit^
Mallard	*Anas platyrhynchos*	Amber	5	2	Yes – all transects	E
Meadow pipit	*Anthus pratensis*	Red	15, 18	5	Yes – all transects	E, L
Mistle thrush	*Turdus viscivorus*	Green	4, 15, 16	7	Yes – all transects	E, L
Pheasant	*Phasianus colchicus*		9	1	Yes – all transects	E
Pied wagtail	*Motacilla alba*	Green	1, 6	2	Yes – all transects	E
Reed bunting	*Emberiza schoeniclus*	Green	15, 16	2	Yes – all transects	E
Robin	*Erithacus rubecula*	Green	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	79	Yes – all transects	E, L
Rook	*Corvus frugilegus*	Green	2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 15, 16, 17, 18	90	Yes – 7, 9, 10, 15, 16, 17, 18 No – 2, 3, 4, 5, 11, 12	E, L
Song thrush	*Turdus philomelos*	Green	3, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	69	Yes – all transects	E, L
Spotted flycatcher	*Muscicapa striata*	Amber	3, 13	4	Yes – all transects	E, L
Starling	*Sturnus vulgaris*	Amber	3, 4, 5, 7, 8, 9, 10, 11, 15, 17, 18	187	Yes – 3, 4, 5, 7, 8, 9, 15, 17 No – 10, 11, 18	E, L
Stonechat	*Saxicola rubicola*	Green	5	1	Yes – all transects	E
Stock dove	*Columba oenas*	Red	7	1	No – all transects	E
Treecreeper	*Certhia familiaris*	Green	13	1	Yes – all transects	L
Willow warbler	*Phylloscopus trochilus*	Amber	3, 4, 5, 6, 7, 9, 10, 16, 17, 18	33	Yes – 3, 4, 5, 7, 9, 10, 16, 17, 18 No – 6	E, L
Wood pigeon	*Columba palumbus*	Green	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	132	Yes – all transects	E, L
Wren	*Troglodytes troglodytes*	Green	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	198	Yes – all transects	E, L

∞BoCCI: Gilbert *et al*. (2021). Feral pigeon and pheasant are not considered within this classification.

*Breeding evidence: numbers after "Yes" refer to the transects where breeding evidence was observed for that species. Breeding evidence has been categorised as: species observed in suitable nesting habitat; singing male present (or breeding calls heard) in suitable breeding habitat; pair observed in suitable nesting habitat; permanent territory presumed through registration of territorial behaviour (song etc.) on at least two different days a week or more apart at the same place or many individuals on one day; courtship and display (judged to be in or near potential breeding habitat; visiting probable nest site; agitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby; brood patch on adult examined in the hand, suggesting incubation; nest building or excavating nest-hole; distraction-display or injury feigning; used nest or eggshells found (occupied or laid within period of survey); recently fledged young or downy young; adults entering or leaving nest-site in circumstances indicating occupied nest or adults seen incubating; adult carrying faecal sac or food for young; nest containing eggs; nest with young seen or heard.

Numbers after "No" refer to the transects where no breeding evidence was observed for that species. Non-breeding activities include: flying over; species observed but suspected to be still on migration; species observed but suspected to be summering non-breeder. "All transects" after "Yes" or "No" refers to all transects which that particular species was observed in.

^Visit: E – Early Visit (i.e. Late May 2020); L – Late Visit (i.e. Late June 2020).

Table E-5: Section 2 Breeding Bird Survey Results

Common Name	Scientific Name	BoCCI∞	Transects	Total Count	Breeding Evidence*	Visit^
Barn Swallow	*Hirundo rustica*	Amber	1, 3, 4, 5	6	Yes – all transects	L, E
Blackbird	*Turdus merula*	Green	1, 2, 3, 4, 5, 6	15	Yes – all transects	L, E
Black cap	*Sylvia atricapilla*	Green	2, 3, 4, 6, 7	12	Yes – all transects	E, L
Blue tit	*Cyanistes caeruleus*	Green	2, 5	4	Yes – all transects	E, L
Chaffinch	*Fringilla coelebs*	Green	1, 2, 3, 4, 5, 6	20	Yes – all transects	E, L
Chiffchaff	*Phylloscopus collybita*	Green	1, 2, 4, 6, 7	8	Yes – all transects	E, L
Coal tit	*Periparus ater*	Green	2, 7	3	Yes – all transects	L
Dunnock	*Prunella modularis*	Green	1, 3, 4, 5	6	Yes – all transects	E
Goldcrest	*Regulus regulus*	Amber	1, 2, 3, 4, 5, 6, 7	23	Yes – all transects	E, L
Great tit	*Parus major*	Green	4, 5, 6	12	Yes – all transects	E, L
Grey Wagtail	*Motacilla cinerea*	Red	5	2	Yes – all transects	E, L
Hooded crow	*Corvus cornix*	Green	7	2	Yes – all transects	E
House martin	*Delichon urbicum*	Amber	1	1	No – all transects	E
Jackdaw	*Corvus monedula*	Green	1, 3, 4	5	Yes – 1, 3 No – 4	E, L
Lesser Redpoll	*Acanthis cabaret*	Green	2	3	Yes – all transects	E, L
Linnet	*Carduelis cannabina*	Amber	1	4	Yes – all transects	E, L
Magpie	*Pica pica*	Green	1, 2, 3, 4, 5, 7	18	Yes – all transects	E, L
Mistle thrush	*Turdus viscivorus*	Green	1, 5	5	Yes – all transects	E, L
Pied wagtail	*Motacilla alba*	Green	1	1	Yes – all transects	E
Reed bunting	*Emberiza schoeniclus*	Green	1	3	Yes – all transects	E, L
Robin	*Erithacus rubecula*	Green	1, 2, 3, 4, 5, 6, 7	24	Yes – all transects	E, L
Rook	*Corvus frugilegus*	Green	3, 4, 5	9	Yes – 3, 5 No – 4	E, L
Sand Martin	*Riparia riparia*	Amber	1	2	Yes – all transects	E
Sedge Warbler	*Acrocephalus schoenobaenus*	Green	1	1	Yes – all transects	E
Shelduck	*Tadorna tadorna*	Green	1	9	N/A	E

Common Name	Scientific Name	BoCCI∞	Transects	Total Count	Breeding Evidence*	Visit^
Song thrush	*Turdus philomelos*	Green	5	1	Yes – all transects	L
Starling	*Sturnus vulgaris*	Amber	1, 2, 3, 4, 6	23	No – all transects	E, L
Stonechat	*Saxicola rubicola*	Green	1	1	Yes – all transects	L
Willow warbler	*Phylloscopus trochilus*	Amber	1, 2, 3	7	Yes – all transects	E, L
Wood pigeon	*Columba palumbus*	Green	1, 2, 3, 4, 5, 6, 7	22	Yes – 2, 4, 5, 6 No – 1, 3, 7	E, L
Wren	*Troglodytes troglodytes*	Green	1, 3, 4, 5, 6, 7	31	Yes – all transects	E, L

∞BoCCI: Gilbert *et al*. (2021). Feral pigeon and pheasant are not considered within this classification.

*Breeding evidence: numbers after "Yes" refer to the transects where breeding evidence was observed for that species. Breeding evidence has been categorised as: species observed in suitable nesting habitat; singing male present (or breeding calls heard) in suitable breeding habitat; pair observed in suitable nesting habitat; permanent territory presumed through registration of territorial behaviour (song etc.) on at least two different days a week or more apart at the same place or many individuals on one day; courtship and display (judged to be in or near potential breeding habitat; visiting probable nest site; agitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby; brood patch on adult examined in the hand, suggesting incubation; nest building or excavating nest-hole; distraction-display or injury feigning; used nest or eggshells found (occupied or laid within period of survey); recently fledged young or downy young; adults entering or leaving nest-site in circumstances indicating occupied nest or adults seen incubating; adult carrying faecal sac or food for young; nest containing eggs; nest with young seen or heard.

Numbers after "No" refer to the transects where no breeding evidence was observed for that species. Non-breeding activities include: flying over; species observed but suspected to be still on migration; species observed but suspected to be summering non-breeder. "All transects" after "Yes" or "No" refers to all transects which that particular species was observed in.

^Visit: E – Early Visit (i.e. Late May 2020); L – Late Visit (i.e. Late June 2020).

Table E-6: Section 3 Breeding Bird Survey Results

Common Name	Scientific Name	BoCCI∞	Transects	Total Count	Breeding Evidence*	Visit^
Barn Swallow	*Hirundo rustica*	Amber	1, 6	10	No – all transects	E, L
Blackbird	*Turdus merula*	Green	1, 2, 3, 4, 5, 6, 7, 8	29	Yes – all transects	E, L
Black cap	*Sylvia atricapilla*	Green	2, 3, 4, 5	10	Yes – all transects	E, L
Blue tit	*Cyanistes caeruleus*	Green	4	1	Yes – all transects	E
Buzzard	*Buteo buteo*	Green	1, 3, 7	7	Yes – 1, 7 No – 3	E, L
Chaffinch	*Fringilla coelebs*	Green	4, 5, 7, 8	19	Yes – all transects	E, L
Chiffchaff	*Phylloscopus collybita*	Green	2, 3, 4	7	Yes – all transects	E, L
Coal tit	*Periparus ater*	Green	1	6	Yes – all transects	E, L
Cuckoo	*Cuculus canorus*	Green	1, 2, 3	3	Yes – all transects	E
Dunnock	*Prunella modularis*	Green	1, 2, 3, 6, 7, 8	12	Yes – all transects	E, L
Goldcrest	*Regulus regulus*	Amber	1, 4, 5	4	Yes – all transects	E
Great tit	*Parus major*	Green	7, 8	4	Yes – all transects	E, L
Greenfinch	*Chloris chloris*	Amber	1	1	Yes – all transects	E
Grey heron	*Ardea cinerea*	Green	5	10	Yes – all transects	E, L
Grey Wagtail	*Motacilla cinerea*	Red	1, 6	2	Yes – all transects	E, L
Herring gull	*Larus argentatus*	Amber	7	3	No – all transects	L
Hooded crow	*Corvus cornix*	Green	5, 6	8	Yes – 5 No – 6	E, L
House martin	*Delichon urbicum*	Amber	1	2	No – all transects	L
Jackdaw	*Corvus monedula*	Green	1	29	Yes – all transects	E, L
Kestrel	*Falco tinnunculus*	Red	7	1	Yes – all transects	L
Lesser black-backed gull	*Larus fuscus*	Amber	5	6	No – all transects	L
Long-tailed tit	*Aegithalos caudatus*	Green	1, 6	12	Yes – 1 No – 6	E
Magpie	*Pica pica*	Green	5	2	Yes – all transects	E

Common Name	Scientific Name	BoCCI∞	Transects	Total Count	Breeding Evidence*	Visit^
Mallard	*Anas platyrhynchos*	Amber	5, 6	8	Yes – 5 No – 6	E, L
Meadow pipit	*Anthus pratensis*	Red	3, 5	2	Yes – all transects	E, L
Pied wagtail	*Motacilla alba*	Green	5	4	Yes – all transects	E, L
Raven	*Corvus corax*	Green	1, 5	4	No – all transects	E, L
Robin	*Erithacus rubecula*	Green	1, 2, 3, 7, 8	20	Yes – all transects	E, L
Rook	*Corvus frugilegus*	Green	1, 3, 4	169	Yes – 1, 4 No – 3	E, L
Sand Martin	*Riparia riparia*	Amber	6	5	No – all transects	L
Sedge Warbler	*Acrocephalus schoenobaenus*	Green	2, 3	4	Yes – all transects	E, L
Song thrush	*Turdus philomelos*	Green	1, 2, 3, 4, 5, 7, 8	21	Yes – all transects	E, L
Whitethroat	*Sylvia communis*	Green	1	3	Yes – all transects	E, L
Willow warbler	*Phylloscopus trochilus*	Amber	1, 2, 3, 4	14	Yes – all transects	E, L
Wood pigeon	*Columba palumbus*	Green	1, 2, 3, 4, 5, 7, 8	35	Yes – all transects	E, L
Wren	*Troglodytes troglodytes*	Green	1, 2, 3, 4, 5, 6	29	Yes – all transects	E, L
Yellowhammer	*Emberiza citrinella*	Red	4, 6, 8	5	Yes – 6, 8 No – 4	E, L

∞BoCCI: Gilbert *et al.* (2021). Feral pigeon and pheasant are not considered within this classification.

*Breeding evidence: numbers after "Yes" refer to the transects where breeding evidence was observed for that species. Breeding evidence has been categorised as: species observed in suitable nesting habitat; singing male present (or breeding calls heard) in suitable breeding habitat; pair observed in suitable nesting habitat; permanent territory presumed through registration of territorial behaviour (song etc.) on at least two different days a week or more apart at the same place or many individuals on one day; courtship and display (judged to be in or near potential breeding habitat; visiting probable nest site; agitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby; brood patch on adult examined in the hand, suggesting incubation; nest building or excavating nest-hole; distraction-display or injury feigning; used nest or eggshells found (occupied or laid within period of survey); recently fledged young or downy young; adults entering or leaving nest-site in circumstances indicating occupied nest or adults seen incubating; adult carrying faecal sac or food for young; nest containing eggs; nest with young seen or heard.

Numbers after "No" refer to the transects where no breeding evidence was observed for that species. Non-breeding activities include: flying over; species observed but suspected to be still on migration; species observed but suspected to be summering non-breeder. "All transects" after "Yes" or "No" refers to all transects which that particular species was observed in.

^Visit: E – Early Visit (i.e. Late May 2020); L – Late Visit (i.e. Late June 2020).

Appendix F
2023 Ornithology Surveys Report

KRC Ecological Ltd.

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environmental
ecological
consultants



Ten-T Ornithological Surveys (DONEGAL)

05 September 2024

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Executive Summary

KRC Ecological Ltd. was commissioned by RPS to undertake a series of ornithological surveys along the Ten-T transportation corridor, focussing on the corridors adjacent to Ballybofey/Stranorlar (Area 1) and Letterkenny (Area 2).

Surveys were undertaken between May and August 2023 focussing on the following elements: (a) Breeding Bird surveys (BBS) along pre-defined transects in both areas, (b) surveys of Kingfisher along pre-defined waterway transects in both areas, and (c) vantage point surveys focussing on raptors on the southern approach to area 1, and (d) surveys of potentially suitable quarries for breeding raptors, especially Peregrine.

A total of 66 BBS surveys were undertaken within 28 survey transects. Over 4,000 birds were recorded of 55 species, the majority of which were green-listed. Three red, and 12 amber-listed species were recorded in small numbers and they occurrence is discussed in some detail.
36 transects were visited to search for surveys, with vantage point surveys (VP) being conducted where birds were observed. Only one Kingfisher was observed (Letterkenny/Manorcunningham area). During a follow-up VP survey no birds were observed. With some suitable perches and sub-optimal nesting areas (a shallow bank subject to high tide inundation) no nest holes observed nor Kingfisher seen, it seems likely that the initial observation was a transient bird foraging within a territory.

Vantage point surveys were undertaken on the transport corridor south of Ballybofey using standard SNH methods. Species of note were occasional observations of Hen Harrier (1 -transient foraging), Buzzard (frequent – territory nearby), Peregrine (1 – transient hunting) as well as Sparrowhawk and Kestrel (occasional), as well as corvids and Grey Heron. Other than the likelihood of Buzzards nesting in some nearby (undetermined) woodland, there was no evidence that the area was used for any purpose other than foraging. With some open scrub, semi-improved grassland, nearby moorland and woodland the area undoubtedly provides a range of foraging opportunities through hosting prey species including small rodents and small passerines.

Surveys of quarries which could hold active Peregrine nests were undertaken in the Ballybofey/Stranorlar area. Of the four sites which appeared suitable, three were occupied at one time or other with breeding proven at one. Given their locations and existing background knowledge of the sites, these are probably two separate breeding sites for two pairs.

Our findings raised no concerns with direct or indirect impacts on any species given their general abundance, their breeding location relative to the proposed scheme and the apparent way by which these species are utilising the surveyed areas.

1. Introduction

KRC Ecological was commissioned by RPS to undertake a range of ornithological surveys in spring/summer 2023 associated with the Ten-T project in the transportation corridors associated with the existing main trunk roads around (a) Ballybofey/Stranorlar and (b) Letterkenny, Co. Donegal.
The surveys were as follows: (i) Breeding Bird Surveys (BBS; repeat morning transects along pre-defined routes in each of the two main areas), (ii) Walkover/Vantage Point watches at sites where Kingfisher *Alcedo atthis* might occur, (iii) Vantage Point watches specifically for Hen Harrier (and other raptors) and (iv) Visits to potential raptor breeding locations in quarries adjacent to Section 1 (Ballybofey/Stranorlar).
In the report we present the findings of each of these surveys.

Statement of Authority

Field surveys were conducted by Dr Kendrew Colhoun, Jamie Latimer, Steph Trapp and George Taylor, with data analysis including GIS carried out by Steph Trapp, Siun Ní Cheallaigh and Kendrew Colhoun.

Kendrew (KC) has a BSc (Hons) in Environmental Sciences from Ulster University, and a PhD in avian ecology from the Ulster University. He has several years' experience conducting a range of ecological assessments as an independent consultant, in addition to > 25 years' work as a professional ecologist.
Jamie Latimer (JL) holds a BSc in Zoology from Munster Technological University. He has two years professional experience in carrying out ornithological surveys, in addition to a number of years of amateur experience of identifying all Irish birds by sight and sound over > 10 years.
Steph Trapp (ST) holds a BSc in Applied Ecology (Imperial College, London) and is currently doing a PhD in the Centre for Ecology and Conservation at the University of Exeter focussing on waterbird behaviour in and around Dublin. She is a keen ornithologist and competent surveyor, able to identify all British/Irish avifauna by sight and sound, undertake surveys to a high standard and organise, analyse and report data using a variety of statistical approaches including GIS analyses.
Siun Ní Cheallaigh (SNC) has a BSc in Ecology (Munster Technological University) and a MSc in Wildlife Conservation and Management (Queen'sUniversity Belfast). She has worked recently on ACRES (Kerry) and a variety of projects with KRC Ecological Ltd.
George Taylor (GT) is an amateur wildlife biologist based in Co. Leitrim. George has undertaken ornithological surveys and a variety of conservation management projects over more than 30 years in Ireland and Scotland. This has recently included work on the Curlew EIP and participation in national surveys of Red Grouse, and regional surveys of Curlew, Golden Plover and Kingfisher. He is very familiar with all Irish birds, recognising all common and widespread species by sight and/or sound.

2. Study Area

RPS supplied scaled survey maps outlining the specific pre-determined survey transects (BBS and Kingfisher) and viewsheds/vantage points for Vantage Point (VP) Surveys.

The study areas were divided into two areas as follows:

- **SECTION 1 – Ballybofey/Stranorlar** (N15 ~3.5km SW of Ballybofey to ~5km NE on N13 and N15 E & NE of Stranorlar; Figure 1)

- **SECTION 2 – Letterkenny** (N13 ~2km S of Letterkenny and east on N13 to south of Manorcunnigham; Figure 2)

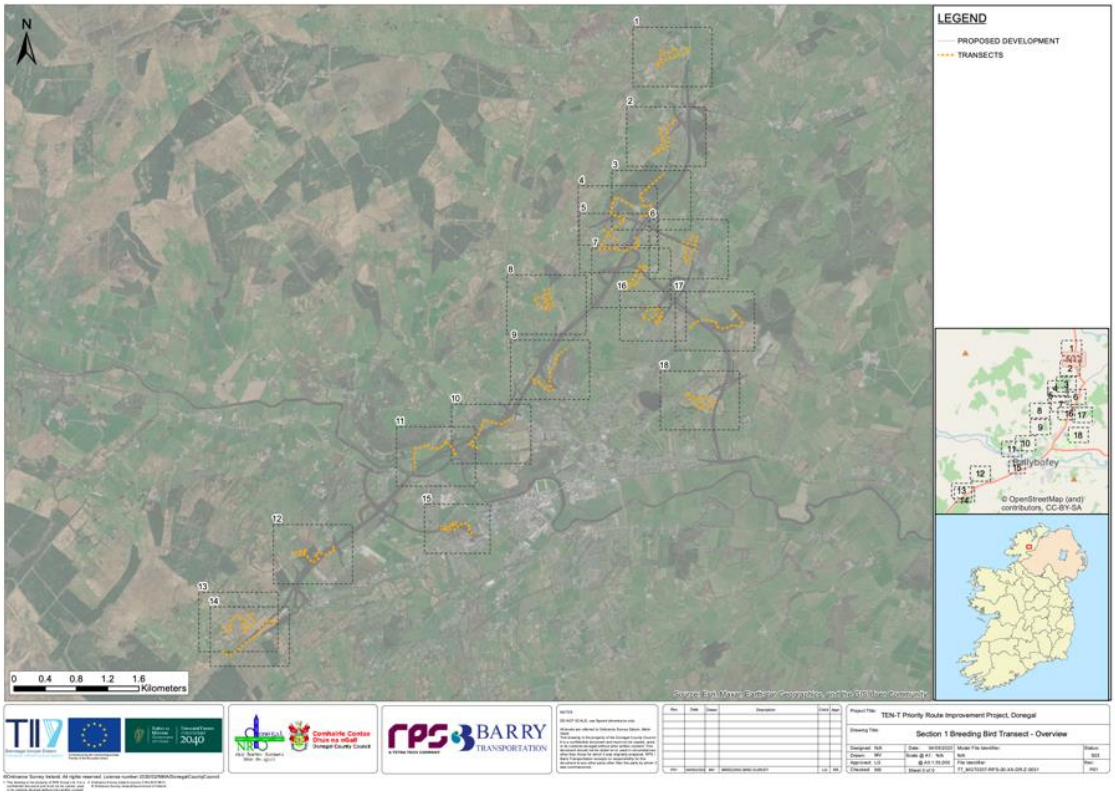


Figure 1: Map showing Section 1 (Ballybofey/Stranorlar) BBS Transects

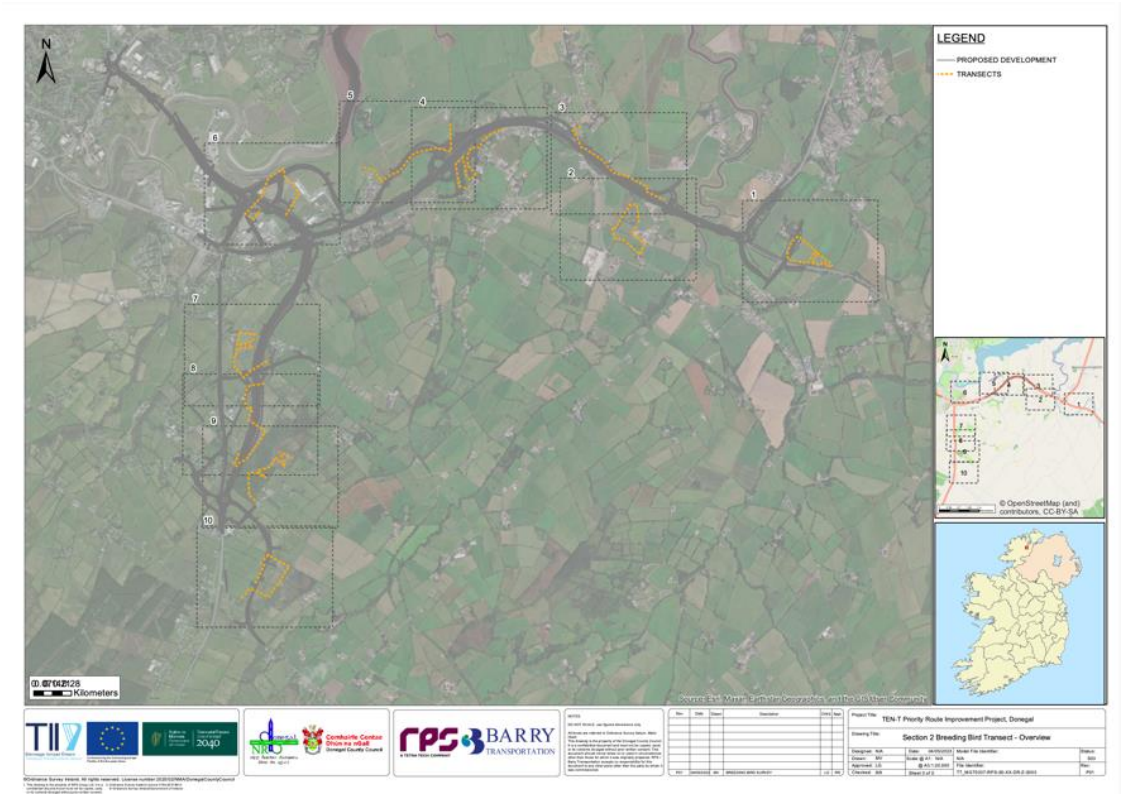


Figure 2: Map showing Section 2 (Letterkenny) BBS transects

3. Methods

3.1 Breeding Bird Surveys

We utilised a generic Breeding Bird Survey methodology as has been developed and employed for the Breeding Bird Survey (BBS; UK[1]) and the Countryside Bird Survey (CBS; Republic of Ireland[2]) and as fully described by Bird Survey Guidelines[3].

