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# Environmental Impact Assessment Report

## TEN-T Priority Route Improvement Project, Donegal

## Chapter 9A: Biodiversity – Terrestrial

TT_MGT0337-RPS-P3-ZZ-RP-E-EN0001

EIAR

March 2026

# Table of Contents



## Tables

# Figures

# List of Abbreviations

The following is a list of abbreviations used within this chapter of the Environmental Impact Assessment Report (EIAR).

**List of the 'Biodiversity – Terrestrial' Abbreviations.**

| List of Abbreviations | |
|---|---|
| AADT | Annual Average Daily Traffic |
| ASSI | Area of Special Scientific Interest |
| BBS | Breeding Bird Survey |
| BCI | Bat Conservation Ireland |
| BCT | Bat Conservation Trust |
| BSBI | Botanical Society of Britain and Ireland |
| BWI | BirdWatch Ireland |
| CIEEM | Chartered Institute of Ecology and Environmental Management |
| CPO | Compulsory Purchase Order |
| DAFM | Department of Agriculture, Food and the Marine |
| DCC | Donegal County Council |
| DHLGH | Department of Housing, Local Government and Heritage |
| EC | European Commission |
| ECoW | Environmental Clerk of Works |
| EHS | Environment and Heritage Service |
| EIA | Environmental Impact Assessment |
| EIAR | Environmental Impact Assessment Report |
| EOP | Environmental Operating Plan |
| EPA | Environmental Protection Agency |
| EU | European Union |
| FPO | Flora Protection Order |
| GSI | Geological Survey Ireland |
| GWB | Ground waterbody |
| HGV | Heavy Goods Vehicle |
| IAPS | Invasive Alien Plant Species |
| IECS | Institute of Estuarine and Coastal Studies |
| IEF | Important Ecological Feature |
| IFI | Inland Fisheries Ireland |
| ILP | Institute of Lighting Professionals |
| Irl | Republic of Ireland |
| I-WeBS | Irish Wetland Bird Survey |
| KER | Key Ecological Receptor |
| LSE | Likely Significant Effect |
| NBAP | National Biodiversity Action Plan |
| NBDC | National Biodiversity Data Centre |
| NHA | Natural Heritage Area |
| NIS | Natura Impact Assessment |
| NPWS | National Parks and Wildlife Service |
| NRA | National Roads Authority |

## List of Abbreviations

| | |
|---|---|
| OPW | Office of Public Works |
| PBR | Potential Bat Roost |
| PDCZ | Potential Deer Collision Zones |
| pNHA | proposed Natural Heritage Area |
| PRF | Potential Roost Feature |
| PRF-I | Potential Roost Feature suitable for a single or small number of bats |
| PRF-M | Potential Roost Feature suitable for multiple bats |
| QI | Qualifying Interest |
| Irl | Ireland |
| SAC | Special Area of Conservation |
| SCI | Special Conservation Interest |
| SNH | Scottish Natural Heritage |
| SNH | Semi-Natural Habitat |
| SPA | Special Protection Area |
| TII | Transport Infrastructure Ireland |
| VP | Vantage Point |
| WFD | Water Framework Directive |
| ZoI | Zone of Influence |

# 9A. BIODIVERSITY – TERRESTRIAL

## 9A.1 Introduction

### 9A.1.1 Scope and Objectives

This chapter of the EIAR identifies, describes, and presents an assessment of the likely significant effects of the TEN-T Priority Route Improvement Project, Donegal (hereafter referred to as "the Proposed Development") on terrestrial biodiversity. The assessment examines the potential impacts during construction and operational phases of the Proposed Development. It sets out mitigation measures to address likely significant effects and documents any likely residual significant effects following the application of these measures. Sections 1 and 2 of this EIAR have been prepared by RPS and Section 3 has been prepared by Barry Transportation. The assessment is informed by other chapters of the EIAR, in particular:

- **Chapter 4:** Project Description
- **Chapter 9b:** Biodiversity – Aquatic
- **Chapter 10:** Land, Soil & Hydrogeology
- **Chapter 11:** Water
- **Chapter 12:** Air Quality
- **Chapter 14:** Noise & Vibration
- **Chapter 18:** Landscape & Visual

In particular, this Chapter should be read in conjunction with Chapter 9b: Biodiversity – Aquatic given the interface between terrestrial and aquatic biodiversity in terms of the assessment of the Proposed Development.

The description of the Proposed Development is provided in Chapter 4: Project Description of the EIAR. The assessment has been made based on this project description. The Proposed Development is divided into 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.

### 9A.1.2 Statement of Competence

This chapter was co-authored by Will Lishman and Paul Murphy; supported by Michael Suttle:

- **Will Lishman BSc (Hons), CSci, MCIEEM, MIEnvSc**. Will is a Principal Ecologist with RPS; holding a BSc (Hons) in Ecology and is a Chartered Scientist (CSi). He is a full member of CIEEM (MCIEEM) and has c. 18 years' experience in ecological assessment including assessment of projects with reference to Article 6 of the EU Habitats Directive. Will has led with respect to the overall assessment and, specifically, the assessment as it relates to Sections 1 and 2 of the Proposed Development.

- **Paul Murphy MSc, CEnv, MCIEEM**. Paul is a Director of Eireco Environmental Consultants with 30 years of professional practice. Paul holds an MSc in Environmental Science and a Diploma in Aquatic Biology. He is a Chartered Environmentalist (CEnv), a full member of CIEEM (MCIEEM) and a member of the Institute of Fisheries Management. Paul is the lead ecological assessor with respect to Section 3 of the Proposed Development. Paul has led with respect to the overall assessment and, specifically, the assessment as it relates to Section 3 of the Proposed Development

- **Michael Suttle BA, MSc**. Michael is an Ecologist with RPS; holding a BA in Plant Sciences and an MSc in Applied Environmental Science. He has c. 2 years' experience in ecological assessment of projects. Michael has supported both Will and Paul in the preparation of this Chapter.

As is typical for this scale of project, the baseline information used to assess the Proposed Development has been completed over a period of approximately 8 years; the information collated by a number of habitat and/or species specialists.

## 9A.2 Methodology

The methodology of the desk study and field surveys which were carried out to establish the ecological baseline against which the Proposed Development is assessed is set out in Appendix C9A.01. It is included as a separate Appendix to aid and provide clarity for the reader of the assessment.

In order to determine the potential for Likely Significant Effects (LSEs), it is necessary to identify the Zone of Influence (ZoI) of the Proposed Development and the potential Important Ecological Features (IEFs) within this zone. The ZoI of the Proposed Development is the geographical area over which it could affect the receiving environment in a way that could have LSEs, directly or indirectly, on potential IEFs. The ZoI is established using the Source-Pathway-Receptor model which is a standard tool used in environmental assessment. For an effect to be likely, all three elements of this model must be in place. The absence of one of the elements of the model results in no likelihood for the effect to occur. The ZoI of the Proposed Development was established and refined with reference to CIEEM (2018) guidelines.

### 9A.2.1 Desk Study

Initially, for the purpose of collating desk study information to identify potential IEFs, a wide study area was defined based on the following criteria and relied on a combination of professional experience and judgement in determining the ZoI. This was considered a precautionary approach encompassing all likely pathways of significant effect. The ZoI was determined having regard to the fact that pathways of effect will extend well beyond the footprint of the Proposed Development. In establishing the ZoI for the Proposed Development, the following were considered:

- All sites designated for nature conservation within the hydrological catchments or ground waterbodies (GWBs) of the Proposed Development;
- All rare and protected[1] species records within the following 10 km grid squares:
    - **Section 1** – C10, H09, and H19
    - **Section 2** – C10, C11, C20, and C21
    - **Section 3** – C20, C21, C30, and H39; and
- All wintering bird records within the Lough Swilly Complex including the lands within and adjacent to the CPO boundary which could provide an *ex situ* function to the designated Lough Swilly bird populations.

Based on the potential ZoI, a desk study was completed for the Proposed Development, and the most recent update of the desk study was carried out in October 2025 for Sections 1 and 2 and August and November 2025 for Section 3. The sources of desk study information are included in Table 9A-1.

Sources of desk study information are neither exhaustive nor necessarily easily or publicly available, and an effort using reasonable skill and care was made to obtain ecological data in the public domain to inform the description of the baseline environment and its assessment. This limitation is acknowledged and incorporated into the assessment, employing the precautionary principle as necessary, and is deemed to not affect the certainty or predictability of the assessment.

[1] Including but not limited to: bird species listed in Annex I and/or referred to in Article 4(2) of the Birds Directive, species listed in Annex II and/or IV of the Habitats Directive, plant species listed in Flora Protection Order (FPO) S.I. 235/2022, and species listed in the Wildlife Acts 1976 (as amended).

**Table 9A-1: 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 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[6] |
| Distribution records for protected species and habitats (including suitability index for bats) held online by the National Biodiversity Data Centre (NBDC)[7], NPWS, UCD, and the Heritage Council. | 2011-2025 | NBDC, NPWS, Heritage Council[8], and Lundy *et al*. (2011). |
| Checklists of protected and threatened species in Ireland | 2019 | Nelson *et al*. (2019) |
| Red Lists | 2006, 2009, 2010, 2011, 2012, 2016, 2019, 2020, 2021 | 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, 2013) |
| Ireland's 4th National Biodiversity Action Plan 2023-2030 | 2024 | Department of Housing, Local Government and Heritage (DHLGH) (DHLGH, 2024) |
| Donegal Development Plan 2024-2030 | 2024 | Donegal County Council (DCC, 2024a) |
| Donegal County Council Climate Action Plan 2024-2029 | 2024 | Donegal County Council (DCC, 2024d) |
| County Donegal Heritage Plan (2023-2030) | 2024 | Donegal County Council (DCC, 2024b) |
| Ramsar Sites | 2025 | Irish Ramsar Wetlands Committee[9] |
| Protected Sites in Ireland (National Heritage Areas (NHA), proposed National Heritage Areas (pNHA), Nature reserves, wildfowl sanctuaries, and OSPAR sites) | 2025 | NPWS[10] |

[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] Available at https://www.npws.ie/maps-and-data/designated-site-data/download-boundary-data. Accessed December 2025.

[7] Accessed October 2024. The records for 10 km grid squares 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.
- 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.

[8] Available at https://www.heritagecouncil.ie/projects/national-heritage-data-sets-metadata. Accessed December 2025.

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

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

## 9A.2.2 Site Specific Surveys

Informed by the findings of the desk study for the potential ZoI of the Proposed Development, detailed surveys were completed between 2017 and 2025 to inform the ecological baseline to enable the identification and evaluation of IEFs to be taken forward for impact assessment. The detailed surveys completed included the following:

- Habitat surveys
- Globeflower (*Trollius europaeus*) survey
- Invasive alien species surveys (plant and animal)
- Bat surveys – roosting and activity
- Badger (*Meles meles*) surveys
- Otter (*Lutra lutra*) surveys
- Breeding Bird Surveys (BBS)
- Wintering bird surveys
- Raptor surveys
- Kingfisher (*Alcedo atthis*) surveys; and
- Barn owl (*Tyto alba*) surveys.

While completing these surveys, any incidental field evidence of other species was recorded, including evidence of deer species, red squirrel (*Sciurus vulgaris*), pine marten (*Martes martes*), reptiles, amphibians, and invertebrates. The surveys are summarised in Table 9A-2 and the detailed methodology for each of the surveys is described in full in Appendix C9A.01.

All field surveys were undertaken with reference to published guidance (where available) and the application of professional interpretation and judgement. 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 surveying protected species. The ecological surveys evolved between 2017 and 2025 to respond to the information necessary to inform each stage of the Proposed Development. Therefore, the survey extents described in Table 9A-2 reflect the extents of the latest surveys which were used to inform the ecological baseline.

**Table 9A-2: 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.<br><br>Earlier surveys completed: December 2017; July and August 2018; July and August 2019; August 2020; May and August 2021; and August and September 2022. | Within the CPO boundary and immediately adjoining habitats. |
| | | EirEco | Section 3: September 2025, August 2023.<br><br>Earlier surveys completed: July 2019 and August 2021. | |
| | | RPS | Section 1: May 2021 | |

| Title | Description of Survey Scope | Survey Contractor | Date | Extent of Survey |
|---|---|---|---|---|
| Protected flora surveys | Survey for the FPO species, globeflower (*Trollius europaeus*). | | June 2023 (recheck of Habitats in August 2025) | Townlands of Drumboe Lower and Cappry within Section 1.<br>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.<br><br>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.<br><br>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.<br><br>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.<br><br>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. | |
| 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.<br><br>Earlier surveys completed: December 2017; September 2018; July and December 2019; and | 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 |

| Title | Description of Survey Scope | Survey Contractor | Date | Extent of Survey |
|---|---|---|---|---|
| | | | February to March, August 2020. | 2010/12 methods (Reid *et al*., 2013). |
| | | EirEco | Section 3: February 2020,November 2023, and September 2025. | Accessibility was influenced by factors such as safe means of access and access permissions from landowners. |
| 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)[11]. | RPS | Sections 1 and 2: August 2025.<br>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).<br>Sections 1 and 2: August and September 2025<br><br>Earlier surveys completed: August 2022 and March 2021. | Within the CPO boundary.<br>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.<br><br>Buildings and structures were assessed August 2019, February and July 2020, February, July, and August 2021, August 2023, September 2024, and August and October 2025. | |
| Bats: Activity Survey | Passive monitoring for bat activity, with reference to Collins (2023)[11].<br>Walked and driven transects were conducted, where feasible and | RPS | Sections 1 and 2: August to September 2025.<br><br>Earlier surveys completed: July to October 2019; August and September 2020; | Static detector surveys were focussed within and adjacent to habitats likely to enable a characterisation of the bat species active within or in close |

[11] 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 |
|---|---|---|---|---|
| | 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 | | May 2021; and August 2022.<br>Transect surveys:<br>September 2019 and July 2020.<br>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. | proximity to the CPO boundary.<br>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)[11]. 2019–2022 surveys included re-entry surveys. | RPS | Sections 1 and 2: August to October 2025<br>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, 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 | Within the CPO boundary. |

| Title | Description of Survey Scope | Survey Contractor | Date | Extent of Survey |
|---|---|---|---|---|
| | | | Earlier surveys completed: December 2017; September 2018; July and December 2019; and February, March and August 2020. | |
| | | 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 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 | Kendrew Colhoun | Sections 1 and 2: May and June 2023<br>Habitat Assessment in August 2025 confirmed no material change to habitats<br><br>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: May and June 2020.<br>Habitat Assessment in September 2025, August 2023 confirmed no material change to habitats | |

| Title | Description of Survey Scope | Survey Contractor | Date | Extent of Survey |
|---|---|---|---|---|
| | 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 to determine any factors which could have materially changed the populations and assemblages characterised during 2018/19 survey.<br><br>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.<br>Habitat Assessment in August 2025 confirmed no material change to habitats<br><br>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. |
| 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 | |

| Title | Description of Survey Scope | Survey Contractor | Date | Extent of Survey |
|---|---|---|---|---|
| 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.<br>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.<br>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.<br>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.<br>Earlier surveys:<br>July 2019 and August 2021. | |
| 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.<br>Earlier surveys: December 2017; September 2018; July and December 2019; | Within the CPO boundary and adjoining habitats. |

| Title | Description of Survey Scope | Survey Contractor | Date | Extent of Survey |
|---|---|---|---|---|
| | | | and February, March and August 2020. | |
| | | EirEco | Section 3: July 2023 to November 2023, and September 2025.<br><br>Earlier surveys:<br>July 2019 and August 2021. | |

## 9A.2.3 Assessment Methodologies

The assessment of the impact(s) of the Proposed Development on terrestrial biodiversity has been completed with reference to the following guidance documents, which are specific to biodiversity:

- *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*, Version 1.3 Updated September 2024 (Chartered Institute of Ecology and Environmental Management (CIEEM), 2018) and
- *Guidelines for Assessment of Ecological Impacts of National Roads Schemes*, Revision 2 (NRA, 2009).

The CIEEM (2018) guidelines have been used as the primary basis of the assessment. The process refers to the *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2022) and incorporates NRA (2009) guidelines for the ecological valuation and geographic context and, where considered applicable, the identification of habitat assemblages (Key Ecological Receptors; KERs) where the value of such assemblages was considered to be greater than their component habitats. The methodology used to value ecological features is with reference to the geographic frames of reference outlined by the NRA (2009) (see Appendix C9A.02).

For the assessment, IEFs, as termed in CIEEM (2018) guidelines, have been identified. IEFs are defined here as those ecological features which are valued at Local Importance (Higher Value) or above (NRA, 2009; see Appendix C9A.02). Ecological features below this value have been scoped out of further ecological impact assessment as any potential impact is deemed to be of Local Importance (Lower Value) or negligible.

### 9A.2.3.1 Ecological Impact Assessment Process

The ecological impact assessment process, as described by CIEEM (2018), involved:

- Identifying and characterising impacts and their effects.
- Incorporating measures to avoid and mitigate negative impacts and effects.
- Assessing the significance of any residual effects after mitigation.
- Identifying appropriate compensation measures to offset significant residual effects.
- Identifying opportunities for ecological enhancement.

The assessment comprises the review of the baseline data gathered and the identification of IEFs with features valued on the basis of available information/guidance and using professional judgement.

#### 9A.2.3.2 Characterising and Determining Significance

Impacts and effects on IEFs are characterised with the following qualitative terms, as relevant; the definitions of which are derived from CIEEM (2018) guidelines:

- **Positive impact/effect:** A change that improves the quality of the environment (e.g. by increasing species diversity, extending habitat, or improving water quality). This may also include halting or slowing an existing decline in the quality of the environment.
- **Negative impact/effect:** A change which reduces the quality of the environment (e.g. destruction of habitat, removal of foraging habitat, habitat fragmentation, or pollution).
- **Extent**: The extent is the spatial or geographical area over which the impact/effect may occur under a suitably representative range of conditions (e.g. noise transmission under water).
- **Magnitude:** Magnitude refers to size, amount, intensity, and volume. It should be quantified if possible and expressed in absolute or relative terms (e.g. the amount of habitat lost, percentage change to habitat area, or percentage decline in a species population).
- **Duration:** Duration should be defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species. The duration of an activity may differ from the duration of the resulting effect caused by the activity. For example, if short-term construction activities cause disturbance to birds during their breeding period, there may be long-term implications from failure to reproduce that season. Impacts and effects may be described as short-, medium-, or long-term and permanent or temporary. These will need to be defined in months/years.
- **Frequency and timing:** The number of times an activity occurs will influence the resulting effect. For example, a single person walking a dog will have very limited impact on nearby waders using wetland habitat, but numerous walkers will subject the waders to frequent disturbance and could affect feeding success, leading to displacement of the birds and knock-on effects on their ability to survive. The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons (e.g. bird nesting season).
- **Reversibility:** An irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation.

There may be any number of possible impacts and effects on IEFs arising from a development. However, it is only necessary to describe in detail the impacts that are likely to be significant. Impacts that are either unlikely to occur or, if they did occur, are unlikely to be significant are scoped out. If in doubt, the precautionary principle is applied, and the potential impacts were assessed.

When assessing the significance of an effect and for the purposes of this assessment, the significance of an effect is simply any effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a Proposed Development. A significant effect is a positive or negative ecological effect that should be given weight in judging whether to permit a Proposed Development. For the purposes of ecological impact assessment, a “significant effect” is defined as an effect that either supports or undermines the biodiversity conservation for the IEF. These significant effects are qualified with reference to an appropriate geographical scale and based on the application of professional judgment.

The approach to determining significance does not utilise a matrix of degrees of impact significance, such as EPA (2022), but instead follows CIEEM (2018) guidelines for determining ecological impact significance where effects are determined to be ‘significant’ or ‘not significant’ at a geographical scale.

## 9A.3 Consultations

The following consultees were contacted to ascertain any commentary or observations in relation to the Proposed Development:

- **National Parks and Wildlife Service (NPWS) - 5 February 2019:** The meeting discussed appropriate setback from riverbanks, appropriate methodologies and documents to consider, barn owl presence, and other details to consider during the preferred route corridor.
- **NPWS - 23 October 2019:** The meeting discussed mitigation through avoidance, impacts on EU sites, methodologies to use, potential whooper swan sites, and recommendation to consult IFI/Loughs Agency and EPA, as well as local and national experts.
- **NPWS - 10 September 2020:** The meeting discussed licenses for protected species, SCI bird species, non-native invasive species, Asian clam (*Corbicula fluminea*), and importance of scientifically supported rationale for mitigation.
- **NPWS - 4 February 2025 and 22 May 2025:** These two meetings clarified the current position of the Proposed Development and outlined the updates that had been carried out and the approach to finalising the EIAR and the NIS. Mitigation measures were discussed and questions raised with regards to advanced planting, collision risk, lighting, and monitoring of water quality.
- **Loughs Agency - 15 November 2018, 10 July 2020, 28 September 2021, 7 August 2025 and 30 March 2026:** The meetings clarified the approach taken by designers regarding structures within the River Finn/Foyle system. Permit requirements under the Foyle Fisheries Act 1952 (as amended) Section 47 (in respect of bed material disturbance/removal for in-stream works) and Section 70 (in respect of fish removals during construction) of that Act were also discussed. A formal data request was made and Loughs Agency who provided Foyle catchment electrofishing and consolidated salmon redd count data for the years 2020-2024. The 30 March 2026 meeting provided an update on the Proposed Development with a discussion on the information the Loughs Agency requires for an "approval in principle."
- **Inland Fisheries - 14 November 2018; 16 September 2020 and 4 September 2025:** The meetings discussed crossing of the estuarine River Swilly in Section 2, attenuation ponds and hydrocarbon interceptors, culvert designs, prevention of Asian clam (*Corbicula fluminea*) introduction. Further meetings between IFI and Donegal County Council took place.

The following were consulted but no response was received:

- **BirdWatch Ireland** (BWI)**:** BWI were contacted by email on five occasions (07/09/2017, 17/05/2018, 29/04/2020, 18/08/2021, and 02/09/2021). RPS received confirmation on the 15/07/2020 that the requests for consultation had been received by the BWI Policy Officer.
- **Bat Conservation Ireland** (BCI)**:** BCI were contacted by email on five occasions (07/09/2017, 17/05/2018, 29/04/2020,18/08/2021, and 02/09/202) regarding route selection and potential constraints.
- **Coillte:** Coillte were contacted by email on five occasions (07/09/2017, 17/05/2018, 29/04/2020, 18/08/2021, and 02/09/2021) regarding route selection and potential constraints. Further phone calls were made to the Coillte Donegal Office on 16/10/2020 and 16/11/2020.
- **Department of Communications, Climate Action and Environment**[12]**:** The department was contacted on five occasions (07/09/2017, 17/05/2018, 29/04/2020, 18/08/2021, and 02/09/2021) regarding route selection and potential constraints.
- **EPA Regional Inspectorate:** The EPA Regional Inspectorate was contact by email on 07/06/2018 regarding the constraints study.

[12] Renamed as the Department of the Environment, Climate and Communications in 2020 and renamed again as the Department of Climate, Energy and the Environment in 2025.

- **North Western River Basin District Project Office:** The North Western River Basin District Project Office was contacted on five occasions (07/09/2017, 17/05/2018, 29/04/2020, 18/08/2021, and 02/09/2021) regarding potential impacts of the proposed route corridors on the northwest river basin.

Details regarding consultations with statutory and non-statutory consultees are provided in Appendix C9A.03.

## 9A.4 Baseline Environment

The baseline environment is described in full in Appendix C9A.01. The baseline has been used to identify IEFs and to attribute values to these with reference to the methodology set out in Section 9A.2.3.

Aquatic receptors are assessed in Chapter 9B: Biodiversity – Aquatic and are therefore not assessed as IEFs in this chapter. Chapter 9B: Biodiversity – Aquatic concluded that, with the proposed design and all mitigation measures and environmental controls implemented as prescribed in the EIAR, including those set out in Chapter 9B: Biodiversity – Aquatic, there will be no significant residual direct, indirect, or cumulative negative effects on aquatic IEFs arising from the construction or operational phase of the Proposed Development. As the assessment in Chapter 9B: Biodiversity – Aquatic included the upper reaches of the Swilly Estuary, downstream of the Proposed Development, it is concluded that there will be no significant effects further downstream on coastal, estuarine, and marine receptors. Therefore, coastal, estuarine, and marine receptors are not assessed in this chapter.

### 9A.4.1 Important Ecological Features (IEFs)

The description of the baseline environment of the Proposed Development has been used to identify the IEFs that will be subject to assessment of significant effects upon them as a result of the construction and operation of the Proposed Development. The identification of IEF's has been made with reference to published guidance (as set out in Section 9A.2.3) and the professional experience and judgement of the assessors. IEFs are those features (designations, habitats, or species) which are valued at Local Importance (higher value) or greater with reference to the NRA (2009) guidance. Any features of lower value or considered to not have potential to be significantly impacted by the Proposed Development are not considered IEFs for the purpose of this assessment. A summary of the IEFs identified for the Proposed Development is set out in Table 9A-3.

**Table 9A-3: Summary of Ecological Receptors and Identification of IEFS for the Proposed Development**

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| **Designated Sites** | | | |
| European Sites (Republic of Ireland (Irl)): River Finn Special Area of Conservation (SAC) | **International Importance** – consistent with NRA (2009) guidance, as it is a designated European site and part of the Natura 2000 network. | **Yes** – due to both Section 1 and 3 including new road crossings of the River Finn SAC together with construction works for both Section 1 and, in part, Section 3 lying within the catchment of the River Finn. Section 2 does not lie within the catchment of the River Finn SAC and therefore there are no effect pathways for this section.<br><br>Section 1 crosses the SAC at the proposed River Finn crossing and the entirety of Section 1 is within the catchments of the River Finn and River Deele, crossing multiple watercourses which all ultimately flow into the SAC.<br><br>Section 3 crosses the River Finn SAC upstream of Lifford as well as crossing the River Deele and Swilly Burn which flow into the SAC. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |
| European Sites (Irl): Lough Swilly SAC | **International Importance** – consistent with NRA (2009) guidance, as it is a European site and part of the Natura 2000 network. | **Yes** – due to Section 2 including a new road crossing of the Swilly together with construction works for both Section 2 and, in part, Section 3 lying within the catchment of the SAC. Section 1 does not lie within the catchment of the Swilly and therefore there are no effect pathways for this section.<br><br>Section 2 intersects the SAC, and a large proportion of Section 2 is in close proximity to the SAC. Section 2 also crosses watercourses which flow into the SAC.<br><br>Section 3 does not directly impact on the SAC but drainage from the north of the route discharges to it. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| European Sites (Irl): Lough Swilly Special Protection Area (SPA) | **International Importance** – consistent with NRA (2009) guidance, as it is a European site and part of the Natura 2000 network. | **Yes** – Section 2 intersects the SPA, and a large proportion of Section 2 is in close proximity to the SPA. Section 2 also crosses watercourses which flow into the SPA. Special Conservation Interests (SCIs) of the SPAs have been shown to be present within and in proximity to the CPO boundary.<br><br>Section 3 does not directly impact on the SPA but drainage from the north of the route discharges to it.<br><br>Section 1 does not lie within the catchment of the Swilly and therefore there are no effect pathways for this section. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |
| European Sites (Irl): Lough Foyle SPA | **International Importance** – consistent with NRA (2009) guidance, as it is a European site and part of the Natura 2000 network. | **Yes** – some of the SCIs of this SPA have been shown to be present in *ex situ* habitats within 500 m of the Section 2 CPO boundary. This is mindful of the ornithological connection between Lough Swilly and Lough Foyle. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |
| Former European Sites (United Kingdom (UK)): River Foyle and Tributaries SAC | **International Importance** – consistent with NRA (2009) guidance, as it is a former European site however is no longer part of the Natura 2000 network. However, out of an abundance of caution, it is assigned international importance. | **Yes** – the entirety of Section 1 and the majority of Section 3 are within catchments and cross multiple watercourses which all ultimately flow into the SAC. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |
| Former European Sites (UK): Lough Foyle SPA | **International Importance** – consistent with NRA (2009) guidance, as it is a former European site however is no longer part of the Natura 2000 network. However, out of an abundance of caution, it is assigned international importance. | **Yes** – some of the SCIs of this SPA have been shown to be present in *ex situ* habitats within 500 m of the Section 2 CPO boundary. This is mindful of the ornithological connection between Lough Swilly and Lough Foyle. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |
| Ramsar Site (UK): Lough Foyle | **International Importance** – consistent with NRA (2009) guidance, as it is an internationally designated site. | **Yes** – some of the qualifying species of this site have been shown to be present in *ex situ* habitats within 500 m of the Section 2 CPO boundary. This is mindful of the ornithological connection between Lough Swilly and Lough Foyle. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |
| National Sites (Irl): River Foyle, Mongavlin to Carrigans pNHA | **International Importance** – consistent with NRA (2009) guidance, because the pNHA area is almost entirely within the area of the River Finn SAC and therefore is elevated from National to International Importance due to this overlap. | **Yes** – the entirety of Section 1 and the majority of Section 3 are within catchments and cross multiple watercourses which all ultimately flow into the pNHA. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| National Sites (Irl): Lough Swilly including Big Isle, Blanket Nook & Inch Lake pNHA | **International Importance** – consistent with NRA (2009) guidance, as it almost entirely overlaps Lough Swilly SAC and SPA and therefore is elevated from National to International Importance due to this overlap. | **Yes** – Section 2 intersects the pNHA and a large proportion of Section 2 is in close proximity to the pNHA. Section 2 also crosses watercourses which flow into the pNHA. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |
| National Sites (Irl): Port Lough pNHA | **National Importance (Irl)** – consistent with NRA (2009) guidance, as it is an undesignated site fulfilling the criteria as an NHA. | **Yes** – the pNHA is part of the Lough Swilly complex of waterbird sites and supports waterbirds that are SCIs of both Lough Swilly SPA and Lough Foyle SPA. The waterbird species of this site have been shown to be present in *ex situ* habitats within 500 m of the Section 2 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of national importance and potentially affected by the Proposed Development. |
| National Sites (UK): River Foyle and Tributaries Area of Special Scientific Interest (ASSI) | **International Importance** – consistent with NRA (2009) guidance, due to the boundary being contiguous with the former European site of the same name and therefore is elevated from National to International Importance due to this overlap. | **Yes** – the entirety of Section 1 and the majority of Section 3 are within catchments and cross multiple watercourses which all ultimately flow into the pNHA. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |
| National Sites (UK): Lough Foyle ASSI | **International Importance** – consistent with NRA (2009) guidance, due to the boundary being contiguous with the former European site of the same name and therefore is elevated from National to International Importance due to this overlap. | **Yes** – The bird species of this ASSI have been shown to be present in *ex situ* habitats within 500 m of the Section 2 CPO boundary. This is mindful of the ornithological connection between Lough Swilly and Lough Foyle. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |
| National Sites (UK): Roe Estuary Nature Reserve | **International Importance** – consistent with NRA (2009) guidance, due to the majority of the site occurring inside the boundary of Lough Foyle SPA (UK) and therefore is elevated from National to International Importance due to this overlap. | **Yes** – The bird species of this site have been shown to be present in *ex situ* habitats within 500 m of the Section 2 CPO boundary. This is mindful of the ornithological connection between Lough Swilly and Lough Foyle. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |
| National Sites (Irl): Blanket Nook Wildlife Sanctuary | **International Importance** – consistent with NRA (2009) guidance, because the site is within Lough Swilly SPA and therefore is elevated from National to International Importance due to this overlap. | **Yes** – the site is part of the Lough Swilly complex of waterbird sites and supports waterbirds that are SCIs of both Lough Swilly SPA and Lough Foyle SPA. The waterbird species of this site have been shown to be present in *ex situ* habitats within 500 m of the Section 2 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |
| National Site (Irl): Inch Levels Wildfowl Reserve | **International Importance** – consistent with NRA (2009) guidance, because the site is within Lough Swilly SPA and therefore is elevated from National to International Importance due to this overlap. | **Yes** – the site is part of the Lough Swilly complex of waterbird sites and supports waterbirds that are SCIs of both Lough Swilly SPA and Lough Foyle SPA. The waterbird species of this site have been shown to be present in *ex situ* habitats within 500 m of the Section 2 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this site has been identified as being of international importance and potentially affected by the Proposed Development. |

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| **Habitats and flora** | | | |
| BC1 Arable crops | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of a small area of a highly modified habitat with a low diversity of flora of some local importance for wildlife. | **Yes** – within the Section 1 CPO boundary (a single area of approximately 0.8 ha). Widespread within Section 3. | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| BC2 Horticultural land | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of a small area of a highly modified habitat of some local importance for wildlife. | **Yes** – within the Section 1 CPO boundary (a single area of approximately 0.6 ha). | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| BC3 Tilled land | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of a small area of a highly modified habitat with a low diversity of flora of some local importance for wildlife. | **Yes** – within the Section 2 CPO boundary (a single area of approximately 1.1 ha). Widespread within Section 3. | **No** – consistent with NRA (2009) guidance; ecological resources of below Local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| BL2 Earth Banks | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of a single stretch along the old railway line of some local importance as a corridor for wildlife. | **Yes** – within the Section 2 CPO boundary (a single length of approximately 100 m). | **No** – consistent with NRA (2009) guidance; ecological resources of below Local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| BL3 Buildings and artificial surfaces | **Negligible** – it consists of numerous areas of a highly modified habitat, predominantly roads, with a low diversity of flora of little importance for wildlife. | **Yes** – within the Section 1 CPO boundary (numerous areas totalling approximately 12.2 ha) and the Section 2 CPO boundary (predominantly in numerous large areas of BL3 totalling approximately 33 ha). Small areas occur within Section 3. | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| ED2 Spoil and bare ground | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of a small area of a highly modified habitat with a low diversity of flora of some local importance for wildlife. | **Yes** – within the Section 1 CPO boundary (in a mosaic with ED3 in a single area of approximately 0.2 ha). | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| ED3 Recolonising bare ground | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of small areas of a highly modified habitat of some local importance for wildlife. | **Yes** – within the Section 1 CPO boundary (in three areas, including habitat mosaics, totalling approximately 0.8 ha) and the Section 2 CPO boundary (predominantly in mosaic with WS1, approximately 2.4 ha in area). | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| ED5 Refuse and other waste | **Negligible** –it consists of numerous areas of a highly modified habitat, with a low diversity of flora of little importance for wildlife. | **Yes** – within the Section 1 CPO boundary (a single area of approximately 0.2 ha). | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| GA1 Improved agricultural grassland | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of numerous large areas of a highly modified habitat with a low diversity of flora of some local importance for wildlife. | **Yes** – within the Section 1 CPO boundary (numerous areas of GA1 totalling approximately 101 ha and GA1 occurs in approximately 21 ha of habitat mosaics), the Section 2 CPO boundary (predominantly in numerous areas of GA1 totalling approximately 62 ha), and is abundant throughout Section 3 (approximately 566 ha). | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| GA2 Amenity grassland | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of multiple small areas of a highly modified habitat with a low diversity of flora of some local importance for wildlife. | **Yes** – within the Section 1 CPO boundary (in multiple areas, including habitat mosaics, totalling approximately 4.6 ha) and the Section 2 CPO boundary (in multiple areas, including habitat mosaics, totalling approximately 1.4 ha). | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| GS2 Dry meadows and grassy verges | **Local Importance (lower)** – consistent with NRA (2009) guidance. It consists of semi-natural habitat (SNH). However, the intensity of the management of this habitat varies between the recorded parcels and it is also considered common and widespread in the wider landscape especially along road margins. | **Yes** – within the Section 1 CPO boundary (almost exclusively in habitat mosaics with GA1 (approximately 12 ha) or GS4 (approximately 2.1 ha)) and the Section 2 CPO boundary (numerous areas of GS2 totalling approximately 4.5 ha and GS2 occurs in approximately 6.2 ha of habitat mosaics). Within Section 3 (approximately 9.3 ha), mainly on road edges. | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| GS4 Wet grassland | **Local Importance (lower)** – consistent with NRA (2009) guidance. It consists of large areas of SNH with high biodiversity in a local context. However, the intensity of the management of this habitat varies between the recorded parcels and it is also considered common and widespread in the wider landscape. | **Yes** – within the Section 1 CPO boundary (numerous areas of GS4 totalling approximately 48 ha and GS4 occurs in approximately 17.9 ha of habitat mosaics) and the Section 2 CPO boundary (numerous areas of GS4 totalling approximately 7.5 ha and GS4 occurs in approximately 26 ha of habitat mosaics). Within Section 3, numerous areas of GS4 typically in mosaics with WN6 (total of 34.5 ha). | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| HH3 Wet heath | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of a single area (approximately 1.3 ha) of SNH with high biodiversity in a local context and a high degree of naturalness. | **Yes** – within the Section 1 CPO boundary (approximately 0.2 ha of a single field of HH3, approximately 1.3 ha in area). | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| WD1 (Mixed) Broadleaved woodland | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of numerous areas of SNH with high biodiversity in a local context. | **Yes** – within the Section 1 CPO boundary (areas of WD1 totalling approximately 3 ha and WD1 occurs in approximately 1.5 ha of habitat mosaics with WS1 and WS2) and the Section 2 CPO boundary (areas of WD1 totalling approximately 9.6 ha and WD1 occurs in approximately 3.4 ha of habitat mosaics with WS1). A number of areas totalling 13.6 ha within Section 3. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| WD2 (Mixed) Broadleaved/ Conifer woodland | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of areas of SNH with high biodiversity in a local context. | **Yes** – within the Section 1 CPO boundary (totalling approximately 3.2 ha) and the Section 2 CPO boundary (a single area of approximately 12.1 ha). Small area within Section 3 boundary totalling 2.9 ha. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| WD3 (Mixed) Conifer woodland | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of two small areas of a modified habitat of some local importance for wildlife. | **Yes** – within the Section 1 CPO boundary (approximately 0.7 ha). | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| WD4 Conifer plantation | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of multiple large areas of highly modified habitat with a low diversity of flora of some local importance for wildlife. | **Yes** – within the Section 1 CPO boundary (multiple areas totalling approximately 7.4 ha). Numerous blocks in close proximity to the Section 3 CPO totalling 31.7 ha. | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| WL1 & WL2 Hedgerows and Treelines | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of numerous stretches of SNH with high biodiversity in a local context which act as corridors between features of higher ecological value. | **Yes** – within the Section 1, Section 2, and Section 3 CPO boundary. Because they function as corridors for movement and connectivity within the landscape for many types of fauna, the fragmentation of this network can affect many species. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| WN1 Oak-birch-holly | **County Importance (Donegal)** – consistent with NRA (2009) guidance, as it consists of SNH with high biodiversity in a county context. Adjacent to Section 1, approximately 8.4 ha of WN1 occurs within approximately 9.8 ha of woodland mapped in the National Survey of Native Woodlands. | **Yes** – of the approximately 8.4 ha area of WN1, only approximately 0.03 ha is within the Section 1 CPO boundary, but a much larger area is within 100 m of the CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of county importance and potentially affected by the Proposed Development. |
| WN2 Oak-ash-hazel woodland | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of multiple large areas of SNH with high biodiversity in a local context. | **Yes** – A number of areas of WN2 occur within Section 3 mainly associated with old railway lines and river corridors, all of which are contained within KER sites. Totalling approximately 4.4 ha. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of county importance and potentially affected by the Proposed Development. |
| WN4 Wet pedunculate oak-ash woodland | **County Importance (higher)** – consistent with NRA (2009) guidance, as it is a part of the River Finn riparian corridor with high biodiversity in a county context. | **Yes** – within the Section 1 CPO boundary (a single area of approximately 0.4 ha). | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of county importance and potentially affected by the Proposed Development. |

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| WN5 Riparian woodland | **County Importance (Donegal)** – consistent with NRA (2009) guidance, as it consists of a stretch on each bank of the River Finn of SNH with high biodiversity in a county context. | **Yes** – within the Section 1 CPO boundary (an area on each bank of the River Finn totalling approximately 0.2 ha in area and 150 m in length). | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of county importance and potentially affected by the Proposed Development. |
| WN6 Wet willow-alder-ash woodland | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of multiple areas of SNH with high biodiversity in a local context. | **Yes** – within the Section 1 CPO boundary (multiple areas totalling approximately 1.7 ha). Numerous areas within Section 3, mainly associated with mosaics of wet grassland, totalling approximately 10.5 ha. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| WS1 Scrub | **Local Importance (lower)** – consistent with NRA (2009) guidance. It consists of areas of SNH with high biodiversity in a local context. However, it is considered widespread in the wider landscape | **Yes** – within the Section 1 CPO boundary (predominantly in areas of WS1 totalling approximately 4.8 ha) and the Section 2 CPO boundary (areas of WS1 totalling approximately 1.8 ha and WD1 occurs in approximately 29 ha of habitat mosaics, of which, 21 ha is with GS4). Widespread locally in Section 3, typically in habitat mosaics with wet grassland or on shallow soils, totalling approximately 9.2 ha. | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| WS2 Immature woodland | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of areas of SNH with high biodiversity in a local context, but they are relatively small in area. | **Yes** – within the Section 1 CPO boundary (a single area of WS2 approximately 0.5 ha in area and in a mosaic with WD1, approximately 1.4 ha in area) and the Section 2 CPO boundary (in habitat mosaics totalling approximately 1.9 ha, predominantly with GS4). Within Section 3 totalling approximately 7.5 ha. | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| WS3 Ornamental/ non-native shrub | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of a small area of a highly modified habitat of some local importance for wildlife. | **Yes** – within the Section 2 CPO boundary (in mosaic with GS2, approximately 0.2 ha in area). | **No** – consistent with NRA (2009) guidance; ecological resources of below Local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| WS5 Recently felled woodland | **Local Importance (lower)** – consistent with NRA (2009) guidance, as it consists of a mosaic with WD4 (approximately 24 ha) of a highly modified habitat with a low diversity of flora of some local importance for wildlife. | **No** – only approximately 0.01 ha of the 24-ha habitat mosaic is within the Section 1 CPO boundary. | **No** – consistent with NRA (2009) guidance; ecological resources of below local (higher) importance do not represent 'key ecological receptors' for which detailed assessment is required. |
| KER 1-1 | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of areas of SNH with high biodiversity in a local context. | **Yes** – approximately 28% of the KER is within the Section 1 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| KER 1-2 | **County Importance (Donegal)** – consistent with NRA (2009) guidance, as it consists of native woodland with high biodiversity in a county context. It comprises approximately 1.6% of the native woodland mapped in County Donegal in the National Survey of Native Woodlands. | **Yes** – of the approximately 9.8 ha area, only approximately 0.03 ha is within the Section 1 CPO boundary, but a much larger area is within 100 m of the CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of county importance and potentially affected by the Proposed Development. |
| KER 1-3 | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of areas of SNH with high biodiversity in a local context. | **Yes** – approximately 12.5% of the KER is within the Section 1 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 1-4 | **County Importance (Donegal)** – consistent with NRA (2009) guidance, as it 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. | **Yes** – approximately 13% of the KER is within the Section 1 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of county importance and potentially affected by the Proposed Development. |
| KER 2-1 | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of areas of SNH with high biodiversity in a local context. | **Yes** – approximately 82% of the KER is within the Section 1 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 2-2 | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of areas of SNH with high biodiversity in a local context. | **Yes** – approximately 74% of the KER is within the Section 1 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 2-3 | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of areas of SNH with high biodiversity in a local context. | **Yes** – approximately 87% of the KER is within the Section 1 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 2-4 | **Local Importance (higher)** – consistent with NRA (2009) guidance. Despite most of the area being a Sitka spruce plantation, wet conditions have resulted in an abundance of wet woodland and scrub species, resulting in a mixed woodland with high biodiversity in a local context. | **Yes** – approximately 65% of the KER is within the Section 1 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| KER 2-5 | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of areas of SNH with high biodiversity in a local context. | **Yes** – approximately 77% of the KER is within the Section 1 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-1 Pluck | **Local Importance (higher)** – Tidal river with reed swamp fringe and wet grassland along the northern bank covering approximately 10.5 ha, approximately 150 m upstream of Lough Swilly SAC. | **Yes** – Not directly impacted with the CPO boundary extending into dry grassland fringe along the existing N14. Susceptible to water quality deterioration primarily during construction and to a lesser extent during operation. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-2 Ballyboe/ Mullenaveagh | **Local Importance (higher)** – 2.29 ha site with oak-ash-hazel woodland on steep ground with exposed siliceous bedrock outcrop. Small stream along eastern boundary and scrub on upper slopes. | **Yes** – Loss of 0.58 ha along the southern portion of the oak-ash-hazel woodland. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-3 Drumoghill | **Local Importance (higher)** – 4.68 ha site consisting of a mosaic of oak-ash-hazel woodland along a river valley and extending along an embankment of old railway line. Young deciduous plantation woodland on north-west side. | **Yes** – Loss of 0.69 ha of oak-ash-hazel woodland habitat along with modification of the watercourse. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-4 Drumoghill | **Local Importance (higher)** – 1.31 ha block of mature broad-leaved woodland on an elevated knoll serving as a rookery. | **Yes** – loss of entire site. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-5 Doorabble - Mondooey | **Local Importance (higher)** – 5.15 ha mosaic of wet willow-alder-ash woodland and wet grassland/freshwater marsh along a stream (W3-08). | **Yes** – Loss of 0.92 ha of the site to the north-east of the existing N14 and associated habitat fragmentation. Risks to water quality during construction and operation. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-6 Sheskinapoll | **Local Importance (higher)** – 2.94 ha of wet willow-alder-ash woodland and wet grassland fed by a non-calcareous spring in the east. | **Yes** – Loss of 0.56 ha of the site to the north-east encompassing wet woodland and spring habitat. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-7 Slievebuck | **Local Importance (higher)** – 6.77 ha of wet grassland with a block of wet willow-alder-ash woodland in the east along a stream. | **Yes** – Loss of 0.18 ha of wet grassland habitat to the west of the existing N14 with resulting habitat fragmentation. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| KER 3-8 Slievebuck | **Local Importance (higher)** – 0.88 ha mosaic of willow-alder-ash woodland, briar scrub, and wet grassland along stream. | **Yes** – Loss of 0.38 ha on the southern tip of the site. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-9 Slievebuck | **Local Importance (higher)** – 2.84 ha of wet grassland with a core of freshwater marsh bounded by a stream to the east. | **Yes** – Loss of a 0.52 ha of the site in the north-east and risks to water quality in W3-11 during construction and operation. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-10 Dromore Big | **Local Importance (higher)** – 1.86 ha block of wet willow-alder-ash woodland and wet grassland bounded by the existing N14. | **Yes** – Loss of 0.75 ha of the wet willow-alder-ash woodland. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-11 Feddyglass/ Tullyrap | **Local Importance (higher)** – 3.06 ha linear band of wet willow-alder-ash woodland and scrub along a river, with a mature mixed broadleaved fringe along the N14. | **Yes** – Loss of a 1.68 ha of the site with requirement to realign a considerable length of the watercourse W3-13 with risks to water quality during construction and operation. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-12 Broadlea/ Mulnaveagh | **Local Importance (higher)** – 4.46 ha mosaic along a river (Swilly Burn) with adjacent flood embankments of dry meadow and grassy verges. | **Yes** – Clear-span structure will not result in any significant impact on habitat connectivity. Risks to water quality remain during construction and operation, along with risk of transfer of the invasive Asian clam during construction. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-13 Tyleford | **County Importance** – 5.75 ha site comprised of depositing lowland / tidal river (River Deele – W3-17) with adjacent flood embankments of dry meadow and grassy verges and a fringe of tall herb swamp along water's edge. | **Yes** – Clear-span structure will not result in any significant impact on habitat connectivity. Risks to water quality during construction and operation. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-14 Murlough | **Local Importance (higher)** – 1.36 ha site comprised of a minor stream with a fringe of oak-ash-hazel woodland in a steep-sided glen. Upper slopes of dry meadow vegetation with fringing mature treelines. | **Yes** – Loss of a 0.87 ha of the oak-ash-hazel woodland in the site and many of the mature trees in the eastern part. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| KER 3-15 Curraghalane | **International Importance** – ecologically valuable mosaic of habitats within the River Finn SAC and River Foyle and Tributaries SAC. Low-lying fields of wet grassland in the floodplain with wet woodland along the southern riverbank. | **Yes** – Clear-span bridge structure avoids any direct impact on QI species or habitats. Susceptible to water quality deterioration primarily during construction and to a lesser extent during operation. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| KER 3-16 Ballindrait | **Local Importance (higher)** – 1.4h a of oak-ash-hazel woodland extending along an embankment of an old railway line. | **Yes** – approximately 70% of this 1.4 ha woodland will be impacted. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of local (higher) importance and potentially affected by the Proposed Development |
| Protected flora – globeflower | **National Importance (Irl)** – consistent with NRA (2009) guidance, as it consists of population of a species protected under the Flora Protection Order and listed as Near Threatened in the Ireland Red List of Vascular Plants. | **Yes** – along the River Finn approximately 180–200 m downstream of where the Section 1 CPO boundary is in close proximity to the river. Old records from the River Finn, Deele, and Swilly Burn in Section 3. | **Yes** – consistent with CIEEM (2018) guidance; this habitat has been identified as being of national importance and potentially affected by the Proposed Development. |
| **Fauna** | | | |
| Bats (roosting) | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of locally important resident populations of species protected under the Wildlife Acts and Habitats Directive. | **Yes** – seven roosts are within the Section 1 CPO boundary, one roost is within the Section 2 CPO boundary, six roosts are within Section 3 CPO, and other roosts are near the CPO boundary. All roosts are small roosts supporting common and widespread, yet legally protected, species. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Bats (commuting and foraging) | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of locally important resident populations of species protected under the Wildlife Acts and Habitats Directive. | **Yes** – habitats important to commuting and foraging bats are within the CPO boundary of all sections of the Proposed Development, particularly linear features such as hedgerows, treelines, and watercourses, which act as corridors for bats. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Badger | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of a locally important resident population of a species protected under the Wildlife Acts. | **Yes** – multiple setts and evidence of badger activity were identified within and in close proximity to the Section 1 CPO boundary. One sett and evidence of badger activity was identified close proximity to the Section 2 CPO boundary. Multiple potential setts and evidence of badger activity were identified within and in close proximity to the Section 3 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Otter | **International Importance** – consistent with NRA (2009) guidance, as it is a species listed in Annex II and Annex IV of the Habitats Directive and a QI of the River Finn SAC and Lough Swilly SAC. | **Yes** – evidence of otter activity was identified within and in close proximity to the CPO boundary of Sections 1, 2, and 3 along watercourses crossed by the Proposed Development. No active holts were recorded during the most recent surveys, and no derogation licence is required. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of international importance and potentially affected by the Proposed Development. |

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| Hedgehog | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of a locally important resident population of a species protected under the Wildlife Acts. | **Yes** – the species is considered likely to occur within optimal habitats within and in close proximity to the CPO boundary of the Proposed Development. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Pygmy shrew | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of a locally important resident population of a species protected under the Wildlife Acts. | **Yes** – the species is considered likely to occur within optimal habitats within and in close proximity to the CPO boundary of the Proposed Development. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Pine marten | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of a locally important resident population of a species protected under the Wildlife Acts. | **Yes** – the species is considered likely to occur within optimal habitats within and in close proximity to the CPO boundary of the Proposed Development. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Irish stoat | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of a locally important resident population of a species protected under the Wildlife Acts. | **Yes** – the species is considered likely to occur within optimal habitats within and in close proximity to the CPO boundary of the Proposed Development. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Red squirrel | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of a locally important resident population of a species protected under the Wildlife Acts. | **Yes** – the species is considered likely to occur within optimal habitats within and in close proximity to the CPO boundary of the Proposed Development. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Irish hare | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of a locally important resident population of a species protected under the Wildlife Acts. | **Yes** – the species is considered likely to occur within optimal habitats within and in close proximity to the CPO boundary of the Proposed Development. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Deer species | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of a locally important resident population of a species protected under the Wildlife Acts. | **Yes** – the species is considered likely to occur within optimal habitats within and in close proximity to the CPO boundary of the Proposed Development. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Common frog | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of a locally important resident population of a species protected under the Wildlife Acts. | **Yes** – the species is considered likely to occur within optimal habitats within and in close proximity to the CPO boundary of the Proposed Development. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |

| Ecological Feature | Valuation of Feature | Potentially affected by the Proposed Development | IEF (scoped into impact assessment) |
|---|---|---|---|
| Smooth newt | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of a locally important resident population of a species protected under the Wildlife Acts. | **Yes** – the species is considered likely to occur within optimal habitats within and in close proximity to the CPO boundary of the Proposed Development. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Common lizard | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of a locally important resident population of a species protected under the Wildlife Acts. | **Yes** – the species is considered likely to occur within optimal habitats within and in close proximity to the CPO boundary of the Proposed Development. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Breeding bird assemblage | **Local Importance (higher)** – consistent with NRA (2009) guidance, as it consists of locally important populations of species protected under the Wildlife Acts. | **Yes** – breeding bird surveys confirmed the presence of several bird species of various conservation statuses within the CPO boundary of the Proposed Development. Recorded species with populations in the wider landscape of greater geographic significance (e.g. hen harrier, curlew, and kingfisher) are considered not likely to be significantly affected and therefore they have not been identified as individual IEFs which required species-specific assessment. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of local (higher) importance and potentially affected by the Proposed Development. |
| Wintering bird assemblage | **International Importance** – consistent with NRA (2009) guidance as SCI species of Lough Swilly SPA are present in the vicinity of Section 2. | **Yes** – wintering bird surveys confirmed the presence of multiple Lough Swilly and Lough Foyle SCI species within 500 m of the Section 2 CPO boundary. No individual species populations of local significance are considered likely to occur in the vicinity of the Section 1 CPO boundary. Wintering flocks of whooper swan utilise the Swilly Burn floodplain within 500 m of Section 3 CPO boundary. | **Yes** – consistent with CIEEM (2018) guidance; this feature has been identified as being of international importance and potentially affected by the Proposed Development. |

## 9A.5 Assessment of Significant Effects

The assessment of significant effects on the identified IEFs during construction and operation, in the absence of mitigation, has been completed with reference to the Project Description set out in Chapter 4: Project Description, with reference to the impact assessment methodology summarised in Section 9A.2.3 of this chapter, and with reference to the ecological baseline which is described in full in Appendix C9A.01.

In the absence of the Proposed Development (i.e. the “do nothing” scenario), it is assumed that the identified IEFs would be subject to the same land use management practices as currently experienced (e.g. agricultural or forestry management) and would continue to be subject to the current identified threats and pressures which they currently experience. It is assumed that the ecological landscape would change over time (due to those land management practices, threats, and pressures, irrespective of the Proposed Development; such changes are evident from the approximately 8 years of surveys during the collation of the baseline to inform the assessment of the Proposed Development.

The Project Description includes a number of “built in” design measures which have been designed to avoid and/or minimise impacts on ecological features; informed by the findings of the baseline as it was collated.

These include measures that will maintain ecological connectivity, particularly for mobile species, such as the open span bridge designs over the River Finn SAC, the Lough Swilly SAC and SPA, the Backlees and Cloghroe streams, the Isle Burn, the River Deele, and the Swilly Burn. These will retain terrestrial and aquatic corridors which cross the proposed road, allowing species to cross, reducing the impacts of habitat fragmentation. The open span bridge design also reduces impacts on aquatic ecology, which is discussed in Chapter 9B: Biodiversity – Aquatic. This also reduces indirect impacts on terrestrial receptors which are susceptible to impacts on aquatic ecology (e.g. otter). The landscape design also proposes the establishment of woodlands, hedgerows, and grasslands which have been designed and will be managed to attain high ecological value, providing foraging/commuting/breeding/resting habitat for a wide range of species and improving connectivity between habitats for these species.

The following impact assessment has been completed initially in the absence of any mitigation measures, but cognisant of the "built in" measures which are included within the Project Description. Mitigation has then been developed and the assessment re-run to determine the significance or otherwise of residual effects.

## 9A.5.1 Potential Sources of Impact and Effect

The potential sources of impact which could result in significant effects on IEFs have been derived from consideration of the activities arising from the construction and operation of the Proposed Development (see Chapter 4: Project Description). The sources of impact will generate direct effects within the CPO boundary (e.g. removal of vegetation) and indirect effects which extend beyond the CPO boundary (e.g. construction/ operational noise/vibration disturbance effects and downstream effects). The range of impacts and effects[13] that potentially arise as a result of the activities are described below. The effects of all of the below impacts have been considered for each IEF. However, impacts which are considered not likely to occur or which will result in a negligible effect on an IEF are not necessarily described in detail within the assessment of impacts on that IEF.

### 9A.5.1.1 Construction

- **Habitat loss, fragmentation, and alteration** – Construction works include the removal of vegetation within the CPO boundary, the stripping of soils/subsoils etc., the cut/fill works necessary to establish the levels required for the Proposed Development surfaces, and the excavation of borrow pits. Such activities will result in the direct removal of habitat, the extent of which is restricted to the CPO boundary. In addition to terrestrial habitats, disturbance, loss, and/or degradation of aquatic habitats may occur during instream works (i.e. culverting and channel realignment). Effects on aquatic habitats are addressed in Chapter 9B: Biodiversity – Aquatic, but any resultant indirect effects on terrestrial receptors (e.g. otter) are addressed in this chapter. The installation of bridges will also result in shading effects on aquatic and terrestrial habitats. Animal species can be affected by impacts on habitats which they use for foraging, commuting, hibernating, resting, and breeding. For certain IEFs, impacts on certain resting/breeding habitats (e.g. bat roosts, otter holts, and badger setts) are of particular concern, and these are assessed as distinct impacts, independent of impacts on foraging/commuting habitat.
- **Unintended incursion** – There is potential for the unintended incursion of construction personnel, machinery, or materials into retained habitat inside the CPO boundary or immediately outside the CPO boundary.
- **Surface water pollution** – Water quality effects from construction related activities, (i.e. sediment run-off, turbidity, and accidental spillage (concrete, hydrocarbons)) were addressed in Chapter 9B: Biodiversity – Aquatic, but indirect effects on terrestrial receptors are addressed in this chapter. The extent of these effects extends downstream of the Proposed Development. Potentially polluting activities include dust-generating activities, the use of construction materials (including environmentally toxic materials such as cement, hydrocarbons, and silt-generating materials (e.g. soils and aggregates)), and the requirement for construction compounds which would include material storage, re-fuelling activities, and welfare facilities (including temporary foul drainage requirements).

[13] Definition of "impact" and "effect" as per CIEEM (2018)

- **Groundwater pollution** – Construction works, especially deep excavations, have the potential to pollute and alter groundwater characteristics. Any groundwater-dependant habitats could be indirectly affected by these impacts. The extent of groundwater impacts depends on site-specific conditions of the groundwater bodies.
- **Air pollution** – Dust-generating construction activities and construction traffic can result in air pollution that extends beyond the CPO boundary, soiling terrestrial habitats and affecting animal health. The extent of the effects of air pollution is restricted to within 200 m of the CPO boundary (TII, 2022).
- **Spread of invasive alien species** – Construction activities may introduce/spread invasive alien species, which could then affect habitats and species which are dependent upon such habitats. The extent of such an effect is mainly determined through downstream hydrological connections, however there is potential for the spread of invasive species through other pathways (e.g. on construction equipment and on materials imported/exported from the Proposed Development) to any location within the CPO boundary.
- **Accidental killing or injury** – Animals have the potential to be killed or injured through the removal of habitats in which they are present and through falling into exposed excavations. The extent of this effect is restricted to the CPO boundary.
- **Disturbance from noise, vibration, lighting, and human presence** – Construction works will generate noise, vibration, light, and visual disturbance which could affect animal species. 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[14]. The distance is based upon noisy construction equipment operating at site boundaries, with distance attenuation, neglecting the effects of air and ground absorption and assuming no topographical screening. The maximum extent of vibration disturbance is considered to be 50 m from the CPO boundary during the construction phase. This 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*.

#### 9A.5.1.2 Operation

- **Surface water pollution** – Road run-off can carry pollutants which could result in effects on the habitats established within the surface water drainage features within the CPO boundary and result in effects on downstream waterbodies.
- **Air pollution** – Traffic on the proposed road can result in air pollution that extends beyond the CPO boundary, soiling terrestrial habitats.
- **Spread of invasive alien species** – If Invasive Alien Plant Species (IAPS) are present within the CPO boundary during operation, maintenance of the planting of the Proposed Development has the potential to result in the spread of IAPS. However, following standard maintenance practices, the operation of the Proposed Development will not result in an increased risk of the spread of IAPS, and this impact is therefore not discussed in detail in the below assessment.
- **Accidental killing or injury** – The Proposed Development will result in a 'barrier effect' as habitats will be fragmented. This can result in collisions between the users of the roads and wildlife which is attempting to cross the road.
- **Disturbance from noise, vibration, lighting, and human presence** – Disturbance associated with the operation of the Proposed Development, including noise and vibration from road users and light from the proposed public lighting, is likely to extend beyond the CPO boundary. In addition, the periodic requirement for maintenance activities associated with new structures, surface water attenuation, and landscaping located within the CPO boundary will cause disturbance. The maximum extent of potential noise disturbance is considered to be 500 m from the new scheme roadway centrelines during the operational phase of the Proposed Development. 500 m was determined based on a threshold of construction and operational noise of 50 dB LAeq, 24hr, below which it is anticipated that it will have no

[14] Figure 2 from Cutts, N. *et al.* (2009) *Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance*

disturbance effect[14]. The distance is based on a high estimate of potential noise from roads of this type and speed limit, with distance attenuation neglecting the effects of air and ground absorption and assuming no topographical screening. The maximum extent of potential vibration disturbance is considered to be 50 m from the CPO boundary during the operational phase. 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*. The extent of the effect of lighting is considered to be within the immediate vicinity of where such lighting would be located.

## 9A.5.2 Potential Impacts and Effects on Designated Sites

The assessment of potential impacts on designated sites was completed with reference to the ecological baseline, described in full in Appendix C9A.01. To ensure consistency of this assessment with the NIS, the assessment of impacts on European sites has been carried out with reference to the assessment of the Proposed Development against the conservation objectives of the European sites, as set out in the NIS.

### 9A.5.2.1 River Finn SAC

The River Finn is directly relevant to the assessment of the Proposed Development due to new bridge crossings of the river (Section 1 and Section 3) and that a significant amount of the Proposed Development, including its construction and operation, lies within the catchment of the River Finn. Sections 1 and 3 of the Proposed Development each include a new bridge crossing over the River Finn SAC (see EIAR Drawings 4.1 and 4.3 in Volume D Book of Drawings) and the entirety of Section 1 and the majority of Section 3 lies within the catchment of the SAC. No impact pathway exists from Section 2 to the SAC and, therefore, Section 2 is not discussed further in relation to the impacts on the River Finn SAC.

The QIs of this SAC are:

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
- Salmon (*Salmo salar*) [1106]
- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- Blanket bogs (* if active bog) [7130]
- Transition mires and quaking bogs [7140]
- Otter (*Lutra lutra*) [1355]

The aquatic QIs of the SAC, which are addressed in Chapter 9B: Biodiversity – Aquatic, are:

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]
- Salmon (*Salmo salar*) [1106]

The terrestrial QIs of the SAC, which are addressed in this chapter, are:

- Northern Atlantic wet heaths with *Erica tetralix* [4010]
- Blanket bogs (* if active bog) [7130]
- Transition mires and quaking bogs [7140]
- Otter (*Lutra lutra*) [1355]

Impacts on aquatic receptors in this SAC are addressed in Chapter 9B: Biodiversity – Aquatic and are therefore not addressed in this chapter. Only impacts on terrestrial receptors in this SAC are addressed in this chapter. However, references to impacts on aquatic receptors are made insofar as they are relevant to the terrestrial receptors. The following sections addressing the construction and operational phase impacts on the SAC should be read in conjunction with Chapter 9B: Biodiversity – Aquatic, Appendix C09A.01, and the NIS.

#### 9A.5.2.1.1 Northern Atlantic wet heaths with *Erica tetralix* [4010]

NPWS acknowledges that this habitat has not been mapped in detail with respect to the SAC (NPWS, 2017) and states that "…*wet heath is associated with the blanket bog throughout the site and is found on the shallow peats and better drained slopes*". Reference in particular is made the wet heath at Owendoo/ Cloghervaddy. Mindful of the association to blanket bog, it further states that "*upland blanket bog occurs throughout much of the upland area found at Tullytresna and in the Owendoo/Cloghervaddy bogs…*". These sites and their locations are identified in Mooney *et al.* (1991).

All the locations identified by NPWS, and referred to in the above paragraph, which contain this QI habitat are at least 19 km upstream of the Proposed Development. The habitat type does not occur within any area adjacent to, or downstream of, Sections 1 or 3. Given this spatial context, there is no pathway for impact, and both the construction and operational phases of the Proposed Development will have **no significant effects** on this QI of the SAC.

#### 9A.5.2.1.2 Blanket bogs (* if active bog) [7130]

NPWS acknowledges that this habitat has not been mapped in detail with respect to the SAC (NPWS, 2017) but states that "*upland blanket bog occurs throughout much of the upland area of the site along the edges of the river. However, more extensive examples are found at Tullytresna and in the Owendoo/Cloghervaddy bogs*". These sites and their locations are identified in Mooney *et al.* (1991).

All the locations referred to by NPWS, and summarised in the above paragraph, which contain this QI habitat are at least 19 km upstream of the Proposed Development. The habitat type does not occur within any area adjacent to, or downstream of, Sections 1 or 3. Given this spatial context, there is no pathway for impact, and both the construction and operational phases of the Proposed Development will have **no significant effects** on this QI of the SAC.

#### 9A.5.2.1.3 Transition mires and quaking bogs [7140]

NPWS acknowledges that this habitat has not been mapped in detail with respect to the SAC (NPWS, 2017) but states that "…*transition mires (or quaking bogs or scraws) occur at several locations, usually at the interface between bog and lake or stream. In Owendoo/Cloghervaddy there are many examples of small lakes south of Belshade. Some of the lakes contain floating scraws of the bog moss S. recurvum, Bottle Sedge (Carex rostrata), Bog-sedge (C. limosa) and Bogbean (Menyanthes trifoliata). West of Owendoo River there is an extensive area of scraw with a similar suite of species but in differing abundances. Quaking areas are also associated with blanket bog at Cronamuck and Cronakerny. At Cronamuck, a small, level flushed area occurs at the base of a slope leading into a flushed stream. Diversity, including diagnostic species, is good".* Other locations where NPWS have noted this habitat include "…*Tullytresna and the lake edges of Lough Fad, Lough Finn, Lough Gulladuff and the small lakes south of Lough Belshade*". These sites and their locations are identified in Mooney *et al.* (1991).

All the sites referred to above which contain this QI habitat are at least 19 km upstream of the Proposed Development. The habitat type does not occur within any area adjacent to, or downstream of, Sections 1 or 3. Given this spatial context, there is no pathway for impact, and both the construction and operational phases of the Proposed Development will have **no significant effects** on this QI of the SAC.

#### 9A.5.2.1.4 Otter [1355]

With respect to the River Finn, otter is described as being "…*widespread throughout the system*…" (NPWS, 2014). This is consistent with the findings of detailed otter surveys which have been completed to inform the assessment, as detailed in Appendix C09A.01. In summary, the surveys identified the following:

- Evidence of otter activity along the surveyed sections of the River Finn at Sections 1 and 3, including sightings of live otter during the survey of Section 1.
- Potential holts and couches, but no confirmed holts, including natal holts, were identified for Sections 1 and 3 during the most recent survey.

Based on the baseline information, otters are active along the River Finn and its tributaries. Given the typical ranges of otter territories (Chanin, 2003), it is reasonable to consider that there may be an overlap in certain individual otter territories between Sections 1 and 3. In relation to the tributaries, many of the latter lie outside of the designated boundary of the SAC but are considered likely to provide an ex-situ function for the maintenance of the SAC populations. No active holts were identified in the areas surveyed for Sections 1 and 3 as relevant to the Proposed Development during the most recent surveys.

#### 9A.5.2.1.4.1 Construction phase

**Accidental killing or injury**

Given that otters are known to be active and widespread along the River Finn and its tributaries, including within the surveyed areas for Section 1 and 3, there is potential for otter to be killed or injured during construction through accessing areas of construction. Otters tend to be nocturnal with activity peaks at dusk and dawn.

Direct impacts to otter during the construction phase of the Proposed Development could include injury or fatalities via collision with construction machinery or entrapment within excavations. Such impacts could affect the population and distribution of otters along the River Finn and its tributaries at a local level. The impact and its potential effects has been minimised due to the setback of works along the banks of the River Finn; which will allow for unimpeded movement of otters along the river during the construction process and mindful that the majority of the works will be completed during daylight hours. This should minimise the need for otters to stray into construction areas.

The source of impact if limited to within the CPO boundary of the Proposed Development which lies within the catchment of the River Finn SAC; however, the effect on population and distribution is likely to extend up and downstream of where the CPO boundary intersects with the river and its tributaries. The extent and magnitude of this is likely to be defined by the range of the territories of the otter killed or injured. The effect on population and distribution is likely to be reversible as otters occupy the territory changes resulting from other otters being killed or injured. The re-occupancy of territories is likely to be within the short- to medium-term. In the absence of mitigation, accidental killing or injury of otter, mindful that the Conservation Objective of the SAC for this QI is to maintain the favourable conservation status of the species, including with reference to its distribution, is likely to result in a **significant, short- to medium-term, reversible adverse** effect on otter and therefore the River Finn SAC; which is of International value

**Habitat loss, fragmentation, and alteration**

The Proposed Development crosses numerous watercourses within the catchment of the River Finn SAC which are likely used by otter for foraging, commuting, and potentially refuge. Watercourses and their banks are used by otter to commute throughout the landscape between resting sites and foraging sites. Watercourse crossings have the potential to restrict the movement of otters through the landscape, resulting in habitat fragmentation and the loss of previously accessible foraging and resting sites. This can affect the ability of otter to thrive and may jeopardise survival and reproductive success.

However, due to the design of the Proposed Development, there will be no direct or indirect loss of any terrestrial or aquatic habitat suitable for use by otter within the SAC:

- Section 1 has a single crossing of the River Finn at Ballybofey–Stranorlar. The bridge structure has been designed to provide unhindered passage beneath the new bridge for otter once constructed, even at times of flood. The bridges over the Backlees and Cloghroe streams are also clear span.
- Section 3 has a single crossing of the River Finn near Lifford/Strabane. The bridge structure has been designed to provide unhindered passage beneath the new bridge for otter once constructed, even at times of flood. The bridges over the River Deele and Swilly Burn are also clear span.

The extent of terrestrial and aquatic habitat for otter within the SAC will be unaffected by the Proposed Development during construction. Although there are occasions where construction works will occur within 10m of the watercourse channels the small area where this occurs is so small in the context of terrestrial habitat that it is deemed insignificant. Due to the design of the bridge crossings over the SAC and its

tributaries, there will be free and unhindered passage of otter beneath these structures, including at times of flood. The Proposed Development will not result in any new barriers to connectivity for otter within the River Finn SAC.

With respect to the tributaries which lie outside the SAC but provide an ex-situ function to supporting the otter population of the SAC, the proposed crossings and/or culverting of these tributaries as part of the Proposed Development could result in localised habitat loss and alterations as well as a fragmentation of habitat due to the barrier effect that such crossings could cause to the movement of otter. The localised habitat loss and alterations are **not likely to result in a significant effect** on otter. However, in the absence of mitigations with respect to the design of the proposed crossings and culverting, including with respect to removing the potential barrier effect with respect to otter, these would result in **significant, permanent but reversible adverse** effect on otter and therefore the River Finn SAC, which is of International value; due to the ex-situ function of the tributaries in supporting otter populations within the catchment of the River Finn, including within the SAC.

**Loss or disturbance of holts and couching sites**

If holts or couching sites were present within or in close proximity to the Proposed Development, construction works could potentially result in their destruction or result in the displacement of otters from breeding or resting at these sites. However, based on the most up-to-date baseline information, there were no confirmed holts or couching or resting sites recorded during field surveys of the River Finn or its tributaries relevant to the Proposed Development. Albeit considerable evidence of otter activity along the River Finn and its tributaries was recorded; generally consistent over the approximately 8-year period of surveys. As indicated from the multiple years of survey, and as would be expected from a mobile species with expansive territories within a dynamic environment, holt and couching site locations will change; therefore, a precautionary approach has been adopted with respect to the assessment and the mitigations proposed to address any likely significant effects identified.

The construction is capable of direct impacts from the loss of holts or couches and indirect impacts through disturbance effects on holts or couches both within and adjacent to the CPO boundary resulting in the potential displacement of otters from using such locations as holts or couches. With respect to disturbance, typically the effect of the disturbance impacts within the CPO boundary (e.g. construction activity and associated noise and vibration) dissipates the further away from the source of disturbance the holt or couch is located. For the purpose of the assessment, no likely significant effects from disturbance are likely to arise beyond 150 m from the source of the impact within the CPO boundary. Given that there are no current holts or couching sites within the CPO boundary or within 150 m of that boundary of the Proposed Development, as relevant to the River Finn, **no likely significant effects** relating to the loss or disturbance of holts or couching sites will occur and therefore there are **no likely significant effects** on the River Finn SAC from this source of impact.

Given that otter are a mobile species inhabiting a dynamic ecosystem, holting and couching locations will change over time. To reflect this dynamism, and applying a precautionary approach, a pre-construction survey for otter will be carried out within the ZoI of the Proposed Development in order to identify any material changes with respect to otter holts or couches within the CPO boundary or within 150 m of that boundary. This will be included as mitigation as a reasonable, precautionary measure, despite the current baseline not identifying any likely significant effects on the River Finn SAC as it relates to the loss or disturbance of otter holts or couch sites.

**Surface water pollution**

The primary concern during construction works within the catchment of the River Finn, including the new bridge crossings of the river in Sections 1 and 3 of the Proposed Development and the other construction works within the catchment at the bridge locations, would be risk of excessive sediment loss from construction areas. If that occurred, increased turbidity may give rise to behavioural, physiological, or physical changes in migratory freshwater fish (i.e. salmon, sea trout, river/sea lampreys, and eel), the most common change being behavioural in terms of either avoiding or being attracted to turbidity plumes. As prey species of otter, this would indirectly impact otter. These impacts and effects on aquatic species, including the prey species of otter, are assessed in Chapter 9B: Biodiversity – Aquatic.

The extent of the effect of surface water pollution is the aquatic habitats within and downstream of the CPO boundaries of Sections 1 and 3 and restricted to the catchment of the River Finn SAC. The magnitude is the reduced foraging resources of otters which results in a knock-on effect on the size and distribution of the otter population within the catchment of the River Finn, including within the SAC itself. The effect is likely to be short-term and reversible. Based on the Chapter 9B: Biodiversity – Aquatic assessment, which concluded that significant effects as a result of surface water pollution are likely, in the absence of mitigation, surface water pollution is likely to result in a **significant, short-term, reversible, adverse effect** at the international geographic scale on the River Finn SAC as a result of the effect of surface water pollution on otters.

**Disturbance from noise, vibration, lighting, and human presence**

The Proposed Development has the potential to cause disturbance to commuting and foraging otter using the River Finn and its tributaries. With respect to disturbance, typically the effect of the disturbance impacts occurs within the CPO boundary, and the effect is considered to dissipate moving away from the source of impact. For the purpose of the assessment, no likely significant effects from disturbance to otter are likely to arise beyond 150 m from the source of the impact within the CPO boundary. The key sources of disturbance as a result of the proposed construction of the two River Finn crossings in Sections 1 and 3 (which will include excavations, platform formation, cofferdam installation and operation, piling and bridge installation, machinery, and artificial lighting) may affect movement along the River Finn at those locations. In addition, there are likely to be disturbance activities from construction within the CPO boundary where it intersects with tributaries of the River Finn which are not part of the SAC but provide an ex-situ function for otters given the expansive range of their territories.

Given the bridge design of the River Finn crossings in Section 1 and 3, functional connectivity along the River Finn SAC will be retained during the construction phase. The effects of disturbance impacts during construction, mindful of the crepuscular habitats of otters, are further minimised since the majority of the construction phase will be completed during daylight hours, other than some intermittent and limited night-time construction works. Despite functional connectivity being maintained and the disturbance effects minimised, it is anticipated that some temporary displacement of otter activity (commuting and foraging) will occur during the construction works (which will occur overall for a period of 24–36 months) within and adjacent to the CPO boundary where it intersects with the River Finn SAC and its tributaries outside the SAC; the extent of the effect dissipating away from the source of impact. Where intermittent over-night working is necessary, these sources of impact include any artificial lighting used to illuminate construction areas during the night-time working period.

The magnitude is the displacement of commuting/foraging otter and the reduced connectivity of their territories and activities within those territories essential for their survival (e.g. foraging and refuge). The effect will be short-term, for the duration of the construction phase, and reversible. Given the potential for disturbance to temporarily displace foraging and commuting QI otter from important corridors, in the absence of mitigation, disturbance of otter can potentially result in a **significant, short-term, reversible, adverse effect** at the international geographic scale on the River Finn SAC.

#### 9A.5.2.1.4.2 Operational phase

**Accidental killing or injury**

Fatality and injury to otters from collision with road traffic is a known and well-documented issue. This has been accounted for in the design of the Proposed Development to provide bridge designs over the River Finn, alongside the mitigations for other crossings and culverts within the catchment of the river (as identified above), which will allow the continued passage by the species even at times of flood. The latter is critical since it minimises the risk of otters being pressured to find alternative upstream/downstream commuting routes which may result in interactions with road traffic. The inclusion of these built-in and additional design mitigation measures is insufficient alone to reduce to non-significant levels the risk of accidental killing or injury during the operational phase since otters can still access the carriageway either side of these structures. Therefore, in the absence of additional, standard, mitigation measures (consistent with published TII guidance) accidental killing or injury of otter during the operational phase of the Proposed Development can potentially result in a **significant, long-term, reversible, adverse effect** at the international geographic scale on the River Finn SAC.

**Surface water pollution**

The operation of the Proposed Development could result in direct and indirect adverse changes in water quality from the discharge of road surface run-off into watercourses; including from accidental pollution events. Such adverse changes could result in changes to the habitat quality of the watercourses, including with respect to otter prey species, downstream of the polluting event(s) which could indirectly result in adverse effects on otter. However, the surface water drainage design of the Proposed Development includes measures to minimise and avoid such adverse changes, including attenuation ponds and interceptors, all designed and to be maintained to TII Standards. It is assessed that the combination of: (1) relatively low Annual Average Daily Traffic (AADT), (2) attenuation of runoff via ponds/wetlands, and (3) consequent treatment of road surface drainage, would lead to an imperceptible impact on receiving water quality linked to road run-off. As a result, no significant operational impacts on aquatic receptors, including with respect to otter prey species, have been identified with respect to changes in surface water quality, accidental spillages, or air pollution (see Chapter 9B: Biodiversity – Aquatic). As a result, no significant operational phase effects on aquatic habitats, including with respect to otter prey species, are anticipated and the long-term effect is potentially slightly positive. Therefore, with respect to surface water pollution as it relates to otter and, even in the absence of mitigation, **no significant effects** (other than a potentially slight positive effect) on the River Finn SAC are predicted to occur.

#### 9A.5.2.2 River Foyle and Tributaries SAC (UK)

The only relevant parts of the Proposed Development to the River Foyle and Tributaries SAC (UK) are Section 1, the entirety of which lies within the catchment of the SAC and the majority of Section 3. Section 1 is approximately 16 km upstream of the SAC, whilst the crossing of the River Finn included within Section 3 will intersect directly with the SAC. There are no relevant effect pathways between Section 2 and the SAC.

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

Atlantic salmon and watercourse of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion vegetation* are aquatic receptors and are addressed in **Chapter 9B: Biodiversity – Aquatic**. Therefore, otter is the only terrestrial receptor of the SAC, and it is addressed in this chapter.

In context to the Proposed Development, the River Foyle and Tributaries SAC is contiguous with the lower reaches of the River Finn SAC, which, as assessed above, also has otter as QI species. The predicted effects, and need for mitigation, as described for otter can be taken from the River Finn SAC assessment (above) as the same for the River Foyle and Tributaries SAC; mindful that they are effectively part of the same watercourse/catchment.