This method is appropriate for surveying a range of breeding bird species and undertaken through repeat surveys of walked transects within a breeding season (early April to late June). CBS and BBS recommend two to three surveys annually but, where there are specific needs for more data up to six surveys are recommended.
With respect to this Ten-T project, surveys have been undertaken previously, and there is no evidence of the presence of any particular very scarce/rare species which are not being covered otherwise using specific surveys). Surveys were started as soon as possible post contract award and completed by the end of June, covering both areas 1 (Figure 1) and 2 (Figure 2).

Transects were pre-defined by RPS and walked slowly in the early morning period, recording all species on or adjacent to the transect by sight/sound, searching particular features/habitats of interest. Windy (> F5), wet (constant precipitation) or low visibility conditions were avoided as

[1] https://www.bto.org/our-science/projects/breeding-bird-survey/research-conservation/methodology-and-survey-design
[2] https://birdwatchireland.ie/app/uploads/2019/03/CBS_Manual_June2012
[3] https://birdsurveyguidelines.org/methods/survey-method/

this might have negatively influenced detectability. We recorded the location, number and activity of all species encountered using standard BTO species codes and CBC activity codes.

Data are summarised according to *Birds of Conservation Concern* status (green, amber and red-listed categories; Gilbert *et al*., 2021[4]).

3.2 Kingfisher Surveys

The Common Kingfisher is a bird of mostly lowland rivers in Ireland and Britain. The species is currently green-listed under *Birds of Conservation Concern in Ireland* (Gilbert *et al.,* 2021) and similarly in the UK. Only one survey has previously been undertaken of Kingfisher in Ireland – of six river systems in 2010 (Cummins *et al*., 2010[5]), with a repeat survey ongoing in 2024 (Colhoun *et al*, i in prep[6]).
The survey method followed that of Cummins *et al*. (2010[5]) and Colhoun *et al*. (in prep[6]), and comprised a combination of (a) walkover surveys (K-WO) of predetermined transects along watercourses with potentially suitable habitat and (b) vantage point surveys (K-VP) where the initial walkover survey found potentially suitable habitat. The K-WO covered the 36 transects (*n*=16 Section 1; (T19-34); *n*=18 Section 2 (T1-18)) shown in Figures 3 & 4, in addition to a 100m buffer.

In addition to searching for Kingfisher, the survey aimed to assess the suitability/presence-absence of nesting habitat in banks and record other species of note that might be associated with this habitat such as Grey Wagtail (*Motacilla cinerea*) or Dipper (*Cinclus cinclus hibernicus*).

These were walked at a slow and steady pace primarily to search for Kingfisher and make an assessment of the suitability or otherwise of the banks for nesting of that species.
The K-VP surveys were undertaken in areas where areas were deemed potentially suitable with respect to habitat for feeding/nesting or where the K-WO recorded Kingfisher. These lasted 1 – 1.5hours, during which time the surveyor sat at a suitable vantage point (determined following the K-WO), observing the area.

[4] Gilbert, G., Stanbury, A. & Lewis, L. (2021) Birds of Conservation Concern in Ireland 2020 –2026. *Irish Birds* 9: 523—544
[5] Cummins, S., Fisher, J., McKeever, R-G, McNaghten, L. & Crowe, O. (2010) Assessment of the distribution and abundance of Kingfisher *Alcedo atthis* and other riparian birds on six SAC river systems in Ireland. BirdWatch Ireland report to NPWS.
[6] Colhoun *et al.* (in prep) Status and distribution of Common Kingfisher at selected catchments across Ireland: results of a survey in 2024. Report to NPWS.

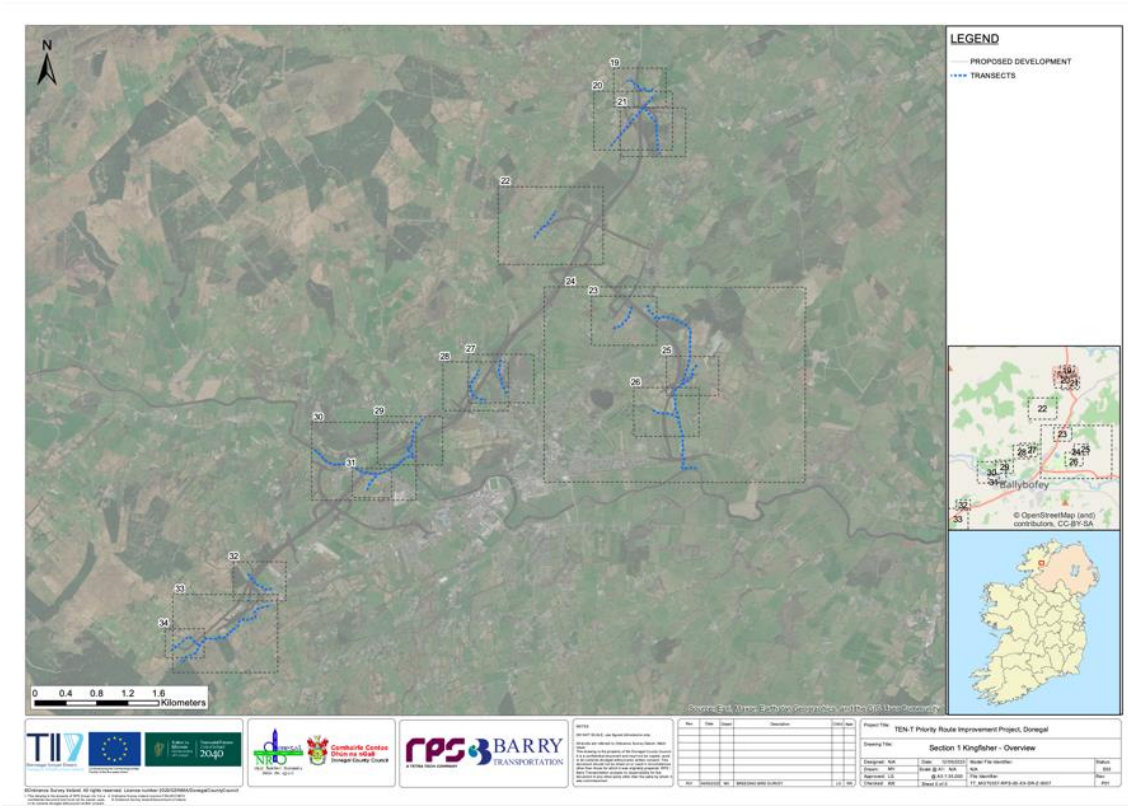


Figure 3: Map showing Section 1 (Ballybofey/Stranorlar) Kingfisher Survey Transects

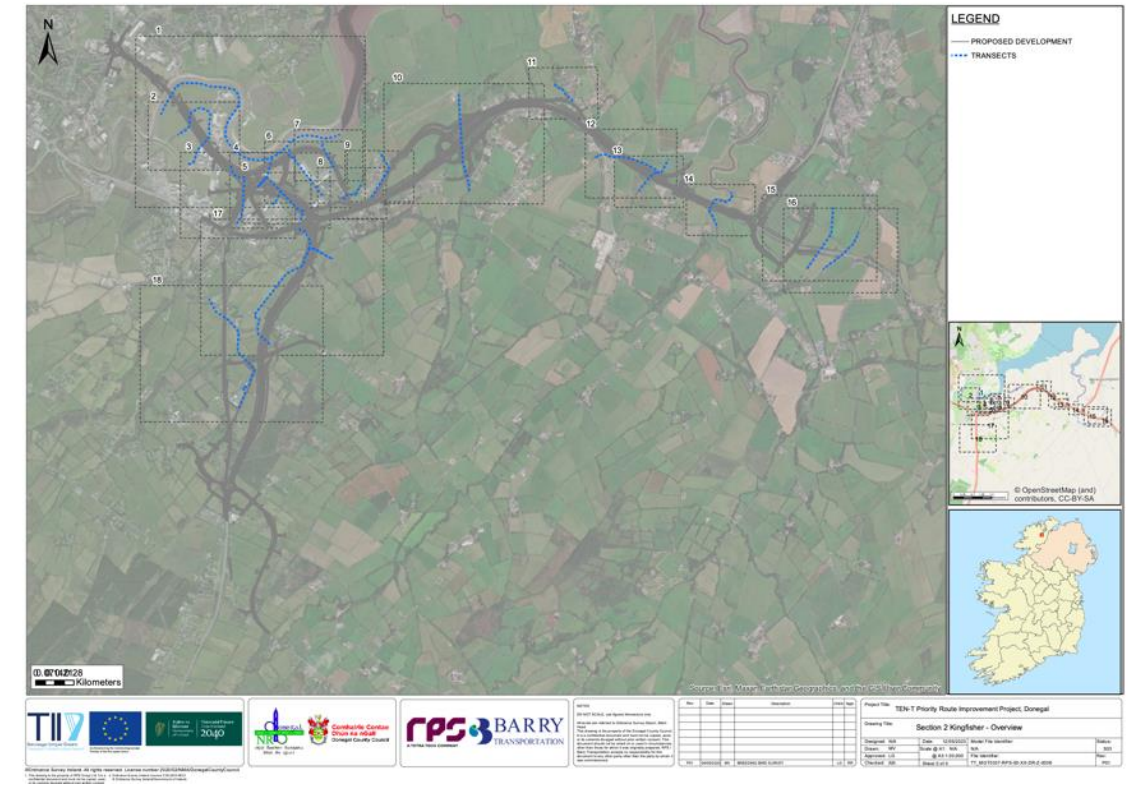


Figure 4: Map showing Section 2 (Letterkenny) Kingfisher Survey Transects

3.3 Vantage Point Surveys (Raptors)

Vantage Point surveys are a well-established method for surveying raptors and similar species over large areas. VPs were pre-defined by RPS following viewshed analysis (Figures 5-7), verified and subject to very minor modification by our team to ensure we (a) minimised human disturbance to any potential target species, (b) maximised visibility across all viewsheds (coverage) and (c) had safe locations from which to observe not causing obstruction to traffic, landowners etc.
The locations of the three VPs were as follows: VP1: 54.7874, -7.8262; VP2: 54.7850, -7.8379; VP3: 54.7826, -7.8437.

Surveys were undertaken in weather conditions with good ground visibility (>2km), each survey block taking a minimum of six hours, typically split across two 3-hour blocks with a short break of approximately 30 minutes in between. Weather conditions were recorded at the start and end of each survey visit.
Surveyors recorded notable flights into/within/out of the viewsheds, recording the species type, number and behaviour continuously through the duration of each survey visit.

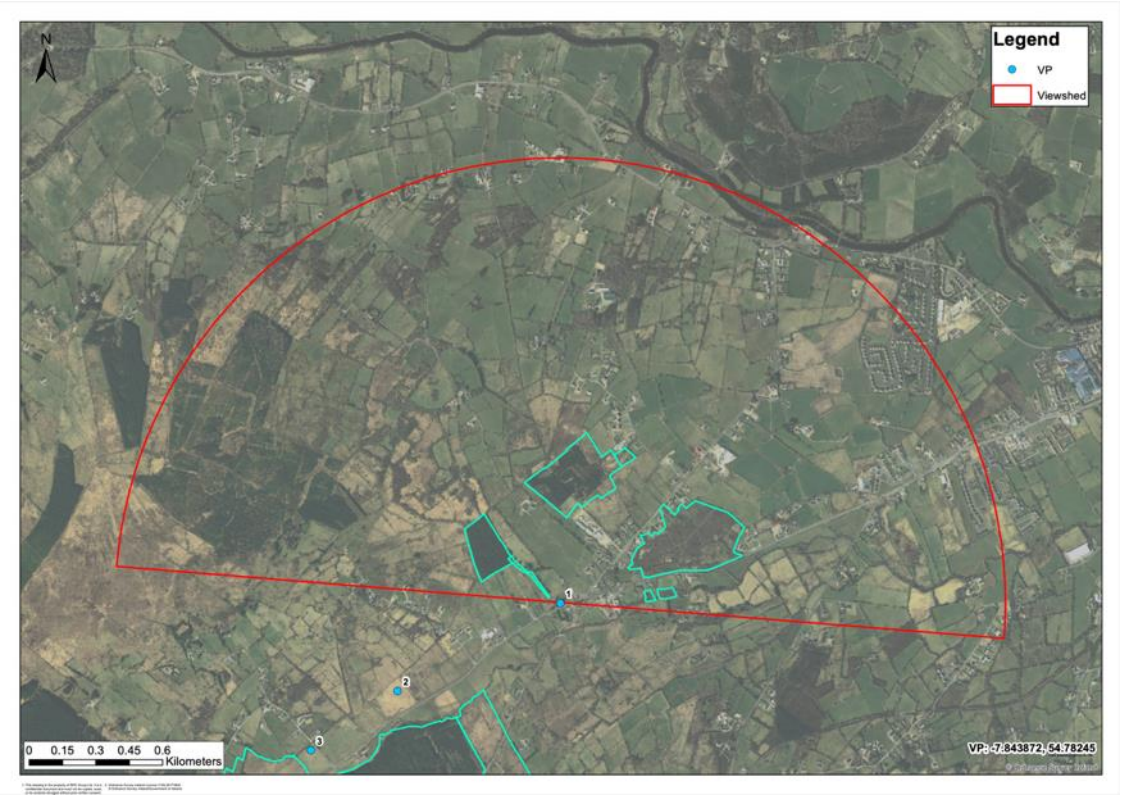


Figure 5. Map showing Section 1 (Ballybofey/Stranorlar) Vantage Point Survey areas (indicated 1, 2 & 3). The viewshed of VP1 is shown

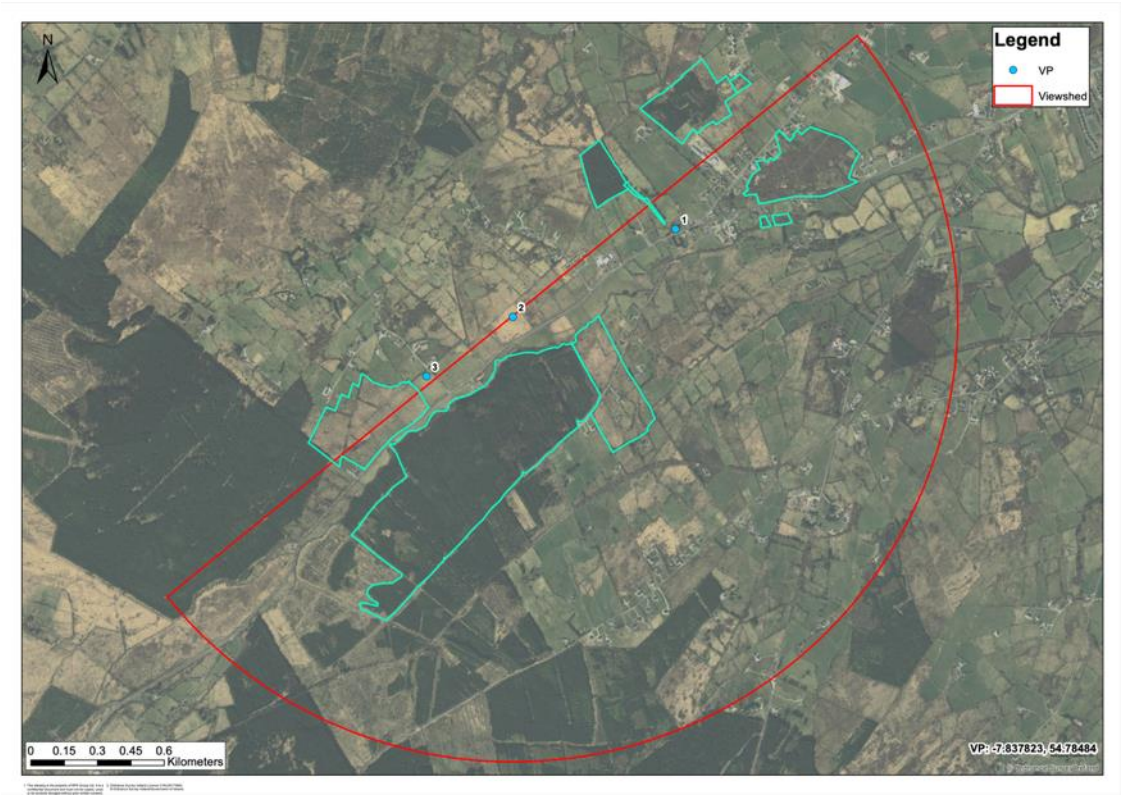


Figure 6. Map showing Section 1 (Ballybofey/Stranorlar) Vantage Point Survey areas (indicated 1, 2 & 3). The viewshed of VP2 is shown

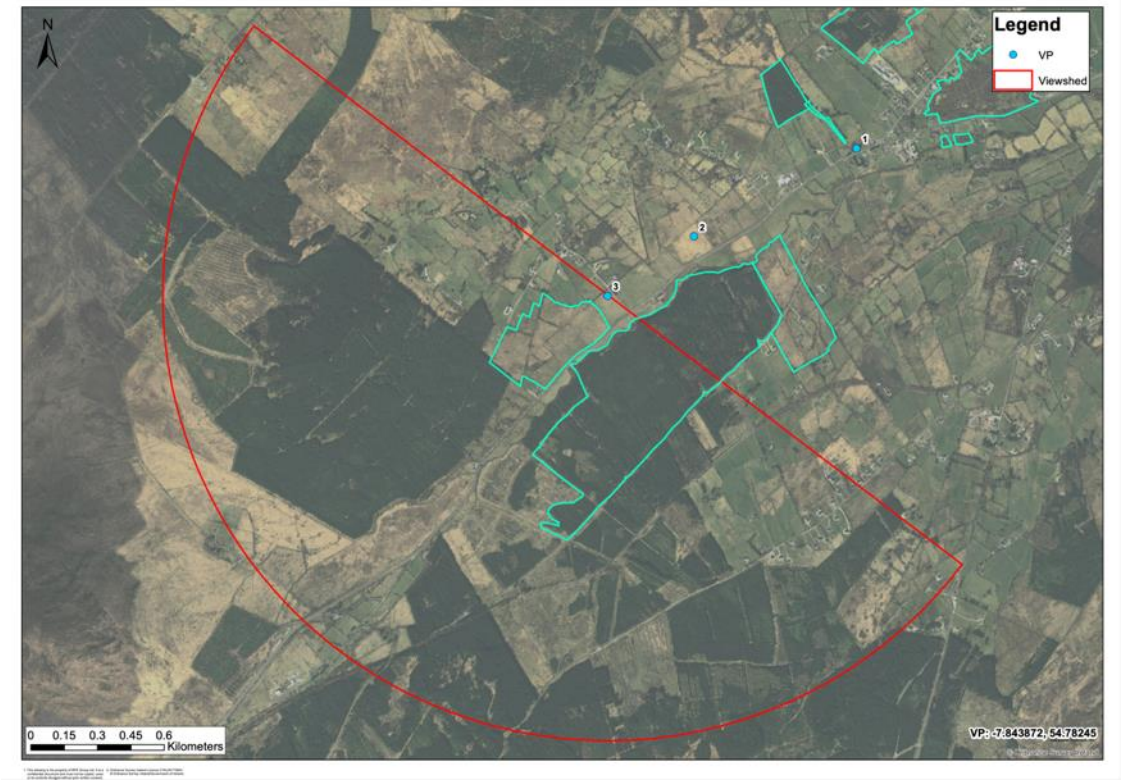


Figure 7. Map showing Section 1 (Ballybofey/Stranorlar) Vantage Point Survey areas (indicated 1, 2 & 3). The viewshed of VP3 is shown.

3.4 Breeding raptor surveys

Visits to potentially suitable nesting areas, focussing on quarry areas identified as potentially suitable by RPS in the brief for nesting Peregrine, were made on multiple occasions during late May – mid July. An initial reconnaissance visit was made on 20th April, checking a range of sites around the transport corridor in Sections 1 and 2, with subsequent visits to each of the two deemed potentially suitable sites in June and/or July.

4. Results

4.1 Breeding Bird Surveys

4.1.1 Coverage

A total of 66 BBS surveys were undertaken between May 20 and June 25, 18 in Ballyfofey/Stranorlar (Section 1: T1/1-11 to T1/28; Table 1) and 10 near Letterkenny (Section 2: T2/2-1 to T/2-10), with a minimum of two (*n*=18) and up to three surveys (*n*=10) undertaken. Surveys were undertaken in daylight between 05:00 – 09:40 (start times) and 06:00 – 10:15 (end times), the average duration of surveys being 52 minutes. 92.5% of surveys were completed by 09:00.

Table 1: Dates of BBS surveys undertaken as part of Ten-T BBS surveys. The dates on which surveys were made are shown for all n=28 transects, 18 in the Ballybofey/Stranorlar area (Sect 1) and 10 in the Letterkenny area (Sect 2)

Section/Transect	20-May	21-May	08-Jun	09-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	15-Jun	16-Jun	17-Jun	21-Jun	22-Jun	23-Jun	24-Jun	25-Jun
T/1-11										x					x		
T/1-12										x					x		
T/1-13									x							x	
T/1-14									x							x	
T/1-15									x							x	
T/1-16										x						x	
T/1-17				x												x	
T/1-18				x												x	
T/1-19				x												x	
T/1-20			x													x	
T/1-21			x													x	
T/1-22						x										x	
T/1-23						x										x	
T/1-24						x										x	
T/1-25							x										x
T/1-26					x												x
T/1-27					x												x
T/1-28					x												x
T/2-1	x							x						x			
T/2-2	x							x						x			
T/2-3	x							x						x			
T/2-4	x										x			x			
T/2-5	x										x		x				
T/2-6		x									x		x				
T/2-7		x										x	x				
T/2-8		x										x	x				
T/2-9		x										x			x		
T/2-10		x										x			x		

4.1.2 *Breeding Bird Surveys*

BBS surveys recorded a total of 4,177 individuals of 55 species (Table 2). With the exception of three red-listed species (Meadow Pipit *Anthus pratensis*, Common Snipe *Gallinago gallinago*, and Eurasian Curlew *Numenius arquata*; Table 3), and 12 amber-listed species, the remainder (40) were green-listed on the most recent all-Ireland assessment of conservation status (Gilbert *et al.*, 2021). National population estimates are derived from Crowe *et al*. (2014[7]).