The area of the River Foyle and Tributaries SAC which is downstream of Sections 1 and 3 follows the same watercourse as the River Finn SAC (i.e. the River Finn and River Foyle) but encompasses the portion of the watercourse within the jurisdiction of Northern Ireland. This assessment was 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. Therefore, the potential effects on the River Foyle and Tributaries SAC due to impacts on otter are summarised as follows:

- Construction phase:
    - Accidental killing or injury of otter is likely to result in a **significant, short to medium-term, reversible, adverse effect** on otter and therefore the River Foyle and Tributaries SAC; which is of International value.

- The extent of terrestrial and aquatic habitat for otter within the SAC will be unaffected by the Proposed Development during construction. Although there are occasions where construction works will occur within 10m of the watercourse channels the small area where this occurs is so small in the context of terrestrial habitat that it is deemed insignificant. Due to the design of the bridge crossing the SAC within Section 3, there will be free and unhindered passage of otter beneath this structure, including at times of flood. The Proposed Development will not result in any new barriers to connectivity for otter within the River Foyle and Tributaries SAC. Unlike with respect to the River Finn, there are no tributaries which lie outside of the River Foyle and Tributaries SAC which are culverted or crossed by the Proposed Development, which could otherwise fragment tributaries of the SAC which provide an ex-situ function for otter. Therefore, there is **no significant effect** on the River Foyle and Tributaries, which is of International value, as a result of loss, alteration or fragmentation of habitat within the SAC or the tributaries which lie outside of the SAC but provide an ex-situ supporting function for otter populations.
- Based on the current baseline, there are **no predicted significant effects** on otter holts or couches which could, in turn, result in adverse effects on the River Foyle and Tributaries SAC. As for the River Finn SAC, precautionary mitigation measures are proposed mindful of the mobile nature of the species within a dynamic environment.
- In the absence of mitigation, surface water pollution is likely to result in a **significant, short-term, reversible, adverse effect** at the international geographic scale on the River Foyle and Tributaries SAC as a result of the effects of surface water pollution on otters.
- Given the potential for disturbance impacts from construction activities to displace foraging and commuting QI otter, in the absence of mitigation, disturbance of otter can potentially result in a **significant, short-term, reversible, adverse effect** at the international geographic scale on the River Foyle and Tributaries SAC.

- Operational phase:
  - In the absence of additional, standard, mitigation measures (consistent with published TII guidance) accidental killing or injury of otter during the operational phase of the Proposed Development can potentially result in a **significant, long-term, reversible, adverse** effect at the international geographic scale on the River Finn SAC.
  - With respect to surface water pollution during the operational phase as it relates to otter and, even in the absence of mitigation, **no significant effects** on the River Foyle and Tributaries SAC are predicted to occur.

#### 9A.5.2.3 River Foyle and Tributaries ASSI

The River Foyle and Tributaries ASSI shares broadly the same boundary as the former European site of the same name (River Foyle and Tributaries SAC), as detailed in Section 9A.5.2.2 above. The only relevant parts of the Proposed Development to the ASSI are Section 1, the entirety of which lies within the catchment of the SAC, and the majority of Section 3. Section 1 is approximately 16 km upstream of the ASSI, whilst the crossing of the River Finn included within Section 3 will intersect directly with the ASSI. There are no relevant effect pathways between Section 2 and the ASSI.

The ASSI is of special scientific interest because of the physical features of the river and its associated riverine flora and fauna. Notable receptors within the ASSI are salmon, otter, and bird species, including red-breasted merganser (*Mergus serrator*).

Similarly to the River Foyle and Tributaries SAC discussed above, the aquatic receptors of the ASSI are assessed in Chapter 9B: Biodiversity – Aquatic. With respect to the non-aquatic receptors which are considered relevant to this assessment based on the available description of the ASSI, these are identified as the:

- Terrestrial habitat associated with the river;
- Otter populations which the river supports; and
- Ornithological interests which the river supports.

#### 9A.5.2.3.1 Terrestrial Habitat

Impacts on this ASSI predominantly relate to aquatic ecology and are therefore addressed in Chapter 9B: Biodiversity – Aquatic. However, the ASSI is also designated for the riparian terrestrial habitat. The portion of the Section 3 River Finn crossing within Northern Ireland crosses the ASSI. However, the proposed bridge crossing is clear span, with the piers set outside the ASSI boundary. The extent of the riparian habitat within the ASSI at the crossing is also limited in area, and the clear span of the bridge does not affect the banks of the watercourse. Therefore, direct impacts on riparian habitat of the ASSI at the bridge crossing will be negligible. The only potentially significant effect of the Proposed Development on the terrestrial receptors of the ASSI is the spread of invasive alien species through its construction and operation.

Construction activities could lead to the introduction and/or dispersal of invasive alien species either via construction machinery, material, clothing, or personnel. Operational activities can, likewise, lead to the introduction and/or dispersal through landscape management activities or maintenance of the road infrastructure.

The introduction and spread of invasive alien species can have significant impacts on the ecological functioning on terrestrial and aquatic habitats. In general, invasive alien species are aggressive colonisers of the habitat that they occupy, crowding out native species in addition to creating shading effects which reduces native species cover. They can also cause erosion, especially on riverbanks, when they die back in winter. This can in turn have a significant effect on water quality. As relevant to the ASSI, the surveys completed have identified invasive species within both Section 1 and Section 3, including Japanese knotweed, Himalayan knotweed, Himalayan balsam, rhododendron, giant rhubarb, snowberry, old man's beard, cherry laurel, winter heliotrope, and monkeyflower.

In the absence of mitigation to manage, control and, where possible, eradicate invasive alien species, there is potential for their colonisation and spread facilitated by construction and operational activities arising from the Proposed Development to result in **significant, long-term reversible, adverse effects** to the River Foyle and Tributaries ASSI; a feature of international value by virtue of it being broadly contiguous with the SAC of the same name.

#### 9A.5.2.3.2 Otter

The assessment of predicted significant effects for otter mirrors the assessment of otter made with respect to the River Foyle and Tributaries SAC, which is summarised as follows:

- Construction phase:
  - Accidental killing or injury of otter is likely to result in a **significant, short to medium-term, reversible, adverse effect** on otter and therefore the ASSI; which is of International value by virtue of its designated area being broadly contiguous with the SAC of the same name which warrants being valued at international level.
  - The extent of terrestrial and aquatic habitat for otter within the ASSI will be unaffected by the Proposed Development during construction. Due to the design of the bridge crossing the ASSI within Section 3, there will be free and unhindered passage of otter beneath this structure, including at times of flood. The Proposed Development will not result in any new barriers to connectivity for otter within the ASSI. Unlike with respect to the River Finn, there are no tributaries which lie outside of the ASSI which are culverted or crossed by the Proposed Development, which could otherwise fragment tributaries of the ASSI which provide an ex-situ function for otter. Therefore, there are **no significant effects** on the ASSI, which is of International value, as a result of loss, alteration or fragmentation of habitat within the ASSI or the tributaries which lie outside of the ASSI but provide an ex-situ supporting function for otter populations.
  - Based on the current baseline, there are **no predicted significant effects** on otter holts or couches which could, in turn, result in adverse effects on the ASSI. As for the River Foyle and Tributaries SAC, precautionary mitigation measures are proposed mindful of the mobile nature of the species within a dynamic environment.

- In the absence of mitigation, surface water pollution is likely to result in a **significant, short-term, reversible, adverse effect** at the international geographic scale on the ASSI as a result of the effects of surface water pollution on otters.
- Given the potential for disturbance impacts from construction activities to displace foraging and commuting QI otter, in the absence of mitigation, disturbance of otter can potentially result in a **significant, short-term, reversible, adverse effect** at the international geographic scale on the ASSI.

- Operational phase:
  - In the absence of additional, standard, mitigation measures (consistent with published TII guidance) accidental killing or injury of otter during the operational phase of the Proposed Development can potentially result in a **significant, long-term, reversible, adverse effect** at the international geographic scale on the ASSI.
  - With respect to surface water pollution during the operational phase as it relates to otter and, even in the absence of mitigation, **no significant effects** on the ASSI are predicted to occur.

#### 9A.5.2.3.3 Ornithology

With respect to ornithology, the only predicted potential impact which could affect the ornithological assemblage within the ASSI is with respect to impacts and effects from surface water pollution both during construction and operation. This source of impact and effect mirrors that identified for otter and the ASSI; as detailed above. The effects of surface water pollution could affect the birds directly in addition to indirect effects from changes in foraging resources and alterations/modification of available habitat upon which the bird species are dependent. As per the otter assessment, and cognisant of the assessment in Chapter 9B: Biodiversity – Aquatic, the assessment with respect to the ornithology of the ASSI and surface water pollution is as following:

- Construction phase:
  - In the absence of mitigation, surface water pollution is likely to result in a **significant, short-term, reversible, adverse effect** at the international geographic scale on the ASSI as a result of the effects of surface water pollution on the ornithology of the ASSI.
- Operational phase:
  - Even in the absence of mitigation, **no significant effects** on the ASSI are predicted to occur as a result of surface water pollution on the ornithology of the ASSI.

### 9A.5.2.4 River Foyle, Mongavlin to Carrigans pNHA

The entirety of Section 1 lies within the catchment of the River Foyle, Mongavlin to Carrigans pNHA and the pNHA is approximately 33 km downstream of the nearest Section 1 watercourse crossing. The majority of Section 3 lies within the catchment of the pNHA, however the closest part of Section 3 to the pNHA lies approximately 9.8 km upstream of the pNHA. No impact pathway exists from Section 2 to the pNHA and, therefore, Section 2 is not discussed further in relation to the impacts on the River Foyle, Mongavlin to Carrigans pNHA.

A site synopsis is not available for the River Foyle, Mongavlin to Carrigans pNHA. Therefore, a detailed impact assessment cannot be based on specific ecological receptors for which it is designated. The River Foyle and Tributaries ASSI is on the same section of river channel as the pNHA and encompasses all major ecological receptors of the channel (e.g. aquatic receptors, otter, riparian habitat, and birds). The impacts and effects on the pNHA, particularly as they relate to significant effects, are therefore predicted to be same as those of the River Foyle and Tributaries ASSI, described in Section 9A.5.2.3. Therefore, in the absence of mitigation, the potential impacts on the River Foyle, Mongavlin to Carrigans pNHA are:

#### 9A.5.2.4.1 Terrestrial Habitats

In the absence of mitigation to manage, control and, where possible, eradicate invasive alien species, there is potential for their colonisation and spread facilitated by construction and operational activities arising from the Proposed Development to result in **significant, long-term reversible, adverse effects** to the pNHA; a feature of international value by virtue of its relationship to European sites.

#### 9A.5.2.4.2 Otter

- Construction phase:
  - Accidental killing or injury of otter is likely to result in a **significant, short to medium-term, reversible, adverse effect** on otter and therefore the pNHA; which is of International value.
  - There are **no significant effects** on the pNHA, which is of International value, as a result of loss, alteration, or fragmentation of habitat within the pNHA or the tributaries which lie outside of the pNHA but provide an ex-situ supporting function for otter populations since the pNHA lies significantly downstream of the Proposed Development. The closest part of the Proposed Development to the pNHA relates to Section 3.
  - Based on the current baseline, there are **no predicted significant effects** on otter holts or couches which could, in turn, result in adverse effects on the pNHA. Precautionary mitigation measures are proposed mindful of the mobile nature of the species within a dynamic environment.
  - In the absence of mitigation, surface water pollution is likely to result in a **significant, short-term, reversible, adverse effect** at the international geographic scale on the pNHA as a result of the effects of surface water pollution on otters. However, the magnitude of pollution will be limited by the dilutionary effect due to tidal influences which are present in the vicinity of the pNHA.
  - **No significant disturbance impacts** from construction and associated displacement effects will result for otters within the pNHA due to the spatial separation between the pNHA and the Proposed Development.
- Operational phase:
  - With respect to surface water pollution during the operational phase as it relates to otter, even in the absence of mitigation, **no significant effects** on the pNHA are predicted to occur.

#### 9A.5.2.4.3 Ornithology

With respect to ornithology, the only predicted potential impact which could affect the ornithological assemblage within the ASSI is with respect to impacts and effects from surface water pollution both during construction and operation. This source of impact and effect mirrors that identified for otter and the ASSI; as detailed above. The effects of surface water pollution could affect the birds directly in addition to indirect effects from changes in foraging resources and alterations/modification of available habitat upon which the bird species are dependent. As per the otter assessment, and cognisant of the assessment in Chapter 9B: Biodiversity – Aquatic, the assessment with respect to the ornithology of the ASSI and surface water pollution are assessed as following:

- Construction phase:
  - In the absence of mitigation, surface water pollution is likely to result in a **significant, short-term, reversible, adverse effect** at the international geographic scale on the pNHA as a result of the effects of surface water pollution on ornithological interests. However, the magnitude of pollution will be limited by the dilutionary effect due to tidal influences which are present in the vicinity of the pNHA.
- Operational phase:
  - Even in the absence of mitigation, **no significant effects** on the pNHA are predicted to occur as a result of surface water pollution on the ornithology of the pNHA.

Similarly to the River Foyle and Tributaries ASSI, the aquatic receptors of the pNHA are assessed in Chapter 9B: Biodiversity – Aquatic.

### 9A.5.2.5 Lough Swilly SAC

Section 2 includes a new bridge crossing over Lough Swilly SAC, and the entirety of Section 2 lies within the catchment of the SAC. A minority of Section 3 lies within the catchment of the SAC. No impact pathway exists from Section 1 to the SAC and, therefore, Section 1 is not discussed further in relation to the impacts on Lough Swilly SAC.

The QIs of this SAC are:

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

The Estuaries QI habitat is addressed in Chapter 9B: Biodiversity – Aquatic and is therefore excluded from the assessment in this chapter. However, references to impacts on the Estuaries QI habitat are made insofar as they are relevant to other QIs. The following sections addressing the construction and operational phase impacts on the SAC should be read in conjunction with Chapter 9B: Biodiversity – Aquatic, Appendix C09A.01, and the NIS.

#### 9A.5.2.5.1 Coastal lagoons

Mapping (NPWS, 2011) indicates that the distribution of coastal lagoons within the SAC is restricted to Blanket Nook Lough and Inch Lough which are approximately 13.4 km and 17.6 km[15] from the site of the proposed River Swilly Bridge crossing.

Given this spatial context of the QI to the Proposed Development, it is assessed that **no significant effects** on this QI habitat will arise from either the construction or operational phases of Proposed Development. This includes a consideration of potentially adverse changes in water quality as a result of the construction and operation of Sections 2 and 3, which, even if they do occur, are sufficiently distant to avoid likely significant effects on coastal lagoons.

#### 9A.5.2.5.2 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion careuleae*) [6410]

Mapping indicates that the distribution of this meadow type within the SAC is restricted to Inch Level, where approximately 11 ha of this habitat is reported to occur (O'Neill *et al*., 2013), the closest of which is located approximately 17.7 km north-west of the proposed River Swilly Bridge crossing[16].

Given this spatial context, no pathway for impact exists and **no significant effects** on this QI habitat will arise from either the construction or operational phases of the Proposed Development. This includes a consideration of potentially adverse changes in water quality as a result of the construction and operation of the Proposed Development which, even if they do occur, are sufficiently distant and subject to such dilution as to avoid likely significant effects on this meadow habitat.

[15] Approximate direct line measurement from proposed crossing of Lough Swilly by Section 2 of Proposed Development to closest part of mapped coastal lagoons at Blanket Nook Lough and Inch Lough; respectively.

[16] Approximate direct line measurement from proposed crossing of Lough Swilly by Section 2 to the closest part of mapped *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion careuleae*).

#### 9A.5.2.5.3 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

NPWS (2011) mapping indicates that the distribution of this woodland type within the SAC are restricted to four areas, the closest of which is located approximately 7.8 km north of the proposed River Swilly Bridge crossing[17].

Given this spatial context and the lack of an effect pathway, it is assessed that **no significant effects** on this QI habitat will arise from either the construction or operational phases of the Proposed Development. This includes a consideration of potentially adverse changes in air quality as a result of the construction and operation of the Proposed Development, which is sufficiently distant (over 200 m) to avoid likely significant effects on this woodland habitat.

#### 9A.5.2.5.4 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]

Within Lough Swilly SAC, saltmarshes are documented as "*well represented in the inner sheltered areas*" of the SAC and noted as "*Atlantic salt meadow type*", NPWS (2017). The distribution of Atlantic salt meadow is predominantly distributed in small areas along the margins of the lough. However, at the mouth of the lough there is an area mapped as "*potential*" Atlantic salt meadow within the SAC boundary. No habitat with affinities to Atlantic saltmarsh has been identified outside the boundary of the SAC and within the construction footprint of the Proposed Development; specifically, Sections 2 or 3.

##### 9A.5.2.5.4.1 Construction Phase

During the construction phase, the sources of impact and resultant effects on this QI habitat are predicted to relate to unintended incursion of the construction works into the habitats and effects on the habitat arising from surface water pollution. Each is assessed below.

**Unintended Incursion**

Unintended incursion into habitats could be from personnel, construction machinery, or construction materials which would accidentally enter the habitats from adjacent construction areas. Such incursion could result in habitat loss or deterioration within the footprint of the incursion, or, in the case of waterbodies, downstream effects include the release of silts/pollutants/invasive species or impacts on species which are using the affected area.

The only location where there is a risk of unintended incursion, relates to the River Swilly bridge crossing N56R005 within Section 2 of the Proposed Development. This will consist of a three-span bridge over the estuary. It will be a clear span bridging structure, with no instream footprint during construction or operation. Construction will involve use of cantilever to place the bridge span between abutments. Abutments will be set outside the SAC boundary and outside the embankments on the riverbanks and will have no direct impact on the riverbank, channel, or their natural function. As set out in Chapter 4: Project Description, there are measures included as part of the expected bridge construction sequence to avoid direct and indirect impacts on the SAC, including fencing to demarcate and thus prevent unwanted incursion into the SAC. These measures will also be relevant with respect to this QI habitat.

In the absence of mitigation, the extent of the effect of unintended incursion is to the area of Atlantic salt meadow downstream of the incursion and the magnitude is the reduced quality of the habitat. There is potential for the impact to occur over the duration of the construction phase (3 years). However, the bridge construction will include the use of temporary fencing set back from the SAC boundary to demarcate the limit of allowable working area, which is outside the SAC, and to leave a width of estuary bank habitat undisturbed. Given this context, unintended incursion into the SAC during construction is not likely and **no significant effects** on Lough Swilly SAC are anticipated due to the impact of unintended incursion on Atlantic salt meadow.

[17] Approximate direct line measurement from proposed crossing of Lough Swilly by Section 2 to the closest part of mapped old sessile oak woods with *Ilex* and *Blechnum*.

**Surface water pollution**

Impacts on aquatic receptors are addressed in Chapter 9B: Biodiversity – Aquatic and are therefore not addressed in this chapter. However, surface water pollution is discussed here in summary, as surface water pollution has the potential to result in indirect impacts on downstream Atlantic salt meadows.

During the construction phase of the Proposed Development, site enabling works including the removal of vegetation, soil stripping and soil excavation, removal of existing hard surfaces (e.g. roads, paths, etc.), blasting, installation of new hard surfaces and structures, bridge abutment construction, and installation of culverts can result in surface water pollution due to increased levels of suspended silts, sediments, concrete, hydrocarbons, etc. An increase in surface water pollutants can have a negative impact on downstream habitats, which can indirectly negatively affect species which utilise those habitats.

Although direct loss of actual or potential Atlantic saltmarsh habitat is avoided through design, particularly with respect to Section 2 of the Proposed Development, there is potential for downstream impacts on estuarine habitats, including Atlantic saltmarsh, due to changes in water quality during the construction of Section 2. These impacts are assessed in Chapter 9B: Biodiversity – Aquatic, where it is concluded that, in the absence of mitigation, the Section 2 construction phase may result in significant impacts on Lough Swilly SAC.

The primary concern during construction at both bridge locations, primarily the River Swilly Bridge, would be risk of excessive sediment loss from construction areas; recognising that sediment dynamics is part of the natural ecological process associated with salt meadow habitats. In a worst-case scenario (i.e. intense heavy rainfall and a complete absence of water quality protection measures), additional sedimentation of the downstream habitats could occur.

Although there are no direct construction impacts on the Lough Swilly SAC resulting from Section 3 of the Proposed Development, the watercourses in the northern portion of Section 3 drain to the SAC via the Corkey River, of which the Leslie Hill Stream is a tributary. This limits potential impacts to indirect effects primarily via a reduction in water quality arising from contaminated runoff.

The extent of the effect of surface water pollution is the area of Atlantic salt meadows within and downstream of the CPO boundary of Section 2 and the CPO boundary of Section 3 within the catchment of Lough Swilly SAC. The magnitude is the reduced quality of the habitat. The effect is likely to be short-term and reversible; particularly mindful that sediment dynamics is a key driver of the QI habitats. Based on the findings of Chapter 9B: Biodiversity – Aquatic, in the absence of mitigation, the impact of surface water pollution on Atlantic salt meadows is likely to result in a **significant, short-term, reversible, adverse effect** at an international geographic scale on Lough Swilly SAC.

#### 9A.5.2.5.4.2 Operational phase

During the operational phase, the sources of impact and resultant effects on this QI habitat that are predicted relate to those arising from surface water pollution.

The operation of the Proposed Development could result in direct and indirect adverse changes in water quality from the discharge of road surface run-off into watercourses. The surface water drainage design of the Proposed Development includes measures to avoid such adverse changes, including attenuation ponds and interceptors, all designed and to be maintained to TII Standards. As a result of these measures, no significant operational impacts on aquatic receptors have been identified with respect to changes in surface water quality, accidental spillages, or air pollution (see Chapter 9B: Biodiversity – Aquatic).

There is potential for downstream impacts on estuarine habitats, including Atlantic saltmarsh, due to changes in water quality during the operation of the Proposed Development. These impacts are assessed in Chapter 9B: Biodiversity – Aquatic, where it is concluded that the operational phase of Section 2 will result in no significant effects on aquatic ecology or, by extension, the QI estuaries habitat of Lough Swilly SAC. Even in the absence of mitigation, the Proposed Development will result in **no significant effects** on Atlantic saltmarsh during the operational phase. Therefore, no significant effects on Lough Swilly SAC will arise as it relates to this QI habitat.

#### 9A.5.2.5.5 Otter [1355]

With respect to Lough Swilly, the surveys completed to inform the Proposed Development identified the following:

- Otter are active along the surveyed sections of Lough Swilly and surveyed tributaries both upstream and downstream of the Proposed Development bridge crossing of the SAC, and it is assumed that they utilise the majority of watercourses within the Proposed Development boundary for foraging and commuting.
- No confirmed active holts or couches were identified within the survey area of 600 m upstream and downstream of proposed water crossing locations. However, a potential inactive holt was recorded in proximity of the proposed Swilly bridge crossing.

All the watercourses outside Lough Swilly SAC which are crossed by Section 2 are considered potential *ex situ* habitat of QI otter of the SAC. The entire Section 2 CPO boundary is within approximately 3.2 km of the SAC and all watercourses crossed by Section 2 flow for less than 2 km before entering the SAC. Otter can have large ranges, up to 50 km (Chanin, 2003). Therefore, all otter within the vicinity of Section 2 are assessed as likely to be part of the QI otter population of Lough Swilly SAC.

The northern portion of Section 3 is within the Corkey River catchment which drains to the Lough Swilly SAC. A single NBDC record exists from the Corkey River in the C21 grid square to the north of the Proposed Development. Evidence of otter activity was recorded on a tributary of the Leslie Hill Stream, where a spraint was present under the existing bridge on the N14. Watercourses within this catchment crossed by the Proposed Development have limited suitability for otter at present due to the poor water quality and lack of fish. Nonetheless, periodic movement can be expected to occur on all watercourses crossed by the Proposed Development.

##### 9A.5.2.5.5.1 Construction Phase

During the construction phase, the sources of impact and resultant effects on this QI otter are predicted to relate to accidental killing or injury; habitat loss, fragmentation and alteration; loss or disturbance of holts or couches, the effects on surface water pollution, and disturbance from construction activities. Each is assessed below.

**Accidental killing or injury**

Given that otters are known to be active and widespread within Lough Swilly and its tributaries, including within the surveyed areas for Sections 2 and 3, there is potential for otter to be killed or injured during construction through accessing areas of construction. Otters tend to be nocturnal with activity peaks at dusk and dawn.

Direct impacts to otter during the construction phase of the Proposed Development could include injury or fatalities via collision with construction machinery or entrapment within excavations. Such impacts could affect the population and distribution of otters within Lough Swilly SAC and its tributaries at a local level. Accidental deaths due to traffic collisions, primarily road users rather than construction traffic, was one of the main threats to otter identified in Article 17 reporting (NPWS, 2025c). The impact and its potential effects has been minimised due to the setback of works that traverse Lough Swilly; which will allow for unimpeded movement of otters along the river during the construction process and mindful that the majority of the works will be completed during daylight hours. This should minimise the need for otters to stray into construction areas.

The source of impact if limited to within the CPO boundary of the Proposed Development which lies within the catchment of the Lough Swilly SAC; however, the effect on population and distribution is likely to extend up and downstream of where the CPO boundary intersects with the river and its tributaries. The extent and magnitude of this is likely to be defined by the range of the territories of the otter killed or injured. The effect on population and distribution is likely to be reversible as otters occupy the territory changes resulting from other otters being killed or injured. The re-occupancy of territories is likely to be within the short- to medium-term. In the absence of mitigation, accidental killing or injury of otter, mindful that the Conservation Objective of the SAC for this QI is to maintain the favourable conservation status of the species, including with

reference to its distribution, is likely to result in a **significant, short- to medium-term, reversible adverse effect** on otter and therefore the River Finn SAC; which is of International value.

### Habitat loss, fragmentation, and alteration

The Proposed Development crosses several watercourses within the catchment of the Lough Swilly SAC which are likely used by otter for foraging, commuting, and potentially refuge. Watercourses and their banks are used by otter to commute throughout the landscape between resting sites and foraging sites. Watercourse crossings have the potential to restrict the movement of otters through the landscape, resulting in habitat fragmentation and the loss of previously accessible foraging and resting sites. This can affect the ability of otter to thrive and may jeopardise survival and reproductive success.

However, due to the design of the Proposed Development – particularly the crossing of Lough Swilly, there will be no significant direct or indirect loss of any terrestrial, aquatic, or estuarine habitat suitable for use by otter within the SAC. Although there are occasions where construction works will occur within 10m of the watercourse channels the small area where this occurs is so small in the context of terrestrial habitat that it is deemed insignificant. The extent of terrestrial, aquatic, and estuarine habitat will be unaffected by the Proposed Development during construction. Due to the design of the bridge crossing over the SAC, there will be free and unhindered passage of otter beneath these structures, including at times of flood. The Proposed Development will not result in any new barriers to connectivity for otter within the Lough Swilly SAC. The Swilly Estuary and its tributaries will continue to provide a functional corridor for the movement of otter even during construction.

With respect to the tributaries which lie outside the SAC but provide an ex-situ function to supporting the otter population of the SAC, the proposed crossings and/or culverting of these tributaries as part of the Proposed Development could result in localised habitat loss and alterations as well as a fragmentation of habitat due to the barrier effect that such crossings could cause to the movement of otter. Some of these effects are addressed already through the design of the Proposed Development (e.g. the clear span bridge over the Leslie Hill Stream). The localised habitat loss and alterations are **not likely to result in a significant effect** on otter. However, in the absence of mitigations with respect to the design of the proposed crossings and culverting not already addressed by the design of the Proposed Development at other culverts and crossings, these would result in a **significant, permanent but reversible, adverse effect** on otter and therefore the Lough Swilly SAC, which is of International value; due to the ex-situ function of the tributaries in supporting otter populations within the catchment of the Lough Swilly SAC.

### Loss or disturbance of holts and couching sites

If holts or couching sites were present within or in close proximity to the Proposed Development, construction works could potentially result in their destruction or result in the displacement of otters from breeding or resting at these sites. However, based on the most up-to-date baseline information, there were no confirmed holts or couching or resting sites recorded during field surveys of Lough Swilly or its tributaries relevant to the Proposed Development. Albeit evidence of otter activity was recorded. As indicated from the multiple years of surveys, and as would be expected from a mobile species with expansive territories within a dynamic environment, holt and couching site locations will change. Therefore, a precautionary approach has been adopted with respect to the assessment and the mitigations proposed to address any likely significant effects identified.

The construction is capable of direct impacts from the loss of holts or couches and indirect impacts through disturbance effects on holts or couches both within and adjacent to the CPO boundary resulting in the potential displacement of otters from using such locations as holts or couches. With respect to disturbance, typically the effect of the disturbance impacts within the CPO boundary (e.g. construction activity and associated noise and vibration) dissipates the further away from the source of disturbance the holt or couch is located. For the purpose of the assessment, no significant effects from disturbance are likely to arise beyond 150 m from the source of the impact within the CPO boundary. Given that there are no current holts or couching sites within the CPO boundary or within 150 m of that boundary of the Proposed Development, as relevant to Lough Swilly or its tributaries, **no likely significant effects** relating to the loss or disturbance of holts or couching sites will occur and therefore there are **no likely significant effects** on Lough Swilly SAC from this source of impact.

Given that otter are a mobile species inhabiting a dynamic ecosystem, holting and couching locations will change over time. To reflect this dynamism, and applying a precautionary approach, a pre-construction survey for otter will be carried out within the ZoI of the Proposed Development in order to identify any material changes with respect to otter holts or couches within the CPO boundary or within 150 m of that boundary. This will be included as mitigation as a reasonable, precautionary measure, despite the current baseline not identifying any likely significant effects on the Lough Swilly SAC as it relates to the loss or disturbance of otter holts or couch sites.

**Surface water pollution**

The primary concern during construction works within the catchment of Lough Swilly SAC, including the new bridge crossing of the SAC included in Section 2 of the Proposed Development, and the other construction works within the catchment, would be risk of excessive sediment loss from construction areas. If that occurred, increased turbidity may give rise to behavioural, physiological, or physical changes in migratory freshwater fish (i.e. salmon, sea trout, river/sea lampreys, and eel), the most common change being behavioural in terms of either avoiding or being attracted to turbidity plumes. As prey species of otter, this would indirectly impact otter. These impacts and effects on aquatic species, including the prey species of otter, are assessed in Chapter 9B: Biodiversity – Aquatic.

The extent of the effect of surface water pollution is the aquatic habitats within and downstream of the CPO boundaries of Section 2 and Section 3 (the latter as it relates to the catchment of Lough Swilly SAC) and restricted to the catchment of Lough Swilly SAC. The magnitude is the reduced foraging resources of otters which results in a knock-on effect on the size and distribution of the otter population within the catchment of Lough Swilly SAC, including within the SAC itself. The effect is likely to be short-term and reversible. Based on the Chapter 9B: Biodiversity – Aquatic assessment, which concluded that significant effects as a result of surface water pollution are likely, in the absence of mitigation, surface water pollution is likely to result in a **significant, short-term, reversible, adverse effect** at the international geographic scale on Lough Swilly SAC as a result of the effect of surface water pollution on otters.

**Disturbance from noise, vibration, lighting, and human presence**

The Proposed Development has the potential to cause disturbance to commuting and foraging otter using Lough Swilly SAC and its tributaries. With respect to disturbance, typically the effect of the disturbance impacts occurs within the CPO boundary, and the effect is considered to dissipate moving away from the source of impact. For the purpose of the assessment, no likely significant effects from disturbance to otter are likely to arise beyond 150 m from the source of the impact within the CPO boundary. The key sources of disturbance as a result of the proposed Lough Swilly crossing construction in Section 2 (which will include excavations, platform formation, cofferdam installation and operation, piling and bridge installation, machinery, and artificial lighting) may affect movement along Lough Swilly at that location. In addition, there are likely to be disturbance activities from construction within the CPO boundary where it intersects with tributaries of Lough Swilly SAC, which are not part of the SAC but provide an ex-situ function for otters, given the expansive range of their territories.

Given the bridge design of Lough Swilly crossing in Section 2, functional connectivity within Lough Swilly will be retained during the construction phase. The effects of disturbance impacts during construction, mindful of the crepuscular habitats of otters, are further minimised since the majority of the construction phase will be completed during daylight hours, other than some intermittent and limited night-time construction works. Despite functional connectivity being maintained and the disturbance effects minimised, it is anticipated that some temporary displacement of otter activity (commuting and foraging) will occur during the construction works (which will occur overall for a period of 36 months) within and adjacent to the CPO boundary where it intersects with Lough Swilly SAC and its tributaries outside the SAC; the extent of the effect dissipating away from the source of impact. Where intermittent over-night working is necessary, these sources of impact include any artificial lighting used to illuminate construction areas during the night-time working period.

The magnitude is the displacement of commuting/foraging otter and the reduced connectivity of their territories and activities within those territories essential for their survival (e.g. foraging and refuge). The effect will be short-term, for the duration of the construction phase, and reversible. Given the potential for disturbance to displace foraging and commuting QI otter from important corridors, in the absence of

mitigation, disturbance of otter can potentially result in a **significant, short-term, reversible, adverse effect** at the international geographic scale on Lough Swilly SAC.

#### 9A.5.2.5.5.2 Operational phase

During the operational phase, the sources of impact and resultant effects on this QI otter are predicted to relate to accidental killing or injury and effects from surface water pollution. Each is assessed below.

**Accidental killing or injury**

Fatality and injury to otters from collision with road traffic is a known and well-documented issue. This has been accounted for in the design of the Proposed Development to provide bridge designs over Lough Swilly alongside the mitigations for other crossings and culverts within the catchment of the lough (as identified above), which will allow the continued passage by the species even at times of flood. The latter is critical since it minimises the risk of otters being pressured to find alternative upstream/downstream commuting routes which may result in interactions with road traffic. The inclusion of these built-in and additional design mitigation measures are insufficient alone to reduce to insignificant levels the risk of accidental killing or injury during the operational phase since otters can still access the carriageway either side of these structures. Therefore, in the absence of additional, standard, mitigation measures (consistent with published TII guidance) accidental killing or injury of otter during the operational phase of the Proposed Development can potentially result in a **significant, long-term, reversible, adverse effect** at the international geographic scale on the Lough Swilly SAC.

**Surface water pollution**

The operation of the Proposed Development could result in direct and indirect adverse changes in water quality from the discharge of road surface run-off into watercourses; including from accidental pollution events. Such adverse changes could result in changes to the habitat quality of the watercourses, including with respect to otter prey species, downstream of the polluting event(s) which could indirectly result in adverse effects on otter. However, the surface water drainage design of the Proposed Development includes measures to minimise and avoid such adverse changes, including attenuation ponds and interceptors, all designed and to be maintained to TII Standards. It is assessed that the combination of: (1) relatively low AADT, (2) attenuation of runoff via ponds/wetlands, and (3) consequent treatment of road surface drainage, would lead to an imperceptible impact on receiving water quality linked to road run-off. As a result, no significant operational impacts on aquatic receptors, including with respect to otter prey species, have been identified with respect to changes in surface water quality, accidental spillages, or air pollution (see Chapter 9B: Biodiversity – Aquatic). As a result, no significant operational phase effects on aquatic habitats, including with respect to otter prey species, are anticipated and the long-term effect is potentially slightly positive. Therefore, with respect to surface water pollution as it relates to otter and, even in the absence of mitigation, **no significant effects** (other than a potentially slight positive effect) on Lough Swilly SAC are predicted to occur.

### 9A.5.2.5.6 Harbour porpoise [1351]

A desk-based study utilising records from NBDC (2025) indicated that harbour porpoise has been sighted in the last 10 years in marine and coastal habitats within Lough Swilly. Live sightings were recorded between 2016 and 2023 within the SAC. The closest live sighting was approximately 24 km north-east of the Proposed Development. It has been shown that although harbour porpoise is an inshore species they, have a preference for deeper waters ranging between 10 to 35 m in depth (Bailey and Thompson, 2009).

The construction of the Proposed Development could result in direct and indirect adverse changes in water quality within the Lough Swilly SAC at the point of construction of the new bridge crossings, downstream of these crossings (dissipating to negligible levels beyond the head of the lough), and from construction works within the catchment of the Lough Swilly SAC which ultimately leads to the lough via its tributaries. Such adverse changes could result in changes to the habitat and quality of the lough, including with respect to harbour porpoise prey species such as salmonids and marine species, downstream of the polluting event(s) on at least a temporary basis. Mindful of the documented status of harbour porpoise within the European Site network and nationally, it is not considered that such a change could be significant enough to result in a significant decline in harbour porpoise.

Given this spatial context, it is assessed that the Proposed Development will have no adverse effects on the SAC with respect to this QI since the Proposed Development is sufficiently distant from the recorded locations of this QI within the SAC. Although there is a connection pathway of downstream effects to the areas where this QI is recorded within the SAC, the distance of the pathway and marine influence on the area where the harbour porpoises are recorded would mean that the dilution effect on any potential contaminants would result in negligible levels.

The Proposed Development will not result in any direct loss of habitat that supports this QI or deterioration of its distribution or quality during the construction phase or the operational phase.

#### 9A.5.2.6 Ornithological Designations of Lough Swilly and Lough Foyle

The landscape in which the Proposed Development is located supports internationally important ornithological interests, particularly with respect to the overwintering bird populations which that landscape supports. In terms of designations, the main focus of these designations are Lough Swilly and Lough Foyle, both of which are covered by SPA designations, reflecting their international ornithological value. Lough Foyle's international value is further reflected by its Ramsar designation.

Coinciding broadly with the boundaries of these international designations are a number of other overlapping designations of lesser value in their own right; their boundaries lying broadly within or contiguous with the boundaries of the international designations; with several of the designations of lesser value effectively "nested" within the international designation boundaries of either Lough Swilly SPA or Lough Foyle SPAs.

The Lough Swilly including Big Isle, Blanket Nook & Inch Lake pNHA (hereafter referred to as "Lough Swilly pNHA"), Blanket Nook Wildlife Sanctuary, and Inch Levels Wildfowl Reserve are all broadly "nested" within the Lough Swilly SPA. Meanwhile, Lough Foyle ASSI and Roe Estuary Nature Reserve are broadly "nested" within the Lough Foyle SPA. The only exception is Port Lough pNHA, which sits approximately mid-way between Lough Swilly and Lough Foyle.

Given the spatial dominance of the international designations and the interconnectivity that is likely to occur between all the ornithological designations, the ecological function and value of the lesser designations are inherently linked to maintaining the conservation status and interests of the SPA designations and Ramsar designation. The following assessment should ideally be read in conjunction with the NIS of the Proposed Development.

The Proposed Development does not overlap with any of the international designations; namely Lough Swilly SPA, Lough Foyle SPAs or Lough Foyle Ramsar Site. **Therefore, there are no direct impacts and effects on any of these designations; no direct significant effects on these international designations will arise.**

The only potential impacts and effects identified with respect to these international designations are indirect and relate to:

- Impacts during construction or operation of the Proposed Development on land outside of these designation boundaries which could provide an ex-situ function to the designated interests of the SPAs and Ramsar Sites and therefore result in indirect effects on their designated interests; or
- Downstream effects during construction or operation of the Proposed Development resulting from impacts arising from within the CPO boundary during the construction and/or operation of the Proposed Development.

Of the lesser designations, the only potential direct impact and effect of the Proposed Development relates to the Lough Swilly pNHA, whose designated boundary (as per the Lough Swilly SAC) overlaps with the CPO boundary of the Proposed Development at Section 2. Other than with respect potentially to Lough Swilly pNHA, **there are no direct impacts and effects on the following designations and, therefore, no direct significant effects on these designations will arise:**

- Lough Foyle ASSI
- Roe Estuary Nature Reserve

- Blanket Nook Wildlife Sanctuary
- Inch Levels Wildfowl Reserve
- Port Lough pNHA

Other than Port Lough pNHA, the only other potential impacts and effects relate to ex-situ and downstream effects relating from impacts arising from within the CPO boundary of the Proposed Development during the construction and operational phases.

With respect to Port Lough pNHA, given there is no hydrological connection between the Proposed Development and Port Lough pNHA, downstream effects will not arise, and the only potential effect relates to the ex-situ effect as per the other designations.