Notable species/Birds of Conservation Concern

Eurasian Curlew and Common Snipe (red-listed)

Small numbers of Curlew were seen whilst undertaking BBS transects around Section 2 (Letterkenny). Between one and two individuals were recorded in transects T2/2-4 and T2/2-6 which were adjacent to the upper reaches of Lough Swilly; a single individual was heard flying over at transect T2/2-10.

Curlew are a very rare breeding bird currently in Ireland, with the latest national survey showing fewer than ~120 breeding pairs (Colhoun *et al*., 2021[8]). Relatively small numbers of adult (non-breeders) occur on Irish coasts during the summer months so it is most unlikely that these individuals were foraging breeders. Adult birds do not breed until at least two years of age and breeding numbers in Donegal are so low that the likelihood is very small indeed. The individual farther inland (T2/T2-10) several kilometres from the Swilly Estuary may have been a breeding bird commuting between breeding areas farther inland (several pairs of Curlew breed farther inland south-west of Section 2) and the estuary. GPS tracking studies on Inishowen showed that a breeding male commuted between an estuarine foraging area and an upland breeding area about 8 miles apart (Colhoun *et al., in prep*[9]). There are currently fewer than five breeding pairs of Curlew in Co. Donegal currently (Colhoun *et al*., 2021), none of which are in proximity to the Ten-T corridors.
Thus the occurrence of this species during these surveys is inconsequential.

Common Snipe were very infrequently encountered, with just two individuals flushed during transect surveys at transects 2/2-5 and 2/2-7. One of these individuals was drumming (display call indicating had a breeding territory) on June 17 (T2/2-7). Snipe are a red-listed species which breed in wet habitats. As with Curlew and other breeding waders, their numbers and range has been severely reduced due to agricultural intensification, with drainage, intensification and mechanised activity severely limiting the suitability of habitats. There is no current and reliable estimate of the number of breeding Snipe nationally but it is believed to be 3-4,000 bp[10].
Snipe nest in open habitats; in the areas surveyed nesting sites are likely to be in patches of rushy, wetter and less intensively-managed ground which are either whole fields or along ditches and open field margins.

Given the nature of the transect habitat (along a hedge) at T2/2-5 and T2/2-7 and the availability of

[7] Crowe, O., Musgrove, A.J. & O'Halloran, J. (2014) Generating population estimates for common and widespread breeding birds in Ireland, Bird Study 61:1, 82-90, DOI: 10.1080/00063657.2013.868401
[8] Colhoun *et al.* (2021) Status and distribution of breeding Eurasian Curlew in Ireland 2021. Irish Wildlife Manuals 138. National Parks & Wildlife, Department of Housing, Local Government and Heritage, Dublin
[9] Colhoun *et al. (in prep*) Nesting behaviour of breeding Eurasian Curlew: preliminary results of GPS tracking adults in Ireland.
[10] Breeding Wader Workshop estimate as incorporated in the Breeding Wader EIP project Call https://www.gov.ie/pdf/?file=https://assets.gov.ie/278690/655ec941-7bf5-46e2-a3f7-69e463a8d14d.pdf#page=null

small wetter habitats adjacent, it is unlikely that the proposed scheme will have direct impacts on habitats for breeding Snipe.

Meadow Pipit (red-listed)

A total of 33 individual Meadow Pipits were recorded at eight transects (six in the Ballybofey T1 section transects, and two in the Letterkenny T2 section transects). This is a species associated with farmland, and semi-improved grassland/moorland at a variety of altitudes. Countryside Bird Survey trends describe the population as 'stable' over the last ~20 years[11], though the rate of decline of >50% over the short-term (13-year period 1998-2011) resulted in the re-classification of the species from 'green' to 'red' in the BoCCI3 assessment (Colhoun & Cummins, 2013[12]). The trend to 2011, however showed a pronounced population crash, most likely as a consequence of high mortality following severe winters of 2009 and 2010 when, respectively, mid-winter temperatures were especially low (coldest winter since 1962/3) and there was extensive and prolonged snow during November and December (Met Eireann, 2012[13]). Breeding population of this insectivorous species appear to have recovered from lows of 2011 but the species has undoubtedly declined significantly in the long-term. The main driver is likely to be agricultural intensification including mowing and other activities which will destroy nests of this ground-nesting species. In German upland grazing systems Anger *et al*., (2023[14]) have shown the negative effects of homogenous swards due to the nature of grazing regimes.

The ecology of Meadow Pipits in Ireland is poorly known, with no formal studies on their ecology ever having been undertaken. There is some evidence of a more severe decline having occurred in lowlands than uplands in Northern Ireland (Colhoun *et al*., 2015[15]).
With respect to the current study, the widespread distribution and stable nature of the population trend means that the negative impacts on Meadow Pipit can be considered negligible. The overall population is likely to exceed 1 million breeding pairs (Table 3).

Amber-listed species

Twelve amber-listed species were recorded during BBS surveys. Of these the presence of two aerial insectivores which are both Afro-Palearctic migrants (Barn Swallow and House Martin) and two seabirds are of little relevance in the context of the transects themselves. The seabirds (two gull species) were either flying over the transect (thus not using habitats associated with it), or were in land adjacent to the transect.

Such usage is ephemeral and the selection of habitats unimportant in a conservation sense, gulls often exploiting a range of terrestrial habitats adjacent to estuaries. Small numbers of gulls (4 Herring, 14 Black-headed) were recorded in both main study areas in June and are likely to either be non-breeders or foraging birds exploiting farmland / urban food resources opportunistically. The nearest breeding Black-headed Gulls are at Inch Island (Inch Lake), ~20 miles NE of the study area. GPS tracking studies of Herring Gulls by the author (Sardà-Serra *et al*., 2022[16]) at two

[11] https://c0cre470.caspio.com/dp/4bae30004ae8cd29333b46b2910b Countryside Bird Survey online; accessed 02/02/2023
[12] Colhoun, K. & Cummins, S (2013) Birds of Conservation Concern in Ireland, 2014-19. Irish Birds 9: 523-544
[13] https://www.met.ie/cms/assets/uploads/2018/11/SnowfallAnal.pdf
[14] Anger, F., Forschler, M.I. & Anthes, N. (2023) Variation in reproductive success in a fragmented Meadow Pipit population: a role for vegetation succession? *Journal of Ornithology*, https://doi.org/10.1007/s10336-023-02121-4
[15] Colhoun, K., Mawhinney, K. & Peach, W.J. (2015) Northern Ireland Farmland Bird Survey. Unpublished Report to NIEA/DAERA-NI. RSPB, RSPB Centre for Conservation Science, Belfast
[16] Sardà-Serra, M., Henriques, M. & Colhoun, K. (2023) Tracking devices to assess distribution and habitat use of large gulls in Republic of Ireland. Poster presented at UCC Ornithological Conference, 2023.

offshore breeding colonies in Donegal showed that breeding adults can commute long distances (> 50 miles each way) to exploit food resources which are primarily terrestrial and not marine. In the context of these surveys, the presence of the gulls is inconsequential.

Similarly, for the aerial insectivores, their occurrence at or near the survey transects is largely inconsequential as the habitats are relatively unimportant and not insect-rich.

The potential for impacts on populations of the remaining eight amber-listed species more closely associated with the habitats (hedgerows, fields, field edge habitats, scrub and woodland) is greater – these habitats are directly providing nesting, foraging and/or resting habitats for these species and thus loss – due to destruction or removal – more likely to have an impact. The species concerned comprise seven passerines (Goldcrest, Greenfinch, House Sparrow, Linnet, Spotted Flycatcher, Starling and Willow Warbler) and one waterbird (Mallard).
With respect to their frequency of occurrence and abundance, Willow Warbler (*n* = 193 in 27 transects), Goldcrest (*n* = 127 in 20 transects) and Starling (*n* = 414 in 18 transects) were by some margin the most frequently encountered species. This reflects the species' close association with field margin habitats (woodland, scrub, hedgerows and adjacent fields). Greenfinch (*n* = 30 in 10), House Sparrow (*n* = 28 in 5) and Linnet (*n* = 21 in 9) occurred in modest numbers at relatively few sites, whilst the least recorded amber-listed species were Mallard (*n* = 2 in 1) and Spotted Flycatcher (*n* = 2 in 1). Of these species, Linnet and Spotted Flycatcher are the least abundant and loss of habitat is likely to be of some consequence. Estimated national population sizes of these species are provided for context in Table 3.

Green-listed species

The remainder of species encountered comprised 3,048 individuals of 42 green-listed species. Almost 70% of these comprised just seven species – Rook (514; 17%), Wren (430; 14%), Jackdaw (269; 9%), Chaffinch (256; 8.3%), Blue Tit (228; 7.5%), Woodpigeon (220; 7.2%) and Blackbird (145; 4.7%). Most recent population estimates of these species all fall in the range 1-5 million individuals (Crowe *et al.*, 2014).
The least frequently encountered species comprised a total of 38 individuals of 14 species (<=5 individuals), including raptors (Peregrine and Sparrowhawk), herons (Grey Heron, Little Egret), corvids (Raven and Jay), passerines (Grasshopper Warbler, Cuckoo, Whitethroat, Pied Wagtail, Bullfinch and Siskin), Collared Dove and Great Black-backed Gull.
As these species are green-listed, widespread and relatively abundant (minimum tens of thousands) their presence in relation to the Ten-T project is relatively inconsequential. Peregrine is the rarest of these species (likely to be 3-400 breeding pairs[17]), whilst .

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Table 2. Maximum counts of individual species by transect recorded during BBS surveys. Transect ID 1-x are Ballybofey/Stranorlar and 2-x are Letterkenny

Transect	Barn Swallow	Black-headed Gull	Blackbird	Blackcap	Blue Tit	Bullfinch	Buzzard	Chaffinch	Chiffchaff	Coal Tit	Collared Dove	Common Redpoll	Common Snipe	Common Whitethroat	Cuckoo	Curlew	Dunnock	European Herring Gull	Feral Pigeon	Goldcrest	Goldfinch	Grasshopper Warbler	Great Black-backed Gull	Great Tit	Greenfinch	Grey Heron	Hooded Crow	House Martin	House Sparrow	Jackdaw	Jay	Linnet	Little Egret	Long-tailed Tit	Magpie	Mallard	Meadow Pipit	Mistle Thrush	Peregrine	Pied Wagtail	Raven	Reed Bunting	Robin	Rook	Sedge Warbler	Siskin	Song Thrush	Sparrowhawk	Spotted Flycatcher	Starling	Stonechat	Treecreeper	Willow Warbler	Woodpigeon	Wren	Grand Total
1-11	1		3	1				2								1	1		6								1						13	4								31								1		8	1	12	102
1-12	1		1	1	9		1	14	1								1				5				1		1			7				2		10				6	2	4			3			10			12	3	18	113
1-13			2	4	10		4	10		4										6	4			1	5		1	1		2		4		1		10	1		1	1	1	2	4							1	1	4	1	22	108
1-14	7		5	6	17			18		8							5			3	2			5			1			9		1		3		1	1				7	5			10			40			14	13	21	202
1-15	1		1	2	19			7									3			1	1			4			4	3	1	4		3			1		3				4		5	4		5			16			12	1	17	122
1-16	2		2	5	7		2	13		4										3				2			2	1		4				1			2				4	3			1						7	4	16	85
1-17	3		2	1	1		3	2		2							1										2			8		3		13				1	1			1	14			2			30	1		5	2	11	109
1-18	5			2	7			3									1			7				2				1		13				1							1	52			2			31			4	6	17	155
1-19	9		6	2	17			4	3		1										14					1	2	1		20	1			3	4			1				1	1			3			11			4	14	10	133
1-20	11		2	1	15			9	4								2			1			1	8	1		5			11				2	4							2		2		1			7		1	3	4	8	105
1-21	3		6	3	7				2	1							2							4			36	2		4	2			6				1				2	3			3	1				1	1	4	12	106
1-22	1		8	1	17			11	4	3							1	2		16				10	2		3				2			1	2							4	3			6					2	8	15	9	131
1-23			7	8	7		1		1	5									1	7		1					1			3							1	2				2	1	3			5			23	1	11	13	4	27	135
1-24	3		1	6	1										1						1			2					3		15		1				20			1		1	1	3	6		5			13	1		6	3	16	110
1-25	5		6	1	2			6									1			4				4	1			2		5			1		14					1	5	4			2			6			8	11	13	102
1-26	8		8	2	2		3	12		1							1			4	2			12	1		2	5		1					3			11				4				2	1		8			1	5	9	108
1-27	2		10	2	4		1	18	6	7									3	13	2			7				1		18			7	3			1				4	3		1	6		2			1	5	18	16	161
1-28	1		5	3	6			10		1							4	1		5	1			10				1	1	7				2	2			9				10	6			6			41			4	10	12	158
2-1	3		6	5	10		7	11									3			3	4			7	4			2		47				1	2		1				3	161			6							8	16	310
2-2	9		7	1	9			6				4					4			5				1	4		5	53	20	8				9	1			1				6	12			6			77			5	3	17	273
2-3	9		7	3	14			17		4	1						5			1	4		3	4	5			8		19					3			2				5	4			4			3			4	16	17	162
2-4	10	1	13	9	21		1	25	4	9	3					1	3			4	3			5	4			4	5	4			5	3							4	2			4			5	1		7	14	26	200
2-5	3		13	1	4			14					1				3			3	6			4			9	23		14		2			1		6				2	2	11			3			45	5		5	10	17	207
2-6	8	13	5	1	9			14				1		1		2	5				3					1				4		4		3					1		3		16	4		4			42	1		5	4	8	162
2-7	3		5	1	3			3		1			1				3	1						1		1				4		2		7							1		10	2		4			6	1		5	8	20	93
2-8	2		6	5	8		2	16	1	1							2			5				2						14											1	133			3						7	21	13	242
2-9			4		1			10	4	7		2								27				3	2					9				4						1		6	17			4	1				2	17	8	13	142
2-10	16		4	6	1	2	4	1		1		4				1	1			9	8	1	1								1					6	3			2	6	2	4	8		1			3		19	9	17	141
	126	14	145	83	228	2	29	256	30	59	5	11	2	1	1	5	52	4	10	127	60	2	5	98	30	3	75	111	28	269	5	21	1	48	81	2	57	36	1	4	4	27	80	514	26	1	101	3	2	414	16	19	193	220	430	4177

Table 3. Red- and Amber-listed species recorded during BBS surveys in Ten-T survey areas in spring/summer 2023. Conservation status is as per Gilbert et al. (2021); primary habitat types, main occurrence and classifications are also shown

Species	Scientific Name	Category	Type	Primary Habitats	Population Estimate[18]
Red-listed					
Eurasian Curlew	*Numenius arquata*	Partial migrant (breeder)	Wader	Wetlands	105 bp[19]
Common Snipe	*Gallinago gallinago*	Partial migrant (breeder)	Wader	Wetlands	
Meadow Pipit	*Anthus pratensis*	Partial migrant (breeder)	Passerine	Various	1.463 million
Amber-listed					
Barn Swallow	*Hirundo rustica*	Migrant (breeder)	Aerial insectivore	Various	4.96 million
Black-headed Gull	*Chroicocephalus*	Partial migrant (breeder)	Seabird	Coastal/inland	7,16719[20]
European Herring Gull	*Larus argentatus*	Partial migrant (breeder)	Seabird	Coastal/inland	18,645[19]
Goldcrest	*Regulus regulus*	Resident (breeder)	Passerine	Scrub/woodland	611,280
Greenfinch	*Cardeulis chloris*	Resident (breeder)	Passerine	Gardens/farmland	693,890
House Martin	*Delichon urbica*	Migrant (breeder)	Aerial insectivore	Various	537,200
House Sparrow	*Passer domesticus*	Resident (breeder)	Passerine	Gardens/farmland	1.85 million
Linnet	*Carduelis cannabina*	Resident (breeder)	Passerine	Farmland/Scrub	451,430
Mallard	*Anas platyrhynchos*	Resident (breeder)	Waterfowl	Wetlands	?
Spotted Flycatcher	*Muscicapa striata*	Migrant (breeder)	Passerine	Woodland/Gardens	37,810
Starling	*Sturnus vulgaris*	Partial migrant (breeder)	Passerine	Gardens/farmland	2.11 million
Willow Warbler	*Phylloscopus trochilus*	Migrant (breeder)	Passerine	Woodland/Scrub	1.37 million

[18] Unless otherwise stated population estimates are Republic of Ireland only and from Crowe *et al.* (2014) based on a combination of 2006-10 densities and Atlas data. Crowe, O. *et al.* (2014) Generating population estimates for common and widespread breeding birds in Ireland. *Bird Study* 61: 82-90.
[19] Colhoun, K. *et al.*, (2021) Status and distribution of breeding Eurasian Curlew in Ireland 2021 IWM No. 138, NPWS. 105bp was the number of confirmed and breeding pairs in 2021 in the Republic of Ireland
[20] Combined urban and rural breeding (Apparently Occupied Nests) numbers 2015-21; Burnell, D. *et al.* (2023) *Seabirds Count: a census of breeding seabirds in Britain and Ireland (2015-21).*

4.2 Kingfisher surveys

4.2.1 Walkover Surveys

Initial walkover surveys were carried out between late May and mid-June (23 May – 02 June (Section 2) and 07 – 15 June (Section 1)). Within Section 2 (Letterkenny), a single Kingfisher was observed on 02 June at Transect 14 (Figure 8; where the main dual carriageway crosses the existing main N13 Letterkenny-Lifford). Many of the rivers and streams in the area are unsuitable for Kingfishers for nesting and/or foraging. This was due to them being being relatively small (e.g. field drains), having few or no perches or being too fast flowing. A general absence of suitable banks limits the availability of breeding nest holes. There was a notable increase in the availability areas in some of the tributaries of the Swilly (in transect sections 3-9 and 14; Figure 8) but neither nest holes nor Kingfishers were seen. These banks were shallow, have tidal influence and are likely to be well inundated every twice monthly on spring high tides – so were generally unsuitable and are probably avoided. A full summary of results is shown in Table 4.

Within the Ballybofey transect section, no Kingfishers were seen during surveys. In some areas the river flow and width may have provided suitable foraging areas and we identified transects 19, 24, 30 and 33 as having suitable foraging areas and locals met during surveys stated Kingfishers occurred in Transect 30 occasionally.

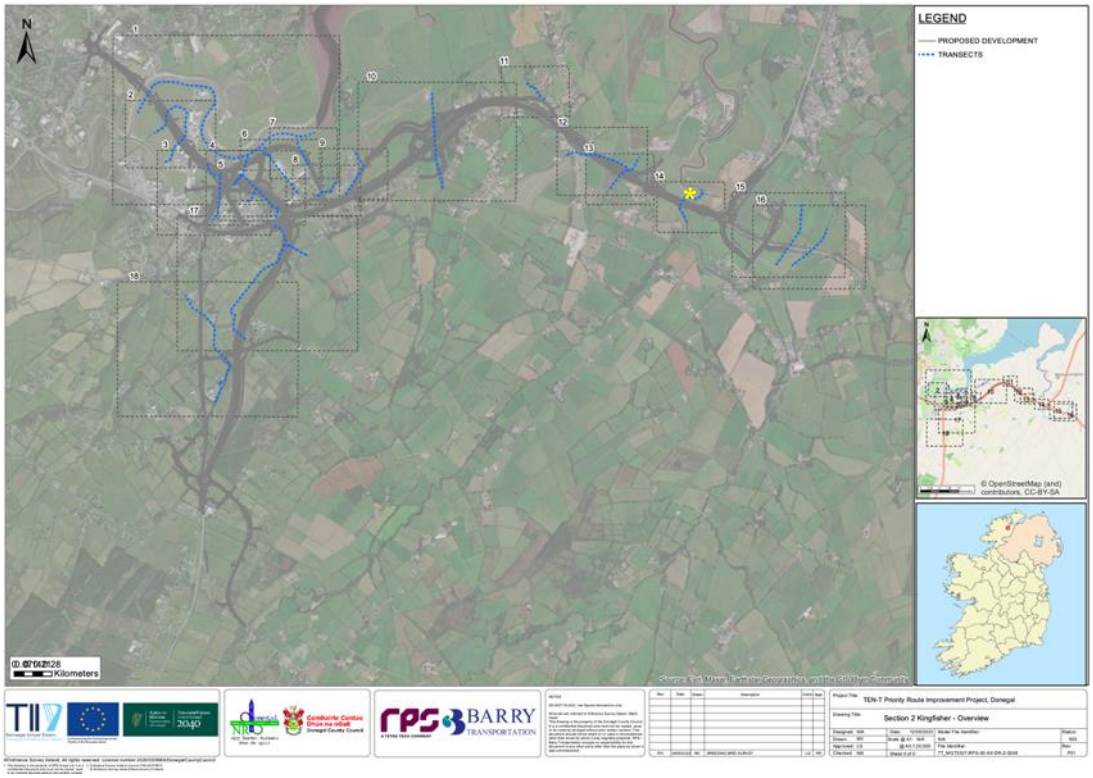


*Figure 8. TenT Kingfisher survey transects in the Letterkenny (Section 2) area. The location of the single observation is indicated * in Transect 14.*

Table 4. Results of Kingfisher walkover and vantage point surveys undertaken in summer 2023

Section	Transect	Date	Kingfisher seen?	Suitable foraging?	Suitable nesting?	Nest found	VP survey	Kingfisher seen?
2	1	23 May	N	N	N	N	N	
2	2	23 May	N	N	N	N	N	
2	3	23 May	N	N	N	N	N	
2	4	23 May	N	N	N	N	N	
2	5	23 May	N	N	N	N	N	
2	6	23 May	N	N	N	N	N	
2	7	23 May	N	N	N	N	N	
2	8	25 May	N	N	N	N	N	
2	9	25 May	N	N	N	N	N	
2	10	25 May	N	N	N	N	N	
2	11	25 May	N	N	N	N	N	
2	12	25 May	N	N	N	N	N	
2	13	02 June	N	N	N	N	N	
2	14	02 June	YES	YES	N	N	YES; 06 June	YES
2	15	02 June	N	N	N	N	N	
2	16	02 June	N	N	N	N	N	
2	17	02 June	N	N	N	N	N	
2	18	02 June	N	N	N	N	N	
1	19	15 June	N	YES	N	N	N	
1	20	15 June	N	N	N	N	N	
1	21	15 June	N	N	N	N	N	
1	22	10 June	N	N	N	N	N	
1	23	10 June	N	N	N	N	N	
1	24	07 June	N	YES	N	N	N	
1	25	07 June	N	N	N	N	N	
1	26	07 June	N	N	N	N	N	
1	27	09 June	N	N	N	N	N	
1	28	09 June	N	N	N	N	N	
1	29	09 June	N	N	N	N	N	
1	30	09 June	N	YES	N	N	N	Dipper nest
1	31	09 June	N	N	N	N	N	
1	32	11 June	N	N	N	N	N	
1	33	11 June	N	YES	N	N	N	
1	34	11 June	N	N	N	N	N	

4.2.2 *Vantage Point Surveys (Kingfisher)*

A follow-up VP survey of 2 hour duration was undertaken at Transect 14 (Section 2 Letterkenny) on 06 June, observing north and south (1h each) sections from the N13. This area (Figure 9) had some suitable foraging habitat and perches but although some of the banks were suitable in structure they were very shallow above the water level (subject to tidal inundation) and no nest holes were seen. No other sites in the Letterkenny area appeared suitable – though it seems likely that at least on some occasions (e.g. winter) Kingfishers will occur, especially on the main Swilly Estuary channel.



Figure 9. Area at Transect 14 along the N13 east of Letterkenny where a single Kingfisher was observed on two occasions. There was no evidence of any suitable nesting area within the transect though slow-flowing water and the availability of some perches.

4.3 Vantage Point Surveys

Over 71 hours of vantage point surveys were undertaken monthly between 20 May and 12 August, with a minimum of six hours of observation being undertaken at each vantage point in each month (Table 5).

The locations of observations of birds are shown in Figures 10-12 for observations from VP1, 2 and 3 respectively. Symbology in the legends refer to the various raptor species seen, or groupings of species as corvids or other species.

We recorded nine species during surveys which included raptors (Buzzard, Peregrine, Hen Harrier, Sparrowhawk and Kestrel), crows (Hooded Crow and Raven), gulls (Great black-backed Gull) and Grey Heron. Table 6 shows the total number of individuals by VP and month for most species.

Buzzard was the most numerous species and, although no nests were seen, undoubtedly pairs are breeding in the broader area within the forestry areas. A single Hen Harrier (female/juvenile type) was observed mobbing a Buzzard on June 12 in VP2 (location 54.792, -7.825).



Figure 10. Locations of individual birds observed during Vantage Point surveys in May - August 2023. Yellow dots represent locations of observations with the approximate viewshed for VP1 outlined in red. See species code explanations (e.g. BZ) in Table 5).

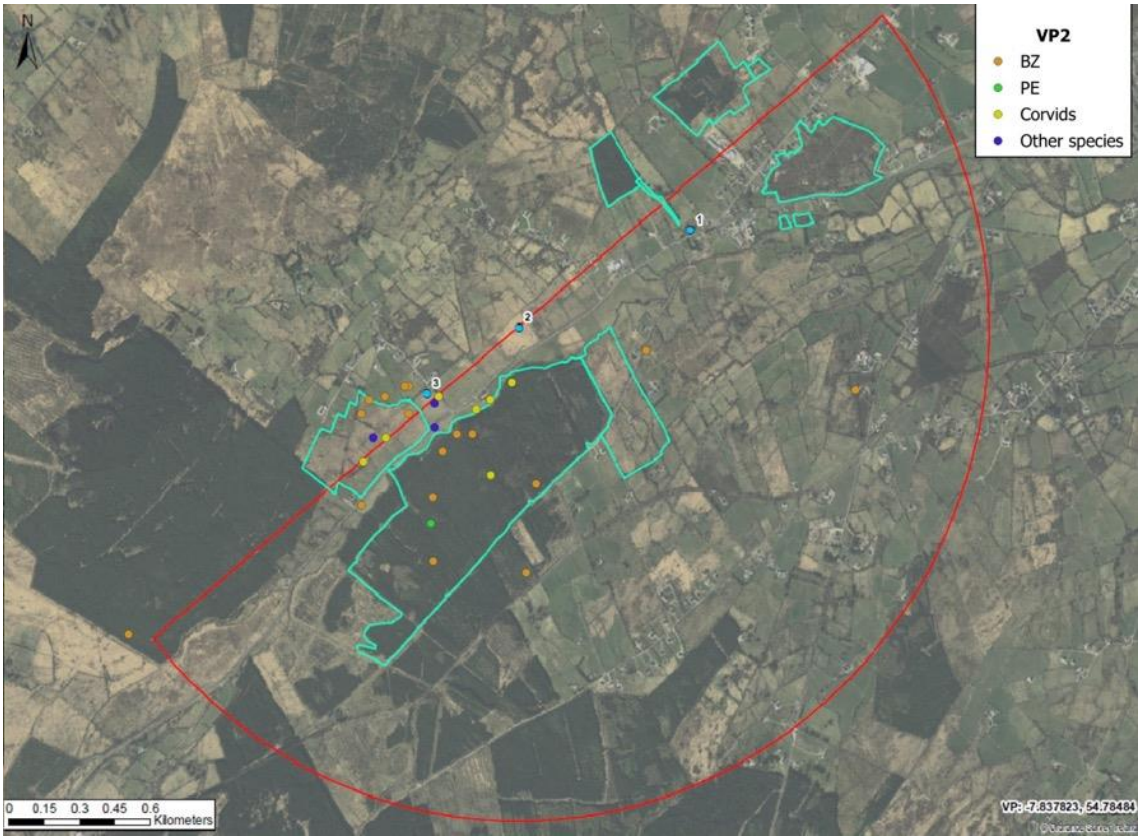


Figure 11. Locations of individual birds observed during Vantage Point surveys in May - August 2023. Yellow dots represent locations of observations with the approximate viewshed for VP2 outlined in red. See species code explanations (e.g. BZ) in Table 5).

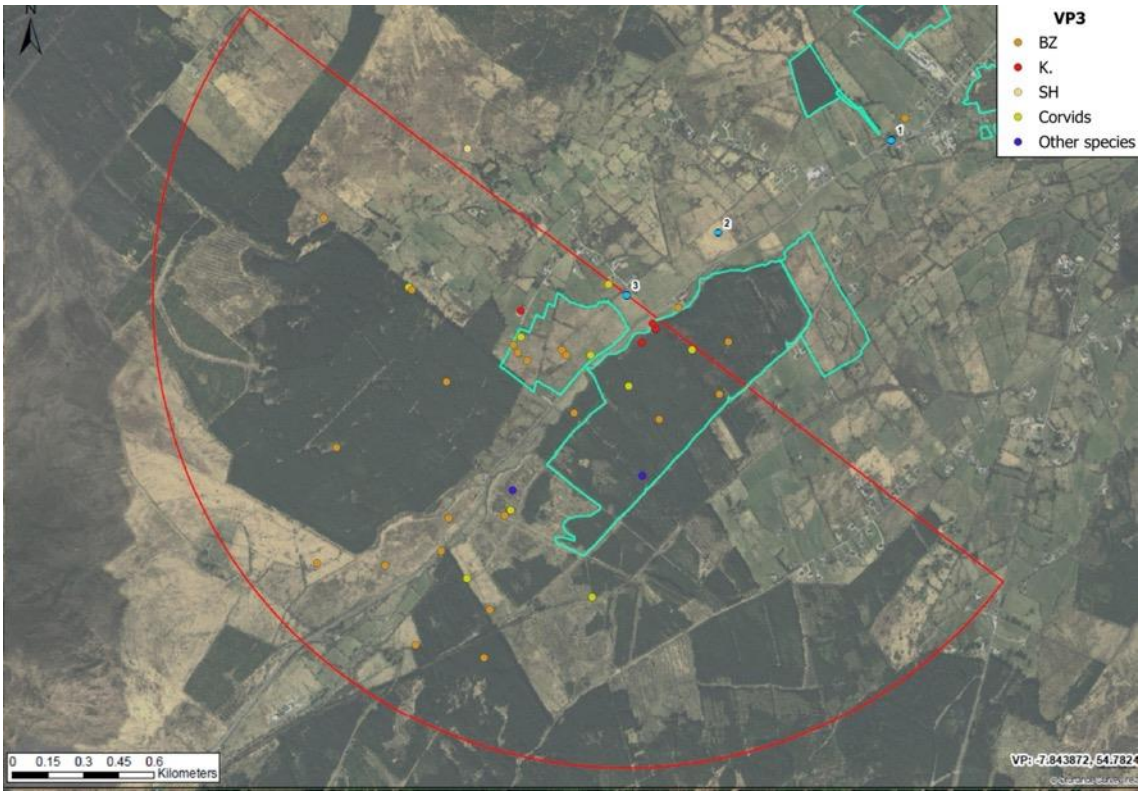


Figure 12. Locations of individual birds observed during Vantage Point surveys in May - August 2023. Yellow dots represent locations of observations with the approximate viewshed for VP3 outlined in red. See species code explanations (e.g. BZ) in Table 5).

Table 5. Timings, duration and weather conditions during VP surveys undertaken in 2023

VP #	VP ID	Date	Time Start	Time Finish	Length of VP watch (h)	Weather (Wind; Precip; Vis)
1	1	20 May	14:15	17:15	3	N F2; Light rain; V Good
2	1	23 May	16:30	19:30	3	W F4; None; V Good
3	2	20 May	17:45	20:45	3	N F3; None; Excellent
4	2	23 May	13:00	16:00	3	W F3; None; V Good
5	3	21 May	13:05	16:05	3	N F3; Light rain; V Good
6	3	21 May	15:20	18:20	3	N F3; None; V Good
7	3	22 May	09:15	12:15	3	NW F3; None; V Good
8	1	01 June	05:00	08:00	3	SSW F2; Light rain; V Good
9	1	12 June	08:50	11:05	2.25	WSW F2; None; Good[21]
10	2	01 June	09:15	12:15	3	SSW F3; None; Excellent
11	2	14 June	10:30	13:30	3	ESE F3; None; V Good
12	3	02 June	17:30	20:30	3	E F3; None; V Good-Excellent
13	3	08 June	10:40	13:40	3	E F4; None; Excellent
14	1	01 July	12:00	15:00	3	W F4-5; Light rain (intermittent); Good
15	1	01 July	15:30	18:30	3	W F4-5; Light rain (intermittent); Good
16	2	02 July	11:30	14:30	3	W F3-4; Light rain; Good
17	2	02 July	15:00	18:00	3	W F3-4; Light rain; Good
18	3	03 July	11:00	14:00	3	WSW F3-4; Moderate rain; Good
19	3	03 July	14:30	17:30	3	WSW F3-4; Moderate rain; Good
19	1	10 Aug	12:10	15:10	3	SE F3-4; Light rain (intermittent); V Good
20	1	10 Aug	15:40	18:40	3	SE F3-4; Light rain (intermittent); V Good
21	2	11 Aug	10:30	13:30	3	S-SW F4; Light rain; V Good
22	2	11 Aug	14:00	17:00	3	S-SW F4; Light rain; V Good
23	3	12 Aug	13:30	16:30	3	SW F4; Light rain (intermittent); Good
24	3	12 Aug	17:00	20:00	3	SW F4; Light rain (intermittent); Good

[21] This VP was incomplete (by approximately 45 minutes) as there were frequent loud noises (possibly a rock-hammer or similar from construction) which were potentially (appeared to be) disturbing birds.

Table 6. Totals of species recorded during VP watches in June - August 2023 south of Ballybofey. Values are summed totals of individual species during ~ 6 hour VPs per month. The species are organised in groupings of raptors, crows and other species and the BTO species codes as used in Figures 10-12 are shown.

VP ID	Month	Buzzard (BZ)	Hen Harrier (HH)	Kestrel (K.)	Peregrine (PE)	Sparrowhawk (SH)	Hooded Crow (HC)	Raven (RN)	Grey Heron (H.)
1	May	7	0	0	0	0	2	0	0
2	May	5	0	0	1	0	3	4	1
3	May	12	0	2	0	0	6	2	0
1	June	11	1	1	0	0	0	0	1
2	June	10	0	0	0	0	2	0	0
3	June	8	0	3	0	1	2	1	0
1	July	1	0	0	0	0	0	0	0
2	July	9	0	0	0	0	0	6	0
3	July	23	0	6	0	0	0	2	0
1	Aug	5	0	0	0	0	1	0	0
2	Aug	5	0	0	0	0	0	3	1
3	Aug	7	0	0	0	0	2	2	0

4.4 Breeding Raptor Surveys

We located Peregrines at a number of potentially suitable breeding locations, but were only able to confirm breeding at one site. April surveys of potential areas confirmed the potential suitability of four site – two quarry sites in close proximity to each other approximately halfway between Letterkenny and Stranorlar (near Drumkeen; Sites A and B Table 7), and two sites to the north and south of Stranorlar/Ballybofey Sites C and D).

Of the sites visited, Site D to the SE of Ballybofey in the townland of Trusk never showed any evidence of Peregrine of other raptors being present.
The other sites A, B and C (Figure 13) all had Peregrine at one time or other. Sites A and B near Drumkeen each had a single Peregrine but we never saw birds at each site on the same day. We did not see evidence of breeding but it is possible that one or other sites was used.
Site C, NE of Stranorlar had 1-2 birds present and a nest with chicks was confirmed in July (Figure 14).

Table 7. Survey visits to potentially suitable quarry nest sites and observations in the Ten-T Section 1 project corridor April – July 2023. Four sites A-D were the only identified as potentially suitable for nesting Peregrine.

Site ID	Site	Lat/Long	Date	Comments
A	S Section 2 (Cloughroe, Drumkeen)	54.885, -7.770	20 Apr 2023	Active Quarry. Industrial complex (timber)
B	S Section 2 (Cloughroe II, Drumkeen)	54.872, -7.767	20 Apr 2023	Apparently disused quarry
C	N Section 1 / S Section 2 (Gortletteragh, Stranorlar)	54.817, -7.735	20 Apr 2023	Active Quarry
D	SE Section 1 (Near Trusk, Ballybofey)	54.757, - 7.815	20 April 2023	Active Quarry
A	S Section 2 (Cloughroe, Drumkeen)	54.885, -7.770	02 Jun 2023	Active Quarry. Industrial complex (timber)
B	S Section 2 (Cloughroe II, Drumkeen)	54.872, -7.767	03 Jun Apr 2023	Apparently disused quarry
C	N Section 1 / S Section 2 (Gortletteragh, Stranorlar)	54.817, -7.735	02 Jun 2023	Active Quarry
D	SE Section 1 (Near Trusk, Ballybofey)	54.757, - 7.815	02 Jun 2023	Active Quarry
A	S Section 2 (Cloughroe, Drumkeen)	54.885, -7.770	04 Jul 2023	Active Quarry. Industrial complex (timber)
B	S Section 2 (Cloughroe II, Drumkeen)	54.872, -7.767	04 Jul 2023	Apparently disused quarry
C	N Section 1 / S Section 2 (Gortletteragh, Stranorlar)	54.817, -7.735	03 July 2023	Active Quarry
D	SE Section 1 (Near Trusk, Ballybofey)	54.757, - 7.815)	03 July 2023	Active Quarry
A	N Section 1 / S Section 2 (Gortletteragh, Stranorlar)	54.817, -7.735	03 July 2023	Active Quarry

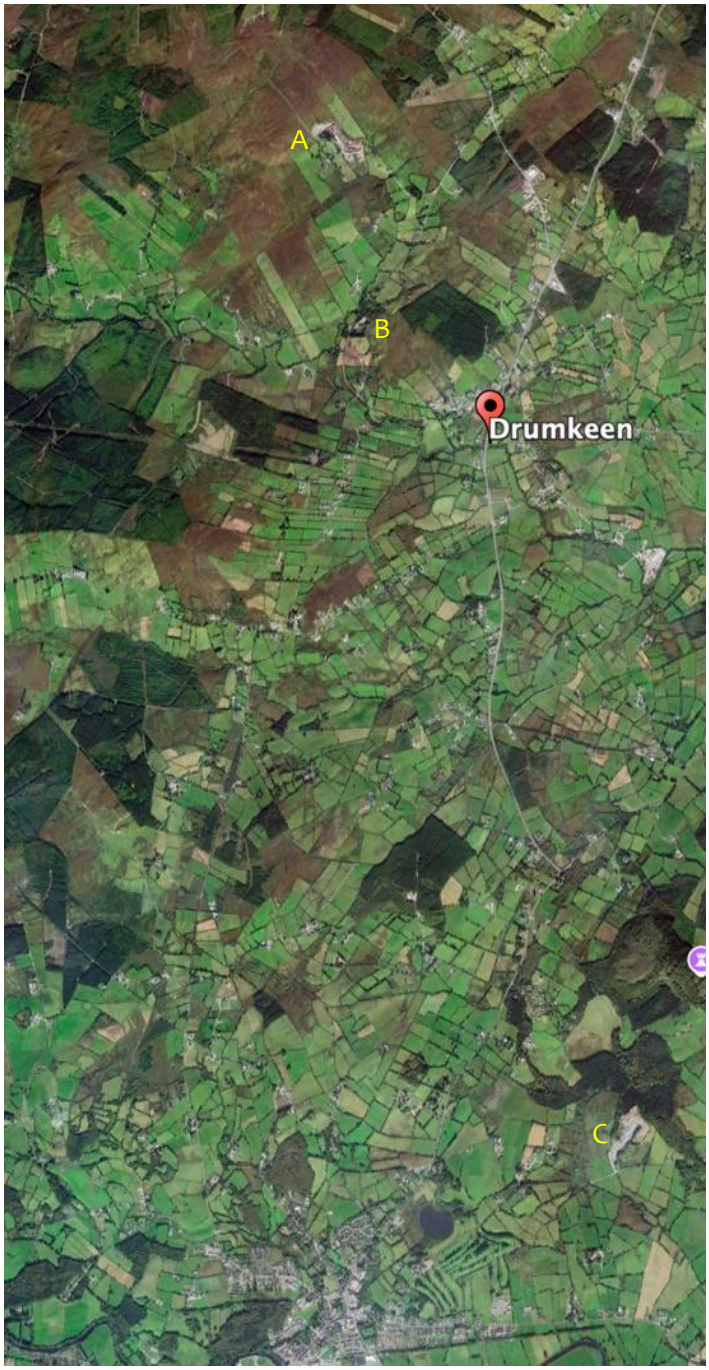


Figure 13. Locations searched for Peregrine - A, B and C all held birds at one time or other but breeding was proven only at site C

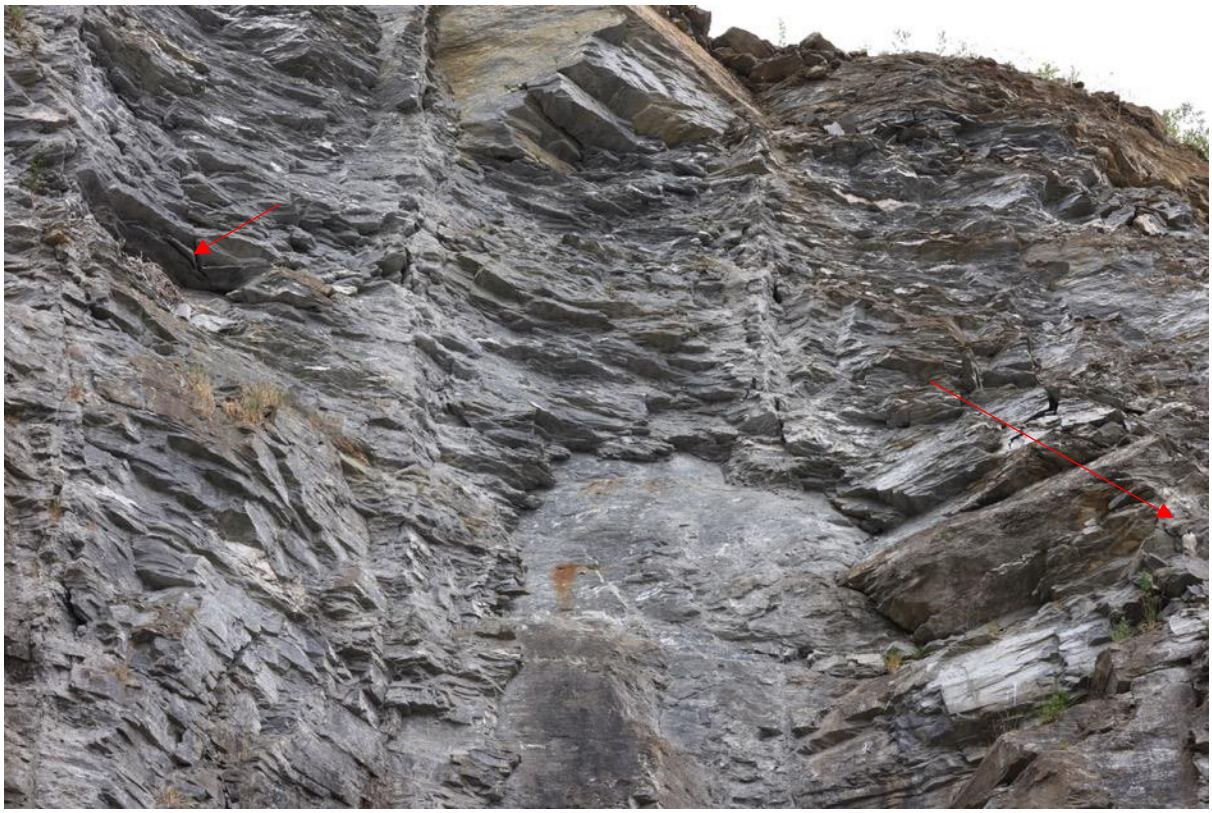


Figure 14. Apparent nest with adult guarding at Site C, Stranorlar.

5. Discussion

Our surveys were comprehensive and relatively unaffected by weather or other factors. Just one of our vantage point surveys was disrupted and had to be aborted due to loud noises from construction which appeared to be affecting the local wildlife – at least temporarily. Overall, we feel that the range of surveys undertaken reflect the breadth of the main ornithological features of the areas visited accurately and accurately during the breeding season. Our familiarity with Irish avifauna generally (species and habitat requirements) and with the specific areas, including via previous surveys work associated with the Ten-T project (e.g. previous BBS surveys) around Letterkenny, reinforce our assertion that the species encountered, and their distribution and abundance are broadly as we would have anticipated.

The primary limitation of our survey probably related to Kingfisher. Whilst most of the transects did not have suitable nesting or foraging habitat for Kingfisher, some of them along the Swilly Estuary appeared much more suitable and had the potential to at least hold some foraging areas for birds – albeit that suitable perches were scarce. Kingfishers are highly mobile in territories that can be up to 4-5km long so it is possible that birds could have been missed.

Local information confirms that the locations where we saw Peregrine are traditional sites used for breeding – so these observations do not constitute new information on breeding areas for that species. Aside from the three sites where birds were observed, breeding being confirmed at one near Stranorlar, a single bird was observed hunting during vantage points – possibly from one of these territories, or possibly from elsewhere in the Blue Stacks to the south and west. We understand that it is likely that there is a single pair at Drumkeen which switch usage between the two sites (A and B), with a separate pair at site C. Whilst we visited sites in a short timeframe on several occasions we never saw birds at more than one site at the same time. We suggest that, in addition to a breeding pair at site C, there was a separate pair at A/B for which breeding in 2023 was unproven.

Overall, we did not see or hear any species of particular conservation interest immediately adjacent to or on the proposed scheme route which gave us any cause for concern with respect to impacts during construction or operational phases of a future road scheme. The species which may be directly impacted through vegetation removal and loss of breeding/foraging opportunities are, on the whole, relatively abundant, common and widespread species in Ireland. It seems unlikely that any of the scarce/rarer species would be significantly impacted by the scheme either due to the fact that they were utilising the areas for foraging only (not nesting) and similar foraging opportunities are widely available in the area.

Appendix G
Overwintering Waterbird Surveys

APPENDIX G:

Wintering Bird Survey Results

The following should be read in conjunction with Section 2 and 3 2022–2026 wintering bird survey mapping in **EIAR Drawings 9A.53, 9A.57, 9A.58, 9A.59, 9A.60, 9A.61, 9A.64, 9A.65, 9A.66, 9A.67, 9A.68, 9A.69, 9A.70 and 9A.71,** in **Volume D: Book of Drawings**.