#### 9A.5.2.6.1 Direct Impacts and Effects – Construction and Operational Phases

As identified above, the Proposed Development will only potentially result in direct effects on the Lough Swilly pNHA that, where it intersects with the Proposed Development, is broadly contiguous with the designated boundary of the Lough Swilly SAC. However direct effects are avoided due to the design of the Proposed Development, particularly with respect to the Swilly crossing in Section 2.

There is no site synopsis published for Lough Swilly pNHA; instead, the pNHA site synopses archive[18] refers to the SPA and SAC, which largely spatially overlap. Therefore, in the absence of additional ecological features described in a dedicated pNHA site synopsis, it is inferred that Lough Swilly pNHA is designated for the same ecological features for which the SAC and SPA are designated, in addition to any notable features described within their respective site synopses. The impacts and effects on the pNHA are therefore considered to be identical to the impacts and effects on the SAC, assessed in Section 9A.5.2.5, and SPA.

#### 9A.5.2.6.2 Ex-situ Impacts and Effects – Construction and Operational Phases

Based on the ornithological surveys completed to inform the Proposed Development, only parts of Section 2 and Section 3 of the Proposed Development included land either within or adjacent to the CPO boundary which supported any of the species for which these international designations were designated. The land within and adjacent to the CPO boundary of Section 1 did not support any of the designated interests of these designations. Therefore, potential ex-situ impacts and effects are only potentially relevant to those parts of Sections 2 and 3 which have been shown to support designated interests. This is further expanded upon below.

##### 9A.5.2.6.2.1 Identification of Relevant Bird Species

For sites which have explicit site synopses or species lists, the species for which the sites are designated are listed in Table 9A-4. Explicit lists are not available for Roe Estuary Nature Reserve, Blanket Nook Wildlife Sanctuary, and Inch Levels Wildfowl Reserve. However, these sites spatially overlap with sites which do have explicit site synopses. Therefore, the species associated with these sites are considered likely to be included within the lists of species associated with other sites of the Lough Swilly/Lough Foyle complex (i.e. the species listed in Table 9A-4). There is no site synopsis for Lough Swilly pNHA; instead, the pNHA site synopses archive[19] refers to the SPA and SAC. Therefore, the bird species for which Lough Swilly pNHA is designated are inferred from the site synopsis of Lough Swilly SPA.

Based on the ornithology surveys completed for the Proposed Development (as documented in Appendix C9A.01) the potentially relevant SCI bird species of Lough Swilly SPA for this EIAR as set out below. The rationale as to which SCI bird species are potentially relevant is set out in Appendix C9A.01. Based on the surveys completed, only part of the footprint of Section 2 (and its environs) provides any potential ex-situ function for the SCI species of Lough Swilly SPA. No land within and adjacent to Section 1 along with part of the footprint of Section 3 of the Proposed Development provides any potential ex-situ function for any of the Lough Swilly SPA SCI species.

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

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

In relation to Section 2 and from the full suite of surveys 2017 – 2026 of the Proposed Development boundary, there are a number of SCI species regularly utilising the lands associated with the proposed bridge crossing and lands within 500m of the proposed road alignment in the area to the north of the Letterkenny airfield and on the Swilly Burn flood plain. However, they occur in low numbers compared to the overall SPA populations and the national/internationally important numbers criteria.

The findings show that the lands downstream of the crossing area that are within the SPA boundary, the area to the north of the Letterkenny airfield, and the Big Isle area and significantly away from the potential disturbance effects of the construction and operation of the Proposed Development, are preferable for the majority of SCI species and the habitats present are capable of absorbing the SCI bird species, given the numbers that may be displaced as a result of the Proposed Development. Based on the surveys completed over multiple years, the five SCI species which were identified as being potentially relevant to the assessment of the Proposed Development with respect to the Lough Swilly SPA were curlew (*Numenius a*rquata), teal (*Anas crecca*), whooper swan (*Cygnus cygnus*), greylag goose (*Anser anser*) and redshank (*Tringa totanus*).

Based on the baseline surveys completed to inform the Proposed Development, the only potentially relevant species for which ex-situ impacts and effects could occur during either the construction or operation of the Proposed Development are highlighted in Table 9A-4 below, and expanded upon in the subsequent text. It is important to note the overlap in designated interests of the international designations within which the lesser designations are broadly “nested”.

**Table 9A-4: Designated Sites and their Associated Bird Species.**

| Species | Lough Swilly SPA | Lough Swilly pNHA[20] | Port Lough pNHA | Lough Foyle SPA (Irl) | Lough Foyle SPA (UK) | Lough Foyle ASSI | Lough Foyle Ramsar site | Potentially Relevant Species with respect to Ex-situ Effects |
|---|---|---|---|---|---|---|---|---|
| Bar-tailed godwit (*Limosa lapponica*) | | ✓ | | ✓ | ✓ | | ✓ | |
| Bewick's swan (*Cygnus columbianus*) | | | | ✓ | ✓ | | ✓ | |
| Black-headed gull (*Chroicocephalus ridibundus*) | ✓ | ✓ | | ✓ | | | | |
| Common gull (*Larus canus*) | ✓ | ✓ | | ✓ | | | ✓ | |
| Common tern (*Sterna hirundo*) | ✓ | ✓ | | | | | | |
| Coot (*Fulica atra*) | ✓ | ✓ | | | | | | |
| Cormorant (*Phalacrocorax carbo*) | | | | | ✓ | ✓ | ✓ | |
| Curlew (*Numenius arquata*) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Dunlin (*Calidris alpina*) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| Eider (*Somateria mollissima*) | | | | ✓ | ✓ | ✓ | ✓ | |
| Golden plover (*Pluvialis apricaria*) | | ✓ | | ✓ | ✓ | | ✓ | |
| Goldeneye (*Bucephala clangula*) | ✓ | ✓ | | | | | | |
| Great crested grebe (*Podiceps cristatus*) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |

[20] The species of the pNHA are inferred from the Lough Swilly SPA Site Synopsis.

| Species | Lough Swilly SPA | Lough Swilly pNHA[20] | Port Lough pNHA | Lough Foyle SPA (Irl) | Lough Foyle SPA (UK) | Lough Foyle ASSI | Lough Foyle Ramsar site | Potentially Relevant Species with respect to Ex-situ Effects |
|---|---|---|---|---|---|---|---|---|
| Great northern diver (*Gavia immer*) | | ✓ | | | | | | |
| Greenland white-fronted goose (*Anser albifrons flavirostris*) | ✓ | ✓ | ✓ | | | | | |
| Greenshank (*Tringa nebularia*) | ✓ | ✓ | | | | | ✓ | |
| Grey heron (*Ardea cinerea*) | ✓ | ✓ | | | | | | |
| Grey plover (*Pluvialis squatarola*) | | ✓ | | | | | ✓ | |
| Greylag goose (*Anser anser*) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Herring gull (*Larus argentatus*) | | | | ✓ | | | | |
| Knot (*Calidris canutus*) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| Lapwing (*Vanellus vanellus*) | | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| Light-bellied brent goose (*Branta bernicla hrota*) | | ✓ | | ✓ | ✓ | | ✓ | |
| Mallard (*Anas platyrhynchos*) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| Mute swan (*Cygnus olor*) | | ✓ | | | | ✓ | ✓ | |
| Oystercatcher (*Haematopus ostralegus*) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| Pink-footed goose (*Anser brachyrhynchus*) | | ✓ | | | | | | |
| Pochard (*Aythya ferina*) | | ✓ | | | | | | |
| Red-breasted merganser (*Mergus serrator*) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| Redshank (*Tringa totanus*) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Red-throated diver (*Gavia stellata*) | | | | ✓ | | | ✓ | |
| Ringed plover (*Charadrius hiaticula*) | | ✓ | | | | | ✓ | |
| Ruff (*Philomachus pugnax*) | | | | | | | ✓ | |
| Sandwich tern (*Sterna sandvicensis*) | ✓ | ✓ | | | | | | |
| Scaup (*Aythya marila*) | ✓ | ✓ | | | | | | |
| Shelduck (*Tadorna tadorna*) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| Shoveler (*Anas clypeata*) | ✓ | ✓ | | | | | | |
| Slavonian grebe (*Podiceps auritus*) | | ✓ | | | | | ✓ | |
| Teal (*Anas crecca*) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Tufted duck (*Aythya fuligula*) | | ✓ | | | | | | |
| Turnstone (*Arenaria interpres*) | | ✓ | | | | | | |
| Whimbrel (*Numenius phaeopus*) | | | | | | | ✓ | |

| Species | Lough Swilly SPA | Lough Swilly pNHA[20] | Port Lough pNHA | Lough Foyle SPA (Irl) | Lough Foyle SPA (UK) | Lough Foyle ASSI | Lough Foyle Ramsar site | Potentially Relevant Species with respect to Ex-situ Effects |
|---|---|---|---|---|---|---|---|---|
| Whooper swan (*Cygnus cygnus*) | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Wigeon (*Anas penelope*) | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |

**Curlew**

Curlew are a wading bird typical of intertidal areas (mud and sand flats) which are typically reliant on such areas but are highly likely to utilise alternative habitats at certain times (*e.g.* high tides). In the case of curlew, damp grassland provides feeding opportunities during high tides. The species is documented as widespread within the SPA occupying approximately 86% of the SPA (89% of subsites). The SPA regularly supports 1% or more of the all-Ireland population of curlew with a baseline population of 1,720 and the most recent population from subsequent surveys at 1,839 (five-year average from 2005/06 – 2009/10) (NPWS, 2011d). The population within the SPA is considered to be intermediate (unfavourable) with a population trend of -17.6% (compared to an all-Ireland trend for the species of -25.7% and the documented international trend for the species noted as “decline” (NPWS, 2011d).

The disturbance distance, as set out within the NatureScot guidance[21], for curlew during the non-breeding season is stated as between 200-650m. A conservative estimate of 500m for curlew has been taken forward when assessing the likely disturbance distances for this project given the existing level of disturbance from the operational noises and construction level that are present within the area as recorded during the surveys undertaken and the level of habituation shown.

With respect to the Proposed Development, curlew have been recorded in levels above the 1% threshold of the Lough Swilly SPA in three distinct locations in relation to the Proposed Development, within the Milk Isle Swilly Bridge location, the area to the north of the Letterkenny airfield and to the north of the Isle Burn bridge location. The survey results from the 2025/2026 and 2022/2023 survey seasons are mapped in EIAR Drawings 9A.64 and 9A.67 but are shown below in Figure 9-1 and Figure 9-2 for ease of reference.

[21] Disturbance Distances in selected Scottish Bird Species – NatureScot Guidance | NatureScot

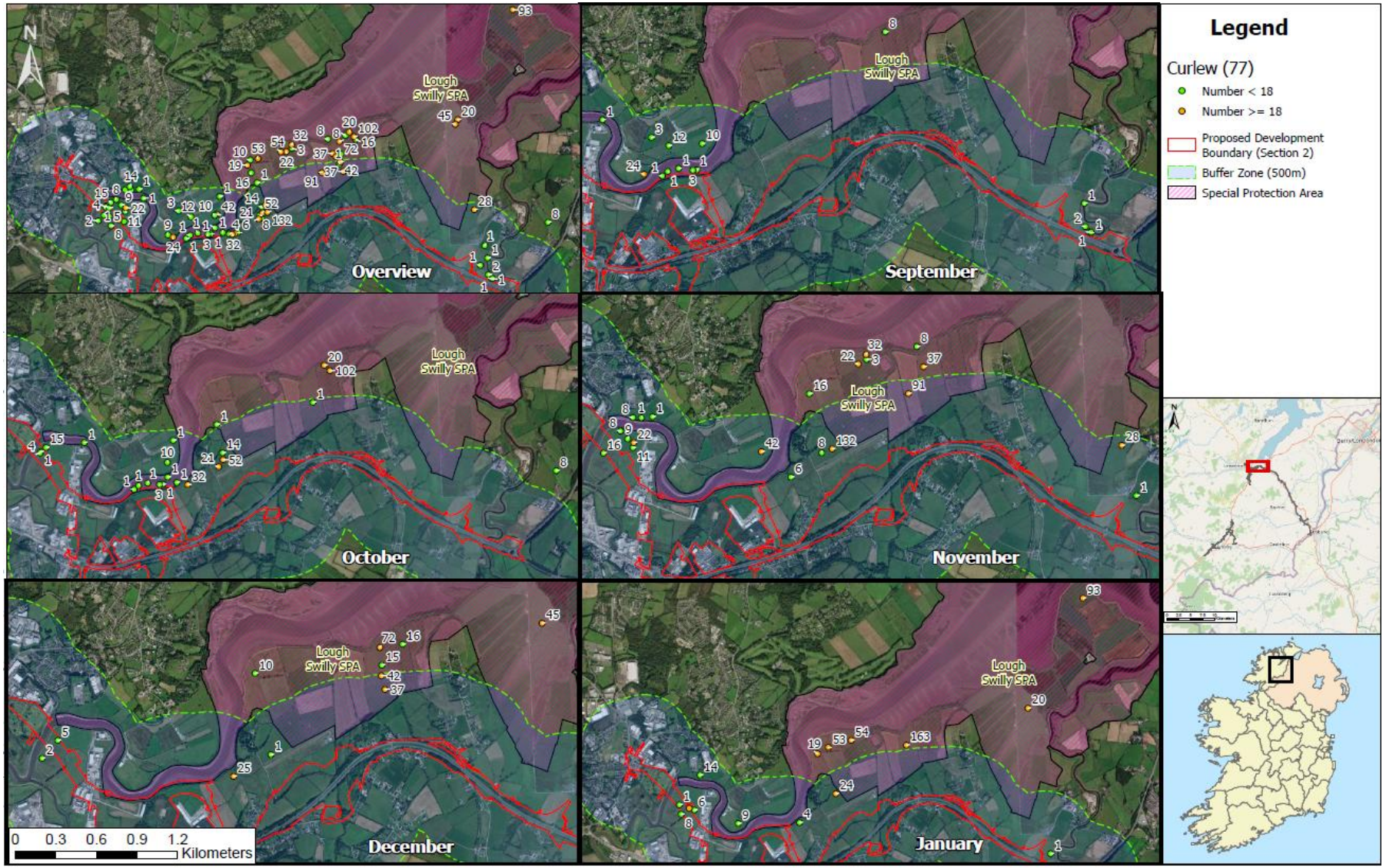


**Figure 9-1: 2025/2026 Winter Bird Survey Results – (Curlew)**

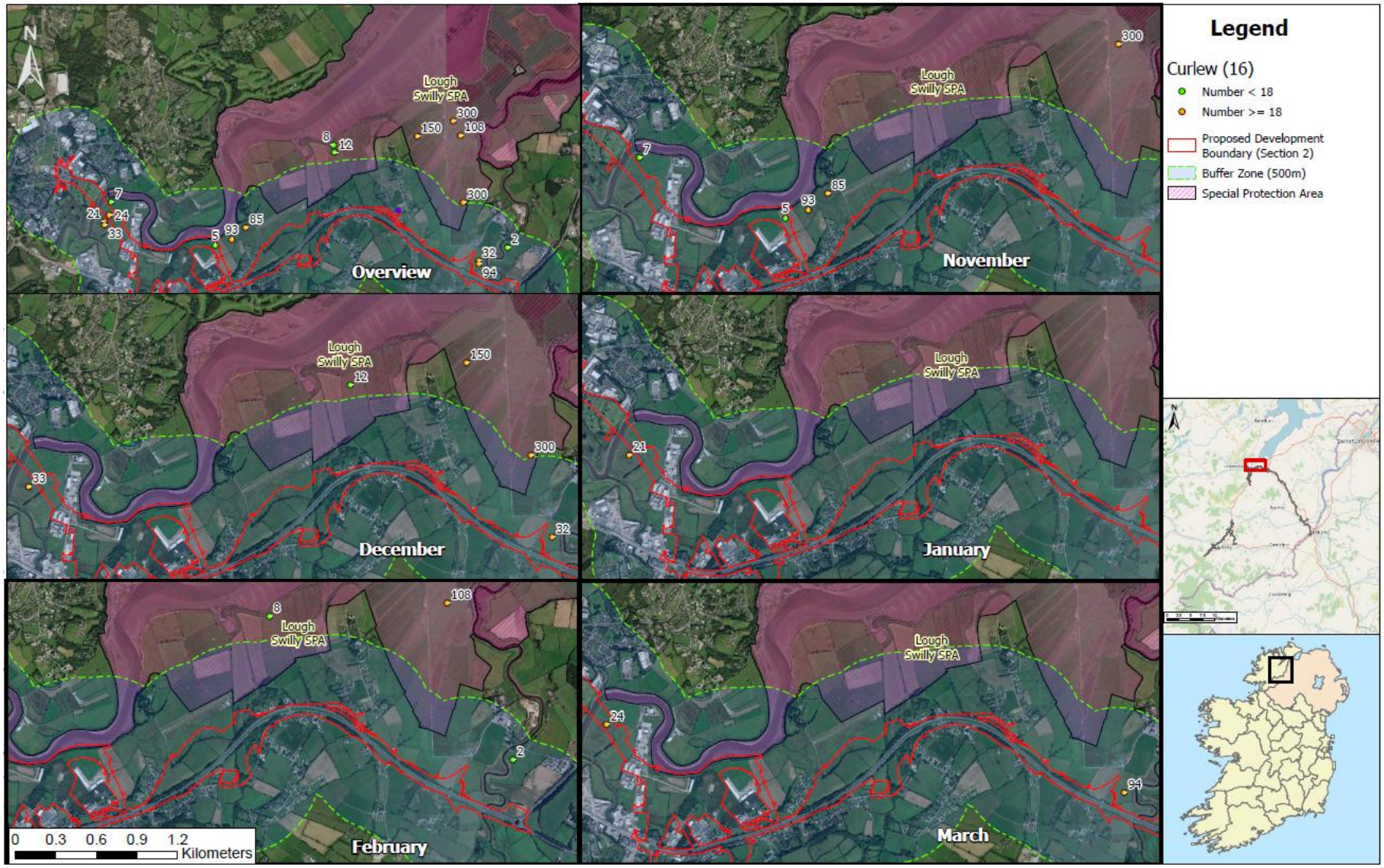


**Figure 9-2: 2022/2023 Winter Bird Survey Results – (Curlew)**

For the survey results shown in Figure 9-1 and Figure 9-2, it can be seen that curlew were recorded within the potential disturbance buffer, five times out of the 10 survey months as above the 1% threshold (orange dots) of the Lough Swilly SPA, within the Milk Isle area; Five out of the 10 survey months as above the 1% threshold of the Lough Swilly SPA in the area to the north of Letterkenny airfield; and three out of the 10 months as above the 1% threshold of the Lough Swilly SPA to the north of the Isle Burn bridge.

The largest curlew flock recorded within the disturbance buffer was 132 birds (7.7% of the baseline population) within the Letterkenny airfield area on one occasion.

Based on the surveys completed, the Proposed Development boundary and fields within 500m of construction works were considered to be of significance for curlew in the local Swilly Estuary context and within the context of the SPA, however there is sufficient areas within the locality within the areas to the north of the Letterkenny airfield and the Big Isle area within close proximity to the proposed works that are outside the disturbance zone, as well as areas in the wider SPA that are regularly used by curlew as shown in the SPA supporting Document (NPWS, 2011d).

**Teal**

Teal is a species of dabbling duck typical of shallow subtidal, lagoons, intertidal muds and sandflats and which are typically reliant on such areas. They are a largely migratory species, moving south of their breeding range during the winter. Individuals breeding in Ireland are supplemented during the winter by birds from a range extending from Iceland, through Scandinavia to north-west Siberia. The species is documented as very widespread within the SPA. The SPA regularly supports 1% or more of the all-Ireland population of teal with a baseline population of 1,581 and most recent population of 2066, with an increasing population trend documented for the SPA based figures from between 1994 and 2008. The population of teal is considered to be in favourable conservation condition (= population stable/increasing). This trend is consistent with the documented all-Ireland and international trend for the species (NPWS, 2011d).

No specific disturbance distances for teal can be found within the Nature Scot guidance, and a literature review has varying disturbances listed for teal and therefore a precautionary distance of 500m from Proposed Development will be taken.

With respect to the Proposed Development, teal have been recorded in levels above the 1% threshold of the Lough Swilly SPA in one main location within the main channel of the Swilly Estuary to the north of the proposed Swilly Bridge location. Teal were not recorded within this location during the 2022/2023 windscreen surveys but were recorded within this location during the 2025/2026 surveys and previously during the 2018-2020 surveys. The survey results from the 2025/2026 survey seasons are mapped in EIAR Drawing 9A.68 but are shown below in Figure 9-3 for ease of reference.

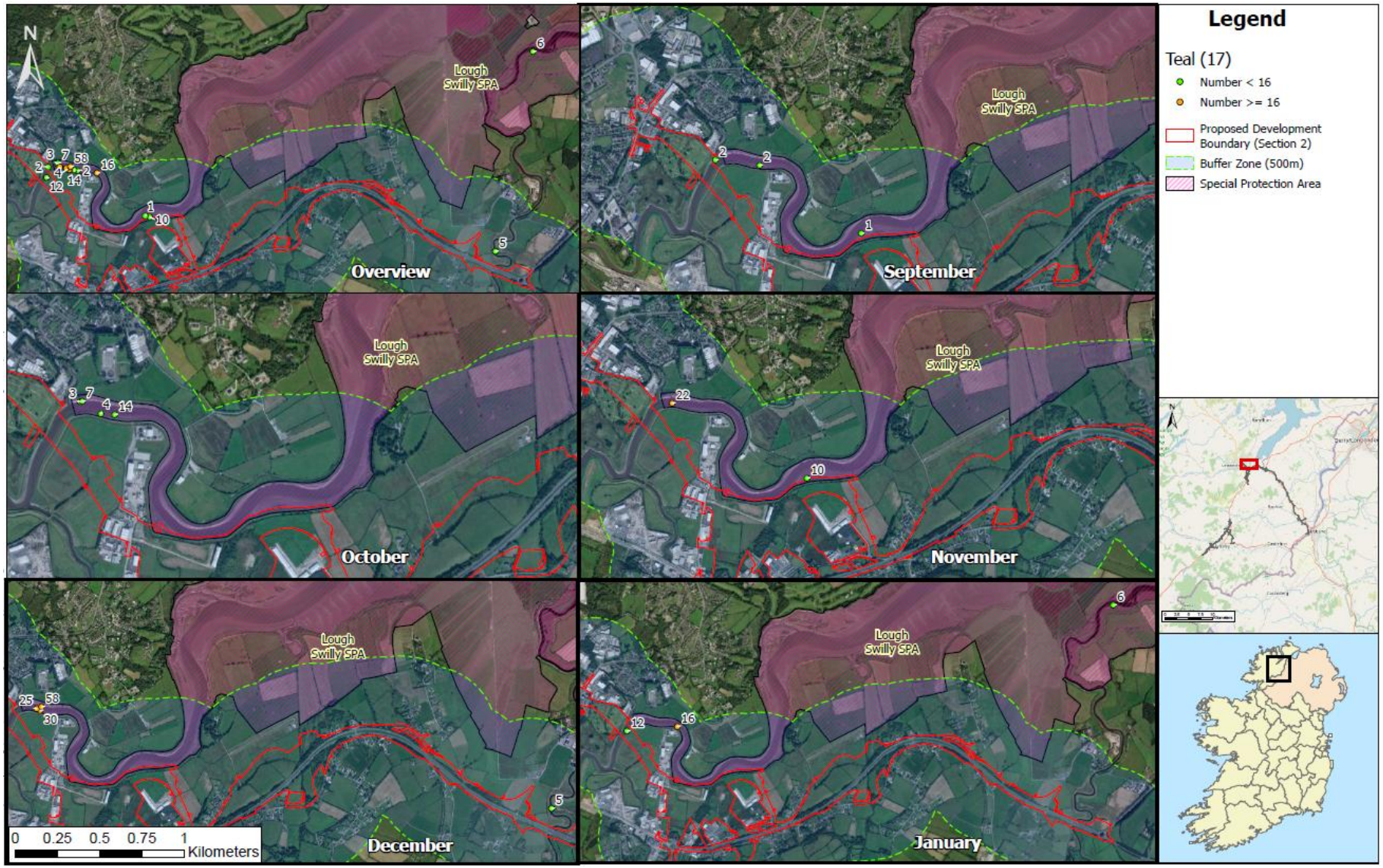


**Figure 9-3: 2025/2026 Winter Bird Survey Results – (Teal)**

The 2025/2026 survey data shows that teal utilise the main estuary channel on a regular basis and were recorded in numbers above the 1% threshold for the Lough Swilly SPA on three out of the five survey months. The peak flock count of 58 birds (3.7% of the baseline population) was recorded during the December survey. Given the nature of teal to be reliant on intertidal areas, sandflats and lagoons, it is likely that they are utilising areas within the survey area but within the estuary itself that could not be observed during the surveys, however these areas are likely to be outside the disturbance zone.

High tide counts targeted at the bridge crossing area during 2018 – 2020 did not find teal as one of the species present within the survey area with relative consistency being recorded five times out of the 12 surveys undertaken However, they were recorded twice above the 1% threshold on two of those occasions, with the maximum count of 35 (2.2% of the baseline population).

During the dawn and dusk surveys carried out during 2019 – 2020 wintering season, teal were found to be present within the survey areas on a regular basis being recorded eight times out of the 12 surveys, however on only one occasion where these species above the 1% threshold of the SPA with a peak count of 18 (1.1% of the baseline population.

Therefore, out of the 24 surveys undertaken from 2018-2020 teal were only recorded above the 1% threshold for the Lough Swilly Spa on three of those occasions.

From the full suite of surveys from 2018 – 2026 show that teal regularly utilise the estuary habitat near the proposed bridge crossing, however they usually occur in numbers that are not regarded as significant compared to the overall SPA population

**Greylag goose**

Greylag goose is a migratory species of large goose with the wintering population in Ireland originating from the Icelandic breeding population. A feral population of greylag goose is present in Ireland year-round. Greylag geese used to concentrate more on estuaries, where they fed on the roots of rushes and sedges. Since the intensification of agriculture in Ireland, greylag geese mostly feed on cereal stubble and grassland, while they have been observed to feed on potatoes. Greylag geese currently feed mostly on cereal stubble and grassland in their wintering areas. The SPA regularly supports 1% or more of the biogeographical population of greylag goose. The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 1,218 individuals with the most recent population estimated at 2,183 making the population of international importance.

The disturbance distance, as set out within the NatureScot guidance, for greylay goose during the non-breeding season is stated as between 200-600m. A conservative estimate of 500m for greylag goose has been taken forward when assessing the likely disturbance distances for this project given the existing level of disturbance from the operational noises and construction level that are present within the area as recorded during the surveys undertaken and the level of habituation shown.

With respect to the Proposed Development, greylag goose have been recorded in levels above the 1% threshold of the Lough Swilly SPA in two distinct locations in relation to the Proposed Development, within the Milk Isle  Swilly Bridge location and the area to the north of the Letterkenny airfield. The survey results from the 2022/2023 and 2025/2026 survey seasons are mapped in EIAR Drawings 9A.65 and 9A.69 but are shown below in Figure 9-4 and Figure 9-5 for ease of reference.

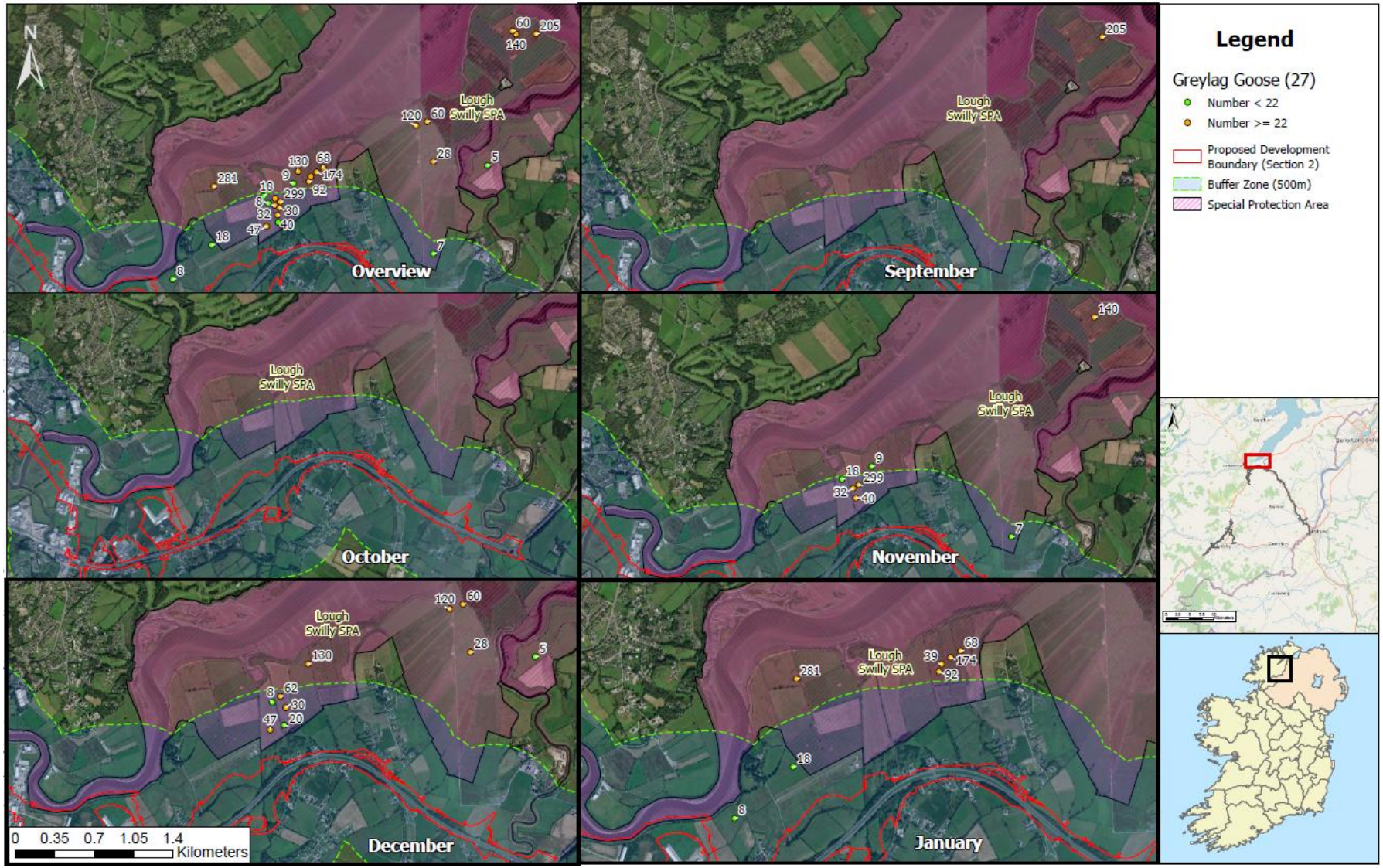


**Figure 9-4: 2025/2026 Winter Bird Survey Results – (Greylag Goose)**


**Figure 9-5: 2022/2023 Winter Bird Survey Results – (Greylag Goose)**

The 2023 to 2026 surveys show that the greylag goose were recorded within the potential disturbance zone above the 1% threshold of the Lough Swilly SPA on five out of the 10 survey months. They were recorded above the 1% threshold in the area to the north / northeast of the Letterkenny airfield on four out of the 10 survey months and in the area of Milk Isle on two out of the 10 survey months. The peak count of 350 individuals (13.7% of the most recent population) was located to the north of the Letterkenny airfield. The peak count within the Milk Isle area was 68 individuals (3.1% of the most recent population).

The 2017 to 2021 surveys mainly identified the greylag population utilising the area in proximity to the proposed works in section 2 within the Big Isle area and an area north of the Airfield, however the area to the north of the airfield only held 35 individuals approximately during each survey. This area was greater than 500m from the proposed works.

During the 2022/23 vantage point surveys the greylag goose were recorded on nine out of the 10 surveys in large numbers with a peak count of 2115 individuals in the Big Isle area from the Manorcunningham VP. Greylag goose were recorded on 5 of the 10 surveys, in lower numbers than the Big Isle area, with a peak count of only 230 individuals from the Airfield VP.

The surveys have shown that greylag goose have been recorded within the potential disturbance zone in relatively significant numbers. They have been recorded at the Milk Isle bridge crossing location in significant numbers, but they have only been recorded in this location during one survey year out of all the years covered and only on two occasions above the 1 % threshold. The more significant population has been recorded in the area to the north of the airfield location, however there is sufficient areas within the locality within the areas to the north of the Letterkenny airfield and the Big Isle area within close proximity to the proposed works that are outside the disturbance zone, as well as areas in the wider SPA that are regularly used by greylag goose as shown in the SPA supporting Document (NPWS, 2011d).

**Whooper swan**

Whooper swan are a migratory species and has a Palearctic breeding distribution which extends from Iceland to the Bering Sea. Most of the Icelandic breeding population overwinter in Britain and Ireland. It is documented that historically the species was known to winter in areas with freshwater wetland habitats or brackish lagoons and coastal bays. However, a change to feeding on terrestrial habitats has been observed since the mid-1990s with grassland and, increasingly, arable habitats used by foraging individuals. Whooper swans are considered to have a widespread winter distribution within the SPA and are typical within polderland – agricultural habitats within the SPA but are considered to be highly likely to utilise alternative habitats at certain times (*e.g.* high tide). The SPA regularly supports 1% or more of the biogeographical population of whooper swan with a baseline population of 1,673. With respect to whooper swan, Lough Swilly forms part of the Lough Swilly/Lough Foyle/River Foyle complex as the birds are documented to move frequently around the whole area. The area is particularly important as a staging area in late October/early November when it is documented that thousands of swans congregate at the site before making onward movements. The population is considered to be in favourable conservation condition (if population stable/increasing) which is consistent with the all-Ireland and international trend for the species (NPWS, 2011c). It is formally documented that whooper swan are recorded in a total of five subsites (distinct geographical areas divided up within the SPA) within the SPA, namely: Blanket Nook, Fahan Creek, Castle Shanaghan, Big Isle and, Inch Lough and Levels. During low tide surveys for the SPA, the swans were recorded with greatest frequency and highest numbers within the Inch Lough and Levels subsite and the importance of this subsite is documented. Smaller numbers are documented as foraging within the terrestrial habitats associated with the Swilly estuary and Big Isle subsites.

The disturbance distance, as set out within the NatureScot guidance, for whooper swan during the non-breeding season is stated as between 200-600m. A conservative estimate of 500m for curlew has been taken forward when assessing the likely disturbance distances for this project given the existing level of disturbance from the operational noise of the existing road and agricultural activities that are present within the area as recorded during the surveys undertaken and the level of habituation shown.

During the 2022/2023 surveys and 2025/2026 surveys within the Lough Swilly area of Section 2 whooper swan were only recorded on one occasion during all surveys with a count of two juveniles and therefore this area is not considered significant for whooper swan.

Whooper swan are 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 mainly occurring at sites at a greater distance than 1 km to the east of the Proposed Development (see Appendix 9A.01: Appendix H – Lifford Whooper Swan Report).

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 field immediately east of the proposed alignment at Tullytrap (shown as Site 1 in Figure 2 in Appendix 6: (Lifford Whooper Swan Report) was, when used for cropping potatoes, has been used for foraging by whooper swan after harvesting. The field was not in potato production in 2025/2026 and therefore it's use or otherwise by whooper swan varies from year to year depending on farming activities prevalent at the time. The field is shown in Appendix 9A.01: Appendix H – Lifford Whooper Swan Report at Figure 2 as Site 1.

During the surveys undertaken in the winter 2020-2021, swans were observed flying along the Swilly Burn in both an east-west and west-east orientation from Lough Foyle direction, 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. It should be noted that no sites have been identified further west of the proposed Swilly Burn crossing location for foraging whooper swan and therefore, they are unlikely to fly further west along this corridor.

A further site to the west of the existing N14 on the flood plain of the Swilly Burn (shown as Site 2 in Figure 2 in Appendix 9A.01: Appendix H – Lifford Whooper Swan Report was recorded as supporting significant numbers above the 1% threshold of the Lough Swilly SPA on three occasions with a peak count of 54 (3.2% of the Lough Swilly baseline population). This site is within the potential disturbance zone although the closest record for the swans is approximately 480m from the proposed road alignment and therefore is at the upper end of the potential disturbance buffer for this species.

During the 2025/2026 surveys whooper swan were only recorded on one occasion within this location (See EIAR Drawing 9A.72) with a peak count of 8 individuals so below the 1% threshold of the Lough Swilly SPA.

The surveys have shown that whooper swans have been recorded within the potential disturbance zone in relatively significant numbers, on a few occasions. It appears that the use of the areas in significant areas is opportunistic depending on the farming activities prevalent at the time. The surveys have shown that whooper swans do utilise areas further to the east along the Swilly Burn in greater numbers and frequency than recorded closer to the site.

**Redshank**

The redshank (*Tringa totanus*) is a medium-sized wader. It is commonly seen on estuaries, mudflats and wet grasslands where it forages, and it occurs as both a breeding species and a winter visitor.

The species is documented as very widespread within the SPA. The site regularly supports 1% or more of the all-Ireland population of redshank. The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 1,404 individuals. It is deemed to be favourable population which is described as stable/increasing.

The disturbance distance, as set out within the NatureScot guidance, for redshank during the non-breeding season is stated as between 200-300m. therefore a precautionary 300m was used in this instance although redshank are known to habituate to construction noise and other disturbances especially in more urban settings.

With respect to the Proposed Development, redshank have been recorded in levels above the 1% threshold of the Lough Swilly SPA within the potential disturbance zone for the species. Redshank has nearly always been recorded within the SPA and mainly in close proximity or within the estuarine habitats. The survey results from the 2025/2026 and 2022/2023 survey seasons are mapped in EIAR Drawings 9A.66 and 9A.70 but are shown below in Figure 9-6 and Figure 9-7 for ease of reference.