Section 2 2022/23 Surveys

Table G-1: Peak Counts of Species Recorded During Vantage Point Surveys

Species	BoCCI Status	VP	23/11/22	30/11/22	14/12/22	19/12/22	11/01/23	13/01/23	09/02/23	22/02/23	08/03/23	31/03/23	Peak
Primary Target Species													
Canada goose	Green	Big-Isle	2	2	0	0	0	0	0	0	0	0	**2**
		Airport	0	0	0	0	0	0	0	0	0	0	**0**
Greenland white-fronted goose*	Amber (W)	Big-Isle	100	140	125	0	200	0	200	120	475	0	**475**
		Airport	0	0	0	0	0	0	0	0	0	0	**0**
Greylag goose*	Amber (W)	Big-Isle	460	400	1	223	2,115	610	250	150	145	0	**2,115**
		Airport	0	45	0	0	19	0	185	230	0	120	**230**
Secondary Target Species													
Black-headed gull*	Amber (B/W)	Big-Isle	34	48	22	0	0	0	0	0	11	127	**127**
		Airport	19	126	2	340	0	0	0	0	142	0	**340**
Buzzard	Green	Big-Isle	0	1	0	1	1	1	0	0	0	1	**1**
		Airport	2	0	1	0	1	0	0	0	1	0	**2**
Common gull*	Amber (B/W)	Big-Isle	0	0	0	0	0	0	0	0	0	0	**0**
		Airport	0	0	3	0	0	0	0	0	0	0	**3**
Cormorant	Amber (B/W)	Big-Isle	0	0	0	0	0	0	0	1	0	0	**1**
		Airport	0	0	0	0	0	0	0	0	0	0	**0**
Curlew*	Red (B/W)	Big-Isle	1	0	3	3	0	41	15	0	43	3	**43**
		Airport	0	0	1	0	0	0	5	0	0	1	**5**
Dunlin*	Red (B/W)	Big-Isle	0	0	400	312	0	0	0	1,400	0	0	**1,400**

Species	BoCCI Status	VP	23/11/22	30/11/22	14/12/22	19/12/22	11/01/23	13/01/23	09/02/23	22/02/23	08/03/23	31/03/23	Peak
		Airport	0	0	0	0	0	0	0	0	0	0	**0**
Eider	Red (B/W)	Big-Isle	0	10	0	0	0	0	0	0	0	0	**10**
		Airport	0	0	0	0	0	0	0	0	0	0	**0**
Golden plover	Red (B/W)	Big-Isle	0	0	0	0	950	0	40	0	0	0	**950**
		Airport	0	0	0	0	0	0	0	0	0	0	**0**
Great black-backed gull	Green	Big-Isle	0	0	0	0	0	0	0	0	0	0	**0**
		Airport	0	0	0	0	0	0	0	0	0	1	**1**
Greenshank*	Green	Big-Isle	0	0	0	0	0	0	0	0	2	0	**2**
		Airport	0	0	0	0	0	0	0	0	0	0	**0**
Grey heron	Green	Big-Isle	0	1	0	0	0	0	0	0	0	0	**1**
		Airport	3	0	0	1	1	1	0	1	1	1	**3**
Lapwing	Red (B/W)	Big-Isle	385	400	14	228	1,230	700	38	0	0	0	**1,230**
		Airport	0	388	0	30	25	0	600	0	0	0	**600**
Lesser black-backed gull	Amber (B/W)	Big-Isle	4	6	9	1	3	0	0	22	23	0	**23**
		Airport	0	18	7	13	12	0	162	0	1	0	**162**
Little egret	Green	Big-Isle	0	3	2	1	0	1	0	0	0	0	**3**
		Airport	1	6	0	7	0	0	0	0	0	0	**7**
Mallard*	Amber (B/W)	Big-Isle	0	2	2	10	60	0	4	41	0	0	**60**
		Airport	0	0	0	0	0	0	0	2	0	0	**2**
Oystercatcher*	Red (B/W)	Big-Isle	0	2	35	37	46	93	8	0	1	1	**93**
		Airport	0	0	0	0	0	0	208	0	0	0	**208**
Raven	Green	Big-Isle	0	0	0	0	0	0	0	0	0	1	**1**
		Airport	0	1	0	0	0	0	0	0	0	0	**1**
Redshank*	Red (B/W)	Big-Isle	2	1	5	12	0	0	8	0	10	6	**12**
		Airport	2	0	0	0	0	0	0	0	0	0	**2**
Shelduck*	Amber (B/W)	Big-Isle	0	24	0	20	250	113	70	79	0	6	**250**
		Airport	0	0	0	0	0	0	0	0	0	0	**0**
Teal*	Amber (B/W)	Big-Isle	6	14	0	26	0	0	0	0	27	0	**27**

Species	BoCCI Status	VP	23/11/22	30/11/22	14/12/22	19/12/22	11/01/23	13/01/23	09/02/23	22/02/23	08/03/23	31/03/23	Peak
		Airport	0	0	0	0	0	0	0	0	0	0	**0**
Tufted duck	Amber (B/W)	Big-Isle	6	0	0	0	0	0	0	48	0	0	**48**
		Airport	0	0	0	0	0	0	0	0	0	0	**0**
Whimbrel	Green	Big-Isle	0	0	0	0	0	0	0	0	0	0	**0**
		Airport	0	24	0	0	0	0	0	0	0	0	**24**
Wigeon*	Amber (B/W)	Big-Isle	100	24	19	45	0	0	0	0	152	60	**152**
		Airport	0	0	0	0	0	0	0	0	0	0	**0**

Key to table: B = BoCCI listed for breeding population; W = BoCCI listed for overwintering population; **BOLD*** = Lough Swilly SPA SCI

Table G-2: Counts and Locations of Species Recorded During Windscreen Surveys

Species	BoCCI Status	18/11/2022 Count (ITM coords)	20/12/2022	11/01/2023	01/02/2023	03/03/2023
Primary Target Species						
Greenland White-fronted goose*	Amber (W)	—	57 (620946 912251)	15 (621357 912180)	14 (620891 911720)	54 (622714 912530)
					42 (620713 912192)	
Greylag goose*	Amber (W)	57 (622716 912544)	6 (621486 912221)	15 (619371 911676)	350 (620891 911720)	56 (619243 911502)
			53 (622371 912064)	68 (619109 911502)	148 (621276 911894)	82 (619156 911571)
			60 (622453 912005)	56 (621250 911780)	1 (621135 911913)	
			250 (622822 911702)	12 (621152 911775)		
				31 (621357 912180)		
				21 (622580 912439)		
Whooper swan* (juvenile)	Amber (W)	—	—	2 (622797 911719)	—	—
Secondary Target Species						
Black-headed gull*	Amber (B/W)	—	10 (619254 911633)	17 (619211 911644)	3 (619300 911025)	13 (623210 911160)
					37 (619214 911642)	
Black-tailed godwit	Red (W)	1 (620425 911317)	100 (622822 911702)	—	—	31 (619156 911571)
						9 (622982 911068)
Buzzard	Green	1 (623398 911324)	—	—	—	—

Species	BoCCI Status	18/11/2022 Count (ITM coords)	20/12/2022	11/01/2023	01/02/2023	03/03/2023
Common gull*	Amber (B/W)	—	—	—	—	6 (620396 911070)
						8 (623210 911160)
Curlew*	Red (B/W)	85 (620568 911442)	33 (619109 911470)	21 (619109 911502)	8 (621480 912294)	24 (619156 911571)
		93 (620425 911317)	12 (621486 912221)		108 (622792 912392)	94 (622982 911068)
		5 (620255 911257)	150 (622345 912386)		2 (623278 911234)	
		7 (619177 911707)	300 (622826 911702)			
		300 (622716 912544)	32 (622978 911097)			
Dunlin*	Red (B/W)	—	5 (622345 912386)	—	—	—
Greenshank*	Green	1 (623260 911327)	—	2 (621357 912180)	—	—
Grey heron	Green	1 (620568 911442)	—	—	—	—
Herring gull	Amber (B/W)	—	27 (619254 911633)	4 (619211 911644)	10 (619214 911642)	—
			40 (621342 912211)			
Kingfisher	Amber (B)	1 (623260 911327)	—	—	—	—
Lapwing	Red (B/W)	300 (622560 912565)	43 (619254 911633)	52 (619211 911644)	43 (619214 911642)	—
			400 (622345 912386)	14 (619109 911502)	97 (622508 912348)	
			197 (622816 911131)	1 (622879 911984)	740 (622792 912392)	
Lesser black-backed gull	Amber (B/W)	—	1 (619254 911633)	—	—	—
Mallard*	Amber (B/W)	—	—	12 (619311 911040)	—	2 (622576 912374)
Oystercatcher*	Red (B/W)	1 (622908 911214)	1 (619109 911470)	—	27 (622792 912392)	6 (622714 912530)
Redshank*	Red (B/W)	—	25 (621486 912221)	1 (621357 912180)	—	—
			200 (622345 912386)			
			1 (623373 911280)			
White-tailed eagle	Red (B)	1 (621173 911768)	—	—	—	—

Key to table: B = BoCCI listed for breeding population; W = BoCCI listed for overwintering population; BOLD* = Lough Swilly SPA SCI

Section 2 2025 Surveys

Vantage Point Surveys

Table G-3: VP2.12 High/Low Tide Counts September/October/November/December/January

Species	BoCCI	02/09/25 (High)	10/09/25 (Low)	07/10/25 (Low)	13/10/25 (High)	03/11/25 (Low)	27/11/25 (High)	01/12/25 (High)	03/12/25 (Low)	07/01/26 (Low)	12/01/26 (High)
Black-headed gull	Amber	93	37	78	40	-	325	98	63	-	124
Buzzard	Green	-	-	-	-	-	-	-	1	-	-
Common gull	Amber	-	-	2	-	-	-	-	-	-	-
Cormorant	Amber	1	-	-	-	-	4	3	-	-	-
Curlew	Red	4	1	8	15	34	30	2	19	15	19
Great Black-backed Gull	N/A	-	-	-	-	-	-	-	1	-	-
Greenshank	Green	1	-	3 (2)	-	-	-	-	-	-	5
Grey heron	Green	1	-	1	1	-	-	1	1	-	1
Herring gull	Amber	3	-	-	-	-	3	-	2	-	
Lapwing	Red	75	14	-	-	-	14	-	-	-	1
Lesser black-backed gull	Amber	1	1	-	-	-	1	-	-	-	-
Little egret	Green	-	-	1	2	-	-	-	-	-	-
Mallard	Amber	-	-	-	2	-	6	-	-	-	3
Oystercatcher	Red	12	-	-	1	18	5	3	-	-	-
Redshank	Red	6	-	1	9	-	6	1	1	5	3
Sparrowhawk	Green	1	-	-	-	-	1	1	-	-	-
Snipe	Red	-	-	-	-	-	-	2	-	-	-
Spotted sandpiper	Vagrant	-	-	-	1	-	-	-	-	-	-

Species	BoCCI	02/09/25 (High)	10/09/25 (Low)	07/10/25 (Low)	13/10/25 (High)	03/11/25 (Low)	27/11/25 (High)	01/12/25 (High)	03/12/25 (Low)	07/01/26 (Low)	12/01/26 (High)
Teal	Amber	2	2	14	14	-	26	42	97	-	28
Wigeon	Amber	-	-	-	-	-	-	-	2	-	6

BOLD* = Lough Swilly SPA SCI

Table G-4: VP2.13 High/Low Tide Counts September/October/November/December/January

Species	BoCCI	03/09/25 (High)	09/09/25 (Low)	08/10/20 (Low)	14/10/25 (High)	04/11/25 (Low)	26/11/25 (High)	02/12/25 (High)	04/12/25 (Low)	06/01/26 (Low)	13/01/26 (High)
Black-headed gull	Amber	203	804	-	-	-	228	214	-	-	11
Barnacle Goose	Amber	-	-	-	-	-	1	-	-	-	-
Bar-tailed Godwit	Red	-	-	-	-	-	45	-	-	-	-
Black-tailed Godwit	Red	-	-	-	-	-	165	-	-		
Curlew	Red	31	4	4	55	162	45	102	73	27	216
Common Gull	Amber	-	-	-	-	1	-	-	-	-	-
Golden Plover	Red	-	-	-	-	-	450	-	-	-	-
Great black-backed gull	Green	-	4	-	-	-	-	-	-	-	-
Grey heron	Green	-	-	-	1	-	-	-	-	-	1
Greylag Goose	Amber	-	-	-	-	9	299	62	105	196	174
Herring Gull	Amber	-	-	-	-	-	-	-	-	-	4
Lapwing	Red	-	-	-	106	-	4	-	18	120	55
Little Egret	Green	-	-	-	-	-	-	-	-	1	1

Species	BoCCI	03/09/25 (High)	09/09/25 (Low)	08/10/20 (Low)	14/10/25 (High)	04/11/25 (Low)	26/11/25 (High)	02/12/25 (High)	04/12/25 (Low)	06/01/26 (Low)	13/01/26 (High)
Lesser black-backed gull	Amber	-	1	-	-	-	-	-	-	-	-
Oystercatcher	Red	-	-	-	-	-	10	-	-	-	-
Peregrine falcon	Green	-	1	-	-	-	-	-	-	-	-
Redshank	Red	-	-	-	-	-	32	28	-	-	-
White-fronted Goose	Amber	-	-	-	-	-	581	-	-	-	375
Wigeon	Amber	-	-	-	-	-	-	-	-	-	48

BOLD* = Lough Swilly SPA SCI

Table G-5: VP3.14 High/Low Tide Counts September/October/November/December/January

Species	BoCCI	04/09/25 (High)	11/09/25 (Low)	09/10/20 (Low)	29/10/25 (High)	06/11/25 (Low)	25/11/25 (High)	02/12/25 (High)	04/12/25 (Low)	14/01/26 (High)	30/01/26 (Low)
Black-headed Gull	Amber	-	-	-	-	4	2	66	-	1	108
Buzzard	Green	1	-	-	-	-	-	-	-	1	-
Bonaparts gull	Vagrant	-	-	-	1	-	-	-	-	-	-
Common Gull	Amber	-	-	-	-	-	-	-	-	-	18
Cormorant	Amber	3	2	-	-	1	-	-	-	-	-
Curlew	Red	-	9	-	8	-	100	-	-	-	109
Dunlin	Red	-	-	-	-	-	25	-	-	-	-
Golden plover	Red	-	-	-	-	-	77	-	-	-	-
Greenshank	Green	-	1	-	-	-	-	-	1	-	-
Grey heron	Green	3	1	4	-	-	-	-	-	-	-
Greylag Goose	Amber	-	-	-	-	-	1	-	-	-	-

Species	BoCCI	04/09/25 (High)	11/09/25 (Low)	09/10/20 (Low)	29/10/25 (High)	06/11/25 (Low)	25/11/25 (High)	02/12/25 (High)	04/12/25 (Low)	14/01/26 (High)	30/01/26 (Low)
Grey wagtail	Red	-	-	1	-	-	-	-	-	-	-
Herring Gull	Amber	-	-	-	-	-	-	-	-	10	-
Kingfisher	Amber	1	-	-	-	-	2	-	-	-	-
Lapwing	Red	-	-	-	-	-	6	-	-	18	41
Lesser black-backed gull	Amber	5	1	-	-	-	3	-	-	-	-
Little Egret	Green	-	4	-	-	-	2	-	-	-	3
Redshank	Red	-	1	-	-	-	-	-	1	-	-
Sparrowhawk	Green	-	-	-	-	1	1	-	-	-	-
Teal	Amber	-	-	-	-	-	-	5	-	-	-
White-fronted Goose	Amber	-	-	-	-	-	535	-	-	-	-

BOLD* = Lough Swilly SPA SCI

Table G-6: VP4.15 High/Low Tide Counts September/October/November/December/January

Species	BoCCI	01/09/25 (High)	03/09/25 (Low)	06/10/25 (Low)	28/10/25 (High)	05/11/25 (Low)	28/11/25 (High)	01/12/25 (High)	03/12/25 (Low)	05/01/26 (Low)	29/01/26 (High)
Bar-tailed godwit	Red	-	3	3	-	-	10	-	-	-	-
Black-headed gull	Amber	67	152	-	-	2	30	-	22	5	13
Black-tailed godwit	Red	8	4	2	-	-	35	-	-	-	-
Common gull	Amber	-	-	1	-	-	-	-	-	-	-
Common sandpiper	Amber	1	-	-	-	-	-	-	-	-	-

Species	BoCCI	01/09/25 (High)	03/09/25 (Low)	06/10/25 (Low)	28/10/25 (High)	05/11/25 (Low)	28/11/25 (High)	01/12/25 (High)	03/12/25 (Low)	05/01/26 (Low)	29/01/26 (High)
Cormorant	Amber	4	1	-	-	-	-	-	-	-	-
Curlew	Red	30	129	7	35	1	50	1	48	-	24
Dunlin	Red	-	-	5	-	-	-	-	-	-	-
Greenshank	Green	-	2	2	-	-	-	-	-	-	-
Grey heron	Green	3	2	1	-	-	1	1	-	1	-
Jack snipe	Green	2	-	-	-	-	-	-	-	-	-
Lapwing	Red	-	-	32	-	-	132	-	-	-	-
Lesser black-backed gull	Amber	-	1	-	-	-	-	-	-	-	1
Little Egret	Green	1	-	1	-	-	1	2	-	-	1
Oystercatcher	Red	-	-	9	-	-	17	-	-	-	-
Peregrine	Green	-	-	-	-	-	-	1	-	-	-
Redshank	Red	116	8	9	-	-	6	9	-	-	-
Snipe	Red	-	-	-	-	-	-	-	-	-	-
Sparrowhawk	Green	1	1	-	-	-	-	-	-	-	-
Teal	Amber	-	1	-	-	-	29	8	-	-	-
Wigeon	Amber	-	-	-	-	-	-	34	-	-	-
White-fronted Goose	-	-	-	-	-	-	-	-	-	-	26

BOLD* = Lough Swilly SPA SCI

Windscreen Surveys

Table G-7: Species Counts for Windscreen Surveys September/October/November/December/January section 2

Species	BoCCI	12/09/25	15/10/2025	18/11/25	05/12/25	15/01/26	Peak Flock Count
Black-headed gull	Amber	337	300	36	3	127	300
Brent Goose	Amber	-	-	-	35	-	35
Buzzard	Green	-	-	-	1	2	1
Cormorant	Amber	-	-	-	-	2	2
Curlew	Red	23	154	160	61	194	132
Golden plover	Red	-	-	456	200	520	520
Great Black-backed Gull	Green	8	-	-	-	-	-
Greenshank	Green	-	-	-	-	1	1
Grey Heron	Green	-	-	-	-	4	2
Greylag goose	Amber	205	-	230	403	337	281
Herring Gull	Amber	-	-	-	5	20	20
Lapwing	Red	-	-	335	60	250	251
Lesser Black-backed Gull	Amber	12	-	-	-	-	12
Little Egret	Green	-	-	-	3	-	3
Oystercatcher	Red	-	-	-	8	25	8
Redshank	Red	-	-	11	-	5	6
Sanderling	Red	-	-	-	-	350	350
Shelduck	Amber	-	-	-	-	36	36
Sparrowhawk	Green	-	-	-	-	1	1
Teal	Amber	-	-	-	-	6	6
White-fronted goose	Amber	-	52	456	19	500	424
Wigeon	Amber	-	-	-	-	38	38

BOLD* = Lough Swilly SPA SCI

Table G-8: Species Counts for Windscreen Surveys Section 3

Species	BoCCI	12/09/25	15/10/2025	19/11/25	05/12/25	16/12/26	08/01/26	16/01/26	Peak Flock Count
Black-headed gull	Amber	337	300	122	-	-	-	53	300
Common Gull	Amber	-	-	-	-	-	-	5	5
Herring gull	Amber	-	-	46	147	78	152	5	152
Grey Heron	Green	-	-	-	7	-	-	-	7
Greylag Goose	Amber	-	-	-	-	-	287	-	287
Lesser Black-backed Gull	Amber	-	-	-	-	-	-	4	4
Whooper swan	Amber	-	-	-	-	-	95	8	51

Appendix H
Lifford Whooper Swan Report

14th October 2021

Whooper Swan Monitoring 2020/21: Ten-T (Sect 3)

Report to Barry Transportation/RPS



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Any advice, opinions or recommendations expressed in this report are based upon due diligence including the authors' interpretation of field conditions experienced at the time of survey. The authors do not accept any responsibility for material changes to field conditions which may have occurred subsequent to the survey date.

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Executive Summary

This project is concerned with monitoring the distribution and movements of Icelandic Whooper Swans, a species of conservation interest known to utilise the areas in Section 3 (N14) of the Ten-T Priority Route Improvement Project near Lifford, Co. Donegal.

A programme of monitoring was undertaken between November and April in the winter of 2020/21.

Surveys were conducted at least once per month following road transects routes and utilising suitable vantage point locations, recording the location, flock size, flock composition and movements of Whooper Swans in an area of ~21km^2 north and north-west of Lifford.

This area is traditionally used by Icelandic Whooper Swans, with transient use in autumn and spring by birds on passage when higher numbers may occur for short periods. The majority of wintering birds occur on either side of the River Foyle at Swilly Burn, roosting on the river and utilising the improved grasslands to the east (Grange, Co. Derry) or west in Co. Donegal.

During 2020/21 monitoring a similar pattern to the historic one was evident, in respect to peak numbers (~300 individuals), distribution and phenology of site use. The largest and most sedentary flocks occurred at the confluence of the Swilly Burn and River Foyle ~6km NNE of Lifford; smaller flocks occurred along Swilly Burn to the west towards the intersection with the N14 including one flock (~40 birds) consistently through February and March along the N14. The utilisation of potato crops here as elsewhere is ephemeral – when this habitat is available anywhere within traditional sites they will exploit them temporarily. Due to the rotational nature of this crop type and the farming landscape in which it occurs it is concluded that the planned road development works will have no significant impact on the Whooper Swan population utilising the general Foyle/Swilly Burn area.

1. Background

1.1 Project Brief

KRC Ecological Ltd were invited to undertake a survey of the N14 and environs, building on work undertaken in previous winters by RPS. This comprised a full 'winter' season of bi-monthly counts in the area documenting the numbers, distribution and movement patterns of Whooper Swans within the area which would form the basis of an evaluation of the relative importance of areas within the footprint of the scheme for this species of conservation interest.

1.2 Objectives

The primary objectives of the survey work commissioned in 2021 were as follows:

- Document the size, location, composition of Whooper Swan flocks in the study area in the winter of 2020/21
- Document the presence of associated species (e.g. waders/geese)
- Source appropriate and relevant information from others
- Compile a short report in the broader context of Whooper Swan status in the area

2. Study Area

The study area comprises some 20km^2 north and northwest of Lifford, Co. Donegal (54.83, -7.48; Figure 1) dominated by agricultural land interspersed with sparse small areas of marsh/fen and woodland habitats. Low density housing occurs across the area, mostly developed in a linear fashion along the many small roads and with the many small farms. The topography is dominated by two floodplains - the larger River Foyle running N-S along the east of the area, and the much smaller Swilly Burn which flows eastwards into the River Foyle. Elsewhere the land bounded in Figure 1 rises to < 80m elevation is farmland. Agricultural land is predominant (> 95%) and within that the predominant habitat type is improved grassland (for grazing and/or silage production). There are small amounts (< ~5% of farmed area) of arable – wheat/barley or potatoes.



Figure 1. Location of study area NW of Lifford, Co. Donegal.

3. Methods

A number of road transects combined with vantage counts were used to identify occupied areas by Whooper Swans and to record flight-lines which, for example, could reveal the location of additional flocks or be flight-lines associated with commuting to/from roosts. During each survey all areas within the 20km^2 were visited at least twice, the only exception being the eastern side of River Foyle (Grange) where visits were not made on every occasion.

Surveys were conducted for periods of around six hours at least once per month from November through to April. The positions of each flock of Whooper Swans, geese or waders encountered was recorded on a field map to land management units (field parcels; ITM co-ordinates). In addition to the location, the habitat type, and flock size and composition (distinguishing 1st winter/adult swans and noting family units sizes) were noted.