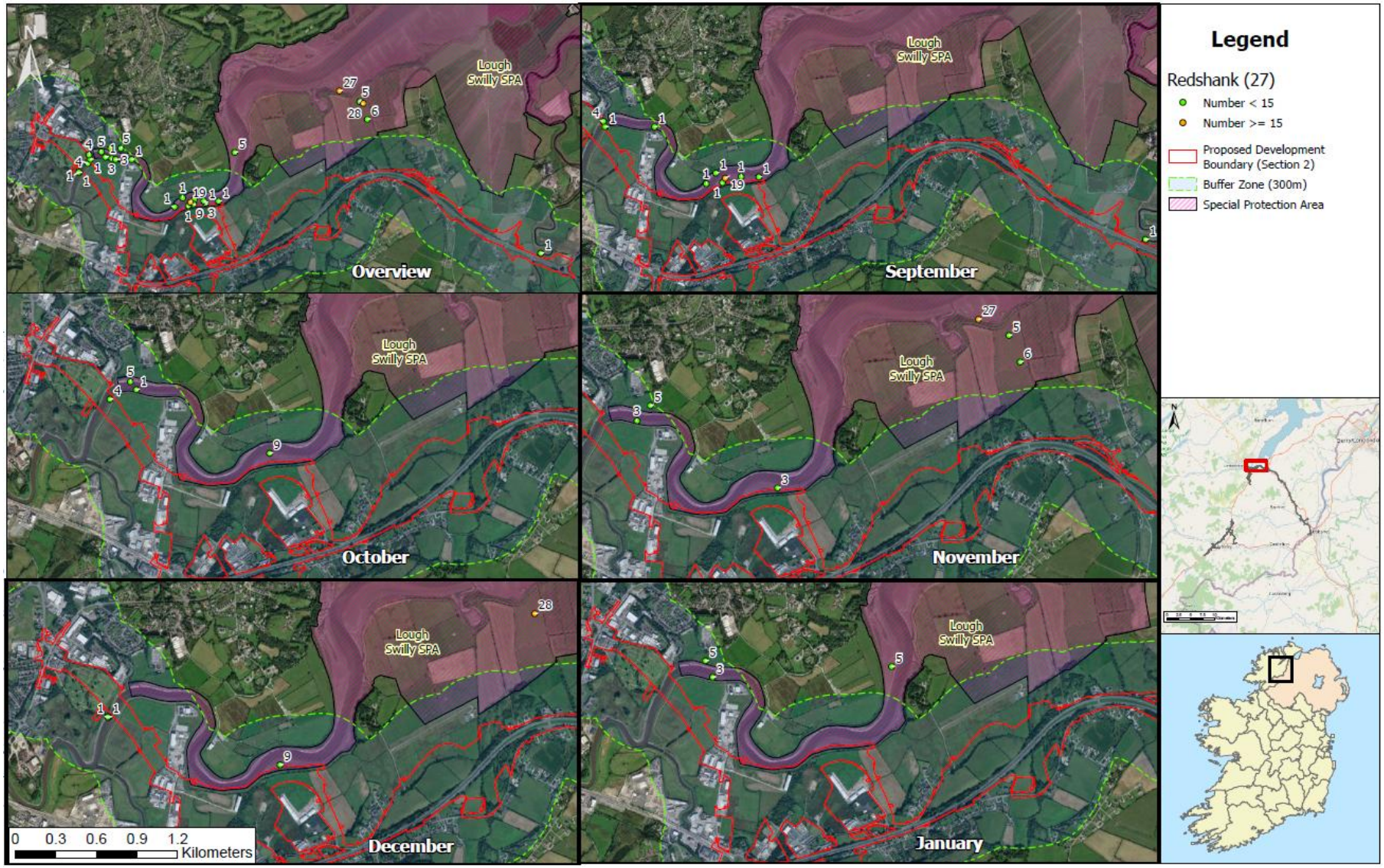


**Figure 9-6: 2025/2026 Winter Bird Survey Results – (Redshank)**

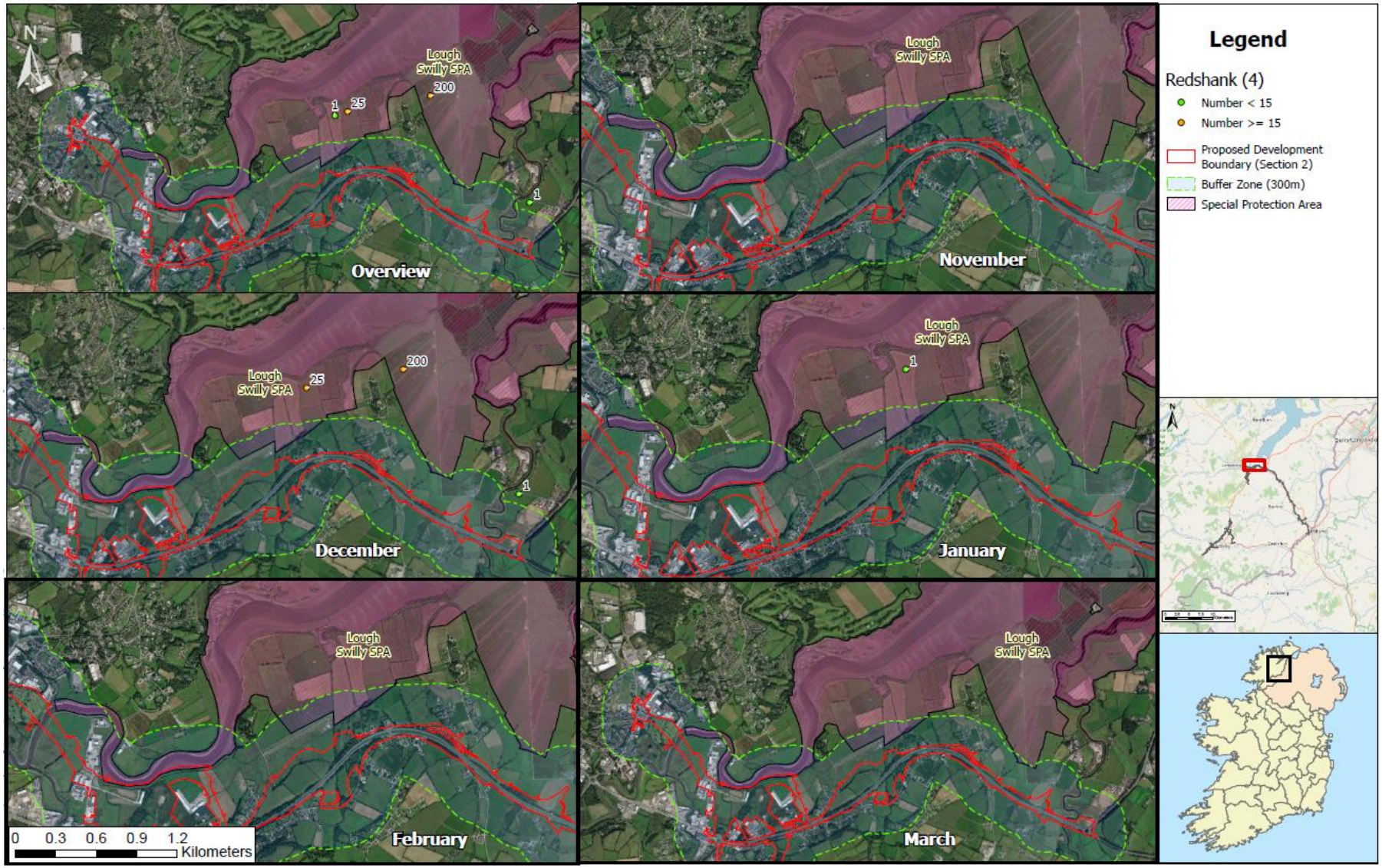


**Figure 9-7: 2022/2025 Winter Bird Survey Results – (Redshank)**

The figures above show that redshank although are relatively regularly recorded within the Lough Swilly SPA they have only once been recorded within the potential disturbance zone above the 1% threshold of the Lough Swilly SPA.

This is consistent with the surveys undertaken during 2018-2021, when redshank was also never recorded above the 1 % threshold.

Therefore, although the area is regularly used by redshank it can be concluded that the area in not a significant foraging area for redshank.

#### 9A.5.2.6.2.2 Assessment of Relevant Bird Species

During construction, increased noise and the presence of construction personnel and vehicles could have an indirect impact on bird species. The Proposed Development will include construction works within and adjacent to habitat suitable for foraging, commuting, and roosting wintering birds. Construction works have the potential to result in temporary disturbance, via noise, personnel, and traffic, which could affect the use of available habitat by wintering waterbirds for foraging and movement. Such disturbance events can result from the increased noise and human activity levels associated with heavy machinery and the construction works. Disturbance of birds feeding within these habitats during construction works could cause them to abandon their habitat. Disturbance to birds has two main effects:

- Decreasing time available for foraging.
- Increasing energy expenditure as a result of fleeing the source of the disturbance (Riddington et al., 1996).

Possible responses to disturbance include:

- Changing feeding site and/or diet, if alternatives are available.
- Increasing the amount of time spent foraging.
- Increasing intake or assimilation rate.
- Increasing the level of night-time feeding (if disturbance is lower at night).

If none of these options are available, waterbirds may incur an energy deficit and lose weight. Accordingly, disturbance can have a severe negative effect on waterbird species utilising the area of the Proposed Development.

Disturbance, in the general context, is defined in a 2009 Institute of Estuarine and Coastal Studies (IECS) report as discrete events that disrupt ecosystem, community, or population structures or in some way alter resource levels (i.e. food and space) (Cutts *et al.,* 2009). It may also influence the survival of individual birds and reduce the function of the site either for roosting or feeding. The report states that disturbance varies in its magnitude, frequency, predictability, spatial distribution, and duration. Species vary greatly in their susceptibility to disturbance, and this susceptibility is likely to vary with age, season, weather, and the degree of previous exposure. The links between visual and audible stimuli are evident throughout the report and it is clear that noise by itself is not necessarily a cause for disturbance if not accompanied by a perceived visual threat.

A number of construction works will create noise over 75 dB, including the movement of excavators, concrete pumping, road planing, rock crushing, and piling. A large impact piling rig is the activity that is likely to create the greatest noise. This rig is likely to be in operation close to Lough Swilly SPA during the construction of the proposed River Swilly crossing. Therefore, there is potential for impact to bird species from these works during the wintering season.

**Curlew**

The disturbance distance, as set out within the NatureScot guidance[22], for curlew during the non-breeding season is stated as between 200-650m. A conservative estimate of 500m for curlew has been taken forward when assessing the likely disturbance distances for this project given the existing level of disturbance from

[22] Disturbance Distances in selected Scottish Bird Species – NatureScot Guidance | NatureScot

the operational noises and construction level that are present within the area as recorded during the surveys undertaken and the level of habituation shown.

Based on the surveys completed, the Proposed Development boundary and fields within 500m of construction works were considered to be of significance for curlew in the local Swilly Estuary context and within the context of the SPA.

It is therefore likely that curlew will be disturbed during construction due to noise disturbance and the presence of construction personnel. The disturbance during the construction phase will be short term (maximum 36 months) and is likely to be phased so that only certain areas will be affected at any one time. This will allow for disturbed birds to relocated into other suitable areas of habitat within the SPA both within the survey areas and in the wider SPA context, that have been shown to be suitable to support foraging and roosting curlew and are not subject to disturbance.

There is unlikely to be significant disturbance to curlew within the SPA during the operational phase of the development. The majority of the Section 2 scheme in proximity to the SPA is the upgrade of the existing alignment of the current carriage way. Therefore, curlew are habituated to the current use of the roadway in these locations. Where new elements of the road scheme, such as Milk Isle are proposed there will be limited disturbance of species from an ex-situ area outside the SPA. However, it should be noted that in this location significant existing vehicle movements are present from the development along Bunagee Lane which the curlew have become habituated too.

Therefore, in the absence of mitigation, the construction and operational phase of the Proposed Development could result in **temporary non-significant, adverse effects** at the international on Curlew from disturbance.

During the operational phase of the development, there will be a loss of the foraging and roosting area within the footprint of the Milk Isle carriageway. This is outside the SPA boundary and is considered to be an ex-situ foraging and roosting area. This small-scale loss of a foraging and roosting area is not regarded as being significant in the overall numbers and range of areas used by curlew, given the context of the whole SPA and the available habitat that is present within the vicinity of the Proposed Scheme and the wider SPA.

Therefore, in the absence of mitigation, the operational phase of the Proposed Development could result in permanent **non-significant, adverse effects** at the international on Curlew from loss of ex-situ foraging areas.

**Teal**

No specific disturbance distances for teal can be found within the Nature Scot guidance, and a literature review has varying disturbances listed for teal and therefore a precautionary distance of 500m from Proposed Development will be taken.

It is therefore likely that teal will be disturbed during construction due to noise disturbance and the presence of construction personnel, but the numbers of birds being disturbed are not regarded to be significant, given the few times that significant numbers have been recorded.

Given the level of disturbance at the construction phase and the limited scope for disturbance during the operation phase, and given that the levels of teal recorded in proximity to the Proposed Development is very rarely above the 1% threshold of the SPA, it is considered that any disturbance from the Proposed Development is very unlikely to affect the long-term population trend for teal. Therefore, in the absence of mitigation, the construction and operational phase of the Proposed Development could result in **temporary non-significant, adverse effects** at the international geographic scale on Teal for disturbance.

Given that Teal tend to feed within the estuary channel and have not been recorded foraging or roosting in ex-situ habitat that is to be lost to the development there is **no significant effect** with regards to loss of habitat.

**Greylag Goose**

The disturbance distance, as set out within the NatureScot guidance, for greylag goose during the non-breeding season is stated as between 200-600m. A conservative estimate of 500m for greylag goose has been taken forward when assessing the likely disturbance distances for this project given the existing level of disturbance from the operational noises and construction level that are present within the area as recorded during the surveys undertaken and the level of habituation shown.

As detailed above the surveys have shown that greylag geese have been recorded within the potential disturbance zone in relatively significant numbers. They have been recorded at the Milk Isle bridge crossing location in significant numbers, but they have only been recorded in this location during one survey year out of all the years covered and only on two occasions above the 1 % threshold and this area is not considered a significant area for foraging greylag geese in the context of the SPA.

The more significant population has been recorded in the area to the north of the airfield location and has been recorded above the 1% threshold of the SPA on a number of occasions, within the potential disturbance zone.

It is therefore likely that greylag geese will be disturbed during construction due to noise disturbance and the presence of construction personnel. The disturbance during the construction phase will be short term (maximum 36 months) and is likely to be phased so that only certain areas will be affected at any one time. This will allow for disturbed birds to relocated into other suitable areas of habitat within the SPA both within the survey areas and in the wider SPA context, that have been shown to be suitable to support foraging and roosting greylag geese and are not subject to disturbance.

There is unlikely to be significant disturbance to greylag goose within the SPA during the operational phase of the development. The majority of the Section 2 scheme in proximity to the SPA is the upgrade of the existing alignment of the current carriage way. Therefore, greylag goose have habituated to the current use of the roadway in these locations.

Although an active travel network is being proposed along the main carriageway, the majority of this will be screened through existing planting and proposed planting or from existing development. The majority of the active travel network is also at a distance that would not result in disturbance to greylag goose. Where the active travel network is closest to the area favoured by greylag goose to the north of the airfield it will be screened by hedgerow planting and is therefore unlikely to give rise to significant disturbance during the operational phase of the Proposed Development.

Therefore, in the absence of mitigation, the construction and operational phase of the Proposed Development could result in **temporary non-significant, adverse effects** at the international geographic scale on greylag goose for disturbance.

Given that greylag geese tend to feed and roost within the area to the north of the airfield and have only rarely been recorded within any land that will be lost to the development for foraging or roosting in ex-situ habitat there is **no significant effect** with regards to loss of habitat.

**Whooper Swan**

The disturbance distance, as set out within the NatureScot guidance, for whooper swan during the non-breeding season is stated as between 200-600m. A conservative estimate of 500m for curlew has been taken forward when assessing the likely disturbance distances for this project given the existing level of disturbance from the operational noise of the existing road and agricultural activities that are present within the area as recorded during the surveys undertaken and the level of habituation shown.

Whooper swan were not recorded in significant numbers within the immediate area around the Lough Swilly Estuary during the winter bird surveys with only two juvenile birds being recorded through all of the survey years.

However, an area of land along the Swilly Burn flood plain was identified as supporting ex-situ populations of foraging whooper swans. The surveys have shown that the 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.). The Swilly Burn was also highlighted as a potential main flyway within the area from the populations within the Swilly and Foyle estuaries, however no record of birds roosting or foraging further west of the new Swilly Burn crossing have been recorded.

There is a potential for whooper swan to be disturbed during construction due to noise disturbance and the presence of construction personnel. However, given the frequency that whooper swan have been recorded within the vicinity of the Proposed Development and the amount of available habitat that is present within the Lough Swilly and Lough Foyle context, and these areas of ex-situ foraging resources within the Swilly Burn flood plain, outside the potential disturbance zone, this short term (maximum 36 months), low level of disturbance is unlikely to affect the long term population trend and prevent it from being stable or increasing.

Given that the preferred foraging site within 500m of the proposed alignment is currently within 100-300m of the existing carriageway and therefore the whooper swans are not significantly disturbed by vehicle road use. The closest point to the proposed alignment is at a distance of approximately 480m and at over 600m from the active travel network. Therefore, it is also considered that disturbance from users of the active travel network is highly unlikely especially given the screening that would be present too.

Therefore, in the absence of mitigation, the construction and operational phase of the Proposed Development could result in **temporary non-significant, adverse effects** at the international geographic scale on whooper swan for disturbance.

The crossing of the Swilly Burn floodplain by the proposed Section 3 road will entail an embankment and clear span structure for the river. The bridge structure proposed is clear span using pre-cast W beams with a resultant low profile within the surrounding open landscape. The deck height is set at 3.2 m above the 1:100-year flood. Given that swans tend to fly at heights between 5-30m whilst commuting between foraging and roosting sites, and tend to have greater collision risk with wires (not proposed here) the low-profile structure will not present a collision risk to whooper swan during the operational phase whilst utilising the river corridor as a flight path, if they do pass further west than the bridge, even though no swans have been observed further west of the proposed bridge structure.

Therefore, in the absence of mitigation, the construction and operational phase of the Proposed Development will have **no significant effects** on whooper swan from collision with structures causing accidental injury or death.

Given that whooper swan have not been recorded foraging or roosting within the areas of land to be lost to development there is **no significant effect** with regards to loss of habitat.

**Redshank**

The disturbance distance, as set out within the NatureScot guidance, for redshank during the non-breeding season is stated as between 200-300m, therefore a precautionary 300m was used in this instance although redshank are known to habituate to construction noise and other disturbances especially in more urban settings.

As detailed above redshank have been noted mostly along the riverbanks of the Swilly Estuary in small numbers with only some observations being made on the improved grassland. It has only been found in significant numbers and within 300m of the proposed works when on the riverbanks of the Swilly. The peak count of 19 individuals (1.3% of the SPA population at designation) was observed on the bank of the Swilly adjacent to the rugby pitches during the 2025 update surveys. However, this is the only occasion that redshank have been observed above the 1% threshold of the Lough Swilly SPA, during all of the survey undertaken from 2018- 2026. It is therefore concluded that the areas within 300m of the Proposed Development does not form a significant component of the redshanks foraging and roosting areas.

Given the number and frequency of redshank recorded within the vicinity of the Proposed Development and the amount of available habitat that is present within the Lough Swilly context, it is considered that any disturbance from the Proposed Development is very unlikely to affect the long-term population trend for

redshank. Therefore, in the absence of mitigation, the construction and operational phase of the Proposed Development will result in **no significant effect** with regards to redshank for disturbance.

**Overall assessment**

Mindful of the above and of relevance to this assessment, the NIS identified, in the absence of mitigation, no adverse effects with respect to curlew, teal, greylag goose, whooper swan or redshank , with reference to the relevant Conservation Objectives of the Lough Swilly SPA and Lough Foyle SPAs. The Conservation Objectives for each of these species was assessed against population trend and distribution. Limited and infrequent displacement of individuals and small flocks during construction was acknowledged. However, given the spatial context of the Proposed Development to the extensive areas of habitat both within and in the vicinity of the SPAs, this ex-situ effect was considered not to affect either the long-term population trends or distribution of these species.

Therefore, consistent with the NIS assessment, the disturbance impacts during construction and their effects on limited ex-situ populations of curlew, teal, greylag goose, whooper swan, or redshank are **not considered significant** with respect to either the populations of Lough Swilly SPA and, through potential connection, the populations of Lough Foyle SPAs and Ramsar Site.

By extension, it can therefore also be concluded that the disturbance impacts during construction and their effects on limited ex-situ populations of curlew, teal, greylag goose, whooper swan or redshank, (as relevant to the individual designated interests of these designations; as per Table 9A-4) are **not considered significant** with respect to the populations of:

- Lough Swilly pNHA
- Lough Foyle ASSI
- Roe Estuary Nature Reserve
- Blanket Nook Wildlife Sanctuary
- Inch Levels Wildfowl Reserve
- Port Lough pNHA

However, mitigations are included to further minimise disturbance impacts and their effects, including with respect to ornithological interests, during the construction phase.

During the operational phase of the Proposed Development, ex-situ effects are **not considered significant** on curlew, teal, greylag goose, whooper swan, redshank, or bar-tailed godwit and therefore, by extension, on Lough Swilly SPA and, through potential connection, the populations of Lough Foyle SPAs and Ramsar Site; together with any of the “nested” lesser designations (identified above) which are broadly contiguous with these international designations; including Port Lough pNHA.

#### 9A.5.2.6.3 Downstream Impacts and Effects – Construction and Operational Phases

Other than Port Lough pNHA, which has no downstream hydrological connection to the Proposed Development, all of the following have a downstream hydrological connection to the Proposed Development. Therefore, any impacts within the CPO boundary, either during construction or operation, which could result in adverse changes in water quality could result in a downstream indirect effect either directly to the ornithological populations or indirectly to the habitats upon which they are dependent within those designations. These impacts are identified within Chapter 9B: Biodiversity – Aquatic. Therefore, in the absence of mitigation and adopting a highly precautionary approach, the construction of the Proposed Development could result in **significant, adverse effects** at the international geographic scale on Lough Swilly SPA, Lough Foyle SPAs, Lough Foyle Ramsar, Lough Foyle ASSI, Roe Estuary Nature Reserve, Blanket Nook Wildlife Sanctuary, and Inch Levels Wildfowl Reserve.

However, the design of the Proposed Development includes features such as attenuation ponds and interceptors will result in imperceptible to potentially slightly positive operational phase impacts on surface waters. Therefore, in the absence of mitigation, the operation of the Proposed Development will result in **no significant, adverse effects** on Lough Swilly SPA, Lough Foyle SPAs, Lough Foyle Ramsar, Lough Foyle ASSI, Roe Estuary Nature Reserve, Blanket Nook Wildlife Sanctuary, and Inch Levels Wildfowl Reserve.

#### 9A.5.2.6.4 Summary of Assessment of Ornithological Designations

The above assessment of the ornithological designations is summarised in Table 9A-5, below.

**Table 9A-5: Summary of the Assessment of Ornithological Designations.**

| Designation | Direct Effects – Construction and Operational Phases | Indirect Effects – Ex-situ Impacts and Effects | Indirect Effects – Downstream Impacts and Effects | Mitigations Required? |
|---|---|---|---|---|
| Lough Swilly SPA | No | Yes – not significant during construction or operation | Yes – significant during construction in absence of mitigations. | Yes – to address significant downstream effects and to minimise non-significant ex-situ effects from disturbance during construction phase. |
| Lough Foyle SPA (Irl) | No | Yes – not significant during construction or operation | Yes – significant during construction in absence of mitigations. | Yes – to address significant downstream effects and to minimise non-significant ex-situ effects from disturbance during construction phase. |
| Lough Foyle SPA (UK) | No | Yes – not significant during construction or operation | Yes – significant during construction in absence of mitigations. | Yes – to address significant downstream effects and to minimise non-significant ex-situ effects from disturbance during construction phase. |
| Lough Foyle RAMSAR | No | Yes – not significant during construction or operation | Yes – significant during construction in absence of mitigations. | Yes – to address significant downstream effects and to minimise non-significant ex-situ effects from disturbance during construction phase. |
| Lough Foyle ASSI | No | Yes – not significant during construction or operation | Yes – significant during construction in absence of mitigations. | Yes – to address significant downstream effects and to minimise non-significant ex-situ effects from disturbance during construction phase. |
| Lough Swilly pNHA | Yes – as per assessment of Lough Swilly SAC. | Yes – not significant during construction or operation | Yes – significant during construction in absence of mitigations. | Yes – to address significant downstream effects and to minimise non-significant ex-situ effects from disturbance during construction phase. |
| Roe Estuary Nature Reserve | No | Yes – not significant during construction or operation | Yes – significant during construction in absence of mitigations. | Yes – to address significant downstream effects and to minimise non-significant ex-situ effects from disturbance during construction phase. |
| Blanket Nook Wildlife Sanctuary | No | Yes – not significant during construction or operation | Yes – significant during construction in absence of mitigations. | Yes – to address significant downstream effects and to minimise non-significant ex-situ effects from disturbance during construction phase. |
| Inch Levels Wildfowl Reserve | No | Yes – not significant during construction or operation | Yes – significant during construction in absence of mitigations. | Yes – to address significant downstream effects and to minimise non-significant ex-situ effects from disturbance during construction phase. |
| Port Lough pNHA | No | Yes – not significant during construction or operation | No | Yes –to minimise non-significant ex-situ effects from disturbance during construction phase |

## 9A.5.3 Potential Impacts and Effects on Key Ecological Receptors

### 9A.5.3.1 Construction Phase

#### 9A.5.3.1.1 Habitat Loss, Modification and Fragmentation

Summaries of the assessments of the predicted impacts on the KERs identified along Sections 1, 2, and 3 of the Proposed Development are presented in Table 9A-6, Table 9A-7, and Table 9A-8, respectively. The impacts during construction include loss of habitat, effects on habitat continuity, and risks to the continued functioning of the habitat as a KER.

For all KERs, the construction impacts will entail a loss of habitat associated with the clearance and loss of vegetation due to the construction of the Proposed Development, including associated features such as accommodation works and drainage. The extent of impact will vary between KERs, dependant on the scale of the nature and sensitivities of the habitats being impacted and the scale of habitat loss. As many KERs consist of low-lying wet grassland / wet woodland mosaics, there is a potential for impacts on the hydrology of the retained elements of these sites due to changes in drainage flow or patterns. In addition, without appropriate protection being put in place at the outset of construction, there is a risk of habitat disturbance or damage beyond the lands required for the construction of the Proposed Development.

A number of KERs have associated watercourses which are vulnerable to potential pollutants used during the construction phase including fuels, oils and lubricants, cementitious laitance, water-proofing agents, etc. Spillage or leaks can result in pollution of watercourses and/or soils with significant consequences extending downstream proportional to the toxicity of the material and the magnitude of the event.

The Proposed Development will result in fragmentation of multiple mixed broadleaved woodland KERs with potential consequences for associated fauna which, without mitigation, could be isolated by the barrier effect of the proposed road. Construction activities will also result in disturbance at all KERs, which will have a localised effect on fauna, though no effect on habitats.

There will be a loss of other habitats of Local Importance (Lower) ecological value during construction (mainly treelines, hedgerows and areas of scrub) along the length of the Proposed Development. In addition to direct habitat loss, this will result in habitat fragmentation due to the barrier effect of the proposed road giving rise to permanent slight negative impacts across the length of the Proposed Development. The impact on these sites after mitigation however remains rated as permanent slight negative.

**Table 9A-6: Summary of Impacts on KERs in Section 1**

| KER No. | Townland | Total Area of KER (Ha) | Key habitats | Evaluation | Total Area of KER in CPO (Ha) | % of KER within CPO | Summary and Magnitude of Pre-mitigation effects |
|---|---|---|---|---|---|---|---|
| 1-1 | Drumboe Upper | 4.89 | 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) | 1.36 | 27.9% | Loss of a portion of the wet willow-alder-ash woodland and mixed broadleaved woodland at the northern end of the KER and along the Backlees. The bridging of the Backlees causes fragmentation of the corridor, the effect of which is minimised by the clear span bridge design.<br>The core area of the KER is retained and lies outside the CPO boundary of Section 1, which ensures its core function is maintained. However, the peripheral areas of the KER are fragmented in several places by the Proposed Development, and the KER becomes more isolated from its wider landscape by existing development to the south and east and the Proposed Development to the north and west.<br><br>**Permanent, irreversible, significant adverse effect on a KER of Local Importance (Higher)**. |
| 1-2 | Dunwiley | 9.79 | 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 [23]. | County Importance | 0.03 | 0.03% | A negligible proportion of the woodland may be removed at the edge.<br><br>**No significant effect.** |

[23] https://www.npws.ie/maps-and-data/habitat-and-species-data. Accessed November 2025. Note that NPWS mapping does not overlap with the CPO boundary, but 0.03 ha of WN1 was mapped inside the CPO boundary adjacent to the NPWS mapping.

| KER No. | Townland | Total Area of KER (Ha) | Key habitats | Evaluation | Total Area of KER in CPO (Ha) | % of KER within CPO | Summary and Magnitude of Pre-mitigation effects |
|---|---|---|---|---|---|---|---|
| 1-3 | Drumboe Lower | 5.3 | Mixed conifer and broadleaved woodland within the Holy Well Woods. Numerous mature oak trees were present within this area. | Local Importance (Higher Value) | 0.66 | 12.5% | Loss of the eastern portion of the mixed broadleaved and mixed conifer woodland; the loss peripheral to the KER with the core of the KER retained. In the long-term, due to the proposed new woodland planting (See Appendix B of the Biodiversity Management Plan (BMP), directly adjoining the KER, this will consolidate and strengthen its ecological function within the wider landscape.<br><br>**Significant, permanent adverse effect in short-term due to loss of KER, however significant beneficial effect in the medium- to long-term as the landscape planting matures to a receptor of Local Importance (Higher).** |
| 1-4 | Drumboe Lower | 8.92 | Woodlands in the vicinity of the River Finn, which include riparian woodland, wet pedunculate oak-ash woodland, wet willow-alder-ash woodland, mixed broadleaved woodland, and conifer plantation. | County Importance | 1.16 | 13% | Directly impacted through loss of portions riparian woodland, wet pedunculate oak-ash woodland, mixed broadleaved woodland, and conifer plantation. However, portions of riparian woodland and the portion of the wet pedunculate oak-ash woodland at the edge of the riverbank are to be retained. This linear corridor will be fragmented by the bridge. However, the clear span bridge design reduces the effect of habitat fragmentation.<br>**Permanent non-significant adverse effect on a KER of County importance**, given that the linear ecological function of the KER is maintained by the Proposed Development. |

**Table 9A-7: Summary of Impacts on KERs in Section 2**

| KER No. | Townland | Total Area of KER (Ha) | Key habitats | Evaluation | Total Area of KER in CPO (Ha) | % of KER within CPO | Summary and Magnitude of Pre-mitigation effects |
|---|---|---|---|---|---|---|---|
| 2-1 | Dromore | 11.49 | 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) | 9.40 | 81.8% | Loss of most of this habitat. Permanent moderate negative impact, resulting in **Permanent, irreversible, significant, adverse effect on a KER of Local Importance (Higher)**, given context with respect to Lough Swilly SAC. |
| 2-2 | Drumgreggan /Trimagh/ Magheraboy | 16.16 | Strips of mixed broadleaved woodland as well as areas of wet grassland/scrub mosaic flanking the N13. | Local Importance (Higher Value) | 12.01 | 74.3% | Loss of a large portion of this habitat. However, significant areas of woodland are to be retained. **Permanent, irreversible, significant adverse effect on a KER of Local Importance (Higher)**. |
| 2-3 | Dromore | 0.92 | Mosaic of mixed broadleaved woodland and scrub (dominated by alder). Embankment of railway tracks, culvert crossing, and access track within this area. | Local Importance (Higher Value) | 0.80 | 87% | Loss of the majority of this site, excluding the eastern extent. However, this area is at the very western end of an ecological corridor along the disused rail line which extends to the east (not part of mapped KER for this Proposed Development). Given that the Proposed Development crosses the end of this corridor, only a small portion of length of this corridor (the KER as mapped) will be lost and fragmented. **Significant, permanent adverse effect to KER of Local Importance (Higher).** |

| KER No. | Townland | Total Area of KER (Ha) | Key habitats | Evaluation | Total Area of KER in CPO (Ha) | % of KER within CPO | Summary and Magnitude of Pre-mitigation effects |
|---|---|---|---|---|---|---|---|
| 2-4 | Drumany/ Listillion/ Corranagh | 18.71 | 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) | 12.09 | 64.7% | The majority of the loss of this KER is due to the planned removal of the non-native conifers and its management, due to the Proposed Development, to enable the establishment of a higher quality habitat in the medium- to long-term. The core of the KER will therefore be retained and/or enhanced ecologically; however peripheral areas (to the west) will be lost directly to the road alignment with minor areas fragmented and isolated from the core area.<br>In balance, the Proposed Development will result in **no significant adverse effects to the habitats and, in the medium- to long-term will result in a smaller area of greater ecological value to be provided.** |
| 2-5 | Listillion | 10.23 | A wet grasland and scrub mosaic, with a mix of species including *Juncus* sp. On the southern limit of the CPO boundary. | Local Importance (Higher Value) | 7.83 | 76.6% | Loss of a large section of wet grassland and scrub which borders the L1064 road to the south. However, the majority of this habitat is to be restored after the construction phase, so only a small portion of the impact will be permanent.<br>**Significant adverse effect in short-term, however non-significant effect (and potentially beneficial effect) in the medium- to long-term to a receptor of Local Importance (Higher)** |

**Table 9A-8: Summary of Impacts on KERs in Section 3**

| KER No. | Townland | Total Area of KER (Ha) | Key habitats | Evaluation | Total Area of KER impacted (Ha) | % of KER impacted | Summary and Magnitude of Pre-mitigation effects |
|---|---|---|---|---|---|---|---|
| 3-1 | Pluck | 10.29 | 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) | 0.52 | 5.0% | Not directly impacted, with CPO boundary extending into dry marginal fringe along the existing N14. Susceptible to water quality deterioration primarily during construction and to a lesser extent during operation. No risk of disturbance to wintering waterfowl during construction due to distance from receptor.<br>**Temporary non-significant adverse effect on a KER of Local Importance (Higher).** |
| 3-2 | Ballyboe | 2.29 | 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) | 0.58 | 25.1% | Loss of the southern portion of the Oak-ash-hazel woodland.<br>**Permanent, irreversible, significant adverse effect on a KER of Local Importance (Higher)**. |
| 3-3 | Drumoghill | 4.68 | 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) | 0.69 | 14.7% | Loss of Oak-ash-hazel woodland habitat along with modification of the watercourse reducing its naturalness and associated instream habitats and posing risks to water quality during construction and operation. Dissection of the woodland along the dismantled railway line leading to habitat fragmentation.<br>**Permanent, irreversible, significant adverse effect on a KER of Local Importance (Higher)**. |
| 3-4 | Drumoghill | 0.31 | Block of mature broad-leaved woodland on elevated knoll. | Local Importance (Higher Value) | 0.31 | 100.0% | Loss of entire site.<br>**Permanent, irreversible, significant adverse effect on a KER of Local Importance (Higher)**. |

| KER No. | Townland | Total Area of KER (Ha) | Key habitats | Evaluation | Total Area of KER impacted (Ha) | % of KER impacted | Summary and Magnitude of Pre-mitigation effects |
|---|---|---|---|---|---|---|---|
| 3-5 | Doorabble - Mondooey | 5.15 | Mosaic of wet willow-alder-ash woodland and wet grassland/ freshwater marsh along stream (W3-08). Adjoins a conifer plantation with relic area of broad-leaved woodland in centre to east. | Local Importance (Higher Value) | 0.92 | 17.8% | Loss of a portion of the site to the northeast of the existing N14 and associated habitat fragmentation. Risks to water quality during construction and operation. **Significant, permanent adverse effect to KER of Local Importance (Higher).** |
| 3-6 | Sheskinapoll | 2.94 | Area of wet willow-alder-ash woodland and wet grassland fed by a non-calcareous spring in the east. | Local Importance (Higher Value) | 0.56 | 19.1% | Loss of a portion of the site to the northeast encompassing wet woodland and spring habitat. **Significant, permanent adverse effect to KER of Local Importance (Higher).** |
| 3-7 | Slievebuck | 6.77 | Low-lying area of wet grassland with block of wet willow-alder-ash woodland in the east along stream. | Local Importance (Higher Value) | 0.18 | 2.7% | Loss of a portion of wet grassland habitat to the west of the existing N14 with resulting habitat fragmentation. Risks to water quality in W3-10 during construction and operation. **Significant, permanent adverse effect to receptor of Local Importance (Higher).** |
| 3-8 | Slievebuck | 0.88 | Narrow mosaic of willow-alder-ash woodland, briar scrub and wet grassland along stream adjacent to existing N14. | Local Importance (Higher Value) | 0.38 | 42.5% | Minor impact on southern tip of site. **Permanent non-significant adverse effect on a KER of Local Importance (Higher).** |
| 3-9 | Slievebuck | 2.84 | Wet grassland with core of freshwater marsh bounded by stream to the east. | Local Importance (Higher Value) | 0.52 | 18.4% | Loss of a portion of the site in the north-east and risks to water quality in W3-11 during construction and operation. **Significant, permanent adverse effect to KER of Local Importance (Higher).** |
| 3-10 | Dromore Big | 1.86 | Block of wet willow-alder-ash woodland and wet grassland bounded by the existing N14 to the southwest. | Local Importance (Higher Value) | 0.75 | 40.3% | Loss of a portion of the wet willow-alder-ash woodland adjacent to the existing N14. **Significant, permanent adverse effect to KER of Local Importance (Higher).** |

| KER No. | Townland | Total Area of KER (Ha) | Key habitats | Evaluation | Total Area of KER impacted (Ha) | % of KER impacted | Summary and Magnitude of Pre-mitigation effects |
|---|---|---|---|---|---|---|---|
| 3-11 | Feddyglass/ Tullyrap | 3.06 | Linear band of wet willow-alder-ash woodland and scrub along river, with mature mixed broadleaved fringe along N14. | Local Importance (Higher Value) | 1.68 | 54.9% | Loss of a large portion of the site with requirement to realign a considerable length of the watercourse W3-13 with risks to water quality in W3-11 during construction and operation. **Significant, permanent adverse effect to KER of Local Importance (Higher).** |
| 3-12 | Broadlea/Mulnaveagh | 4.46 | Depositing lowland River (Swilly Burn) with adjacent flood embankments of dry meadow and grassy verges. | Local Importance (Higher Value) | 1.40 | 31.3% | Clear-span structure will not result in any significant impact on habitat connectivity. Risks to water quality remain during construction and operation, and additional risk of transfer of the invasive Asian Clam during construction without appropriate biosecurity measures in place. **Permanent non-significant adverse effect on a KER of Local Importance (Higher).** |
| 3-13 | Tyleford | 5.75 | 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 water's edge. | County Importance | 2.24 | 38.9% | Clear-span structure will not result in any significant impact on habitat connectivity. Risks to water quality remain during construction and operation. **Permanent non-significant adverse effect on a KER of County importance.** |
| 3-14 | Murlough | 1.36 | 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) | 0.87 | 63.5% | Loss of a large portion of the oak-ash-hazel woodland in the site and many of the mature trees in the eastern part, including one used by Buzzard for nesting. **Significant, permanent adverse effect to KER of Local Importance (Higher).** |

| KER No. | Townland | Total Area of KER (Ha) | Key habitats | Evaluation | Total Area of KER impacted (Ha) | % of KER impacted | Summary and Magnitude of Pre-mitigation effects |
|---|---|---|---|---|---|---|---|
| 3-15 | Curraghalane | 27.04 | Low-lying fields of wet grassland in floodplain and wet woodland along Depositing lowland river (River Finn). Within River Finn SAC and River Foyle and Tributaries SAC | Local Importance (Higher Value). | 4.53 | 16.8% | Directly impacted through small loss of wet grassland habitat, though clear span structure avoids any direct impact on QI species or habitats. Susceptible to water quality deterioration primarily during construction. and to a lesser extent during operation. Although the KER sits within the SACs it does not support the QIs of either SACs.<br>**Permanent non-significant adverse effect on a KER of Local Importance (Higher) Importance** given that the linear ecological function of the KER is maintained by the Proposed Development. |
| 3-16 | Ballindrait | 1.4 | Oak-ash-hazel woodland along river valley and extending along embankment of old railway line. | Local Importance (Higher Value) | 1.0 | 71.0% | Loss of a large portion of the oak-ash-hazel woodland in the site.<br>**Significant, permanent adverse effect to KER of Local Importance (Higher).** |

#### 9A.5.3.1.2 Unintended Incursion

All of the KERs identified, with the exception of KER 3-4 will have elements that will be retained during the construction phase and could potentially be subject to unintended incursion through construction activities; the incursion resulting in the loss or deterioration of those habitats. Unintended incursion into KER habitats could be from personnel, construction machinery, or construction materials which would accidentally enter the habitats from adjacent construction areas. Such incursion could result in habitat loss or deterioration within the footprint of the incursion or, in the case of waterbodies, downstream effects such as release of silts/pollutants/invasive species or impacts on species which are using the affected area.

In the absence of mitigation to address unintended incursion into these retained habitats during the construction phase, there is potential for **likely significant adverse effects** which are, at worst case, permanent losses of these retained habitats.

#### 9A.5.3.1.3 Air Pollution

The potential impacts to air quality from the construction phase of the Proposed Development include the generation and dispersion of construction dusts during the proposed construction works and generation of traffic emissions from construction vehicles and plant during the construction phase. Air pollution and dust deposition may have a negative effect on any habitats or species of conservation value.

Dust from large construction sites, with high use of haul routes, has the potential to have significant effects on vegetation for a distance of 25 m from the source or emission while soiling can occur on other receptors for a distance of 100 m. The mainline construction works for Sections 1, 2, and 3 are major works and any receptor, including retained KERs, within 100 m of these areas has the potential for adverse effects from construction dusts. Dust from construction works can deteriorate habitats by smothering vegetation and/or

increasing the turbidity of watercourses. In addition to the deterioration of habitats, the effect can reduce habitat quality for species using these habitats.

With respect to emissions from construction vehicles and plant, the principal pollutants of concern which originate from road developments are nitrogen oxides ($NO_x$), in terms of impact on sensitive ecosystems. The emission of $NO_x$ can affect vegetation growth, photosynthesis, and nitrogen assimilation/metabolism. For Sections 1, 2, and 3 of the Proposed Development, the predicted increase in traffic volumes on the road network as a result of construction traffic are less than 10% of existing volumes so the predicted impact to air quality from this traffic is negligible.

With respect to the retained KERs, potential impact and effects of air pollution are relevant. However, given that the predicted impact to air quality from construction traffic is considered negligible, **no significant effects** from air quality changes during the construction phase of the Proposed Development will arise.

#### 9A.5.3.1.4 Spread of invasive alien species

Multiple different invasive alien species have been recorded within or the vicinity of the proposed works areas of Sections 1, 2, and 3. Construction activities could lead to the dispersal of invasive alien species either via machinery, material, clothing, or personnel. The introduction and spread of invasive alien species can have significant impacts on the ecological functioning of terrestrial and aquatic habitats. In general, invasive alien species are aggressive colonisers of the habitat that they occupy, crowding out native species in addition to creating shading effects which reduces native species cover. They can also cause erosion, especially on riverbanks, when they die back in winter. This can in turn have a significant effect on water quality.

With respect to retained KERs, in the absence of mitigation measures, the spread of invasive alien species into these habitats during the construction phase would result in a **significant, reversible, adverse effect** on these habitats.

### 9A.5.3.2 Operational Phase

The operational impacts of the Proposed Development on retained KERs relate primarily to disturbance, air quality and the potential for pollution to sites via road run-off. Habitats are not at risk from disturbance, though species utilising them are, and these impacts are assessed below.

As many of the KERs incorporate watercourses and drainage ditches, these receptors are particularly sensitive to pollution from run-off, accidental spillage, etc. The assessment of this risk is examined in more detail in Chapter 9B: Biodiversity – Aquatic, but in effect **No significant effects** on water quality during the operational phase were identified.

KER sites are also at risk of impacts of $NO_x$ (i.e. NO and $NO_2$) emissions resulting from the operation of the Proposed Development. The emission of $NO_x$ can affect vegetation growth, photosynthesis, and nitrogen assimilation/metabolism. With reference to Chapter 12: Air Quality, the change in nitrogen deposition for all retained KERs is considered negligible. **No significant effects** from air pollution are therefore identified with respect to the retained KERs.

## 9A.5.4 Potential Impacts and Effects on Habitats

The assessment of potential impacts on habitats and flora was completed with reference to the ecological baseline described in full in Appendix C9A.01.

#### 9A.5.4.1.1 Construction Phase

##### 9A.5.4.1.1.1 Habitat loss and fragmentation

The Proposed Development will result in the direct loss of habitats, directly impacting the habitats themselves. Some of these have been discussed above where the habitats are also valued as KERs for their ecological function, apart from the specific habitat value. In addition to the loss of habitats, the loss will be compounded by the loss of connectivity between habitat parcels within the wider landscape which are

separated and/or become fragmented by the Proposed Development. Any habitat parcels which will be partially lost due to the Proposed Development will mean that the remaining habitat parcel will be ecologically less resilient.

Habitat fragmentation has numerous effects on ecological receptors. The fragmentation of these features can have a knock-on effect on faunal species which use these features for refuge, foraging, commuting, and breeding. Habitat fragmentation involves the subdivision of previously continuous habitat, which can effectively result in habitat loss via loss of habitat connectivity, as species are unable to access previously available areas. This may lead to a reduction or localised absence of species (such as fungi, plants, amphibians, invertebrates, small mammals, etc.) that utilise these habitats. This is primarily due to a reduction or loss of utilisable habitat for foraging, nesting, roosting, etc.

Additionally, small populations are at an increased risk of a variety of genetic consequences that influence their long-term survival. As the remaining habitat patches are smaller, they tend to support smaller populations of fewer species leading to a reduction or loss of genetic diversity due to the reduced gene flow that occurs in smaller, more discrete populations. Habitat fragmentation has also been shown to change predator-prey relationships; affecting prey searching by the predator and predator avoidance behaviour of prey individuals (Gorini *et al.,* 2012) which can lead to changes in species abundances.

The impacts and effects on IEF habitats brought forward for assessment with respect to the construction phase of the Proposed Development are assessed below:

**HH3 Wet Heath**

The CPO boundary of the Proposed Development supports approximately 0.2 ha of HH3 Wet Heath (part of a larger, 1.3 ha parcel); which is located within the northern end of Section 1. No such habitat occurs within the CPO boundary for Sections 2 and 3. Of the 0.2 ha, the construction phase will result in the loss and fragmentation of 0.14 ha of this habitat; the remainder of which is capable of being physically retained. Given that this is part of a wider 1.3 ha parcel of this habitat, the remainder of this parcel will be smaller in scale and potentially less resilient ecologically. However, due to the minor extent of habitat lost and fragmented, this permanent effect is assessed as **not significant** with respect the HH3 Wet Heath; a receptor of Local Importance (Higher).

**WD1 (Mixed) Broadleaved Woodland**

Overall, the CPO boundary of the Proposed Development supports over 15 ha of WD1 (mixed) broadleaved woodland.

With respect to Section 1, WD1 mixed broadleaved woodland occurs in parcels totalling approximately 4.4 ha, approximately 1.5 ha of which is in mosaic with WS1 scrub and WS2 immature woodland. The entirety of the mosaic parcels will be removed and approximately 2 ha of the WD1 parcels will be removed. These blocks form part of the mosaic of woodland within the landscape when considered collectively with the other woodland types, including conifer-based woodland and riparian/wet woodland. Impacts on WD1 will also indirectly impact species which are dependent on such habitats (e.g. breeding birds, foraging bats, badgers, etc.). Habitat fragmentation will be particularly striking for Section 1 with respect to the concentration of woodland, linking into larger woodland blocks to the east and west of the Proposed Development north of the River Finn.

Throughout Section 2, WD1 occurs in many parcels totalling approximately 13 ha in area (including 3.4 ha of WD1/WS1 scrub mosaic), approximately 8.4 ha of which is to be removed (including 3.4 ha of WD1/WS1 scrub mosaic). The majority of WD1 is located adjacent to currently existing road infrastructure and is likely to be relatively recently established. Despite the young age of the majority of this habitat, given the relative lack of woodland habitat in the wider area, any adverse effects are of increased significance. Impacts on WD1 will also indirectly impact species which are dependent on such habitats (e.g. breeding birds, foraging bats, badgers, etc.).

With respect to Section 3, areas of mixed broadleaved woodland are limited along the length of the Proposed Development and are mainly included as KERs. These woodlands include 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.

Overall, the Proposed Development will result in the loss of approximately 8.25 ha of WD1, and 4.9 ha WD1 mosaic habitat summarised by Section as follows:

- Section 1 - Approximately 2 ha of WD1 and 1.5 ha of WD1/WS1 and WD1/WS2 mosaic will be removed.
- Section 2 - Approximately 5 ha of WD1 and 3.4 ha of WD1/WS1 mosaic will be removed.
- Section 3 - Approximately 1.25 ha of WD1 will be removed.

However, the landscape design of the Proposed Development includes the creation of approximately 113 ha of WD1(See Appendix B of the BMP); the creation of WD1 significantly outweighing the loss. It is recognised, however that there will be a lag in time between when the habitats created will reach the level of functional maturity as the WD1 lost during the construction phase.

In the short-term, the loss of WD1 will result in a **significant adverse effect** with respect to this habitat, however in the medium- to long-term the Proposed Development will result in a significant beneficial effect with respect to this habitat and increases significantly and beneficially the habitat connectivity in parallel with the main route corridors of the Proposed Development. Overall, the Proposed Development will result in a **significant long-term beneficial effect** on WD1; a receptor of Local Importance (Higher).

**WD2 (Mixed) Broadleaved/Conifer Woodland**

Overall, the CPO boundary of the Proposed Development support over 15 ha of WD2 (mixed) broadleaved/conifer woodland; which only located in Sections 1 and 2; which are discussed further below:

In Section 1, WD2 occurs in parcels totalling approximately 3.2 ha, approximately 2.5 ha of which is to be removed during the construction phase. These blocks form part of the mosaic of woodland within the landscape when considered collectively with the other woodland types including conifer-based woodland and riparian/wet woodland. Impacts on WD2 will also indirectly impact species which are dependent on such habitats (e.g. breeding birds, foraging bats, badgers, etc.). Habitat fragmentation will be particularly striking for Section 1 with respect to the concentration of woodland, linking into larger woodland blocks to the east and west of the Proposed Development north of the River Finn.

With respect to Section 2, WD2 occurs in a single area of approximately 12.6 ha, approximately 12.1 ha of which is within the CPO boundary and is to be removed. This is an area of Sitka spruce plantation, but the spruce did not uniformly establish and has formed a mosaic with areas of wet woodland and scrub species. Impacts on WD2 will also impact species which are dependent on such habitats (e.g. breeding birds, foraging bats, badgers, etc.).

Overall, the Proposed Development will result in the loss of approximately 8.25 ha of WD2 summarised by Section as follows:

- Section 1 - Approximately 2.5 ha of WD2 will be removed.
- Section 2 - Approximately 12.1 ha of WD2 will be removed.

However, the landscape design of the Proposed Development includes significant areas of new woodland. As documented with respect to WD1 above, this increase in woodland will significantly outweigh the loss of WD2 and also has the potential for more ecologically valuable woodland habitats to be established in the medium- to long-term. It is recognised, however that there will be a lag in time between when the habitats created will reach the level of functional maturity of woodland lost during the construction phase.

In the short-term, the loss of WD2 will result in a **significant adverse effect** with respect to this habitat, however in the medium- to long-term the Proposed Development will result in a significant beneficial effect with respect woodland habitat overall and increases significantly and beneficially the habitat connectivity in parallel with the main route corridors of the Proposed Development. Overall, the Proposed Development will result in a **significant long-term beneficial effect** on woodland overall.

**WN1 Oak-Birch-Holly Woodland**

Overall, the CPO boundary of the Proposed Development supports a single 0.03 ha parcel of WN1; all of which is located in Section 1. No WN1 habitat is located within Sections 2 or 3. The WN1 recorded is at the edge of an 8.4 ha patch of WN1, which itself is part of an approximately 11 ha broadleaf woodland. This woodland forms part of the mosaic of woodland within the landscape when considered collectively with the other woodland types including, conifer-based woodland and riparian/wet woodland. Impacts on WN1 will also indirectly impact species which are dependent on such habitats (e.g. breeding birds, foraging bats, badgers, etc.). Habitat fragmentation will be particularly striking for Section 1 with respect to the concentration of woodland, linking into larger woodland blocks to the east and west of the Proposed Development north of the River Finn.

The permanent loss of 0.03 ha of a wider 8.4 ha parcel of WN1 is considered a permanent adverse **not significant effect** on a receptor of County importance.

**WN2 Oak-ash-hazel woodland**

A number of areas of WN2 occur within Section 3 mainly associated with old railway lines and river corridors, all of which are contained within KER sites. The total area of WN2 is approximately 4.4 ha, approximately 2.3 ha of which is within the CPO boundary. Within the CPO boundary, approximately 1 ha will be retained, and 1.3 ha will be removed.

Overall, the construction of the Proposed Development will result in the permanent loss of approximately 1.3 ha of WN2. The magnitude and extent of the effect of the loss of habitat is the area of WN2 to be removed (i.e. approximately 1.3 ha). The extent of the effect of fragmentation is the wider landscape of woodlands along the corridor of the Proposed Development, and the magnitude is the reduced connectivity between these woodlands. The effect will commence during site clearance during the construction phase and is considered permanent and irreversible. Significant effects will occur on KERs containing WN2, discussed in Section 9A.5.3. Aside from the impacts on KERs, given the small areas to be removed, in the absence of mitigation, habitat loss and fragmentation is predicted to result in a **not significant**, permanent, irreversible, adverse effect on WN2; a receptor of Local Importance (Higher).

**WN4 Wet Pedunculate Oak-Ash Woodland**

Overall, the CPO boundary of the Proposed Development supports a single parcel, approximately 0.36 ha in area, approximately 0.27 ha of which is to be removed. No WN4 habitat is located within Sections 2 or 3.

With respect to the single parcel of WN4, the portion of the habitat adjacent to the R252 road is to be removed while the portion adjacent to the River Finn is to be retained. This area is within the River Finn corridor upstream of the proposed bridge crossing. The retained portion of WN4 includes a large proportion of the area of WN4 immediately adjacent to the River Finn which 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. As a constituent part of the corridor of woodlands along the River Finn, WN4 is an IEF of county importance. Both WN4 and WN5 riparian woodland form part of the network of woodland habitats along the River Finn and are subject to similar impacts.

The permanent loss of 0.27 ha WN4 is considered a permanent adverse **not significant effect**; particularly given that the portion of the parcel which provides greatest functional capacity to the River Finn is being retained**.**

**WN5 Riparian Woodland**

Overall, the CPO boundary of the Proposed Development supports approximately 0.17 ha of WN5, within Section 1, approximately 0.08 ha of which is to be removed. No WN5 habitat is located within Sections 2 or 3. WN5 (alongside WN4, assessed above) form part of the network of woodland habitats along the River Finn and are subject to similar impacts. The portion of WN5 within the floodplain of the River Finn has affinity for the priority Annex I habitat, alluvial forests [91E0].

It is considered that the Section 1 construction works will not result in any significant hydrological changes to the River Finn that, in part, supports riparian woodland. There are no works within the river which would alter

the quality or flow to the river upstream to a degree that would impact riparian woodland. Impacts on water quality within the River Finn are considered in Chapter 9B: Biodiversity – Aquatic.

Approximately 0.08 ha of WN5 will be removed. WN5 forms part of a wider network of woodland habitats along the River Finn, which will be subject to fragmentation. The 85 m main span of the bridge is clear span over the River Finn SAC and the majority of existing WN5 including that with affinity to Annex I habitat. Those sections that are subject to loss at the crossing point do not have affinity to Annex I habitats. As a result, the permanent but minor loss of the WN5 habitats is a permanent, adverse but **not significant effect** on a receptor of County importance.

**WN6 Wet Willow-Alder-Ash Woodland**

Overall, within the CPO boundary of the Proposed Development there is over 2.5 ha of WN6; all located in Sections 1 and 3 and none within Section 2.

With respect to Section 1, WN6 occurs at several locations with WN6 wet willow-alder-ash woodland totalling approximately 1.69 ha, approximately 1.46 ha of which is to be removed. The portion of WN6 within the floodplain of the River Finn, which is outside the CPO boundary, has affinity for the priority Annex I habitat, alluvial forests [91E0], but lacked the large herb species typically associated with this habitat.

In relation to Section 3, 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 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. Approximately 0.92 ha of WN6 will be removed as a result of construction of Section 3.

Overall, the construction of the Proposed Development will result in the permanent loss of approximately 2.38 ha of WN6. The magnitude and extent of the effect of the loss of habitat is the area of WN6 to be removed (i.e. approximately 2.38 ha). The extent of the effect of fragmentation is the wider landscape of woodlands along the corridor of the Proposed Development, and the magnitude is the reduced connectivity between these woodlands. The effect will commence during site clearance during the construction phase and is considered permanent and irreversible. In the absence of mitigation, habitat loss and fragmentation is predicted to result in a **significant, permanent, irreversible, adverse effect** at the local (higher) geographic scale on WN6; a receptor of Local Importance (Higher).

**WL1 and WL2 Hedgerows and Treelines**

Overall, the CPO of the Proposed Development includes over 21 km of WL1 and 15 km of WL2, respectively, across all three Sections of the Proposed Development. Hedgerows and treelines are valued in their own right and provide habitat connectivity within the landscape (e.g. to woodland, rivers, and other semi-natural habitats) and provide corridors for the movement of animal species (e.g. bats and birds).

With respect to Section 1, there is approximately 28.1 km of WL1 hedgerows and WL2 treelines (15.7 km of WL1 and 12.4 km of WL2) within the CPO boundary, approximately 17.2 km (9.9 km of WL1 and 7.3 km of WL2) of which is to be removed.

In relation to Section 2 there are approximately 7.4 km of WL1 hedgerows and WL2 treelines (5 km of WL1 and 2.4 km of WL2) within the CPO boundary, approximately 6.3 km (4.8 km of WL1 and 1.5 km of WL2) of which is to be removed.

Hedgerows and treelines are the dominant field boundary within Section 3. 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.

Overall, the Proposed Development will result in the combined loss of approximately 50km of WL1 and WL2; the losses summarised by Section as follows:

- Section 1 – Approximately 28.1 km of WL1/WL2 (15.7 km of WL1 and 12.4 km of WL2) within the CPO boundary, approximately 17.2 km (9.9 km of WL1 and 7.3 km of WL2) will be removed.
- Section 2 – Approximately 7.4 km of WL1 hedgerows and WL2 treelines (5 km of WL1 and 2.4 km of WL2) within the CPO boundary, approximately 6.3 km (4.8 km of WL1 and 1.5 km of WL2) of which is to be removed.
- Section 3 – Approximately 14.3 km of WL1 within the CPO boundary, approximately 13 km will be removed.

However, the landscape design of the Proposed Development includes the creation of approximately 100 km of WL1; the creation of WL1 significantly outweighing the loss. It is recognised, however that there will be a lag in time between when the habitats created will reach the level of functional maturity as the WL1 and WL2 lost during the construction phase.

In the **short-term, the loss of WL1 and WL2 will result in a significant adverse effect** with respect to this habitat of Local Importance (Higher), however in the medium- to long-term the Proposed Development will result in a significant beneficial effect with respect to this habitat and increases significantly and beneficially the habitat connectivity in parallel with the main route corridors of the Proposed Development; however the inherent perpendicular fragmentation with the main route is not possible to overcome. Overall, the Proposed Development will result in a **significant long-term beneficial effect** on WL1 and WL2; a receptor of Local Importance (Higher).

#### 9A.5.4.1.1.2 Unintended incursion

There are habitats in the vicinity of the CPO boundary which are intended to be retained and could potentially be subject to unintended incursion through construction activities; the incursion resulting in the loss or deterioration of those habitats. This includes IEF habitats retained during construction within the CPO boundary of the Proposed Development; namely HH3, WD1, WD2, WN2, WN4, WN5, WN6, WL1 and WL2. Unintended incursion into habitats could be from personnel, construction machinery, or construction materials which would accidentally enter the habitats from adjacent construction areas. Such incursion could result in habitat loss or deterioration within the footprint of the incursion or, in the case of waterbodies, downstream effects such as release of silts/pollutants/invasive species or impacts on species which are using the affected area.

In the absence of mitigation to address unintended incursion into these retained habitats during the construction phase, there is potential for **likely significant adverse effects** which are, at worst case, permanent losses of these retained habitats of Local Importance (Higher) to County value.

#### 9A.5.4.1.1.3 Surface water pollution

Impacts on aquatic receptors are addressed in Chapter 9B: Biodiversity – Aquatic and are therefore not addressed in this chapter. However, surface water pollution is discussed here in summary, as surface water pollution has the potential to result in indirect impacts on terrestrial receptors.

During the construction phase of the Proposed Development, site enabling works including the removal of vegetation, soil stripping and soil excavation, removal of existing hard surfaces (e.g. roads, paths, etc.), blasting, installation of new hard surfaces and structures, bridge abutment construction, and installation of culverts can result in surface water pollution due to increased levels of suspended silts, sediments, concrete, hydrocarbons, etc. An increase in surface water pollutants can have a negative impact on terrestrial habitats, which can indirectly negatively affect species which utilise those habitats.

With respect to IEF habitats, impacts and effects related to surface water pollution are only potentially relevant to HH3 Wet Heath. HH3 is typically an acidic, nutrient poor habitat which is dependent, at least in

part, on surface and/or ground water hydrology for maintaining its ecological condition, function, and equilibrium. Typically, wet heath is maintained primarily by high rainfall inputs rather than surface/ground water inputs and any impacts which could affect the acidity, poor nutrient status, or hydrology of the habitat could result in an adverse deterioration in its ecological interest. No significant impact on its hydrology during the construction phase is anticipated. However, there is potential for localised, adverse changes to the acidic, nutrient poor conditions of the habitat due to construction impacts on the quality of any surface water inputs (particularly if nutrient-enriched or alkaline) or from dust and/or vehicular/plant emissions from construction activities.

Approximately 1.1 ha of HH3 inside and outside the CPO boundary will be retained. Due to the construction works being adjacent to the retained HH3, there is potential for runoff containing pollutants from the construction works to enter the retained parcel of HH3 within and outside the CPO boundary. Mindful of the acidic, rain-fed, nature of the habitat, such run-off, particularly if alkaline and/or nutrient rich, could result in a deterioration of the retained HH3. Therefore, in the absence of mitigation measures to prevent such runoff into retained habitats generally, including with respect to HH3, the construction phase is likely to result in a **significant adverse, deteriorating effect** on HH3; a receptor of Local Importance (Higher).

#### 9A.5.4.1.1.4 Groundwater pollution

During the construction phase of the Proposed Development, certain activities are likely to have an impact on the hydrogeological environment, including cut excavations, embankment construction, overburden and rock slope construction, excavation of areas to be used and soil extraction and replacement sites, construction of foundations (pad and piled foundations at river crossings), disturbance of soft soil and peat, and dewatering activities. These activities have the potential to impact on the hydrogeological environment through hydraulic impact (i.e. change in water levels, supply, flow rates, and flow regime) or hydrochemical impact (change in water chemistry or water quality where artificial contaminants may be released into the water environment). Furthermore, accidental spillages of polluting materials, release of fines into the groundwater, and contaminated runoff all have the potential to impact groundwater quality. Depending on the local hydrogeological environment, groundwater may interact with habitats and may discharge to streams, rivers, springs, and seeps. Therefore, a groundwater pollution event could result in impacts on habitats. Chapter 10: Land, Soils & Hydrogeology outlines the impacts of the Proposed Development on groundwater.

With respect to IEF habitats, impacts and effects related to ground water pollution are only potentially relevant to HH3 Wet Heath.

In areas where cut levels are below the water table there will be an alteration in the groundwater flow regimes and the water table will be directly impacted. In areas where cuttings take place, the vulnerability will increase locally. This would increase the ease at which recharge can percolate downward. The potential hazards will be associated with construction plant and activities within the area where the protective soil cover has been reduced. During the initial excavation phase, there will be no drainage installed and in the absence of adequate controls, there will be potential to cause groundwater contamination. This is also true in areas of embankments, where fill will be imported, although there may still be the potential for untreated runoff. Any impact on groundwater vulnerability is considered to be permanent and irreversible while an impact on groundwater quality is considered to be short-term and reversible.

The parcel of HH3 is at the northern end of Section 1, overlying the Raphoe GWB. The longest and deepest cut in Section 1 is Cut 4 at 1.05 km in length and 13.75 m deep between Ch. 4+950–Ch. 6+000 (See Chapter 10: Land, Soils & Hydrogeology), overlying the Ballybofey GWB. The closest cut to the wet heath is Cut 5, between Ch. 6+550–Ch. 7+450 with a maximum depth of 7.42 m at Ch. 6+880. It predominantly overlies the Ballybofey and Upper Deele GWBs but extends to the boundary of the Raphoe GWB at its northern end. It is just over 1 km from the wet heath at its closest point and approximately 1.6 km from the wet heath at its deepest point.

There is potential for adverse impacts on groundwater on the HH3 parcel in Section 1. However, given that it is unlikely that any major groundwater – surface water interactions occur in any of the three GWBs that Section 1 crosses, and that wet heaths are primarily rainwater-fed, **no significant effect** from groundwater impacts is anticipated with respect to HH3; a receptor of Local Importance (Higher).

#### 9A.5.4.1.1.5 Air pollution

The potential impacts to air quality from the construction phase of the Proposed Development include the generation and dispersion of construction dusts during the proposed construction works and generation of traffic emissions from construction vehicles and plant during the construction phase. Air pollution and dust deposition may have a negative effect on any habitats or species of conservation value.

Dust from large construction sites, with high use of haul routes, has the potential to have significant effects on vegetation for a distance of 25 m from the source or emission while soiling can occur on other receptors for a distance of 100 m. The mainline construction works for Sections 1, 2, and 3 are major works and any receptor within 100 m of these areas has the potential for adverse effects from construction dusts. Dust from construction works can deteriorate habitats by smothering vegetation and/or increasing the turbidity of watercourses. In addition to the deterioration of habitats, the effect can reduce habitat quality for species using these habitats.

With respect to emissions from construction vehicles and plant, the principal pollutants of concern which originate from road developments are nitrogen oxides ($NO_x$), in terms of impact on sensitive ecosystems. The emission of $NO_x$ can affect vegetation growth, photosynthesis, and nitrogen assimilation/metabolism. For Sections 1, 2, and 3 of the Proposed Development, the predicted increase in traffic volumes on the road network as a result of construction traffic are less than 10% of existing volumes so the predicted impact to air quality from this traffic is negligible.

With respect to the identified habitat IEFs bought forward into the assessment, potential impact and effects of air pollution are relevant to HH3, WD1, WD2, WN1, WN2, WN4, WN5, WN6, WL1, and WL2. However, given that the predicted impact to air quality from construction traffic is considered negligible, **no significant effects** from air quality changes during the construction phase of the Proposed Development will arise to these habitats of Local Importance (Higher) to County value.

#### 9A.5.4.1.1.6 Spread of invasive alien species

Multiple different invasive alien species have been recorded within or the vicinity of the proposed works areas of Sections 1, 2, and 3. Construction activities could lead to the dispersal of invasive alien species either via machinery, material, clothing, or personnel. The introduction and spread of invasive alien species can have significant impacts on the ecological functioning of terrestrial and aquatic habitats. In general, invasive alien species are aggressive colonisers of the habitat that they occupy, crowding out native species in addition to creating shading effects which reduces native species cover. They can also cause erosion, especially on riverbanks, when they die back in winter. This can in turn have a significant effect on water quality.

With respect to the identified habitat IEFs bought forward into the assessment, potential impacts and effects of the spread of invasive alien species are relevant to HH3, WD1, WD2, WN1, WN2, WN4, WN5, WN6, WL1, and WL2. In the absence of mitigation measures, the spread of invasive alien species into these habitats during the construction phase would result in a **significant, reversible, adverse effect** on these habitats of Local Importance (Higher) to County value.

### 9A.5.4.1.2 Operational Phase

#### 9A.5.4.1.2.1 Surface water pollution

Impacts on aquatic receptors are addressed in Chapter 9B: Biodiversity – Aquatic and are therefore not addressed in this chapter. However, surface water pollution is discussed here in summary, as surface water pollution has the potential to result in indirect impacts on terrestrial receptors.

The operation of the Proposed Development could result in direct and indirect adverse changes in water quality from the discharge of road surface run-off into watercourses. The surface water drainage design of the Proposed Development includes measures to avoid such adverse changes, including attenuation ponds and interceptors, all designed and to be maintained to TII Standards. As a result of these measures, no significant operational effects on aquatic receptors have been identified with respect to changes in surface water quality, accidental spillages, or air pollution. There is potential for slightly positive effects at certain receptor, where pollution from the existing road network will be reduced (see Chapter 9B: Biodiversity –

Aquatic). As a result, the operation of the Proposed Development will result in **no significant effect** on any of the habitat IEFs bought forward into the assessment**.**

#### 9A.5.4.1.2.2 Air pollution

With respect to emissions from car users of the Proposed Development, the principal pollutants of concern which originate from road developments are the $NO_x$, in terms of impact on sensitive ecosystems. The emission of $NO_x$ can affect vegetation growth, photosynthesis, and nitrogen assimilation/metabolism. With reference to the habitat IEFs bought forward into the assessment, the following is predicted with respect to those habitats retained by the Proposed Development. With reference to Chapter 12: Air Quality, the change in nitrogen deposition for all retained IEF habitats is considered negligible. **No significant effects** from air pollution are therefore identified with respect to these retained IEF habitats.

## 9A.5.5 Potential Impacts and Effects on Flora – Globeflower

The globeflower (*Trollius europaeus*) occurs on lake shores, riverbanks, wet pastures, scrub, and woodland (Curtis and McGough, 1988). It has a very limited national distribution and is protected under the Flora Protection Order (2022). The known populations of globeflower in Section 1 are located along the River Finn, upstream of the proposed bridge crossing, between 80 m to 120 m from the CPO boundary. However, there are no major works within 100 m of any of these known populations. Therefore, it is anticipated that the only potential significant impact on this globeflower population is the spread of invasive alien species.

Within Section 3, the NPWS database holds a record in hectad C20 at Convoy from 1998, while the Botanical Society of Britain and Ireland (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 persist. Both the River Finn and the Swilly Burn, which have also been arterially drained, may support relic populations of globeflower in remnants of suitable habitat. However, there was no evidence of globeflower on any of these rivers during the surveys undertaken. The habitat conditions along the Deele and Swilly Burn in the vicinity of the proposed crossing points are not considered suitable for the plant, as they consist of rank grassland on the modified riverbanks and associated flood embankments. The habitat along the southern bank of the River Finn are more varied and offer more suitable conditions for the plant, but no evidence of the plant was recorded during the multiple surveys undertaken in the vicinity of the proposed crossing point.

Multiple different invasive alien species have been recorded within or the vicinity of the proposed works areas of Sections 1 and 3. Construction activities could lead to the dispersal of invasive alien species either via machinery, material, clothing, or personnel. The introduction and spread of invasive alien species can have significant impacts on the ecological functioning on terrestrial and aquatic habitats; and the species they support include globeflower. In general, invasive alien species are aggressive colonisers of the habitat that they occupy, crowding out native species, such as globeflower, in addition to creating shading effects which reduce native species cover. They can also cause erosion, especially on riverbanks, when they die back in winter. This can in turn have a significant effect on water quality.

With respect to globeflower, the potential impact and effect of the spread of invasive alien species is relevant to this species and its distribution as identified through baseline surveys. In the absence of mitigation measures, the spread of invasive alien species into these habitats during the construction phase would result in a **significant, reversible, adverse effect** on globeflower; a receptor of national value.

## 9A.5.6 Potential Impacts and Effects on Fauna

The assessment of potential impacts on fauna was completed with reference to the ecological baseline, described in full in Appendix C9A.01.

### 9A.5.6.1 Bats – Roosting

Based on the surveys completed, the land within the CPO boundary of the Proposed Development currently supports a single tree roost and 13 roosts in structures. The distribution and characterisation of those current roosts are detailed further below, and the current roosting conditions are used to inform the assessment of the Proposed Development.

As indicated by surveys from previous years, roost locations and characteristics can change over time mindful that bats are a mobile species in a dynamic environment. Therefore, a precautionary approach has been taken to reflect this dynamism through including a requirement for pre-commencement surveys to be completed in advance of construction activities affecting existing and potential roost features within trees and buildings/built structures.

### Section 1

2025 surveys identified 80 trees with potential roost features in Section 1: 68 PRF-Is (potential roost features with potential for individuals or small numbers of bats) and 12 PRF-Ms (potential roost features with potential for multiple bats). During September 2022 surveys, one PRF-M tree (S1-TA5-BT17) had a confirmed roost, with up to three soprano pipistrelles recorded inside. During 2025 surveys, one likely soprano pipistrelle was identified in the same feature.

2025 surveys assessed 37 structures in Section 1 for potential roosts. 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. Emergence surveys identified six structures as supporting confirmed roosts; detailed in Table 9A-9.

**Table 9A-9: Locations of Section 1 building roosts**

| Structure Code | ITM X | ITM Y | Emergence |
|---|---|---|---|
| S1-B13a | 612110 | 894491 | Roost confirmed: likely one bat; likely a pipistrelle species. |
| S1-B14a | 612144 | 894453 | Roost confirmed: likely two bats; one pipistrelle species and one unconfirmed species. |
| S1-B14b | 612162 | 894457 | Roost confirmed: three bats; likely two were a *Myotis* sp. and one was a pipistrelle species. |
| S1-B17 | 612456 | 894952 | Roost confirmed: likely four bats; one Leisler's bat and two confirmed and one likely soprano pipistrelle. |
| S1-B21a | 613919 | 895902 | 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-B22b | 614474 | 896821 | 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. |

Pre-2022 surveys of structures outside the CPO boundary identified two confirmed bat roosts in buildings 30–35 m outside the CPO boundary and three other suspected roosts were identified 30–100 m outside the CPO boundary.

### Section 2

2025 surveys identified 21 trees with potential roost features in Section 2: 18 PRF-Is and three PRF-Ms. Tree climbing surveys did not identify any confirmed roosts.

2025 surveys assessed 32 structures in Section 2 for potential roosts. 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. Emergence surveys identified one structure as a confirmed roost, S2-B20b (ITM coordinates: 622396 911275), with one common pipistrelle.

Pre-2022 surveys of structures outside the CPO boundary identified two structures with confirmed roosts; one immediately adjacent to the CPO boundary and one approximately 5–10 m from the CPO boundary. These structures are not being removed or altered as part of the Proposed Development.

**Section 3**

The landscape in vicinity of the proposed road route of Section 3 is used as a roosting, foraging and commuting for local bat populations. A total of seven bat species were recorded along the proposed route of Section 3: common pipistrelle, soprano pipistrelle, Leisler's bat, brown long-eared bat, Natterer's bat, Daubenton's bat and Nathusius' pipistrelle as well as records listed as *Myotis* species (not determined to species level). A total of 1,920 bat encounters at discrete grid reference points were recorded for seven species of bat listed above and these records were collated from a wide array of bat surveys undertaken since 2018.

As a result of ground assessment of trees during the 2025 surveys,43 trees/tree groups (i.e. grid referenced locations) comprising of 115 individual trees were identified with potential roost features along 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.

Surveys, over the years, assessed 46 structures in Section 3 for potential roosts, 24 buildings were surveyed in 2023, 2024, and 2025 with all other buildings surveyed prior to 2023 (all of these buildings are located outside the CPO boundary). Based on these surveys, a total of sixteen bat roosts were recorded. Of the 24 structures assessed in 2023, 2024, and 2025, three buildings were confirmed to be bat roosts as a result of dusk emergence surveys. One structure previously recorded as a bat roost was not recorded as a bat roost in 2023. Earlier surveys of structures outside the CPO boundary identified 12 bat roosts. Of the confirmed bat roosts in these surveyed buildings, five are located within 30 m of the CPO boundary with an additional five buildings located within 30–100 m of the CPO boundary.

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 in previous surveys undertaken. All other structures were deemed to have a Low suitability for bat roosting and therefore were not resurveyed.

#### 9A.5.6.1.1 Species Conservation Status

With respect to the roosts identified, they are small roosts of relatively common and widespread species within the Irish context. Of the species for which roosts have been identified:

- Common pipistrelles have a very wide distribution across Ireland and is the most populace Irish bat species. In Ireland, the range of the population is considered stable with an increasing population. The conservation status of the species is considered to be favourable within the most recent Article 17 reporting (NPWS, 2025c).
- Soprano pipistrelles are the most widespread species in Ireland. In Ireland, the range of the population is considered stable with an increasing population. The conservation status of the species is considered to be favourable within the most recent Article 17 reporting (NPWS, 2025c);
- Leisler bats are also considered one of the most common and widespread species in Ireland compared to the rest of Europe where it is uncommon or absent. The majority of known roosts in Ireland are from buildings; consistent with the findings of the surveys completed to inform this assessment. In Ireland, the range of the population is considered stable with a steadily increasing population. The conservation status of the species is considered to be favourable within the most recent Article 17 reporting (NPWS, 2025c).
- Daubenton's bat is widespread across Ireland and is associated with aquatic habitats, where it forages. In Ireland, the range of the population is considered stable. The population is considered decreasing, but stable over the long term. The conservation status of the species is considered to be favourable within the most recent Article 17 reporting (NPWS, 2025c).
- Natterer's bat is widespread across Europe. Pressures on this species in Ireland relate to its roosting habitats (typically stone buildings and bridges) and foraging habitats (typically woodlands, rivers, and

pastures). In Ireland, the range of the population is considered stable, but the population trend is unknown. The conservation status of the species is considered to be favourable within the most recent Article 17 reporting (NPWS, 2025c).

#### 9A.5.6.1.2 Construction Phase

##### 9A.5.6.1.2.1 Roost loss

The key potential impacts to roosting bats from the Proposed Development would be the loss of roosts during the construction phase. Roost loss was one of two major threats identified to bats in the Irish countryside; the other major threat being habitat change (Russ and Montgomery, 1999). Roosts are necessary to support the local bat populations. Bats can roost in buildings, built structures (e.g. bridges), natural structures (e.g. caves), and in trees with suitable features for roosting. Dependant on what type of roost is disturbed (e.g. maternity, hibernation, etc.) and the numbers and species of bats in residence, the removal of a roost may result in a considerable decline in local bat populations. Demolition of buildings and felling of trees may result in loss of one or more bat roosts, potentially including maternity roosts.

The roosts predicted to be lost as a result of the construction of the Proposed Development are summarised as follows for each section.

**Section 1**

One tree (S1-TA5-BT17) and six buildings (see Table 9A-9) to be removed have been identified as confirmed roosts. In addition, numerous trees and structures were identified with varying degrees of roosting suitability, but in which bats were not confirmed to be roosting during 2025 surveys.

**Section 2**

One building (see S2-B20b) to be removed has been identified as a confirmed roost. In addition, numerous trees and structures were identified with varying degrees of roosting suitability, but in which bats were not confirmed to be roosting during 2025 surveys.

**Section 3**

Four confirmed bat roosts, two in buildings (Building 1 and Building 8) and two in bridges (Bridge No. 8 and Bridge No. 9), were confirmed within the CPO boundary of Section 3 and proposed for demolishing. An additional two buildings (Building 2 and Building 16), located within the CPO boundary, were recorded but not proposed to be demolished. A large number of trees were identified to have potential roosting value for bats within the CPO boundary of Section 3. Additional bat roosts were recorded in buildings and one tree (PBR 1) outside the CPO boundary of Section 3 and additional buildings with bat roosting potential were also recorded.

**Overall Impact and Effects**

The extent of the effect of roost loss is the CPO boundary of the Proposed Development. The magnitude of the effect is the number of suitable roosts lost (i.e. 12 roosts, each containing between one and seven bats). The species identified to be roosting are common and widespread species with increasing population trends. The effect will commence during site clearance and will be long-term and reversible. Given the number of roosts to be removed, in the absence of mitigation, roost loss is predicted to result in a **significant, localised, long-term, reversible, adverse effect** at the local (higher) geographic scale on roosting bats. The effect is not considered likely to result in any adverse changes in the favourable conservation status of the species affected.

##### 9A.5.6.1.2.2 Accidental killing or injury

Trees to be felled and structures to be demolished could potentially contain roosting bats including those currently identified and those not currently identified but could, due to the mobile nature of the species within a dynamic environment, colonise and establish new roosts prior to the commencement of the construction phase. If bats are in residence when a roost is being destroyed, it may lead to injury and fatalities within the bat population in residence within the roost. In all three Sections of the Proposed Development, such

activities could result in the accidental killing or injury of roosting bats. The loss of known roosts is addressed above. However, in the absence of mitigation, other roosts may be established where bats could be accidentally killed or injured. Such an uncontrolled effect could result in **significant, localised, long-term, reversible effect** at a local (higher) geographic scale on bat populations local to the Proposed Development.

#### 9A.5.6.1.2.3 Disturbance from noise, vibration, lighting, and human presence

Roosts outside the CPO boundary, although not directly impacted, could be indirectly impacted through disturbance (noise, vibration and/or use of artificial lighting) or habitat modification during construction. The principal potential effects of road construction on bats are acute acoustic trauma, disturbance, and displacement from important food and shelter resources (Caltrans, 2016). Disturbance is likely to be the most pervasive and significant effect associated with Proposed Development upon roosting bats. This could lead to roost abandonment, dysfunctional allocation of time and energy resources to vigilance behaviours, and degradation of physiological condition and social order.

Foraging by flight and homeostatic maintenance of thermal balance in small bodies at night is energetically expensive (Caltrans, 2016). Noise disturbance, therefore, may jeopardise survival and reproductive success of bat species as, if their roost is disturbed, energy reserves may be expended finding new roosts or increased vigilance behaviours may occur which may affect their ability to grow, maintain, and reproduce.