4. Results

Whooper Swan surveys were conducted on twenty different dates by three different groups (KC, Barry Engineering LLO Team, Nick Duff) between December 03, 2020 and 07 April, 2021 as follows: December (6), January (2), February (6), March (5) and April (1).

Numbers peaked in February (n=299 birds) when numbers were highest for a period of ~ 4 weeks in the area of Swilly Burn at River Foyle (R265; areas 5 & 6; Figure 2). Elsewhere, and for the majority of the winter (Dec – March), average peak counts across the entire site were between 52 and 62 birds. Figure 3 summarises the peak monthly counts by area.

There was a clear sequence of usage of the site through the season, with a small flock (peaking at 37 birds) utilising two adjacent potato fields along the N14 corridor (area 1; ITM: 629171,903784) for a period of ca. six weeks (mid-December until early February), reducing in number through time and a proportionate increase in the usage of grasslands ca. 5km to the SE, east and west of the N14/Swilly Burn crossing at Feddyglass. This flock (mostly using a small group of fields west of the N14 at the crossing (ITM: 630250,902440; area 2, Figure 2)) were present almost continuously through much of February and March. Finally overall site numbers grew, with the majority of birds occurring at the Swilly Burn confluence with the River Foyle.

In the area within the N14 corridor, therefore, there were two main areas of usage – (1) the pair of potato fields at Drumbeg (area 1; Figure 2, Figure 6) used by 10-40 birds for a period of ca. 6 weeks and (2) the N14 / Swilly Burn crossing at Feddyglass where a similar-sized flock fed on a limited range of grass fields from January through to March (Figure 7). There were no ringed or colour-marked birds in these flocks to link individual birds' usage, but on several occasions the linkage between sites 1 and 2 or 3 (Figure 2) was evident through commuting flocks being observed moving between them. The location of all observed flocks is shown in Figure 6 and full details of observations are in Appendix 1.

There were no other notable species (geese or waders) observed utilising fields in the vicinity of the N14 at any point. There were flocks of Greylag Geese *Anser anser* (max 145), Lapwing *Vanellus vanellus* (max 150) and Golden Plover (max 60) all at Swilly Burn (R265; area 5).

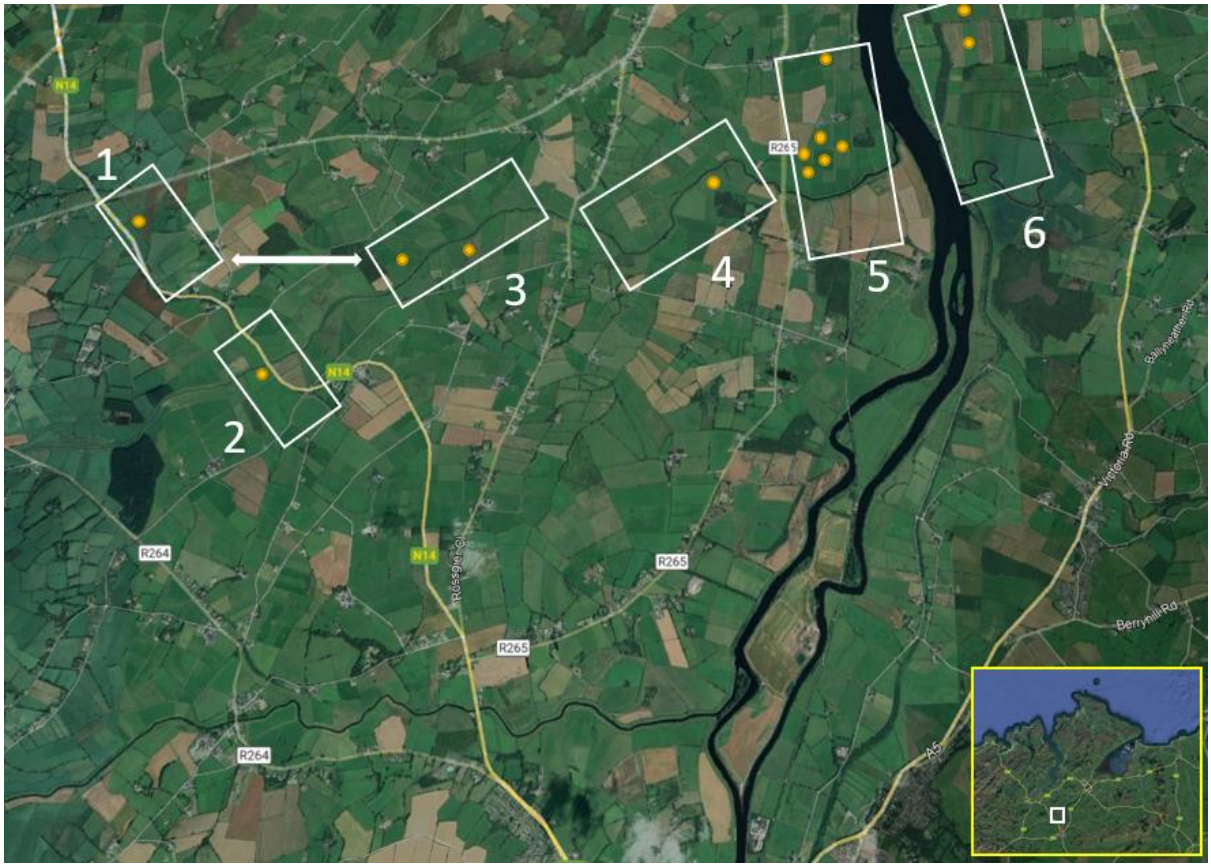


Figure 2. Location of main flocks (dots) and subsites within the Swilly Burn area. The arrow shows the main movement corridor of birds in the vicinity when moving between foraging on potatoes (area 1) and grassland (areas 2/3).

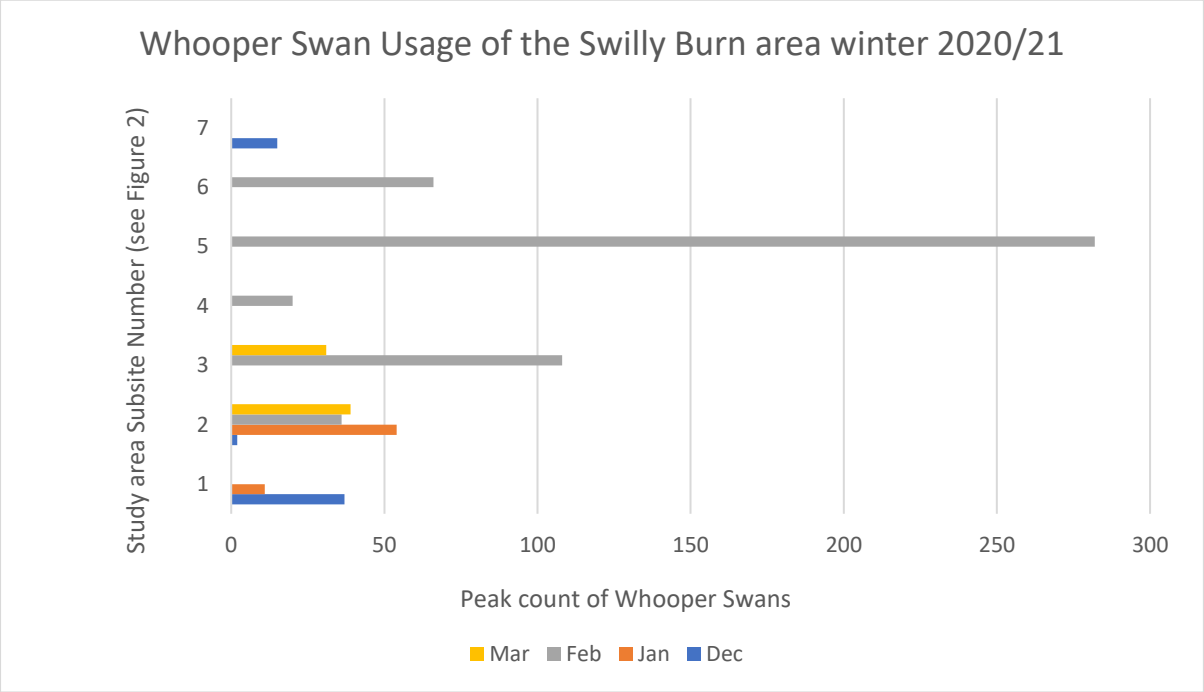


Figure 3. Usage of the study area by Whooper Swans in winter 2020/21. The study area subsections (labelled 1-7) are shown in Figure 2.



Figure 4. Area in potato fields at Drumbeg utilised by Whooper Swans in winter 2020/21.

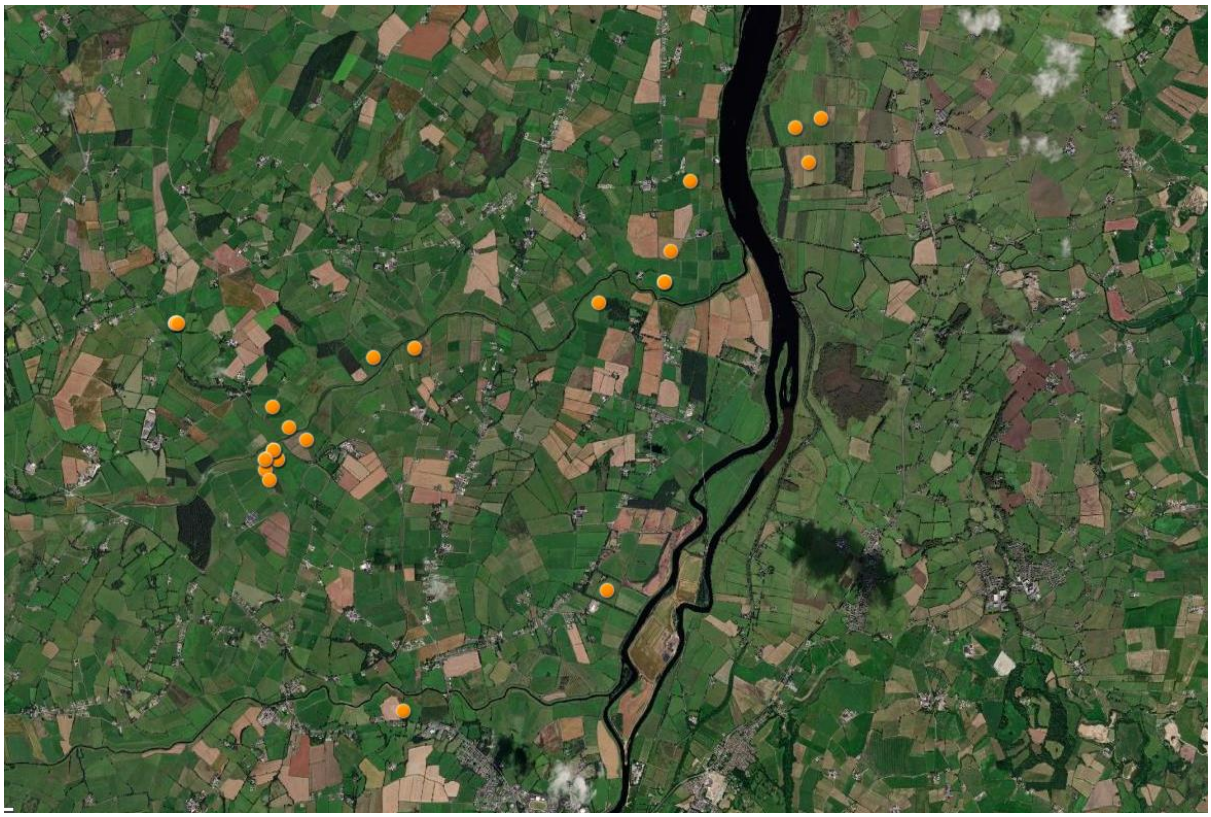


Figure 5. Locations of all Whooper Swan flocks observed November 2020 - April 2021.

5. Discussion

The Foyle/Swilly complex has historically been amongst the most important sites in Ireland for migratory Whooper Swans. Sheppard (1981) described an increasing importance of the site between the mid-1960s and early 1980s. Successive international swan censuses (held at 5-year intervals since 1986) and annual I-WeBS and WeBS monitoring continue to demonstrate the sites importance. Loughs Foyle & Swilly are the top two sites in the country for Whooper Swans (Lewis *et al*. 2019). Waterbird monitoring at River Foyle by I-WeBS and WeBS (of which Swilly Burn/Grange and adjacent sites are a part) has been variable and data were not sought from these schemes for the study reported here. Colhoun (1998) studied wintering swans and geese in this whole complex intensively over four years in the mid-1990s and periodically since. Observations and conclusions here are largely based on this familiarity and knowledge of the behavioural ecology of Whooper Swans in this and other areas.

Since the mid-1990s there has been a reduction in the importance of the Loughs Swilly/Foyle complex and a concomitant increase in populations further south (e.g. midlands); over the same period the overall Whooper Swan flyway population has grown by about 40% (24 years – 1994/95 to around 2018/19). The way by which the River Foyle sites have been utilised has not changed appreciably since the 1960s insofar as irregular transient peaks with very high numbers may occur in autumn likely in relation to the relative landscape-scale availability of waste grain in cereal stubbles in the overall

complex. In drier autumns in which much of the rotational arable habitat is ploughed and resown by early autumn at the main haunts further north (e.g. Inch Levels on Lough Swilly, Myroe on Lough Foyle) but may be available further south then numbers can be considerable. The presence of just a few poorly harvested fields can have a great deal of influence on the short- and medium-term distribution and abundance of birds within the site.

In mid-winter numbers typically increase as birds from further north on the Swilly/Foyle deplete exhaust food resources there and switch foraging to grasslands. Then, as now, the Grange/Swilly Burn area becomes more important and the majority of Whooper Swans in the complex occur here. Between years the importance appears to be dependent primarily on the availability of grassland elsewhere, especially at Inch Levels where the farming system has changed considerable over the decades. When it was arable-dominated in mid-winter in the 2000s (the wetter soils were not resown in the autumn) the absence of grassland meant that the relative importance of the River Foyle sites increased. This has since reverted to the older pattern whereby more birds now remain at Inch Levels as the area has much more extensive areas of grassland again.

In March and April there is normally an increase in the numbers of birds in the area again due to a northward movement of spring migrants staging for a short period on their return to the breeding grounds. The numbers in traditional areas holding larger mid-winter flocks (such as Swilly Burn/Grange) tend to swell with these spring migrants. This was evident in March when a number of individuals were observed having arrived from further south[1].

The availability of extensive areas of partially-harvested waste potatoes adjacent to grasslands has a major influence on the distribution of Whooper Swans throughout Ireland. Within- and between-winter changes in distribution is often dictated by the presence of poorly-harvested crops, ideally within standing water and grasslands adjacent. In open arable-dominated landscapes with good visibility, large fields and access to high-quality roost sites, Whooper Swans numbers can be significant and have a major bearing on the abundance, distribution and movements of flocks within a winter. On a smaller-scale, such as at Swilly Burn, the presence of smaller areas of arable crops such as potatoes can provide local resources which tend to have a short-term localised impact on movements of birds – if these habitats occur in traditionally-used sites. The ephemeral nature of rotational mixed arable cropping systems means that predicting the precise distribution of birds is impossible.

Our monitoring of the N14 corridor in 2020/21 showed that the area is utilised in a similar way to the way it was used over recent decades. The route of road development corridor will be unlikely to have any significant impact on Whooper Swans given the fact that it does not impact on any unique landscape or habitat attribute loss of which would have any impact. In all probability any potato fields in the area with waste crops this or in subsequent autumns in the vicinity will hold these birds. In conclusion, we believe there is no significant of the scheme as currently planned on Whooper Swans.

[1] The arrivals of new birds is often evident in the presence of orange-necked/headed individuals – these are birds which have been feeding on submerged vegetation in ferrous-rich sediments from bogland sites further south



Figure 6. Flock of Whooper Swans at Drumbeg on the N14 corridor, feeding on waste potatoes. Up to 37 birds were recorded here, mostly from mid-December 2020 through to mid-January 2021.



Figure 7. Small Whooper flock at Feddyglass/Swilly Burn bridge on the N14, present regularly through February and March

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Appendix 1 (overleaf)

Locations of flocks of Whooper Swans – showing habitat type (G grass, P potatoes), flock sizes, flock composition (numbers of adults/juveniles and brood sizes, and location (ITM and decimal lat/long). Flocks observed adjacent to the N14 corridor in areas 1 (orange) and 2 (green) are highlighted.

OBS	MONTH	DATE	TIME	COUNT	SITE TTL	Ads/Juvs (brood sizes)	HAB	OTH	ITM_X	ITM_Y	Lat	LONG	AREA	NOTES
LLO	3 (D)	19/12/2020		35			P		629171	903784	54.881	-7.545	1	
LLO	3 (D)	19/12/2020		2			G		630144	902342	54.867	-7.53	2	
LLO	3 (D)	20/12/2020		13			P		629171	903784	54.881	-7.545	1	
LLO	3 (D)	20/12/2020		29			P		629171	903784	54.881	-7.545	1	
LLO	3 (D)	21/12/2020		13			P		629219	903828	54.881	-7.5446	1	
KColhoun	3 (D)	29/12/2020		25		22-3 (1,1,1)	P		629171	903784	54.881	-7.545	1	
KColhoun	3 (D)	30/12/2020	14:00	15			G		633836	900976	54.8554	-7.473	7	
KColhoun	3 (D)	30/12/2020		37		34-3 (1,1,1)	P		629171	903784	54.881	-7.545	1	
NDuff	4 (J)	09/01/2021	17:30	54	54		G		630220	902380	54.8683	-7.5292	2	
LLO	4 (J)	12/01/2021		11			P		629171	903784	54.881	-7.545	1	
KColhoun	4 (J)	24/01/2021	17:00	0			n/a							snow; no birds
KColhoun	5 (F)	05/02/2021	13:00	21		18-3	G		630250	902440	54.8688	-7.5287	2	
KColhoun	5 (F)	05/02/2021	14:00	92	189		G	GJ: 40	634426	904256	54.8849	-7.4634	5	GJ = Greylag Goose
KColhoun	5 (F)	05/02/2021	14:00	97		93-4	G	GJ: 47	634489	904596	54.8879	-7.4624	5	
KColhoun	5 (F)	05/02/2021	15:40	18	66		G	GJ: 10	635958	905547	54.89637	-7.4394	6	
KColhoun	5 (F)	05/02/2021	15:40	24			G	GJ: 120	635806	905928	54.8998	-7.4417	6	
KColhoun	5 (F)	05/02/2021	15:40	24			G		636086	906018	54.9006	-7.4373	6	
KColhoun	5 (F)	06/02/2021	15:00	52	52	52-0	G	GJ: 145	634426	904256	54.8849	-7.4634	5	
KColhoun	5 (F)	06/02/2021		70			G		634426	904256	54.8849	-7.4634	3	
KColhoun	5 (F)	06/02/2021		5			n/a		630235	902933	54.873	-7.5289	2	in flight
KColhoun	5 (F)	07/02/2021		36		31-5 (1,2,3)	G		630250	902440	54.8688	-7.5287	2	
KColhoun	5 (F)	07/02/2021		20			G		633725	904080	54.883	-7.4744	4	
NDuff	5 (F)	10/02/2021	16:30	108	108		G		630600	902550	54.8698	-7.5232	3	
KColhoun	5 (F)	21/02/2021	14:00	282	282	270-12	G	MS: 13	634695	905344	54.8946	-7.4591	5	MS = Mute Swan
KColhoun	5 (F)	21/02/2021		17		15-2 (2)	G		630158	902394	54.868	-7.53	2	
NDuff	5 (F)	25/02/2021	08:00	10			G		630410	902710	54.871	-7.526	3	
NDuff	5 (F)	25/02/2021	08:00	15	25		G		630250	902440	54.868	-7.528	2	
LLO	6 (M)	03/03/2021		2			G		630158	902394	54.868	-7.53	2	
KColhoun	6 (M)	05/03/2021		31	31	28-3	G		631315	903435	54.877739	-7.51204	3	
KColhoun	6 (M)	05/03/2021		28			G		631755	903540	54.8786	-7.505179	2	
LLO	6 (M)	05/03/2021		3			P		631660	899670	54.84389	-7.50707	OTHER	
LLO	6 (M)	08/03/2021		39			G		630250	902440	54.8688	-7.5287	2	
LLO	6 (M)	13/03/2021		30			G		630210	902121	54.866	-7.5294	2	
LLO	6 (M)	26/03/2021		8			G		630250	902440	54.868	-7.528	2	
KColhoun	7 (A)	07/04/2021		0			n/a							no birds (all gone)

Appendix I
Barn Owl Surveys

Barn Owl Survey to inform the impacts and mitigation requirements for the proposed Donegal TEN – T Priority Improvement Scheme



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Prepared for RPS

By

J L Ecology

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1. INTRODUCTION

The Barn Owl *Tyto alba* is a Red-listed Bird of Conservation Concern in Ireland due to extensive declines in their breeding population and range over recent decades (Gilbert *et al.* 2021). The Breeding Birds Atlas (2007-2011) highlighted a decline of 39% in the breeding range of Barn Owls in Ireland over the 40-year period since the original Breeding Birds Atlas of Britain and Ireland (1968 – 1972) (Sharrock, 1976, Balmer *et al.* 2013). The intensification of agriculture, in particular the reduction of prey rich foraging habitat, is likely to be the main driver of long-term Barn Owl population declines in Ireland (Taylor, 1994, Shawyer, 1998, Copland and Lusby, 2009). In addition, the loss of nesting sites, and the expansion of the major road network have also been recognised as factors which affect Barn Owl populations (Nagle, 2007, Lusby *et al.* 2021). The development of road infrastructures has the potential to affect the quality and quantity of available habitat for Barn Owls, cause displacement through disturbance and loss of nest sites and result in direct mortalities through vehicle collisions (Lusby *et al.* 2021). It is necessary to assess these potential impacts of National Road Projects on Barn Owl populations and to ensure appropriate protection for the species during the planning, construction and operation of National Road Projects in accordance with the '*Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects'* (TII, 2021) as set out by Transport Infrastructure Ireland and within the relevant legislative requirements.

1.1 Impacts during the construction phase

The development of new road schemes has the potential to cause disturbance to or the displacement of breeding Barn Owls, particularly where nesting sites are directly affected (demolished, altered etc.) by construction and related disturbances or where construction works in close proximity to a breeding site can cause disturbance to a breeding pair. The potential for disturbance may vary depending on the scale of works, proximity of the works to the breeding site, the characteristics of the site (nest site type, nest location, level of existing disturbance activities) and the topography (TII, 2021). Identification of Barn Owl breeding sites in relation to new road developments is essential to inform the potential impacts during the construction phase and the appropriate mitigation requirements as set out in the 'Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects'.

1.2 Impacts during the operational phase

Vehicle collisions during the operational phase of roads is a major cause of death for Barn Owls and has been implicated as a contributing factor in the decline of their populations in Europe. Due to their low flight and hunting behaviour, Barn Owls are particularly susceptible to vehicle collisions (Illner 1992, De Bruin 1994, Baudvin 1997, Massemin and Zorn 1998, Ramsden 2003, Boves and Belthoff 2012, Loss *et al.* 2014, Lusby *et al.* 2021). Several studies to assess avian mortality on roads have recorded Barn Owls as the most frequently affected raptor (Massemin and Zorn 1998, Shawyer and Dixon 1999, Lusby *et al.* 2021), or the most frequently affected bird species (Baudvin 1997, Boves and Belthoff 2012, Loss *et al.* 2014). The relative importance of road fatalities as a cause of death for Barn Owls appears to be increasing (Newton *et al.* 1997) and there are significant concerns over the impacts of this form of mortality on Barn Owl populations throughout their range.