Acoustic trauma can potentially have immediate severe consequences. Bats' highly specialised vocalisation and auditory systems dramatically increase their hearing sensitivity to all sounds which potentially exposes them to noise shock and acoustic damage from loud anthropogenic noise. Bats, however, have evolved very effective compensatory protective measures to prevent noise overexposure, specifically from their own very loud echolocation calls. It is unknown, however, whether these mechanisms can protect from overexposure from sudden, unexpected anthropogenic noise shocks such as from blasting or pile driving. Construction of structures, such as the bridges, are expected to produce noise levels up to 74 dB at 10 m distance and 60 dB at 100 m distance (see Chapter 14: Noise & Vibration). Vibration will be generated during activities such as blasting, pile driving, rock breaking, and earthmoving. Table 14-50 within Chapter 14: Noise & Vibration presents typical Peak Particle Velocity (PPV) levels at 7.6 m from specific construction equipment.

Light disturbance can also be detrimental to bats as, when there is too much luminance, bats' vision can be reduced, resulting in disorientation. Too much luminance at bat roosts may cause bats to desert a roost (BCI, 2010). Light falling on a roost exit point can delay bats from emerging and miss peak levels of insect activity at dusk. Any delays of emergence can reduce feeding periods. This has been shown to have direct impacts on bats' reproductive ecology, such as slower growth rates and starvation of young (Duverge *et al.,* 2000). Artificial lighting can also increase the risks of predation as many avian predators will hunt bats.

The impact of roost disturbance during the construction phase of the Proposed Development is predicted to be at least 20 m from the Proposed Development as traffic noise has been shown to affect bats at this distance (Finch *et al.,* 2020). The precise extent of the impact of light-spill, construction noises, and vibrations on roosting bats could not be ascertained, but it is expected to be greater during the construction phase compared to the operational phase.

Based on the survey baseline, a small number of roosts have been identified outside the boundary of the CPO as summarised below:

**Section 1**

A small number of bat roosts were identified close to the Section 1 CPO boundary, but all identified roosts are over 20 m from the CPO boundary. There is also the potential for additional unidentified roosts to be present outside the CPO boundary. All of the identified roosts are over 20 m from the CPO boundary.

**Section 2**

Two bat roosts were identified within 10 m of the CPO boundary of Section 2; one from which up to 19 soprano pipistrelles were confirmed emerging and the other housing at least two Leisler's.

**Section 3**

Four confirmed bat roosts, two in buildings and two in bridges, were confirmed within the CPO boundary of Section 3 and likely to be directly impacted on as demolition works are planned for such structures.

An additional two buildings, located within the CPO boundary were also recorded as bat roosts but are not proposed to be demolished. However, there may be indirect impacts as a result of the proposed works on these two buildings. Additional buildings were recorded as roosts, but these are located outside the CPO boundary of Section 3. Seven of these buildings are located within 20 m of the CPO boundary of Section 3 (four within 10 m of CPO boundary) and these buildings provided roosts for soprano pipistrelles, brown long-eared bats, Natterer's bats, and common pipistrelles. Of the remaining five roosts were recorded, three are located <100 m from CPO and two are located >100 m from CPO boundary. One confirmed tree roost is located 35 m from the CPO boundary of Section 3. There is also the potential for additional unidentified roosts to be present outside the CPO boundary.

**Overall Impact and Effects**

The extent of the effect of disturbance on roosting bats during the construction phase of the Proposed Development is predicted to be at least 20 m from the CPO boundary, as traffic noise has been shown to affect bat behaviour at least 20 m from the noise source (Finch *et al.,* 2020). However, the exact extent is unknown, and the severity of the impact varies with noise levels over the extent. The magnitude of the effect is the number of bats abandoning roosts or otherwise adversely affected. The effect will be short-term over the duration of the construction phase (3 years) and reversible. Due to the confirmed roosts within 10 m of the Proposed Development, disturbance is predicted to result in a **significant, localised, short-term, reversible, adverse effect** at the local (higher) geographic scale on roosting bats within 20 m of the CPO boundary.

#### 9A.5.6.1.2.4 Habitat loss, fragmentation, and alteration

The modification of the habitat (e.g. trees, hedgerows, woodland, etc.) surrounding a roost can have a detrimental effect on the survival of the bat species within that roost. The associated flightpath to and from an access/egress point to a roost is just as valuable and vulnerable as the roost itself (Bat Conservation Trust (BCT) and Institute of Lighting Professionals (ILP), 2018). Severing a key flightpath some distance from the roost could cause desertion. Habitat modification includes direct removal and severance of commuting and foraging routes via removal of habitat (e.g. hedgerows, treelines, woodland, etc.) or indirect severance of commuting and foraging routes (e.g. via installation of lighting).

**Section 1**

As described above, two confirmed and three suspected roosts occur 30–100 m from the Section 1 CPO boundary. There is also the potential for additional unidentified roosts to the present outside the CPO boundary. All will experience significant localised habitat loss in the short-term within their immediate environs, including a reduction in available habitat for foraging and severance of potential commuting/foraging routes to and from the roosts.

**Section 2**

As described above, two confirmed roosts occur within 10 m from the Section 2 CPO boundary. There is also the potential for additional unidentified roosts to the present outside the CPO boundary. All will experience significant localised habitat loss in the short-term within their immediate environs, including a reduction in available habitat for foraging and severance of potential commuting/foraging routes to and from the roosts.

**Section 3**

As described above, four confirmed roosts within the CPO for Section 3 will be impacted. There are an additional two roosts located within the CPO and seven roosts located within 20 m for the CPO boundary. All other roosts are located >20 m from the CPO boundary. There is also the potential for additional unidentified roosts to the present outside the CPO boundary. All will experience significant habitat loss within their immediate environs, including a reduction in available habitat for foraging and severance of potential commuting/foraging routes to and from the roosts.

**Overall Impact and Effects**

The extent of the effect of construction phase habitat loss, fragmentation, and alteration on roosting bats is predicted to be confined to within the CPO boundary where habitat will be removed or modified. The magnitude of the effect is the number of roosting bats within the vicinity of the CPO boundary. The effect will commence during site clearance during construction and is partially permanent and irreversible; mindful of the significant amount of habitat (including linear habitat) which the Proposed Development will deliver in the medium- to long-term. The proposed landscaping includes the creation of hedgerows, woodland, and semi-natural grassland. Given that the effect will be partially reversed through landscaping, in the absence of mitigation, habitat loss, fragmentation, and alteration is predicted to result in a **not significant**, partially permanent and irreversible, adverse effect on roosting bats.

### 9A.5.6.1.3 Operational Phase

The only potential operational phase impact on roosting bats is disturbance from noise, vibration, lighting, and human presence.

#### 9A.5.6.1.3.1 Disturbance from noise, vibration, lighting, and human presence

The principal potential effects of traffic on bats are disturbance and displacement from important food and shelter resources (Caltrans, 2016). Disturbance is likely to be the most pervasive and significant effect associated with road projects upon roosting bats. This could lead to roost abandonment, dysfunctional allocation of time and energy resources to vigilance behaviours and degradation of physiological condition and social order.

Foraging by flight and homeostatic maintenance of thermal balance in small bodies at night is energetically expensive (Caltrans, 2016). Noise disturbance, therefore, may jeopardise survival and reproductive success of bat species as, if their roost is disturbed, energy reserves may be expended finding new roosts or increased vigilance behaviours may occur which may affect their ability to grow, maintain and reproduce.

Traffic noise has been shown to have a significant negative effect on bat activity (Finch *et al.,* 2020). This negative effect was elicited at least 20 m away from the noise source with bats avoiding the source of the noise. Traffic noise reduced activity for a number of species studied while it also reduced feeding behaviour and overall activity of common and soprano pipistrelle.

Light disturbance can also be detrimental to bats as, when there is too much luminance, bats' vision can be reduced resulting in disorientation. Too much luminance at bat roosts may cause bats to desert a roost (BCI, 2010). Light falling on a roost exit point can delay bats from emerging and miss peak levels of insect activity at dusk. Any delays of emergence can reduce feeding periods. This has been shown to have direct impacts on bats' reproductive ecology, such as slower growth rates and starvation of young (Duverge *et al.,* 2000).

**Section 1**

As described above, two confirmed and three suspected roosts occur 30–100 m from the Section 1 CPO boundary. There is also the potential for additional unidentified roosts to the present outside the CPO boundary.

**Section 2**

As described above, two confirmed bat roosts occur within 10 m of the Section 2 CPO boundary. There is also the potential for additional unidentified roosts to the present outside the CPO boundary.

The Proposed Development does not include additional lighting in the vicinity of either of the confirmed roosts. The roost from which up to 19 soprano pipistrelles were observed emerging (S2B1) is adjacent to the existing stretch of the N13 from which the majority of traffic will be diverted. Therefore, while the new alignment will bring the carriageway slightly closer to the roost (i.e. from approximately 25 m to 20 m), traffic will be significantly reduced. The carriageway will be approximately 80 m from the Leisler's roost (S2B3). Therefore, disturbance of this roost is not considered significant.

**Section 3**

As described above two buildings, located within the CPO boundary were also recorded as bat roosts but are not proposed to be demolished. Additional buildings were recorded as roosts, but these are located outside the CPO boundary of Section 3. Eight of these buildings are located within 20 m of the CPO boundary of Section 3. Of the remaining five roosts recorded, three are located <100 m from CPO boundary and two are located >100 m from CPO boundary. One confirmed tree roost is located 35 m from the CPO boundary of Section 3.

Additional lighting is proposed for six locations along Section 3, and this will increase lighting in vicinity of the following buildings recorded as a bat roost and located adjacent to the Proposed Development route:

- Bat Area 1 (Lifford): Building 46 (Satellite Roost – Common pipistrelle).
- Bat Area 2 (Ballindraite): Building 40 (Satellite Roost – Soprano pipistrelle) and Building 41 (Maternity Roost, Soprano pipistrelle).
- Bat Area 5 (Drumoghill): Building 2 (Satellite/Daytime Roost – Soprano pipistrelle).

**Overall Impact and Effects**

The extent of the effect of disturbance on roosting bats during the operational phase of the Proposed Development is predicted to be at least 20 m from the CPO boundary, as traffic noise has been shown to affect bat behaviour at least 20 m from the noise source (Finch et al., 2020). However, the exact extent is unknown, and the severity of the impact varies with noise levels over the extent. The magnitude of the effect is the number of bats abandoning roosts or otherwise adversely affected. The effect will be long-term for the operational phase of the proposed road, and reversible. Given that the identified bat roosts will not be subject to significant increases in disturbance, in the absence of mitigation, disturbance from noise, vibration, lighting, and human presence is predicted to result in a **not significant**, long-term, reversible, adverse effect on roosting bats.

### 9A.5.6.2 Bats – Commuting and Foraging

Overall, and as would be expected, mindful of the spatial scale of the Proposed Development and the habitats which lie within the CPO boundary, the Proposed Development supports a typical range of species which are summarised by Section below:

**Section 1**

Seven species were recorded (i.e. common pipistrelle, soprano pipistrelle, Leisler's bat, brown long-eared bat, Natterer's bat, Nathusius' pipistrelle, and Daubenton's bat) in Section 1. Common and soprano pipistrelle had high levels of activity at certain locations, Leisler's bat also had notable activity levels at certain locations, and all other species were either absent or exhibited very low activity levels at every survey location in Section 1.

**Section 2**

Six species were recorded (i.e. common pipistrelle, soprano pipistrelle, Leisler's bat, Nathusius' pipistrelle, brown long-eared bat, and *Myotis* sp.) in Section 2. Common and soprano pipistrelle had high levels of activity at certain locations, Leisler's bat also had low to moderate activity levels at certain locations, and all other species were either absent or exhibited very low activity levels at every survey location in Section 2.

**Section 3**

Bat activity was recorded along the entire length of the proposed road route as a result of transects and dusk/dawn surveys completed. 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. The following bat species were recorded: soprano pipistrelle, common pipistrelle, Leisler's bat, Nathusius' pipistrelle, Daubenton's bat, Natterer's bat, and brown long-eared bat, with additional *Myotis* species records. Therefore, a total of seven confirmed bat species were recorded along Section 3.

The levels of bat activity varied for each bat species recorded. In the 2023 and 2025 static surveillance surveys, 7 static locations (30%) had a high level of bat activity while an additional 5 static unit locations (22%) had a moderate level of bat activity. For individual bat species, there was six static unit location 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.

Bat activity was associated with a number of KERs identified along the proposed road route: KER 3-1, KER 3-3, KER 3-4, KER 3-5, KER 3-11, KER 3-13, KER 3-14, KER 3-15, and KER 3-16.

#### 9A.5.6.2.1 Species Conservation Status

With respect to the roosts identified, they are small roosts of relatively common and widespread species within the Irish context. Of the species for which roosts have been identified:

- Common pipistrelles have a very wide distribution across Ireland and is the most populace Irish bat species. In Ireland, the range of the population is considered stable with an increasing population. The conservation status of the species is considered to be favourable within the most recent Article 17 reporting (NPWS, 2025c).
- Soprano pipistrelles are the most widespread species in Ireland. In Ireland, the range of the population is considered stable with an increasing population. The conservation status of the species is considered to be favourable within the most recent Article 17 reporting (NPWS, 2025c)
- Leisler bats are also considered one of the most common and widespread species in Ireland compared to the rest of Europe where it is uncommon or absent. The majority of known roosts in Ireland are from buildings; consistent with the findings of the surveys completed to inform this assessment. In Ireland, the range of the population is considered stable with a steadily increasing population. The conservation status of the species is considered to be favourable within the most recent Article 17 reporting (NPWS, 2025c).
- Nathusius' pipistrelle a resident species, but it is typically a migrant species, with resident bats supplemented by migratory bats in the winter. No confirmed maternity or hibernation roosts have been recorded in the Republic of Ireland. Its range has been increasing, and population models indicate that the population is increasing, but favourable reference values have not been established, and the conservation status of the species is considered unknown within the most recent Article 17 reporting (NPWS, 2025c)
- Daubenton's bat is widespread across Ireland and is associated with aquatic habitats, where it forages. In Ireland, the range of the population is considered stable. The population is considered decreasing, but stable over the long term. The conservation status of the species is considered to be favourable within the most recent Article 17 reporting (NPWS, 2025c).
- Natterer's bat is widespread across Europe. Pressures on this species in Ireland relate to its roosting habitats (typically stone buildings and bridges) and foraging habitats (typically woodlands, rivers, and pastures). In Ireland, the range of the population is considered stable, but the population trend is unknown. The conservation status of the species is considered to be favourable within the most recent Article 17 reporting (NPWS, 2025c).
- Brown long-eared bat is widespread in Ireland and Europe. It is associated with landscapes containing riparian habitat and woodland. In Ireland, both the range and population are considered stable. The conservation status of the species is considered to be favourable within the most recent Article 17 reporting (NPWS, 2025c).

#### 9A.5.6.2.2 Construction Phase

##### 9A.5.6.2.2.1 Habitat loss, fragmentation, and alteration

The Proposed Development will result in the loss of foraging habitat. Not all of the habitat lost is of equal quality or value for foraging by the bat assemblage. Habitats especially used by bats to forage include woodland edges, treelines and hedgerows, wetlands, and watercourses; however, bats also forage over pastoral grassland. Therefore, the higher quality habitat which will be lost includes hedgerows and treelines, ditches, watercourses, wet grassland, various woodland types, and associated habitat. Habitat loss leads to a reduction in foraging area for bats as the abundance of insects upon which bats rely on as their only food source is reduced.

The linear nature of the Proposed Development will result in significant severance of key corridors likely to be used by the bat assemblage to move through the landscape for foraging and commuting purposes. These include hedgerows and treelines, drainage ditches, and watercourses. The linear features which will be lost can also connect several blocks of woodland habitat. Therefore, accessibility to these for foraging will be impacted.

Habitat change in the wider countryside was one of two major threats identified to bats in the Irish countryside; the other major threat being roost loss (Russ and Montgomery, 1999). Bats rely on commuting routes through the landscape to link their varied seasonal habitat requirements. Features such as hedges, treelines, and waterways are used by bats to navigate between roosts and feeding areas and continuity of such features is important to them (Law *et al.,* 2019). Not only do treelines and hedgerows act as wildlife corridors; they also provide cover and shelter between roost and foraging sites (Shiel and Fairly, 1998; Shiel *et al.,* 1998; Shiel *et al*., 1999). A break in a hedge line for 10 m or more can cut bats off from a foraging site (Entwistle *et al.,* 2001). There are also implications for breeding bats with hedgerow loss, because Leisler's bats have been shown to use hedgerow trees as advertising posts during mating (O'Neill, 2001) and the loss of these may have an effect on their ability to find a mate and to reproduce.

**Section 1**

Section 1 will result in the loss of foraging habitat. In particular, these will include the loss of approximately 17.2 km of hedgerow and treelines, approximately 18 ha of woodlands and scrub (i.e. WD1, WD2, WD3, WN1, WN4, WN5, WN6, WS1, and WS2), and approximately 61 ha of wet grasslands and heath. Numerous drainage ditches, streams, and rivers will also be culverted or bridged. The linear nature of the Proposed Development will result in significant severance of key corridors likely to be used by the bat assemblage to move through the landscape for foraging and commuting purposes (i.e. hedgerows, treelines, drainage ditches, rivers, and streams). The River Finn is likely to be a key foraging and commuting route locally and this will be traversed by the Proposed Development. To the north of the River Finn, the linear features which will be lost currently connect several blocks of woodland habitat, so accessibility to these for foraging will be impacted.

**Section 2**

The Proposed Development will result in the loss of foraging habitat. These include the loss approximately 4.1 km of hedgerow and treelines and approximately 56 ha of woodlands, scrub, and wet grasslands (i.e. WD1, WD2, WS1, WS2, and GS4). Numerous drainage ditches, streams, and rivers will also be culverted or bridged. The linear nature of the Proposed Development will result in significant severance of key corridors likely to be used by the bat assemblage to move through the landscape for foraging and commuting purposes (i.e. hedgerows, treelines, drainage ditches, rivers, and streams). The River Swilly is likely to be key foraging and commuting route locally and this will be traversed by the Proposed Development.

**Section 3**

The Proposed Development will result in the loss of foraging and commuting habitat. This includes the loss of approximately 14 km of WL1 Hedgerows (92% of existing hedgerow within the CPO boundary), 13.82 ha of woodland (WS2 immature woodland, WD4 conifer planation, WD1 mixed broadleaved woodland, WN6 wet willow-alder-ash woodland, WS1 scrub, WN5 riparian woodland, and WD2 mixed broadleaved/conifer woodland = 89% of existing woodland within the CPO boundary), modification of 3.27 km of waterway (FW2 depositing/lowland rivers and FW1 eroding/upland rivers = 52% of waterway within the CPO boundary). Additional semi-importance habitats also include ditches (FW4 drainage ditches) and tall vegetation (e.g. FS2 tall herb swamps).

The linear nature of the Proposed Development will result in significant severance of key corridors likely to be used by the local bat population to move through the landscape for foraging and commuting purposes. The Deele River and River Finn and smaller rivers such as the Swilly Burn and Corker River are important key linear waterways for local bat movement and foraging.

Many of the areas identified as KERs are also important foraging habitats for local bat populations. Therefore, the potential impacts on KERs will also impact on the foraging and commuting habitat capacity of the habitats identified in the following KERs: KER 3-1, KER 3-3, KER 3-4, KER 3-5, KER 3-11, KER 3-13,

KER 3-14, KER 3-15, and KER 3-16. These is an additional impact where bat roosts (to be retained) are located within or adjacent to KERs due to the removal of bat habitat associated with the KER:

- Building 2 is located adjacent to KER 3-4 (Bat Area 5 Drumoghill)
- Buildings 30 and 31 are located adjacent to KER 3-5 (Bat Area 6 Dorrable)
- Buildings 40 and 41 are located adjacent to KER 3-16 (Bat Area 2 Ballinadraite)
- Building 46 is located adjacent to KER 3-15 (Bat Area 1 Lifford).

**Overall Impact and Effects**

The extent of the effect of habitat loss, fragmentation, and alteration on foraging and commuting bats during the construction phase is predicted to be confined to within the CPO boundary where habitats will be removed/fragmented, but there will also be impacts on the accessibility of habitats outside the CPO boundary for the local bat population; particularly those populations moving perpendicular to the road corridors. The magnitude of the effect is the reduction in area in which the local bat populations can forage and commute, combined with a change in spatial foraging/commuting activity. **In the short-term, the effect will be significant; however, in the medium- to long-term the effect will be non-significant** particularly due to the extent of landscaping which will be delivered combined with the design of the crossings over key corridors such as those along the River Finn and Swilly. The proposed landscaping will, in particular, strengthen foraging/commuting opportunities parallel to the road alignment.

#### 9A.5.6.2.2.2 Disturbance from noise, vibration, lighting, and human presence

Works associated with road construction are likely to lead to an increased human presence at the site, extra noise, lighting, and changes in the site layout and local environment. These works may have a negative effect on how bats use that environment as they prefer low incidences of direct human disturbance and lighting and a stable environment so they can continue to follow established flightpaths. As a result, disturbance is likely to be the most pervasive and significant effect associated with road projects upon commuting and foraging bats. This could lead to avoidance of foraging areas which may lead to degradation of physiological condition (Caltrans, 2016) as they spend increased time seeking additional foraging areas. The principal potential effects of road construction, including construction traffic noise, on bats are acute acoustic trauma, disturbance, and displacement from important food and shelter resources.

Construction lighting and noise may affect the foraging and commuting behaviour of bats. The extent of the effect of disturbance on foraging and commuting bats during the construction phase of the Proposed Development is predicted to be at least 20 m from the CPO boundary, as traffic noise has been shown to affect behaviour at least 20 m from the noise source (Finch *et al.,* 2020). However, the exact extent is unknown, and the severity of the impact varies with noise levels over the extent. The magnitude of the effect is the area from which foraging and commuting bats are displaced and their resulting reduced foraging success. Given the baseline moderate levels of activity, the magnitude of the effect is also considered moderate. The effect will be infrequent, as most construction activities will be carried out during regular daytime hours. The effect will be short-term over the duration of the construction phase (3 years) and reversible. The timing of the construction works may influence the magnitude (i.e. the greatest potential magnitude is during the summer months of May to September when bat foraging and commuting activity is highest). Because of its infrequent occurrence, disturbance is predicted to result in a **not significant**, short-term, reversible, adverse effect on commuting and foraging bats.

### 9A.5.6.2.3 Operational Phase

The only potential operational phase impact on commuting and foraging bats is disturbance from noise, vibration, lighting, and human presence.

#### 9A.5.6.2.3.1 Disturbance from noise, vibration and lighting

The principal potential effects of operational traffic on bats are disturbance and displacement from important food and shelter resources (Caltrans, 2016). This impact acts in combination with the construction phase habitat fragmentation, as the operation of the proposed road can act as a barrier to movement, reducing the foraging area available to bats and impacting on population dynamics. Disturbance from the operational

phase of the Proposed Development can occur from light-spill from vehicles and static lamps in addition to noise-related disturbance from vehicles. Disturbance is likely to be the most pervasive and significant effect associated with road projects upon commuting and foraging bats. This could lead to avoidance of foraging areas which may lead to degradation of physiological condition (Caltrans, 2016) as they spend increased time seeking additional foraging areas.

Traffic noise has been shown to have a significant negative effect on bat activity (Finch *et al.,* 2020). This negative effect was elicited at least 20 m away from the noise source with bats avoiding the source of the noise. Traffic noise reduced activity for a number of species studied while it also reduced feeding behaviour and overall activity of common and soprano pipistrelle. Light disturbance can also be detrimental to bats as, when there is too much luminance, bats' vision can be reduced, resulting in disorientation. Artificial lighting can attract insects which may attract certain species of bats (e.g. Leisler's and pipistrelle bats), but it can also deter other species such as *Myotis* (BCT and ILP, 2018). Consequently, bat species less tolerant of light are put at a competitive disadvantage and are less able to forage successfully and efficiently. This can have a significant impact upon fitness and breeding success, especially when insects preferentially congregate around artificial lighting depopulating the adjacent habitats. Artificial lighting is particularly harmful if used along linear habitats such as watercourses and hedgerows. Continuous lighting in the landscape, such as along roads or waterways, creates barriers which many bat species may not cross, especially the slower-flying species (Fure, 2012) even at low light levels.

**Section 1**

Details of proposed lighting of Section 1 are contained in EIAR Drawing 4.54. The proposed lighting is limited to select locations required for safety, limiting ecological impacts. Lighting is not proposed at any large watercourse. The largest area of proposed lighting is at the Teevickmoy junction. This junction crosses small watercourses. However, static detectors S1-SD09 and S1-SD11 were deployed at these watercourses and only recorded moderate levels of bat activity; almost entirely pipistrelle species.

**Section 2**

Details of proposed lighting of Section 2 are contained in EIAR Drawing 4.55. The proposed lighting is limited to select locations required for safety, limiting ecological impacts. Levels of bat activity were generally moderate at the static detector locations near where lighting is proposed; namely S2-SD04, S2-SD06, and S2-SD10.

**Section 3**

Details of proposed lighting of Section31 are contained in EIAR Drawing 4.56. The proposed lighting is limited to six locations along Section 3 for safety and limiting ecological impacts. Five of these six locations are in deemed to be "Bat Areas" (Bat Areas 1, 2,4, 5, and 6). Park & Share / Cycle Facilities are proposed for three of the six locations. These are located within Bat Areas 1, 2, and 4. Light sensitive bat species were recorded in all six areas proposed for public lighting.

**Overall Impact and Effects**

The extent of the effect of disturbance on foraging and commuting bats during the operational phase of the Proposed Development is predicted to be at least 20 m from the CPO boundary, as traffic noise has been shown to affect behaviour at least 20 m from the noise source (Finch *et al*., 2020). However, the exact extent is unknown, and the severity of the impact varies with noise levels over the extent. The magnitude of the effect is the area from which foraging and commuting bats are displaced and their resulting reduced foraging success. The magnitude of the effect is the number of bats displaced and is therefore proportional to the baseline activity levels, which varies across the length of the Proposed Development. Given the levels of activity recorded across the Proposed Development, especially at locations with proposed lighting, the magnitude is considered moderate. The effect will be long-term over the duration of the operational phase and reversible. Therefore, disturbance is predicted to result in a **localised significant, long-term, reversible, adverse effect** at the local (higher) geographic scale on commuting and foraging bats. The magnitude and extent of effect is also likely to reduce significantly as the proposed landscaping matures.

### 9A.5.6.3 Badger

Badgers are a common and widespread species in Ireland, whose significance to this assessment relates not to their conservation status but rather the specific legal protection they are afforded, which is primarily due to issues related to persecution. Badger activity has varied significantly over the years during which baseline information for the Proposed Development was being collated. Badgers are active across the Proposed Development as is summarised, per section, below. Badger evidence is discussed in the Baseline Report in Appendix C9A.01. However, to mitigate potential for persecution risk with potential sett locations entering the public domain, precise locations of badger setts 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 Appendix C9A.01.

**Section 1**

One partially used (S1-SET32) and seven inactive setts (S1-SET1, S1-SET5, S1-SET11, S1-SET13, S1-SET15, S1-SET16, and S1-SET17) are within the CPO boundary. One active (S1-SET3), one partially used (S1-SET33), and nine inactive setts (S1-SET2, S1-SET4, S1-SET6, S1-SET7, S1-SET8, S1-SET9, S1-SET10, S1-SET12, and S1-SET34) are less than 50 m from the CPO boundary. One partially used (S1-SET35), and two inactive setts (S1-SET19, S1-SET21) are 50–100 m from the CPO boundary. One active (S1-SET14), one partially used (S1-SET36), and one inactive sett (S1-SET18) are 100–150 m from the CPO boundary. None of the setts were main setts

**Section 2**

One active sett (S2-SET1) is approximately 30 m from the CPO boundary, west of the proposed Swilly bridge crossing. It is approximately 120 m from the nearest point of the proposed bridge structure and is not a main sett. Two other inactive setts are within the CPO boundary. During the latest surveys, the only recorded badger activity was in the vicinity of S2-SET1.

**Section 3**

Signs of badger activity were recorded at very few locations along Section 3 of the Proposed Development during the mammal surveys carried out in 2020, and no change in the distribution of the species was recorded during the validation survey undertaken in 2025. A total of six badger setts were recorded from within the footprint of the proposed road, or close to the boundary of the CPO boundary, 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.

#### 9A.5.6.3.1 Construction Phase

In relation to construction impacts, the following have been identified:

- Accidental killing or injury
- Loss of setts
- Disturbance of setts
- Habitat loss, fragmentation, and alteration

##### 9A.5.6.3.1.1 Accidental killing or injury

There is potential for badger to be killed or injured during construction through accessing areas of construction, including open excavations. Direct impacts to badgers during the construction phase of the Proposed Development could be injury or fatalities via collision with construction machinery, especially should night-time works be conducted, as badgers are crepuscular and nocturnal. Groundworks also have the potential to disturb setts, causing injury or fatalities to resting badger. There is also a risk of badgers getting trapped in excavations which remain open overnight. Badgers are active right across the Proposed Development including within and adjacent to the CPO boundary.

The extent of the effect of accidental killing or injury is the CPO boundary, and the magnitude is the number of badgers killed or injured. However, if fatalities occur, this could impact on the badger population within the wider, local landscape. The potential for this impact will last for the duration of the construction phase and the effect is long-term and irreversible at the individual level should a fatality occur, with a knock-on reversible impact on the overall population within the vicinity of the works. However, incidents of killing or injury are considered highly unlikely and, therefore, **no significant adverse effects** are likely on badger. Mitigation is proposed to ensure that no animal welfare issues arise with respect to badgers during the construction phase such as from entrapment within open excavations. Similar measures are also proposed for the same purpose for otter.

#### 9A.5.6.3.1.2 Loss of setts

There are multiple types of setts within a badger group's territory, varying in size, complexity, and use (NRA, 2005a). Usually, there is just one principal sett (the 'main' sett) within a territory, which is generally used for breeding and is inhabited by badgers throughout the year. This sett is usually located centrally within the badger group territory. Setts closer to the boundary of a territory are usually referred to as 'outlier' setts; which provide a supporting function to the main sett. Other types of sett include annexe, subsidiary, and minor setts, depending on their use and importance to the badger group. Setts that are too close to the proposed construction works may require temporary closure or permanent removal. Given that sett activity can change over time (as reflected within the baseline surveys collated over several years, precautionary pre-construction surveys for badgers are included, given the mobile nature of the species and their use of the landscape. The assessment below is, however, based on the current baseline conditions with respect to sett distribution and activity.

**Section 1**

None of the setts in the vicinity of Section 1 are main setts. Section 1 will result in the loss of one partially used sett and seven inactive setts within the CPO boundary.

One active sett, one partially used sett, and nine inactive setts are less than 50 m from the CPO boundary and will potentially require closure. The active sett (S1-SET3) is approximately 20 m from the CPO boundary, 30 m from the top of a cut for the mainline carriageway, and 160 m from an area where excavation through rock may require blasting. The partially used sett (S1-SET33) is approximately 15 m from the CPO boundary but is approximately 135 m from the nearest part of the alignment, at the top of a cut for the mainline carriageway. This cut is in an area of rock that may require blasting. Given the likely construction works in the vicinity of these two setts, they will likely require temporary closure for the duration of the construction works

No blasting or piling works are anticipated in the vicinity of the active or partially used setts which are greater than 50 m from the CPO boundary, and therefore they are not likely to require closure or experience significant disturbance.

**Section 2**

Section 2 will result in the loss of two potential inactive setts within the CPO boundary. The active sett, S2-SET1, is approximately 120 m from the proposed Swilly crossing and would likely be subject to significant disturbance during piling. Therefore, this sett would likely require temporary closure.

**Section 3**

A total of six badger setts were recorded within the footprint or immediate proximity of the Proposed Development, which may require exclusion. None of the setts recorded were main setts, though they will require re-surveying prior to the commencement of construction to determine their current activity status (as this may change over the intervening period). While these setts will be removed and the proposed road will dissect existing territories, their loss should not affect the continued survival of badgers subject to the provision of safe crossing facilities in appropriate locations.

**Overall Impact and Effects**

The extent of the effect of the loss of setts is the area within 150 m of the CPO boundary. The magnitude is displacement of badgers from breeding or resting sites. The timing of the construction works may influence the magnitude, as impacts on a breeding sett would be more significant (the badger breeding season is December to June, inclusive). The effect is predicted to be permanent and irreversible for those setts which will be permanently removed and short-term and reversible for those setts which will be temporarily closed. While none of the identified setts are main setts, due to the large number of setts to be impacted, in the absence of mitigation, the loss of setts may result in a **significant, partially permanent and irreversible, adverse effect** at the local (higher) geographic scale on badger. Although significant, it is not considered that the loss of setts will adversely affect the conservation status of the species other than at the local level of the Proposed Development.

#### 9A.5.6.3.1.3 Disturbance of setts

Badger setts can also be disturbed by noise and vibration up to distances of 150 m. Therefore, setts within 150 m of the Proposed Development may be subject to disturbance caused by construction works during the construction phase of the Proposed Development.

**Section 1**

One active sett and two partially used setts are 50–150 m from the CPO boundary and are unlikely to require closure. Due to their distance from the proposed works and the nature of the proposed works in their vicinity, they are unlikely to experience significant levels of disturbance. There is potential that those setts outside the CPO boundary which are assessed above as likely requiring closure, may be allowed to remain open for part of the construction period. If that is the case, these setts could be subject to disturbance.

**Section 2**

There is potential that the sett outside the CPO boundary which is assessed above as likely requiring closure (i.e. S2-SET1), may be allowed to remain open for part of the construction period. If that is the case, this sett could be subject to disturbance.

**Section 3**

There will be a risk of disturbance and disruption to badger setts associated with the construction phase which may lead to temporary displacement from part of a clan's territory. None of the setts identified were main setts and none showed evidence during surveys of recent activities. The use of subsidiary and outlier badger setts is occasional and if disturbance occurs, badger are likely to relocate to main setts. Following construction, the animals are expected to adjust to the re-ordered landscape and there should be no long-term impact on the badger population within the vicinity of the road.

**Overall Impact and Effects**

The extent of the effect of disturbance of setts is the area within 150 m of the CPO boundary. The magnitude is displacement of badgers from breeding or resting sites. The timing of the construction works may influence the magnitude, as impacts on a breeding sett would be more significant (the badger breeding season is December to June, inclusive). The effect will be short-term, for the duration of the construction phase, and reversible. As discussed in the assessment of the loss of setts above, those setts which will be subject to significant levels of disturbance will be closed for the duration of such disturbance. The remaining setts are sufficient distances from the Proposed Development or any blasting or piling works to ensure they will not be subject to significant disturbance. Therefore, in the absence of mitigation, disturbance of setts is likely to result in a **not significant**, short-term, reversible, adverse effect on badger.

#### 9A.5.6.3.1.4 Habitat loss, fragmentation, and alteration

Badgers will forage across a wide range of habitats, including woodland, linear features such as hedgerows, and pastoral land. Typically, badgers move 1–2 km per night within the vicinity of their setts when foraging (O'Corry-Crowe *et al*., 1993), but there have been cases where individual animals have been recorded moving over long distances (e.g. up to 15 km) during relatively short periods, primarily during dispersal (Byrne *et al*., 2012). Badgers are omnivores, feeding on earthworms and other invertebrates such as bees,

wasps, beetles, cranefly larvae, snails, slugs, caterpillars, amphibians, roots, and fruits (Byrne *et al.,* 2012). Birds, bird eggs, rabbits, and hares can also form part of a badger's diet.

The Proposed Development will result in a loss of linear, woodland, and pastoral habitat used by foraging badgers. Additionally, it will sever foraging habitats, resulting in a change in the use of the landscape by different badger clans local to the Proposed Development.

**Section 1**

Given the distribution of badger setts and activity observed during baseline surveys, there is potential to remove habitat for several badger clans located along the length of the Proposed Development. The sparsity of badger activity along the majority of Section 1 recorded in 2023 and 2025 indicated that the majority of Section 1 is not a significant foraging or commuting area for a badger clan. There was greater evidence of badger activity around the townlands of Drumboe Lower and Mullaghagarry. The project description includes a mammal underpass in Drumboe Lower at approximate mainline chainage 3+200 and free passage along the River Finn. This will allow permeability for those badgers recorded as being active in Drumboe Lower. However, for those badgers in the vicinity of Mullaghagarry, Section 1 is likely to significantly reduce the area of their territory.

**Section 2**

The Proposed Development will result in a loss and fragmentation of linear, woodland, and pastoral habitats. Very little badger activity has been recorded throughout Section 2. However, badger are active on the west side of the proposed Swilly crossing. The Proposed Development at this location has the potential to reduce access to foraging habitat, especially given that the area is bounded by urban development.

**Section 3**

The Proposed Development will result in a loss and fragmentation of linear, woodland, and other habitats. While very little badger activity has been recorded throughout Section 3, the resolution of the conflict arising from Bovine TB with associated persecution may allow populations to rebound. The fragmentation of habitats will have a significant negative effect on badger populations in the absence of appropriate measures to allow for safe passage across the Proposed Development.

**Overall Impact and Effects**

The extent of the effect of habitat loss, fragmentation, and alteration on badger during the construction phase is predicted to be confined to within the CPO boundary albeit with effects on badger clans beyond the CPO boundary also. The magnitude of the effect is the change in the territories of the local badger clans and the reduction in area in which they can forage and commute. Based on 2023 and 2025 evidence of activity, areas have been identified in the vicinity of the Proposed Development which are likely to experience significant change in the territory of badger clan(s). The effect will be permanent and irreversible. Therefore, in the absence of mitigation, habitat loss, fragmentation, and alteration is predicted to result in a **significant, local, permanent, irreversible, adverse effect** at the local (higher) geographic scale on badger. Although significant, it is not considered that habitat loss, fragmentation, and alteration will adversely affect the conservation status of the species other than at the local level of the Proposed Development.

### 9A.5.6.3.2 Operational Phase

In relation to operational impacts, the following have been identified:

- Accidental killing or injury
- Disturbance from noise, vibration, lighting, and human presence.

#### 9A.5.6.3.2.1 Accidental killing or injury

In the absence of mitigation, badgers are likely to cross new road developments, where there is a risk of badgers being casualties of road traffic.

The extent of the effect of accidental killing or injury is the length of the proposed road, and the magnitude is mortality of badger through roadkill. The effect is long-term, for the operational phase of the Proposed Development, and irreversible. Therefore, in the absence of mitigation consistent with TII guidance, accidental killing or injury is predicted to result in a **significant, long-term, irreversible, adverse effect** at the local (higher) geographic scale on badger.

#### 9A.5.6.3.2.2 Disturbance from noise, vibration, lighting, and human presence

Badger setts can be disturbed by noise and vibration up to distances of 150 m. Therefore, setts within 150 m of the Proposed Development may be subject to disturbance caused by traffic during the operational phase of the Proposed Development.

The extent of the effect of disturbance from noise, vibration, lighting, and human presence is predicted to be confined to within 150 m of the CPO boundary. The magnitude is the potential displacement of breeding or resting badgers from their setts. The effect is predicted to be long-term and reversible. However, given the badger population appears to be widespread within the landscape either side of Section 1, increased disturbance of setts adjacent to the proposed road is not anticipated to significantly impact the local badger population. The active sett in Section 2 is approximately 120 m from the proposed mainline carriageway and is therefore unlikely to be subject to significant disturbance. Similarly, increased disturbance of setts adjacent to the Section 3 is not anticipated to significantly impact the local badger population. Therefore, in the absence of mitigation, disturbance is predicted to result in a **not significant**, long-term, reversible, adverse effect on badger.