Mortality on roads is a significant cause of death for Barn Owls in Ireland. Vehicle collision on roads (n=312) was the primary cause of mortality recorded for Barn Owls in Ireland between 2008 and 2017, representing just under three quarters (74%) of all recorded mortalities (n=423) (Lusby *et al.* 2021). This is consistent with assessments of Barn Owl mortality causes throughout their range (Taylor 1994, Newton *et al.* 1997). Research carried out by BirdWatch Ireland and Transport Infrastructure Ireland showed that the majority of road fatalities on Irish roads are juveniles which are killed during the post-breeding dispersal phase in late autumn and winter. Barn Owl mortality occurs disproportionately on major roads in Ireland compared to other road

classes. The number of Barn Owls killed on motorways is 15 times higher than on national roads and over 500 times higher than on secondary routes relative to route length. A mortality rate of 51 and 60 Barn Owls per 100km per year on two major roads (the M8 Motorway and the Tralee Bypass) was estimated and showed that Barn Owls are the most frequently killed bird on major roads in Ireland based on the number of recorded fatalities and population densities per species (Lusby *et al.* 2021). A greater vulnerability to vehicle collision for Barn Owls on major roads in Ireland can be explained by several factors, firstly, Barn Owls are attracted to hunt along the verges of major roads, in addition to the expansive dispersal movements of juveniles and the extensive home ranges of adult Barn Owls, all of which can increase the likelihood of encountering major roads (Lusby *et al.* 2021.)

The study by BirdWatch Ireland and Transport Infrastructure Ireland demonstrated that the factors which determine the occurrence of road fatalities operate at two scales - the road scale and the broad scale at the landscape level. At the road scale, the proportion of grass and herbaceous cover in roadside verges is the most important factor which influences the occurrence of Barn Owl mortality. This indicates that Barn Owls are attracted to hunt in roadside verges which subsequently increases their risk of mortality. This is supported by the fact that verge habitats provide an important refuge for small mammal populations and are actively selected for foraging by Barn Owls. At the landscape scale, the distribution of elevated areas influences the movement and dispersal patterns of Barn Owls, which in turn can affect the locations that birds encounter roads and thus mortality spatial patterns. Both of these factors, at the road and landscape scale in combination, influence Barn Owl deaths on roads, and road mortality patterns, clustering and the presence of mortality hotspots vary between roads depending on these influences (Lusby *et al.* 2021). Despite the fact that mortality on roads is a major cause of death for Barn Owls in Ireland, there was no observed effect of road networks on the nesting distribution of Barn Owls. The number of Barn Owl breeding pairs were similar or higher in areas surrounding major roads to areas unaffected by major road infrastructures (Lusby *et al*. 2021). Therefore, major road developments do not necessarily cause the displacement of Barn Owl pairs in close proximity to the road. The response of individual Barn Owls confirmed that major road infrastructures are not barriers to the movement of birds and that individuals can regularly encounter and cross major roads without negative effects. An assessment of Barn Owl foraging behaviour and movement in relation to roads showed that individual birds spent more time in proximity to major roads than expected and spent more time hunting along or in close proximity to major roads than elsewhere in their home range (Lusby *et al.* 2021). This confirms that major roads can provide some benefits to Barn Owls in the form of the provision of suitable habitat. The findings of this study indicate that the main negative effects of major roads on Barn Owl populations are from direct mortality through vehicle collisions or direct disturbance to breeding sites and not by other means such as displacement of pairs not directly affected by the construction of the road, or through a reduction of breeding range or suitable habitat.

1.3 Mitigation for Barn Owls

The requirement for and the application of specific mitigation measures to reduce the negative impacts of roads on Barn Owls are set out in the 'Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects'. The mitigation measures are designed to reduce the direct effects, disturbance and displacement of breeding Barn Owls during the construction phase of National Road Projects and to reduce incidents of mortality of Barn Owls during the operational phase of National Road Projects (TII, 2021). The specific mitigation requirements should be informed by an assessment of the potential and likely impacts of the proposed road on Barn Owl populations and an understanding of the distribution of Barn Owl breeding sites in relation to the proposed road.

1.4 Relevant legislation

All wild bird species in Ireland are protected under both national legislation and European legislation. The legislative framework under the Wildlife Acts 1976 - 2018 provides for the protection of all wild birds and their

nests, eggs and young (www.npws.ie/legislation). It is an offence to intentionally cause disturbance at a nest site or to breeding Barn Owls.

The European Communities (Birds and Natural Habitats) Regulations (2011-2015) transpose the EU Birds Directives (79/409/EEC) into Irish law. Article 5 of the EU Birds Directive prohibits 'deliberate killing by any method, deliberate destruction of, or damage to, their nests and eggs or removal of their nests, deliberate disturbance of these birds particularly during the period of breeding and rearing, in so far as disturbance would be significant having regard to the objectives of the Directive'.

1.5 Relevant guidance

The assessment methodology is based primarily upon 'Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects'. This document specifies the Standards for the treatment of Barn Owls during the planning, construction and operation of National Road Projects to ensure appropriate protection for Barn Owls and consistency of approach during the different stages of National Road Projects in accordance with the relevant legislative requirements. Specifically, these Standards require appropriate surveying, reporting and assessment of impacts of National Road Projects on Barn Owls in Phase 2, Options Selection and Phase 3, Design and Environmental Evaluation of National Road Projects to include the preparation of the EIAR and standards for mitigation and post-construction monitoring.

2. SURVEY METHODOLOGY

2.1 Defining the zone of influence

The zone of influence was defined by creating a buffer of 5km surrounding the proposed route for the Donegal TEN-T Priority Improvement Scheme. This zone of influence was informed by the 'Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects' which requires assessment of the potential impacts to Barn Owl within a 5km radius of the proposed route alignment (TII, 2021). The extent of the zone of influence for Barn Owl surveys and for assessing the impacts to Barn Owls is based on the home range ecology of the species to incorporate all nest sites which may be potentially impacted by the development of a National Road Project (within 5km from the route) (Lusby *et al.* 2021).

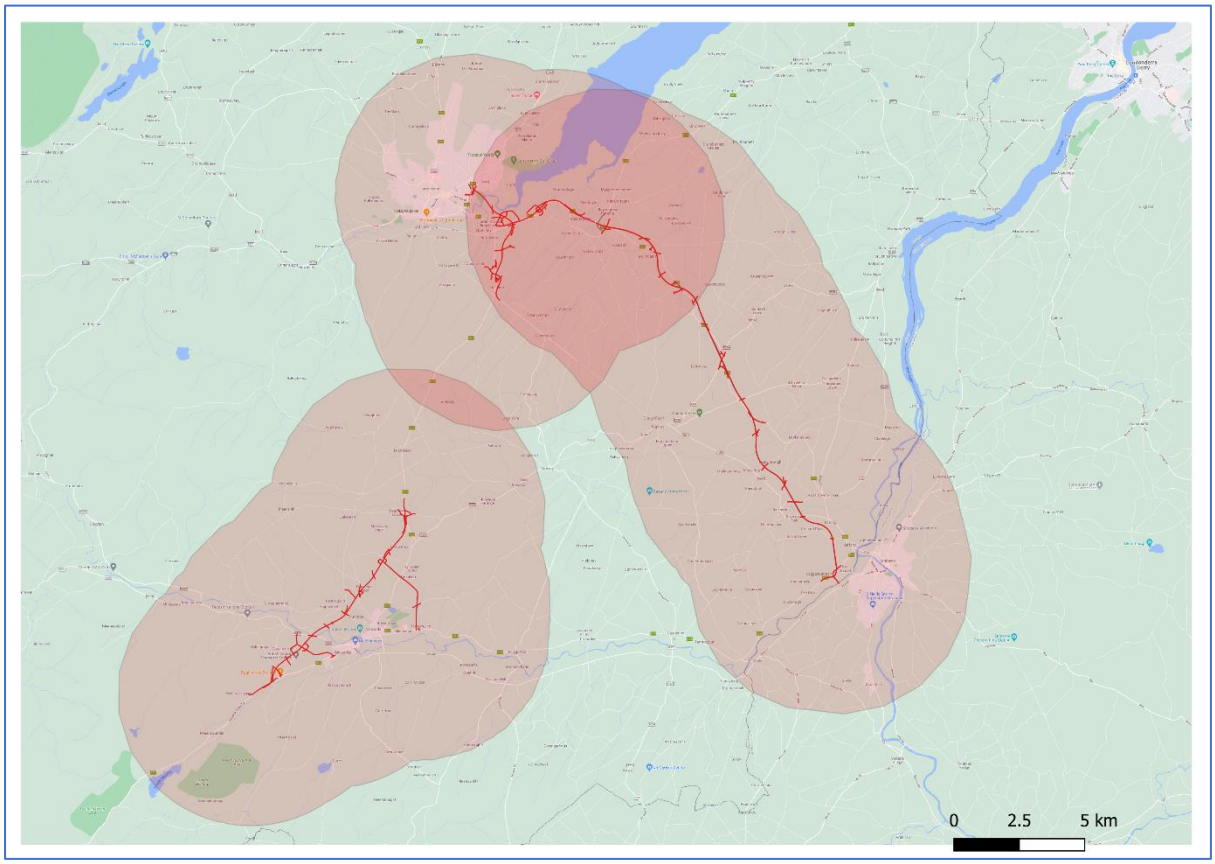


Figure 1: The Barn Owl survey area which extends for 5km surrounding the three Sections of the proposed Donegal TEN – T

2.2 Collating information on Barn Owl within the survey area

Information on the presence and distribution of Barn Owl within the survey area (a 5km radius surrounding the route options) was collated from available sources, including published sources, survey reports (Lusby *et al.* 2021) through consultation with BirdWatch Ireland and collating reports of the species in the relevant area.

2.3 Identification of potentially suitable sites to inform field surveys

An assessment was undertaken between the 27th of March and the 1st of April 2021 to identify all potentially suitable structures for Barn Owl within the defined survey area (5km radius surrounding the proposed route option). The suitability of all buildings and other potentially suitable structures within this area were visually assessed from public roads to determine whether the site was potentially suitable or unsuitable for breeding Barn Owl based on the criteria outlined in 'Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects'. This assessment was carried out to identify all sites which could be used by breeding Barn Owl to inform the field surveys and to minimise contact with landowners and ensure adherence to covid restrictions and social distancing requirements in place at this time. Buildings or other structures which were not visible from public roads were visually assessed using a drone. The location details of all sites determined to be potentially suitable for Barn Owl were recorded. The landowners of these sites were identified, and a letter was issued (in early April 2021) to the relevant landowner to request permission to conduct a more thorough investigation of the site, to include an inspection for signs of Barn Owl and/or a nocturnal survey.

2.4 Barn Owl surveys

Barn Owl surveys were carried out in 2021 to assess the suitability of all sites identified and the presence Barn Owls within as detailed below. Following from this, in 2023 a repeat survey was conducted to ensure the most contemporary information was available on Barn Owl populations within the survey area which could be impacted by the proposed road development and to inform the mitigation requirements, this survey element as detailed below focused on revisiting and resurveying all sites which were identified as potentially suitable for Barn Owl during the 2021. Both phases of the Barn Owl survey (2021 and 2023) are detailed below followed by the results from both survey years individually and combined.

2.4.1 Barn Owl Survey 2021

Field surveys were conducted between the 28th of April and the 4th of June 2021 to confirm Barn Owl occupancy and breeding status at all sites identified as potentially suitable for which permissions to access were granted. The survey methodology employed followed the methods as defined by the 'Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects' (TII, 2021). All sites which were accessible received a day-time inspection to determine suitability for breeding Barn Owl based on nesting opportunities available and to search for signs to indicate the presence of Barn Owls. For sites at which a day-time inspection could not effectively determine the presence of Barn Owls, a nocturnal survey was conducted to confirm Barn Owl occupancy. All information on Barn Owl sightings and reports were collated to identify potential areas where tree nesting Barn Owls may occur within the survey area. At all sites or areas where evidence of Barn Owls was confirmed, a nocturnal survey or nest visit (under Schedule II licence to NPWS) was carried out to determine the breeding status of the site.

2.4.1 Barn Owl Survey 2023

Field surveys were conducted according to the same survey methodologies as detailed above between the 20th of June and the 20th of July 20223. All sites identified as potentially suitable for Barn Owl and for which permissions to access were granted within the survey area were revisited to assess Barn Owl occupancy and breeding status. This allowed for assessment of the status of sites over a two pe, to determine any changes in occupancy over this period and also provided contemporary data on Barn Owl distribution and abundance in the survey area and relative to the proposed road. In addition, all sites which were deemed to be unsuitable for Barn Owl in 2021 were assessed once again in case there was any changes to these sites which may make them more suitable for Barn Owls since the previous survey was undertaken.

2.5 Survey limitations

The objective of the Barn Owl Survey was to identify all Barn Owl breeding sites within the defined survey area (5km radius surrounding the preferred route option) however there are certain constraints to achieving this which should be recognised. Firstly, despite efforts to survey all potentially suitable sites for Barn Owl within the defined survey area, there are certain sites which were not possible to survey as landowner permissions to access these sites were not in place, it was therefore not possible to reliably ascertain the suitability and/or presence of Barn Owls at these sites. In addition, the timing of the survey is scheduled to confirm breeding activity of Barn Owls, however in instances where a breeding pair may fail early in the breeding season and prior to the survey visits then it may not be possible to confirm breeding activity at this site. The fact that the survey was conducted over two breeding seasons (2022 and 2023) should allow for accurate determination of breeding status at all sites deemed to be suitable and which were accessible to undertake the surveys.

3. RESULTS

3.1 Collating information on Barn Owl within the survey area

The desk-based review did not identify any Barn Owl breeding sites within the survey area. Information on two sightings of Barn Owl within the survey area were collated from direct reports from landowners. Both sightings were reported from the same area, one of which was a sighting during the breeding season in 2020 and one during the non-breeding season in 2020. There was no further information obtained on Barn Owls within the survey area.

3.2 Identification of potentially suitable sites to inform field surveys

The initial assessment identified 76 sites which were potentially suitable for breeding Barn Owl within a 5km radius surrounding the proposed route. In addition, when undertaking the more comprehensive survey a further ten sites were identified as potentially suitable for Barn Owl. These sites were mostly associated with buildings already identified (e.g. buildings adjacent to each other or on the same private lands). Therefore, there were a total of 86 individual sites identified as potentially suitable for Barn Owl within the defined survey area, which formed the basis of the Barn Owl surveys.

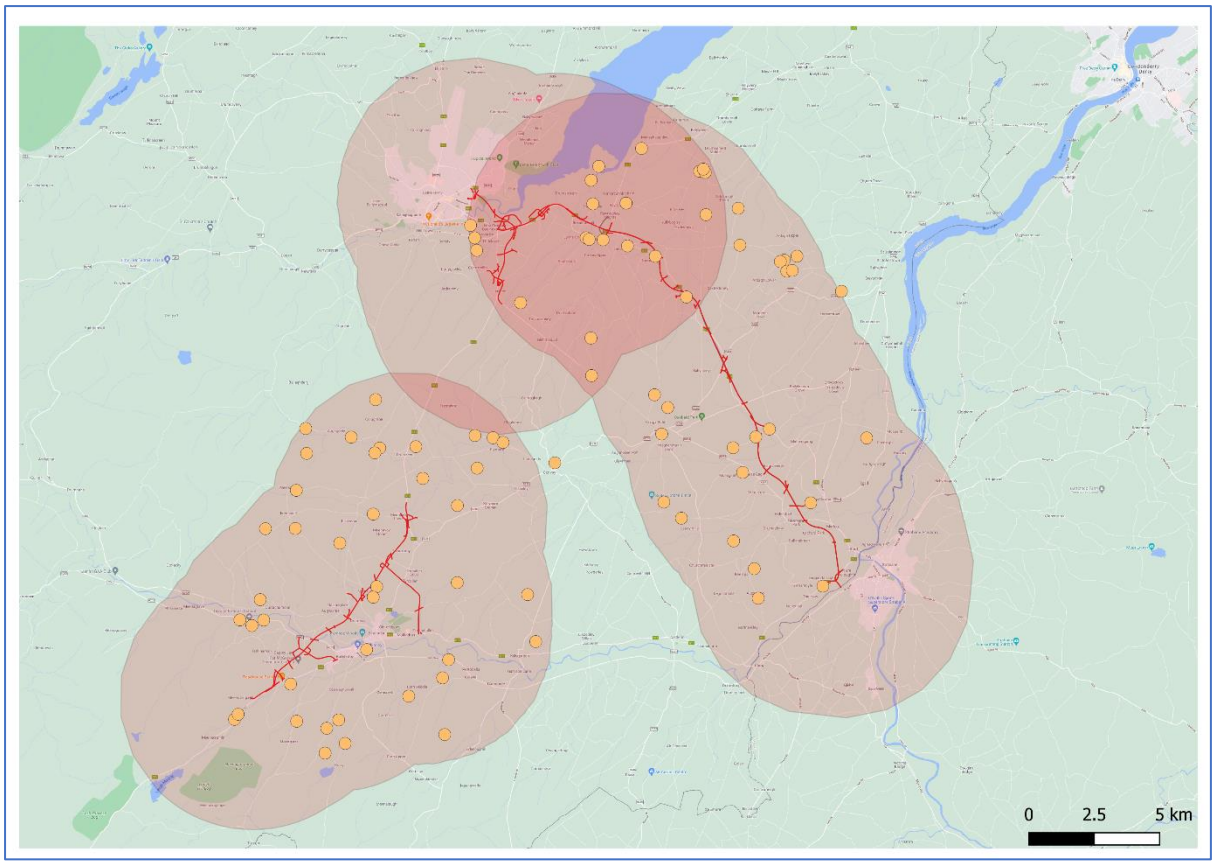


Figure 2: All sites identified as potentially suitable for Barn Owl (n = 86) on the initial inspection and which formed the basis of the Barn Owl surveys

3.3 Barn Owl surveys

3.3.1 Barn Owl Survey 2021

Field surveys were carried out between the 28th of April and the 4th of June 2021. Of the 86 sites identified as potentially suitable for Barn Owl within the survey area, it was not possible to access four sites to assess the suitability for and presence of Barn Owls. Permissions to access were not granted for two sites and two sites were not accessible and it was not possible to contact the relevant landowner. Permissions to access were granted for all other sites identified as potentially suitable for Barn Owl (n = 82).

Field surveys confirmed that 31 of the sites were not suitable for breeding Barn Owl. These sites required no further assessment as they provided no suitable nesting opportunities for Barn Owl and therefore could not be used for nesting by the species. The day-time inspection confirmed that 18 sites were suitable for breeding Barn Owl and provided suitable nesting opportunities. These sites consisted of six derelict cottages, four derelict two-storey houses, two farm buildings, one farm building with a nest box, and a single castle, mill, derelict school, derelict mansion and quarry. A further 33 sites were deemed to have potential nesting opportunities for Barn Owl, which included 15 derelict two-storey houses, nine derelict cottages, seven farm buildings, one ruined mansion and one recently constructed house. The locations of all sites deemed to be unsuitable for breeding Barn Owl (n = 31) and those sites which were deemed to be suitable or potentially suitable, including the four sites which were not possible to access (n = 55) are shown below in Figure 3.

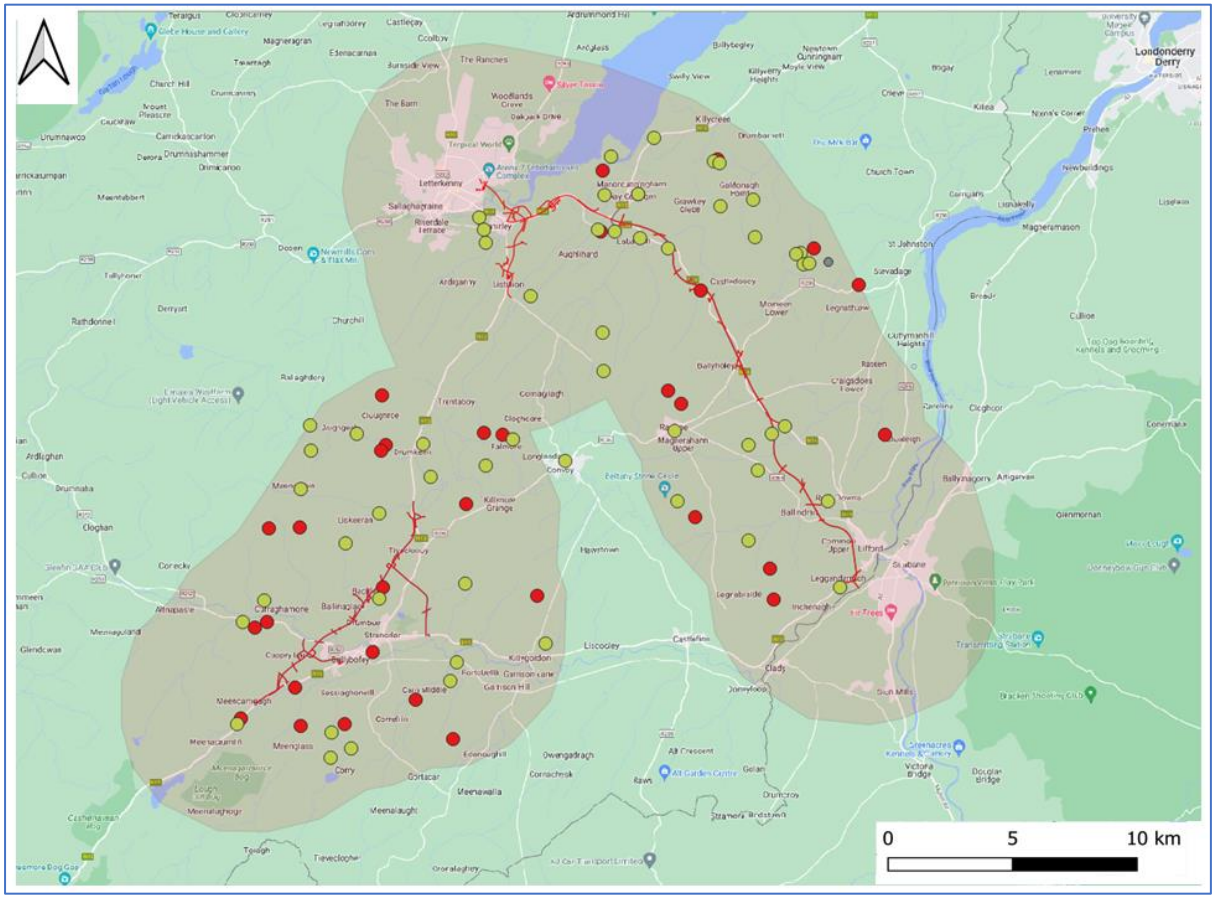


Figure 3: All sites deemed to be potentially suitable (green points; n = 55) and unsuitable (red points; n = 31) for Barn Owl within the survey area

A day-time inspection to determine the suitability of the site and to search for signs to indicate the presence of Barn Owl was carried out at all 51 sites for which permissions were granted. Nocturnal surveys were undertaken at 30 sites to determine Barn Owl occupancy and breeding status.

We did not confirm the presence of Barn Owl within the survey area. Despite the availability of suitable and potentially suitable sites throughout the survey area, and extensive searches of these sites both via day-time inspections and nocturnal surveys, there were no evidence of Barn Owl recorded. The distribution of all potentially suitable sites which were surveyed for the presence of Barn Owl (n = 51) and those sites which were potentially suitable but not possible to obtain access to conduct a survey to determine the presence of Barn Owl (n = 4) within the survey area in 2021 are shown below in Figure 4.

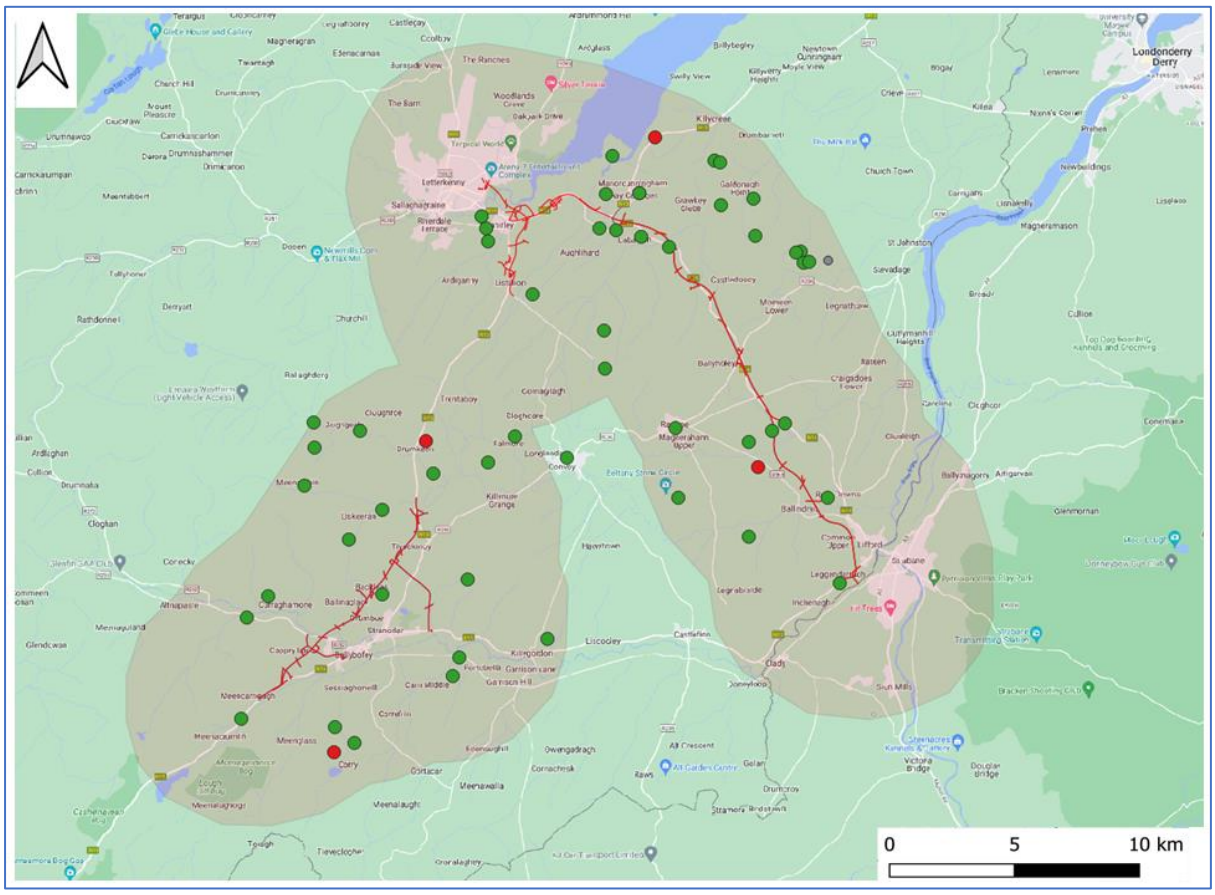


Figure 4: All sites deemed to be potentially suitable and were assessed for the presence of Barn Owl (green points; n = 51) and sites which were potentially suitable but not surveyed for the presence of Barn Owl (red points; n = 4) within the survey area in 2021

3.3.2 Barn Owl Survey 2023

Field surveys were carried out between the 20th of June and the 20th of June 2023 to determine the suitability for and the presence of Barn Owls at sites identified as potentially suitable for Barn Owl through this survey. Of the 51 sites which were deemed to be suitable or potentially suitable for breeding Barn Owl and which were surveyed for the presence of the species in 2021, it was possible to revisit and survey 48 (94%) of these sites in 2023. There were three sites which were surveyed in 2021 and deemed to be suitable for Barn Owl which were not possible to access and/or obtain permissions to access to conduct the survey in 2023. In addition, there was one site identified that we not classed as suitable for breeding Barn Owl in 2021 which was deemed to be

potentially suitable for breeding Barn Owl in 2023, this was a farm building which had deteriorated since 2021 including slates missing on the roof which now allows access to the roof space for Barn Owls.
A total of 49 sites were therefore surveyed for the suitability and presence of Barn Owl in 2023 (which included 48 sites which had been previously surveyed in 2021 and one site surveyed for the first time in 2023). These sites included 18 derelict two-storey farmhouses, 14 derelict cottages, ten farm buildings, and a single castle, derelict school, ruined mansion, nest box in a farm building, quarry, mill and a newly constructed house. A day-time inspection to determine the suitability of the site and to search for signs to indicate the presence of Barn Owl was carried out at all 49 sites for which permissions were granted. Following from this, nocturnal surveys were undertaken at 12 sites to determine Barn Owl occupancy and breeding status.

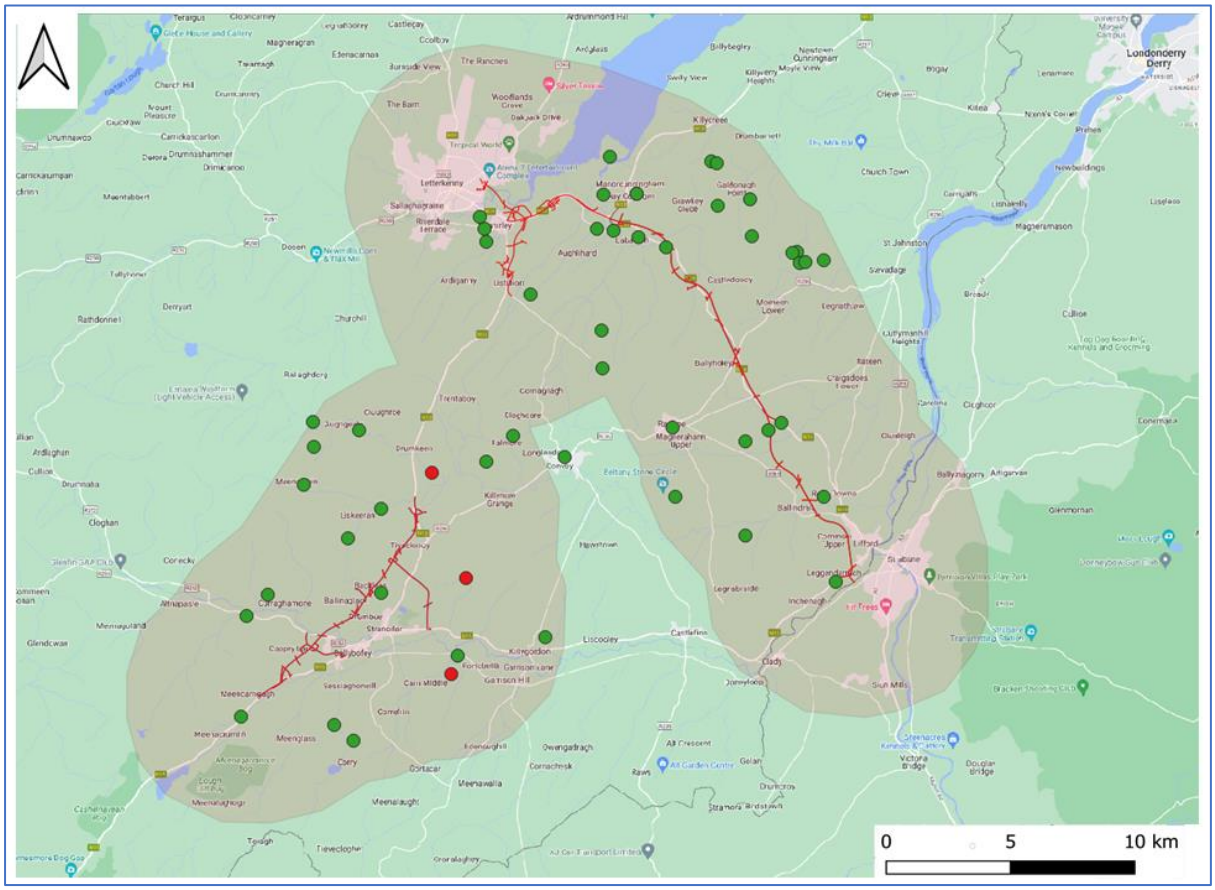


Figure 5: All sites deemed to be potentially suitable and which were assessed for the presence of Barn Owl (green points; n = 49) and sites which were potentially suitable but not surveyed for the presence of Barn Owl (red points; n = 3) within the survey area in 2023

We did not confirm the presence of Barn Owl within the survey area in 2023. Despite the availability of suitable and potentially suitable sites throughout the survey area, and extensive searches of these sites both via day-time inspections and nocturnal surveys, there were no evidence of Barn Owl recorded.

1.1.1 Barn Owl distribution and abundance in the survey area during 2021 and 2023

There was no evidence of Barn Owl recorded in the survey area during the survey period (2021 – 2023). A total of 52 sites which were identified to be suitable or potentially suitable for Barn Owl within 5km of the proposed road were surveyed for the presence of Barn Owl in 2021 and 2023 and no signs to indicate the presence of Barn Owl were confirmed. It should be noted that it was not possible to access four sites which were identified as potentially suitable for Barn Owl to assess for their presence and we cannot determine Barn Owl occupancy

in these sites. However, collation of existing records also indicate that Barn Owls are not breeding within the survey area during the time of the survey (2021 – 2023). The location of all sites deemed to be potentially suitable and which were assessed for the presence of Barn Owl (n = 52) and the sites which were not possible to obtain permissions to access to conduct the survey (n = 4) across both survey years (2021 and 2023) are shown below in Figure 6.

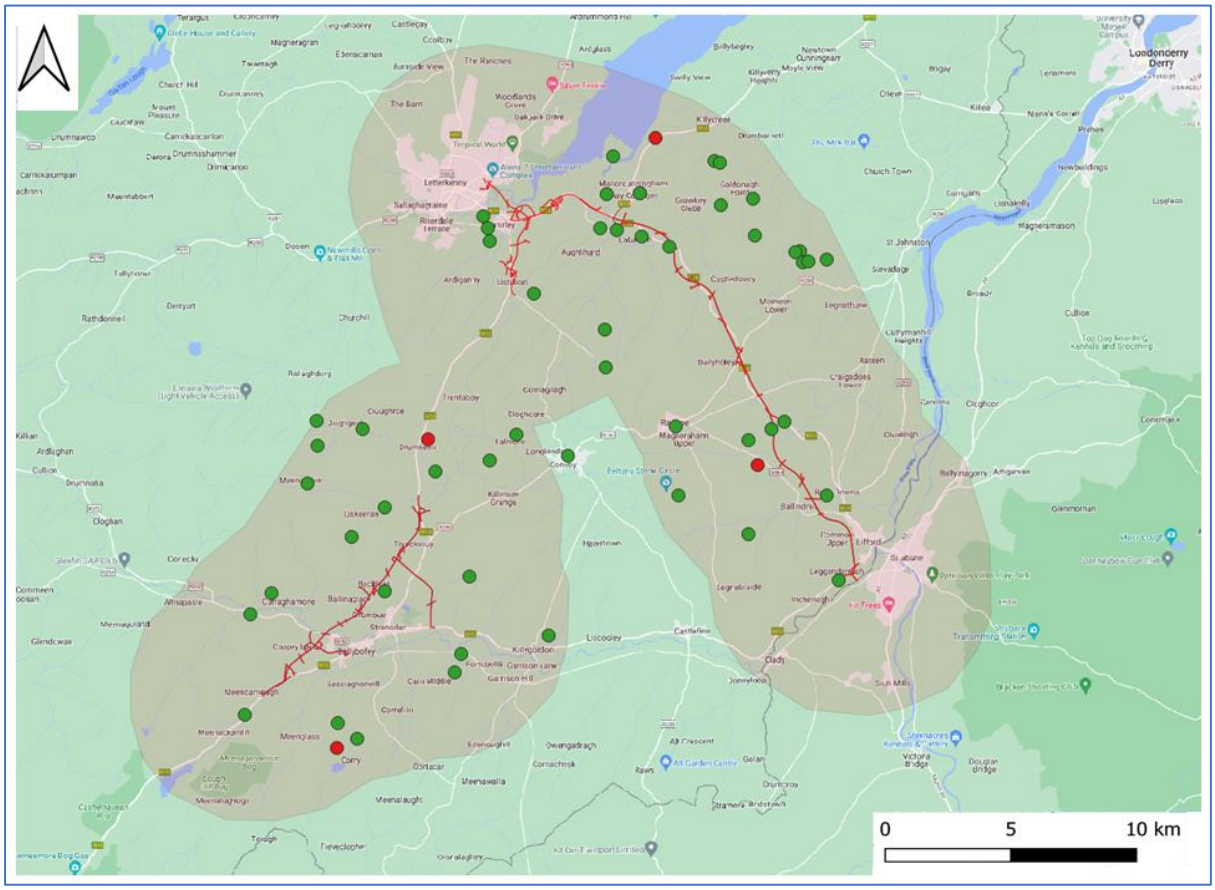


Figure 6: All sites deemed to be potentially suitable and which were assessed for the presence of Barn Owl (green points; n = 52) and sites which were potentially suitable but not surveyed for the presence of Barn Owl (red points; n = 4) within the survey area in 2021 and 2023

4. IMPACTS TO BARN OWL IN RELATION TO THE PROPOSED ROUTE

The impacts of the proposed route to Barn Owl during the construction phase and operational phase is rated based on the Multi Criteria Analysis set out in the 'Project Appraisal Guidelines for National Road Units 7.0 (PE-PAG-02031) and informed by the information gathered on Barn Owl in the survey area for the Donegal TEN – T Project, as defined below.

4.1 Impacts during the construction phase

There were no Barn Owl nest sites identified in the survey area including on or in the immediate vicinity of Sections 1 – 3 of the Donegal TEN – T Project which would be impacted by the construction of the proposed development. There are four sites identified as having potential nesting opportunities for Barn Owl located within 100m of the route, all situated in proximity to Section 3. These was no evidence of Barn Owl at these four sites during 2021 and 2023. All other sites identified as potentially suitable for breeding Barn Owl are located more than 100m from the proposed route. Based on this evidence the impacts of construction on Barn Owls in relation to the proposed route is considered to be 'Not significant or neutral'.

4.2 Impacts during the operational phase

4.2.1 Barn Owl distribution and abundance

Based on the findings of Lusby *et al*. (2021) in relation to the effect of new road developments on Barn Owl breeding densities and distribution, and the fact that there were no breeding or active sites identified within 5km of the proposed route, we consider that the Donegal TEN – T Project will have a 'Not significant or neutral' impact on Barn Owl distribution and abundance within the survey area.

4.2.2 Barn Owl road mortality

It is considered likely that Barn Owl road deaths would occur on the proposed road development during the operational phase of the road, which is informed by data on the extent and patterns of mortality on similar road types in Ireland (Lusby *et al.* 2021). The majority of Barn Owl road fatalities in Ireland are juveniles which are killed during the post-breeding dispersal phase in late autumn and winter. As juveniles can travel extensive distances, the young which disperse from breeding sites throughout the country can be affected by roads, regardless of proximity of nesting sites to roads (Lusby *et al.* 2021). This is evidenced by a record of a Barn Owl which fledged from a nest in County Kerry and was subsequently killed on a road in County Derry, less than 15km from the survey area. In general, dispersal distances are much shorter, with an average dispersal distance of 32km recorded for Irish Barn Owls (Lusby *et al.* 2021). Therefore, based on the Barn Owl population densities in the general vicinity of the proposed road and at the County level (Balmer *et al.* 2013; Lusby *et al.* 2021) and the records of Barn Owl road mortalities in the north-west, we expect that the level of mortality on the proposed road would be low and therefore considered to the 'moderately negative'. The relevant mitigation measures as set out in the 'Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects' during the Design and Environmental Evaluation Phase to reduce the risk and extent of vehicle collision should be applied, as detailed below.

5. MITIGATION RECCOMMENDATIONS

The mitigation measures to reduce the negative impacts of roads on Barn Owls are set out in the 'Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects' (TII, 2021). The mitigation measures are designed to:

• Reduce the direct effects, disturbance and displacement of breeding Barn Owls during the construction phase of National Road Projects

• Reduce incidents of mortality of Barn Owls during the operational phase of National Road Projects

5.1 Construction stage mitigation

We have determined that construction will not constitute a disturbance to Barn Owls or a Barn Owl breeding site based on the known distribution of Barn Owls and informed by the survey findings. There is therefore no requirement for specific construction stage mitigation for Barn Owls.

Caution should be applied to ensure that Barn Owls do not occupy the sites identified as suitable in close proximity to the proposed road in the period between prior to the initiation of construction works. If any of the four buildings identified as potentially suitable for Barn Owl (but not occupied during the survey) are to be directly affected by construction, then a pre-operational survey should be undertaken according to the methods as outlined in the 'Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects' (TII, 2021).

The purpose of the pre-construction (to include enabling works e.g. Ground Investigation) survey is to determine Barn Owl occupancy and breeding status at a site in advance of the initiation of works, where the construction activities could cause disturbance to a breeding pair if present. If the timing of works is planned appropriately to avoid the main nesting period of Barn Owls then the potential of breeding activity in the site is low. A single visit, according to best practice methods is usually sufficient to determine breeding status. The pre-construction survey must be carried out within two weeks of the initiation of works which have the potential to cause disturbance at the site in question. If breeding activity is recorded, then works must not be carried out. If no breeding activity is recorded, then works can proceed. Barn Owls can use sites (particularly buildings) throughout the year and may be present outside of the breeding season, however if it is confirmed that there is no breeding activity then works can continue.

5.2 Barn Owl mitigation measures in the landscape treatment

Barn Owl mitigation measures are designed to discourage Barn Owls from flying and/or foraging in close proximity to major roads and to divert the flight height of birds above the height of traffic, as set out in 'Survey and Mitigation Standards for Barn Owls to inform the Planning, Construction and Operation of National Road Projects' (TII, 2021).

The immediate roadside verge should be created or maintained as unsuitable foraging conditions (low maintenance, infrequently mown grass or stone) to discourage Barn Owls from hunting in this area to reduce risk of direct vehicle collision and/or birds becoming caught in the wake of a Heavy Goods Vehicle (HGV). If possible and suitable to the existing surrounding landscape, a natural barrier of dense shrub and tree line should be provided in the wider verge adjacent to the immediate roadside verge to serve as buffer to:

(i) Focus the foraging activities of birds further from the road,
(ii) Reduce the wake effect of HGVs, and

(iii) Deflect the flight path of Barn Owls which are crossing the road above the height of vehicles. Where the width of the verge and other landscape treatment requirements allow, suitable foraging habitat for Barn Owl in the form of semi-natural grassland can be provided which is segregated from the traffic by shrub and tree lines.

Mitigation must be integrated into the general landscape treatment to optimise conditions favourable to Barn Owl conservation (by reducing foraging potential) where these measures do not conflict with other landscape and safety requirements and other environmental considerations of the road design, as follows:

- Within 3m of the roadside verge immediately adjacent to the hard shoulder / carriageway (in the absence of a hard shoulder), the grass should be maintained to a height not exceeding 10cm or replaced with gravel if appropriate (noting that gravel would generally be considered inappropriate unless there are issues for access for maintenance, or aesthetic considerations at feature areas, such as roundabouts or entrances to towns).

- Between 3-5m of the roadside verge from the hard shoulder / carriageway (in the absence of a hard shoulder), a 2m wide belt of shrubs and trees that will reach a minimum of 4m in height should be planted to divert the flight of the owls over the height of the HGVs, once such mitigation planting is consistent with the surrounding landscape. This mitigation planting should be varied in composition appropriate to the landscape adjacent and may consist of a mix of fast growing species such as Alder (*Alnus glutinosa*), Silver Birch (*Betula pendula*), Whitebeam (*Sorbus aria*), Mountain Ash (*Sorbus aucuparia*), Hazel (*Corylus avellana*) and Willow species (*Salix aurita*, *Salix caprea, Salix cinerea*) and understorey species such as Bramble (*Rubus spp*. - 60% of understorey mix), Hawthorn (*Crataegus monogyna*), Holly (*Ilex aquifolium*) and Blackthorn (*Prunus spinosa*). It should be noted that this belt of shrub and trees proposed is within the 'Clear Zone' defined by TII technical guidance (GE-ENV-01102 A Guide to Landscape Treatments for National Road Schemes in Ireland). For new plantings or existing trees within the Clear Zone, the maximum allowable diameter shall not exceed 100mm or a girth of 314mm (when measured at 0.3m above the ground). For new plantings, the design shall consider the mature size of the tree. The grouping of trees with trunk diameters ≤ 100mm and/or girths ≤ 314mm together may constitute a hazard due to the cumulative impact of the trees on an errant vehicle for a spacing of less than 1500mm. Thus, to achieve the desired mitigation for Barn Owls, the trees should be planted as multi-stem or bush forms in these locations, as they will reach the required height, but will not breach the 314mm girth limit (when measured at 0.3m above the ground). Such trees should be planted at 3.5-4m height from the outset, in order to ensure that the required protection is in place at the earliest possible stage.

- In areas of cut, the belt of shrubs and trees should be extended up the sides of the cut slopes so that the Barn Owl's flight path is diverted to the required extent.

- Where the width of the roadside verge allows, behind the shrub and tree belt, topsoil should be a minimum of 200mm deep to allow for tall grass ("rank grassland") to develop which is the preferred habitat of the Barn Owl's small mammal prey, providing suitable and safe habitat areas. Preference should be given to the establishment of semi-natural grassland through direct seeding or, where appropriate, natural recolonisation.

- At attenuation ponds and other areas of wide verge, areas are to be left free of planting with rank grassland as suitable foraging habitat, set back from the road and in combination with the measures outlined above.

5.3 Identifying areas for Barn Owl mitigation

The Barn Owl mitigation measures should be integrated into the landscape treatment across the scheme, where these measures do not conflict with other landscape and safety requirements and other environmental considerations of the road design.

Where other landscape and safety requirements and/or other environmental mitigation requirements dictate that the Barn Owl mitigation measures cannot be applied across the scheme, then the Barn Owl mitigation should be applied to the areas defined below, where they are compatible with safety requirements. The priority areas for mitigation for Barn Owls are informed by the spatial distribution of breeding sites in relation to the proposed road. As there were no Barn Owl breeding sites identified within a 5km radius of the proposed road, this criteria is not applied to identify areas for mitigation on this scheme. The priority areas for Barn Owl mitigation, are:

i. Sections of road with wide verge (≥ 20m) of suitable open grass/herbaceous cover (including attenuation ponds, junctions etc.)
ii. Sections of road which traverse areas of a high probability of use by Barn Owls (including river crossings and suitable foraging habitats in the form of semi-natural grasslands).

5.4 Post construction monitoring

Post-construction monitoring is a requirement on all National Road Projects where Barn Owl mitigation measures are applied in the landscape treatment. Post-construction monitoring must include a road casualty survey to assess Barn Owl mortality rates and locations on the scheme and in relation to the mitigation measures. The methods for designing and undertaking the road casualty survey are specified in REENV-07004 'The interactions between Barn Owls and major roads: informing management and mitigation' (Lusby *et al.* 2021). Where post-construction monitoring of sections of road without mitigation measures identifies Barn Owl hotspots, or in areas where there is a high risk of vehicle collisions occurring, remedial measures shall be considered, where beneficial.

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