### 9A.5.6.4 Otter

The following precautionary approach is adopted for the purpose of this assessment with respect to otter. As established in Section 9A.5.2.1.4, all otter in the vicinity of Section 1 are considered QI otter of the River Finn SAC. As established in Section 9A.5.2.5.5, all otter in the vicinity of Section 2 are considered QI otter of the Lough Swilly SAC. As established in Sections 9A.5.2.1.4 and 9A.5.2.5.5, all otter in the vicinity of Section 3 are considered either QI otter of the River Finn SAC or QI otter of the Lough Swilly SAC. Therefore, the impacts and effects on the otter IEF are the same as the combined impacts and effects on the QI otter of the River Finn SAC and the QI otter of the Lough Swilly SAC, assessed in Sections 9A.5.2.1.4 and 9A.5.2.5.5, respectively. It should be noted that no active otter holts or couching sites have been recorded, through the latest surveys. Therefore, in the absence of mitigation, the potential impacts on otter are:

- Construction phase:
  - Accidental killing or injury of otter is likely to result in **significant, short- to medium-term, reversible, adverse effect** at the international geographic scale.
  - Habitat loss, fragmentation, and alteration is likely to result in a **significant, permanent but reversible, adverse effect** at the international geographic scale.
  - Loss or disturbance of holts or couching sites is likely to result in **no significant** adverse effects.
  - Surface water pollution is likely to result in a **significant, short-term, reversible, adverse effect** at the international geographic scale.
  - Disturbance from noise, vibration, lighting, or human presence is likely to result in a **significant, short-term, reversible, adverse effect** at the international geographic scale.
- Operational phase:
  - Accidental killing or injury of otter is likely to result in a **significant, long-term, reversible, adverse effect** at the international geographic scale.
  - Surface water pollution is likely to result in a **not significant**, **long-term, reversible, potentially slightly positive effect.**

### 9A.5.6.5 Other Protected Mammals – Hedgehog and Pygmy Shrew

#### 9A.5.6.5.1 Construction phase

##### 9A.5.6.5.1.1 Accidental killing or injury

As many as 25 pygmy shrew per hectare can be found from July to December (McDevitt, 2022) and current data on hedgehog numbers in Ireland shows that population densities can vary from one individual per half a hectare to one individual per three hectares (Conserve Ireland, 2018a). Given the extensive distribution of hedgerows, treelines, woodland, and scrub throughout the Proposed Development, it is likely that pygmy shrew and hedgehog are widely dispersed in considerable numbers throughout the area. Hedgehogs and pygmy shrew are particularly susceptible to injury or killing, should they interact with the proposed works area. Pygmy shrews are very small (approximately 6 g) and prefer habitats rich in ground cover such as hedgerows and woodlands.

Hedgehogs are relatively slow moving and if threatened, their main line of defence is to roll up in a ball. Hedgehogs also hibernate, generally from October/November through to March/April. Hibernation locations include under hedgerows and roots of trees, in piles of timber, inside compost heaps or in old rabbit burrows and underneath timber buildings and sheds. Due to the nature of the works and the traits of these species, they are at high risk of accidental killing or injury during the construction phase of the Proposed Development.

Given the extensive distribution of optimal habitats for pygmy shrew and hedgehog (e.g. hedgerows, treelines, woodland, and scrub) throughout all three sections of the Proposed Development, it is likely that they are widely dispersed in considerable numbers throughout the area.

The extent of the effect of accidental killing or injury is the CPO boundary, and the magnitude is the number of pygmy shrews and hedgehogs killed or injured. It is considered highly unlikely that a significant proportion of the local population (i.e. >1%) will be killed or injured. The potential for this impact will last for the duration of the construction phase and the effect is long-term and irreversible at the individual level, should a fatality occur, but short-term and reversible at the population level. Given the small magnitude, in the absence of mitigation, accidental killing or injury is likely to result in **not significant, short-term, reversible, adverse effects** on pygmy shrew and hedgehog.

##### 9A.5.6.5.1.2 Habitat loss, fragmentation, and alteration

Hedgehogs are nocturnal and prefer edge habitats such as hedgerows in addition to farmland, scrub, parkland, and gardens. Hedgehogs are mainly insectivorous, feeding on moth larvae, earwigs, beetles, spiders, harvestman, caterpillars, slugs, and earthworms. As they are a hibernating species, they spend an extensive time foraging during the autumn as they are under pressure to gain weight quickly prior to hibernation.

Hedgehogs are not territorial, but they have home ranges that they like to keep and can travel up to 3 km per night in search of food. Any severance of their habitat can lead to reduced areas for foraging which can lead to a reduced ability to thrive.

Pygmy shrews prefer habitat rich in ground cover (e.g. hedgerows, grassland, woodland, and peatland), which offers ideal foraging grounds and protection from predators (mainly birds of prey). The high energy demand of pygmy shrews mean that they actively hunt day and night, with very short periods of rest. The pygmy shrew's food intake is 1.25 times its body weight, meaning they may require upwards of 250 prey items per day (McDevitt, 2022). They must feed every few hours or they will starve to death.

Pygmy shrews are solitary and highly territorial and will exhibit aggression towards other pygmy shrews that they encounter. Any severance of pygmy shrew habitat can lead to further encounters with other pygmy shrew which may lead to increased fighting and associated injuries. These encounters can jeopardize the survival of individuals due to increased stress and loss of foraging time.

As well as the direct loss of utilisable habitats, the linear nature of the Proposed Development will result in the severing of habitats, further reducing the area of utilisable habitats and impacting on population dynamics of pygmy shrews and hedgehogs.

The construction of all three sections of the Proposed Development will result in a loss of linear, woodland and pastoral habitat likely to be used by foraging pygmy shrew and foraging and hibernating hedgehog.

The extent of the effect of habitat loss, fragmentation, and alteration on pygmy shrew and hedgehog is the CPO boundary, and the magnitude is the reduction in the area of utilisable habitat. However, the in-built open span bridge designs and proposed mammal underpass in Section 1 (mainline chainage 3+200) provide some permeability across the proposed roads. The effect will be permanent and irreversible. Given the high demands these species have for food items and the area of suitable habitat to be removed, in the absence of mitigation, habitat loss, fragmentation, and alteration is predicted to result in **significant, permanent, irreversible, adverse effects** at the local (higher) geographic scale on pygmy shrew and hedgehog. The extent of new habitat to be delivered through the proposed landscaping of the Proposed Development will, in the long-term, deliver a positive effect for both species.

#### 9A.5.6.5.2 Operational phase

##### 9A.5.6.5.2.1 Accidental killing or injury

As outlined above, the linear nature of the Proposed Development will mean the severance of foraging habitat in addition to the removal of habitat meaning that pygmy shrew and hedgehog may try to cross the carriageway to reach additional foraging grounds. Therefore, there is a risk of pygmy shrew and hedgehog being road traffic casualties during the operational phase. There is also the potential for pygmy shrew and hedgehog to fall into drainage gully pots and suffer fatalities.

Given the extensive distribution of optimal habitats for pygmy shrew and hedgehog (e.g. hedgerows, treelines, woodland, and scrub) throughout all three sections of the Proposed Development, it is likely that they are widely dispersed in considerable numbers throughout the area, where there is a risk of them entering the carriageways.

The extent of the effect of accidental killing or injury is the length of the proposed road, and the magnitude is the number of pygmy shrews and hedgehogs killed or injured. The magnitude of effect is hard to assess, but there is the potential to affect the local population over the lifespan of the Proposed Development. However, it is considered unlikely that the Proposed Development will result in significantly greater mortality than the existing road network; the effect balanced by the significant areas of more optimal habitats to be delivered through the proposed landscaping of the Proposed Development. The effect is long-term, for the operational phase of the Proposed Development, and reversible. Therefore, in the absence of mitigation, accidental killing or injury is predicted to result in **not significant, long-term, reversible, adverse effects** on pygmy shrew and hedgehog.

### 9A.5.6.6 Other Protected Mammals – Red squirrel and Pine marten

#### 9A.5.6.6.1 Construction phase

##### 9A.5.6.6.1.1 Accidental killing or injury

A recent survey of red squirrel and pine marten across Ireland recorded 85 red squirrel and 17 pine marten in Co. Donegal (Lawton *et al.,* 2020). Populations of these species are likely to be locally patchy; primarily restricted to woodland areas. The Proposed Development will be removing areas of woodland and associated habitats (e.g. scrub). Therefore, there is the potential to disturb these species. Given the low numbers of these species recorded across Co. Donegal, any accidental killing or injury may have significant effects on the local population.

Given the distribution of optimal habitats for pine marten and red squirrel (e.g. hedgerows, treelines, woodland, etc.) throughout all three sections of the Proposed Development, they may be encountered during works and the potential for these species to suffer accidental killing or injury during the construction phase of Proposed Development cannot be ruled out.

The extent of the effect of accidental killing or injury is the CPO boundary, and the magnitude is the number of pine martens and red squirrels killed or injured. However, if fatalities occur, this could impact on the red squirrel and pine marten populations within the wider local landscape. Given the low numbers of these species recorded across Co. Donegal, any accidental killing or injury may have significant effects on the local population. The potential for this impact will last for the duration of the construction phase and the effect is long-term and irreversible at the individual level, should a fatality occur, but medium-term and reversible at the population level. However, incidents of killing or injury are considered highly unlikely and, therefore, **no significant adverse effects** are likely on red squirrel and pine marten.

#### 9A.5.6.6.1.2 Habitat loss, fragmentation and alteration

As well as the direct loss of utilisable habitats, the linear nature of the Proposed Development will result in the severing of habitats, further reducing the area of utilisable habitats and impacting on population dynamics of red squirrel and pine marten.

Red squirrels are totally dependent on woodland as a habitat and spend the majority of their foraging time in the tree canopy. They also create their nests, called dreys, in trees. The Proposed Development will result in the loss, fragmentation, and alteration of woodland habitats, impacting suitable habitat for red squirrel.

Pine marten are habitat specialists, requiring forest or scrub habitat to exist in an area, where their dens/refuge sites are typically located. The fragmentation of habitats will likely sever dispersal routes for males seeking females or for young setting up new territories.

**Section 1**

The construction of Section 1 will result in a loss of linear and woodland habitat potentially used by red squirrel and pine marten.

**Section 2**

The construction of Section 2 will result in a loss of linear and woodland habitat potentially used by red squirrel and pine marten.

The main area of habitat to be lost that is likely to be used by these two species is a section of mixed broadleaved/conifer woodland located to the north of the Listellian junction. The NBDC hold a record of pine marten near this section of woodland from the year 2021. However, 2023 and 2025 surveys did not identify any evidence of pine marten in this habitat. This section of habitat covers an area of approximately 27.5 ha. However, since 2022, almost 7 ha of this has been reclaimed and drained by the landowner. The majority of the remainder of this habitat will be lost for the Proposed Development. There is limited woodland in the vicinity of the Proposed Development at this location. The nearest being a small (approximately 5 ha) section of riparian woodland/mixed broadleaved woodland mosaic to the west of this area (approximately 70 m from the CPO boundary and 0.5 km from the mixed broadleaved/conifer woodland). The NBDC hold a record of red squirrel from this section of mosaic woodland from the year 2012. There is also a large area of conifer plantation approximately 1 km to the south of the scrub/broadleaved woodland/conifer plantation mosaic.

**Section 3**

The construction of Section 3 will result in a loss of linear and woodland habitat potentially used by red squirrel and pine marten. However, no evidence of records existing from the vicinity of the alignment with the exception of a single record of pine marten along the River Finn dating from 2010. Both species would suffer a reduction in potential habitat as well as habitat fragmentation as a result of the Proposed Development, which may limit their potential for future recovery.

**Overall Impact and Effects**

The extent of the effect of habitat loss, fragmentation, and alteration on red squirrel and pine marten is the CPO boundary, and the magnitude is the reduction in the area of utilisable habitat. As pine marten are territorial, this loss is likely to affect a single adult pine marten while it may affect more than one red squirrel. As female pine martens can have three kits, this may affect up to four pine marten, should a female pine marten be in residence in the vicinity of the Proposed Development. The female would be affected as her

access to foraging areas and males is reduced while the ability of any kits she may produce to disperse to other areas to create their own territories could be affected. The low densities of these species within Co. Donegal increases the significance of the habitat loss. The effect will be permanent and irreversible. Given the records of the species in the vicinity of Sections 1 and 2, in the absence of mitigation, habitat loss, fragmentation, and alteration is predicted to result in **significant, permanent, irreversible, adverse effects** at the local (higher) geographic scale on red squirrel and pine marten.

#### 9A.5.6.6.2 Operational phase

##### 9A.5.6.6.2.1 Accidental killing or injury

As outlined above, the linear nature of the Proposed Development will mean the severance of foraging habitat in addition to the removal of habitat meaning that red squirrel and pine marten may try to cross the carriageway to reach additional foraging grounds. Therefore, there is a risk of red squirrel and pine marten being road traffic casualties during the operational phase.

Given the distribution of optimal habitats for pine marten and red squirrel (e.g. hedgerows, treelines, woodland, etc.) throughout all three sections of the Proposed Development, there is potential for them to be present at certain areas of the Proposed Development. Therefore, there is a risk of them entering the carriageways.

The extent of the effect of accidental killing or injury is the length of the proposed road, and the magnitude is the number of red squirrels and pine martens killed or injured. The magnitude of effect is hard to assess, but there is the potential to affect hundreds of individuals over the lifespan of the Proposed Development. However, it is considered unlikely that the Proposed Development will result in significantly greater mortality than the existing road network. The effect is long-term, for the operational phase of the Proposed Development, and reversible. Therefore, in the absence of mitigation, accidental killing or injury is predicted to result in **not significant**, **long-term, reversible, adverse effects** on red squirrel and pine marten.

### 9A.5.6.7 Other Protected Mammals – Irish Stoat

#### 9A.5.6.7.1 Construction phase

##### 9A.5.6.7.1.1 Accidental killing or injury

Irish stoats are solitary and territorial. Their population density is variable, depending largely on the density of available food. For example, a stoat's territory could be up to 100 ha where prey numbers are relatively low and can average 20 ha where prey numbers are high (Conserve Ireland, 2018b). They can be found in a wide array of habitat types but prefer an area that provides some cover (e.g. hedgerows, woodland, heathland, marsh, etc.). Given the extensive distribution of such habitats throughout the Proposed Development, it is likely that Irish stoat are within the area. Therefore, there is the potential to disturb this species during the Proposed Development. Given the likely low density of this species within the area of the Proposed Development, any accidental killing or injury may have significant effects on the local population.

Given the extensive distribution of optimal habitats for Irish stoat (e.g. hedgerows, treelines, woodland, etc.) throughout all three sections of the Proposed Development, it is likely that it may be encountered during works and the potential for Irish stoats to suffer accidental killing or injury during the Proposed Development cannot be ruled out.

The extent of the effect of accidental killing or injury is the CPO boundary, and the magnitude is the number of Irish stoats killed or injured. However, given the likely low density of this species within the area of the Proposed Development, any killing or injury caused by these works could impact on the Irish stoat population within the wider landscape. The potential for this impact will last for the duration of the construction phase and the effect is long-term and irreversible at the individual level, should a fatality occur, but medium-term and reversible at the population level. However, incidents of killing or injury are considered highly unlikely and, therefore, **no significant adverse effects** are likely on Irish stoat.

#### 9A.5.6.7.1.2 Habitat loss, fragmentation, and alteration

Irish stoats occur in most habitats with sufficient cover, including urban areas, but they occur most often in wooded areas, and readily climb trees. Their main prey is rabbits followed by pygmy shrews, birds, birds' eggs, rats, mice, and voles. The Proposed Development will result in a loss of linear, woodland, and pastoral habitat potentially used by foraging Irish stoat.

Irish stoats are solitary and territorial and will defend their territory against members of the same sex. Any severance of Irish stoat habitat can lead to further encounters with other Irish stoat which may lead to increased fighting and associated injuries. These encounters can jeopardize the survival of individuals due to increased stress and loss of foraging time.

As well as the direct loss of utilisable habitats, the linear nature of the Proposed Development will result in the severing of habitats, further reducing the area of utilisable habitats and impacting on population dynamics of Irish stoat.

The construction of all three sections of the Proposed Development will result in a loss of linear, woodland, and pastoral habitat likely to be used by foraging Irish stoat.

The extent of the effect of habitat loss, fragmentation, and alteration on Irish stoat is the CPO boundary, and the magnitude is the reduction in the area of utilisable habitat. The magnitude of impact is difficult to assess given the high degree of variability in Irish stoat territory size. However, the in-built open span bridge designs and proposed mammal underpass in Section 1 (mainline chainage 3+200) provide some permeability across the proposed roads. The effect will be permanent and irreversible. Therefore, in the absence of mitigation, habitat loss, fragmentation, and alteration is predicted to result in a **significant, permanent, irreversible, adverse effect** at the local (higher) geographic scale on Irish stoat.

### 9A.5.6.7.2 Operational phase

#### 9A.5.6.7.2.1 Accidental killing or injury

As outlined above, the linear nature of the Proposed Development will mean the severance of foraging habitat in addition to the removal of habitat meaning that Irish stoat may try to cross the carriageway to reach additional foraging grounds. Therefore, there is a risk of Irish stoat being road traffic casualties during the operational phase.

Given the extensive distribution of optimal habitats for Irish stoat (e.g. hedgerows, treelines, woodland, and scrub) throughout all three sections of the Proposed Development, it is likely that they occur throughout the area, where there is a risk of them entering the carriageways.

The extent of the effect of accidental killing or injury is the length of the proposed road, and the magnitude is the number of Irish stoats killed or injured. The magnitude of effect is hard to assess, but there is the potential to affect hundreds of individuals over the lifespan of the Proposed Development. However, it is considered unlikely that the Proposed Development will result in significantly greater mortality than the existing road network. The effect is long-term, for the operational phase of the Proposed Development, and reversible. Therefore, in the absence of mitigation, accidental killing or injury is predicted to result in a **not significant**, long-term, reversible, adverse effect on Irish stoat.

## 9A.5.6.8 Other Protected Mammals – Irish Hare

### 9A.5.6.8.1 Construction phase

#### 9A.5.6.8.1.1 Accidental killing or injury

The national hare survey and population assessment 2017–2019 (McGowan *et al.,* 2019) determined that Irish hare are widespread and ubiquitous throughout Ireland, but they are typically clustered in localised patches. Irish hares can be found in a wide range of habitats, but they are also strongly associated with grassland, preferring heterogeneously structured, rough or unimproved grassland. Average hare density during the McGowan *et al.* (2019) study was 3.19 hares per 100 ha, with the highest density recorded in the

north-west at 3.5 hares per 100 ha. Large areas of grassland habitats across the Proposed Development will be lost. Therefore, there is the potential to disturb this species. There is likely to be an adverse effect due to the Proposed Development on Irish hare and given the likely low density of this species within the area of the Proposed Development, any accidental killing or injury may have significant effects on the local population.

Given the extensive distribution of optimal habitats for Irish hare (e.g. improved agricultural grassland, wet grassland, dry meadows and grassy verges, hedgerows, treelines, scrub, etc.) throughout all three sections of the Proposed Development, it is likely that it may be encountered during works and the potential for Irish hare to suffer accidental killing or injury during the Proposed Development cannot be ruled out.

The extent of the effect of accidental killing or injury is the CPO boundary, and the magnitude is the number of Irish hares killed or injured. However, given the likely low density of this species within the area of the Proposed Development, any killing or injury caused by these works could impact on the Irish hare population within the wider landscape. The potential for this impact will last for the duration of the construction phase and the effect is long-term and irreversible at the individual level, should a fatality occur, but medium-term and reversible at the population level. However, incidents of killing or injury are considered highly unlikely and, therefore, **no significant adverse effects** are likely on Irish hare.

#### 9A.5.6.8.1.2 Habitat loss, fragmentation, and alteration

Irish hares can be found in a wide range of habitats, but they are also strongly associated with grassland, preferring heterogeneously structured rough or unimproved grassland. The diet of Irish hare varies between habitat and seasonally. It is composed mainly of grasses, but heather and sedges can be an important food source in habitats where they are available. The Proposed Development will result in a loss of pastoral habitat likely used by foraging Irish hare.

As well as the direct loss of utilisable habitats, the linear nature of the Proposed Development will result in the severing of habitats, further reducing the area of utilisable habitats and impacting on population dynamics of Irish hare. The construction of all three sections of the Proposed Development will result in a loss of grassland habitat likely to be used by Irish hare.

The extent of the effect of habitat loss, fragmentation, and alteration on Irish hare is the CPO boundary, and the magnitude is the reduction in the area of utilisable habitat. However, the built-in open span bridge designs and proposed mammal underpass in Section 1 (mainline chainage 3+200) provide some permeability across the proposed roads. The effect will be permanent and irreversible. Therefore, in the absence of mitigation, habitat loss, fragmentation, and alteration is predicted to result in a **significant, permanent, irreversible, adverse effect** at the local (higher) geographic scale on Irish hare.

### 9A.5.6.8.2 Operational phase

#### 9A.5.6.8.2.1 Accidental killing or injury

As outlined above, the linear nature of the Proposed Development will mean the severance of foraging habitat in addition to the removal of habitat meaning that Irish hare may try to cross the carriageway to reach additional foraging grounds. Therefore, there is a risk of Irish hare being road traffic casualties during the operational phase.

Given the extensive distribution of optimal habitats for Irish hare (e.g. improved agricultural grassland, wet grassland, dry meadows and grassy verges, hedgerows, treelines, scrub, etc.) throughout all three sections of the Proposed Development, it is likely that they are widely dispersed in considerable numbers throughout the area, where there is a risk of them entering the carriageways.

The extent of the effect of accidental killing or injury is the length of the proposed road, and the magnitude is the number of Irish hares killed or injured. The magnitude of impact is difficult to assess, given the high degree of patchiness observed in Irish hare abundances throughout the landscape, but there is the potential to affect hundreds of individuals over the lifespan of the Proposed Development. However, it is considered unlikely that the Proposed Development will result in significantly greater mortality than the existing road network. The effect is long-term, for the operational phase of the Proposed Development, and reversible.

Therefore, in the absence of mitigation, accidental killing or injury is predicted to result in a **not significant**, long-term, reversible, adverse effect on Irish hare.

## 9A.5.6.9 Other Protected Mammals – Deer Species

### 9A.5.6.9.1 Construction phase

#### 9A.5.6.9.1.1 Accidental killing or injury

Ireland has three species of deer that are well established throughout the island: sika deer, fallow deer, and red deer. Each species has a different distribution throughout Ireland. Red deer are primarily located in the east, north-west, south-west, and west, with smaller numbers scattered throughout the southern half of the island. Sika are primarily located in the east, south-west, and north-west, with smaller numbers scattered throughout the rest of the island. Fallow deer have a wider distribution, being recorded from almost every county, with higher abundances located across counties Waterford, Tipperary, Limerick, Clare, Galway, Offaly, Laois, Wicklow, Leitrim, and Sligo. In general, all deer species are mainly associated with woodland areas which have open grassland nearby, including uplands. Therefore, populations of these species are likely to be locally patchy, primarily restricted to such areas. The Proposed Development will result in the loss of suitable deer habitat. Therefore, there is potential to disturb these species. There is likely to be an adverse effect due to the Proposed Development on deer species. However, given the ability of each species to flee machinery and the low area of their preferred habitat to be removed, these works are unlikely to cause significant impacts.

The Deer Collision Risk Assessment (see Appendix C9A.05) was carried out which identified areas where there are elevated risks of operational phase deer collisions, called Potential Deer Collision Zones (PDCZs)

**Section 1**

Given the distribution of woodlands throughout the area of Section 1, it is likely that deer may be encountered during works and the potential for deer to suffer accidental killing or injury during the Proposed Development cannot be ruled out. Three PDCZs were identified in Section 1 where there is an operational phase risk of collision with red deer; one of low risk and two of moderate risk (see Appendix C9A.05), indicating that red deer traverse the area.

**Section 2**

Given the distribution of woodlands throughout the area of Section 2, it is likely that deer may be encountered during works and the potential for deer to suffer accidental killing or injury during the Proposed Development cannot be ruled out. One PDCZ was identified in Section 2 where there is a low operational phase risk of collision with sika deer (see Appendix C9A.05), indicating that sika deer traverse the area.

**Section 3**

Section 3 of the Proposed Development is in a predominantly agricultural landscape but with scattered patches of woodland offering potentially suitable habitat for deer. Red deer activity was recorded in coniferous woodland adjacent to the N14 at Doorabble (adjacent to KER 3-5) where there was a significant amount of deer activity recorded by Burkitt (see Appendix C9A.05) (tracks, droppings, bark-stripping). This woodland block is within 3.0 km of an identified source population of red deer at Mongorry (an elevated area to the east with large areas of coniferous plantation) and it is likely that red deer have migrated from Mongorry northwards via this point to the Inishowen Peninsula. Given the location of the plantation and its proximity to the N14, there is a high risk of disturbance to deer during the construction phase.

A second location where red deer activity was recorded was in a coniferous woodland plantation to the south of the Swilly Burn at Mullenaveagh. This woodland block has suffered considerable windthrow during recent storms in 2024/2025 and has mostly been clear-felled thus reducing its suitability since the earlier surveys. The woodland is quite isolated in an otherwise intensively managed landscape, limiting its potential to support regular deer activity in the short term until a new crop of conifers reaches thicket stage.

**Overall Impact and Effects**

The extent of the effect of accidental killing or injury is the CPO boundary, and the magnitude is the number of deer killed or injured. The potential for this impact will last for the duration of the construction phase and the effect is long-term and irreversible at the individual level, should a fatality occur, but medium-term and reversible at the population level. However, given the ability of deer to flee machinery, and the small area of their preferred habitat to be removed, accidental killing or injury is considered unlikely. Therefore, in the absence of mitigation, accidental killing or injury is likely to result in **no significant effects** on deer species.

#### 9A.5.6.9.1.2 Habitat loss, fragmentation and alteration

In general, deer species are mainly associated with woodland areas which have open grassland nearby, including uplands. Therefore, populations of these species are likely to be locally patchy, primarily restricted to such areas. Deer are very mobile, roaming for miles, and red deer have been recorded ranging for up to 2,400 ha in the East Highlands of Scotland (Staines *et al.,* 2010). They are generally not territorial, with the exception of during the breeding season.

As well as the direct loss of utilisable habitats, the linear nature of the Proposed Development will result in the severing of habitats, further reducing the area of utilisable habitats and impacting on population dynamics of deer species. The Proposed Development will sever dispersal routes to other sections of woodland in the surrounding area for males seeking females.

**Section 1**

The construction of Section 1 will result in a loss and fragmentation of woodland and scrub habitat suitable for use by deer. As stated above, three PDCZs were identified in Section 1 where there is an operational phase risk of collision with red deer; one of low risk and two of moderate risk (see Appendix C9A.05), indicating that the surrounding habitats are of importance to red deer.

**Section 2**

The construction of Section 2 will result in a loss and fragmentation of woodland and scrub habitat suitable for use by deer. However, as stated above, only one PDCZ was identified in Section 2 where there is a low operational phase risk of collision with sika deer (see Appendix C9A.05), indicating that the surrounding habitats are of low importance to deer species.

**Section 3**

The construction of Section 3 will result in a loss and fragmentation of woodland and scrub habitat suitable for use by deer. Additionally, the linear nature of the Proposed Development will result in the severing of foraging habitats and cover used by deer. Two PDCZs were identified in Section 3 where there is an operational phase risk of collision with red deer; one of high risk at Doorabble and one of low risk at Mullenaveagh to the south of the Swilly Burn (see Appendix C9A.05),

**Overall Impact and Effects**

The extent of the effect of habitat loss, fragmentation, and alteration on deer species is the CPO boundary, and the magnitude is the reduction in the area of utilisable habitat. Given the large areas of habitat on either side of the proposed road to be lost via fragmentation, the magnitude of the effect is large. The effect will be permanent and irreversible. The findings of the Deer Collision Risk Assessment indicate that the surrounding habitats of Section 1 are of importance to red deer. The findings indicate that the surrounding habitats of Section 2 are of low importance to deer species. A single site at Doorabble on Section 3 was found to support habitats of importance to deer. Therefore, in the absence of mitigation, habitat loss, fragmentation, and alteration is predicted to result in a **significant, permanent, irreversible, adverse effect** at the local (higher) geographic scale on red deer, but no significant effects on other deer species.

#### 9A.5.6.9.2 Operational phase

##### 9A.5.6.9.2.1 Accidental killing or injury

As outlined above, the linear nature of the Proposed Development will mean the severance of foraging habitat in addition to the removal of habitat meaning that deer species may try to cross the carriageway to reach additional foraging grounds. Therefore, there is a risk of deer being road traffic casualties during the operational phase. This impact is discussed in greater detail in the Deer Collision Risk Assessment (see **Appendix C9A.05**).

**Section 1**

As stated above, three PDCZs were identified in Section 1 where there is an operational phase risk of collision with red deer; one of low risk and two of moderate risk (see Appendix C9A.05).

**Section 2**

As stated above, only one PDCZ was identified in Section 2 where there is a low operational phase risk of collision with sika deer (see Appendix C9A.05).

**Section 3**

As stated above, two PDCZs were identified in Section 3 where there is an operational phase risk of collision with red deer; one of high risk at Doorabble, and one of low risk at Mullenaveagh (see Appendix C9A.05). This latter site, a coniferous plantation, has subsequently been clear-felled so is no longer likely to support regular deer activity.

**Overall Impact and Effects**

The extent of the effect of accidental killing or injury is the length of the proposed road, and the magnitude is the number of deer killed or injured. However, it is considered unlikely that this will be a significant increase in mortality. The effect is long-term, for the operational phase of the Proposed Development, and reversible. Therefore, in the absence of mitigation, accidental killing or injury is predicted to result in **not significant**, **permanent, reversible, adverse effects** on deer species from an ecological perspective**.**

### 9A.5.6.10 Breeding Birds

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.

The species identified during breeding bird surveys of each section of the Proposed Development are discussed below. Some of the recorded species are of conservation concern (i.e. red- or amber-listed species (Gilbert *et al*., 2021)) and/or are afforded protection in Annex I to the Birds Directive. However, some recorded species which are unlikely to breed in the vicinity of the Proposed Development, or which are only present in insignificant numbers, are not likely to be significantly impacted by the Proposed Development. To determine the importance of the population of each recorded species, the breeding bird survey results were compared against national distribution and population estimates. Of those species which may be significantly impacted by the Proposed Development, their populations are considered to be of a size that would make them locally important (higher value). Therefore, the assemblage of breeding birds is assessed collectively as an IEF of local importance (higher value). Based on the baseline information collected, no individual

species populations were identified as IEFs for species-specific assessment, including with respect to peregrine (*Falco peregrinus*), hen harrier (*Circus cyaneus*), kingfisher, or barn owl.

**Section 1**

During surveys, a typical assemblage of bird species for the types of habitats present were recorded, including red- and amber-listed species. Breeding evidence was observed from several different bird species. The only red-listed species observed during 2023 surveys which has potential to be significantly affected by Section 1 is meadow pipit *(Anthus pratensis*). The amber-listed species observed during 2023 surveys which have potential to be significantly affected by Section 1 are: goldcrest (*Regulus regulus*), greenfinch (*Chloris chloris*), house sparrow (*Passer domesticus*), linnet (*Carduelis cannabina*), spotted flycatcher (*Muscicapa striata*), starling (*Sturnus vulgaris*), and willow warbler (*Phylloscopus trochilus*). None of the observed red- or amber-listed species were significant distances from their breeding distributions[24]. These species use a range of different habitats for breeding, including buildings and other structures such as bridges and walls, conifer and broadleaf trees, scrub, rough grassland, riverbanks, woodlands, wetlands, wet grassland, and hedgerows. Areas of such suitable habitats will be removed and/or disturbed for the Proposed Development. Due to the extent of loss of habitat likely to include significant opportunities to support breeding birds, their active nests, and dependent young, there is a potential for killing or injuring breeding birds and/or their dependent young.

Of the potentially impacted red- and amber-listed species observed during 2023 breeding bird surveys, the species with the highest counts, as a proportion of the estimated national population, was goldcrest. The sum of the maximum goldcrest counts across the Section 1 transects was 70; or 0.01145% of the estimated national population (Crowe *et al.*, 2014).

Multiple species which were recorded during surveys are considered not likely to be subject to significant effects, including red-listed curlew (*Numenius arquata*) and kestrel (*Falco tinnunculus*), amber-listed hen harrier (*Circus cyaneus*), and green-listed peregrine falcon. A single curlew was observed on one occasion during the 2023 breeding bird surveys. 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. An active nesting site for peregrine falcon is present approximately 350 m from Section 1 in a quarry. Given that this quarry is active, the Proposed Development is not likely to significantly disturb the peregrine. VP surveys for raptors at the southern end of Section 1 recorded a hen harrier on one occasion (transient foraging) at a conifer plantation intersected by the Proposed Development. Occasional kestrels and peregrine were also recorded. 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. It is unlikely that hen harrier are nesting in the immediate vicinity of the Proposed Development, as they nest in uplands, bogs, and young plantations. Only buzzards were considered likely to be nesting nearby. Red-listed stock dove (*Columba oenas*) and amber-listed mallard (*Anas platyrhynchos*) were observed during 2020 breeding bird surveys, but due to their absence in 2023, they are not likely to be present in significant numbers. Amber-listed herring gull, house martin (*Delichon urbicum*), and barn swallow (*Hirundo rustica*) were also observed during the 2023 surveys but impacts on breeding populations of these species are considered not likely (see Appendix C9A.01).

**Section 2**

During surveys, a typical assemblage of bird species was recorded, mindful of the habitats present, including red- and amber-listed species of conservation concern. Breeding evidence was observed from multiple bird species. The red-listed species observed during 2023 surveys which have potential to be significantly affected by Section 2 are: meadow pipit and common snipe (*Gallinago gallinago*). The amber-listed species observed during 2023 surveys which have potential to be significantly affected by Section 2 are: goldcrest, greenfinch (*Chloris chloris*), house sparrow (*Passer domesticus*), linnet, mallard, starling, and willow warbler (*Phylloscopus trochilus*). None of the observed red- or amber-listed species were significant distances from their known breeding distributions[25]. These species use a range of different habitats for breeding, including

[24] Breeding distribution maps available at https://birdwatchireland.ie/irelands-birds-birdwatch-ireland/list-of-irelands-birds/. Accessed May 2025.

[25] Breeding distribution maps available at https://birdwatchireland.ie/irelands-birds-birdwatch-ireland/list-of-irelands-birds/. Accessed May 2024.

buildings and other structures such as bridges and walls, conifer and broadleaf trees, scrub, rough grassland, riverbanks, woodlands, wetlands, wet grassland, and hedgerows. Areas of such suitable habitats will be removed and/or disturbed for the Proposed Development. Due to the extent of the loss of habitat likely to include significant opportunities to support breeding birds, their active nests, and dependent young, there is a potential for killing or injuring breeding birds and/or their dependent young.

Of the potentially impacted red- and amber-listed species observed during 2023 breeding bird surveys, the species with the highest counts, as a proportion of the estimated national population, was common snipe. Two snipe were recorded, one of which showed signs of breeding. There is no current, reliable estimate of the number of breeding snipe in Ireland, but it is believed to be 3,000–4,000 breeding pairs (Department of Agriculture, Food and the Marine (DAFM), 2023). Therefore, the two observed snipe would be 0.025%–0.033% of the national population. Aside from common snipe, of the potentially impacted red- and amber-listed species observed during 2023 breeding bird surveys, the species with the highest counts, as a proportion of the estimated national population, was goldcrest. The sum of the maximum goldcrest counts across the Section 2 transects was 59; or <0.01% of the estimated national population (Crow *et al.*, 2014).

Multiple species which were recorded are considered not likely to be subject to significant effects. Red-listed grey wagtail (*Motacilla cinerea*) and amber-listed sand martin (*Riparia riparia*) were observed during 2020 breeding bird surveys, but due to their absence in 2023, they are not likely to be present in significant numbers. Kingfisher were observed at the Leslie Hill Stream, but the stream in the vicinity of the Proposed Development was generally unsuitable for nesting kingfisher. Curlew (red-listed), black-headed gull, herring gull, house martin, and barn swallow (amber-listed) were also observed during the 2023 surveys, but impacts on breeding populations of these species are considered not likely (see Appendix C9A.01).

**Section 3**

Three species of High Conservation Concern (red listed) were identified during the breeding bird surveys, namely meadow pipit, grey wagtail, and yellowhammer. 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, house martin, and swallow. Confirmed breeding amber-listed species include goldcrest, greenfinch, whitethroat, and robin, while potential breeders include kestrel and snipe.

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. 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 and sedge warbler.

Dry scrub habitat at Drumoghill supports breeding by whitethroat while willow warbler (amber-listed), chiff-chaff and blackcap 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 were 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 were present during surveys in 2020, along with a smaller number of jackdaws. 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 waterbirds. 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 and mallard. Kingfisher are afforded protection on Annex I to the Birds Directive and are an amber-listed species. 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 Leslie Hill Stream tributary (W3-12 and W3-03), the Swilly Burn (W3-14), River Deele (W3-17) and the River Finn (W3-18).

Dipper 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 Leslie Hill Stream tributary at Ballyboe (W3-04) though the watercourse provides potentially suitable habitat for the species.

A small colony of heron were confirmed breeding in 2020 at a coniferous plantation approximately 200 m to the west of the Proposed Development by the Swilly Burn (W3-14). There were six nests observed though it was not determined if all were active during the survey. Herons utilise the same nest sites over several years.

Raptors observed during breeding bird field surveys include kestrel and buzzard, 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

There are no records of breeding by peregrine falcons, hen harrier, or merlin 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 may utilise wet grassland for breeding at KER 3-5. KER 3-6, KER 3-7, and KER 3-10. Woodcock 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.

### 9A.5.6.10.1 Construction phase

#### 9A.5.6.10.1.1 Accidental killing or injury

During surveys, breeding evidence was observed from multiple different bird species. The bird assemblage present uses a range of different habitats for breeding, including buildings and other structures, such as bridges and walls, conifer and broadleaf trees, scrub, rough grassland, riverbanks, woodlands, wetlands, wet grassland, and hedgerows. Much of these habitats will be removed for the construction of all three sections of the Proposed Development. Due to the extent of loss of habitat likely to include significant opportunities to support breeding birds, their active nests, and dependent young, there is a potential for killing or injuring breeding birds and/or their dependent young. For each section of the Proposed Development, the species potentially subject to significant effects are discussed at the top of Section 9A.5.6.10 above.

The extent of the effect of accidental killing or injury is the suitable nesting habitat/vegetation (e.g. hedgerows, scrub, and trees) proposed to be removed within the CPO boundary. The magnitude of the effect is the mortality of the eggs/chicks of breeding birds of a range of species. The effect is long-term and irreversible. The timing of the construction works influences the magnitude (i.e. vegetation removal between 1 March and 31 August, inclusive, are more likely to affect breeding birds). Therefore, in the absence of mitigations, the potential for mortality of chicks/eggs is predicted to result in a **significant, long-term, irreversible, adverse effect** at the local (higher) geographic scale on breeding birds.

#### 9A.5.6.10.1.2 Habitat loss, fragmentation and alteration

The construction of all three sections of the Proposed Development will result in the loss of large areas of habitats that provide opportunities to support nests or maintain (e.g. by providing foraging habitat) a range of breeding birds. Not all the habitat is of equal quality for breeding birds either in terms of supporting nests or maintaining breeding birds. The loss of these habitats can reduce the area of suitable nesting and foraging habitats available to breeding birds. For each section of the Proposed Development, the species potentially subject to significant effects are discussed at the top of Section 9A.5.6.10 above.

The extent of the effect of habitat loss, fragmentation, and alteration is the suitable nesting habitat/vegetation (e.g. hedgerows, scrub, and trees) and foraging habitat proposed to be removed within the CPO boundary. The magnitude of the effect is the displacement of breeding birds of a range of species. The effect is considering largely medium-term and reversible after the construction phase as the new landscaping matures, providing new suitable nesting and foraging habitat. There is an abundance of equivalent suitable nesting and foraging habitat in the locality. Unlike the non-volant (i.e. non-flying) mammals discussed above, birds can more readily cross the Proposed Development. Therefore, the impact of habitat loss, fragmentation, and alteration is predicted to result in a **not significant**, **medium-term, reversible, adverse effect** on breeding birds. Given the extent of habitat to be delivered through the proposed landscaping, there is potential for a beneficial effect on the breeding bird assemblage within the vicinity of the Proposed Development in the medium- to long-term as that habitat matures.

#### 9A.5.6.10.1.3 Disturbance from noise, vibration, lighting, and human presence

During construction, increased light and noise could have an indirect impact on bird species. All three sections of the Proposed Development will include construction works within and adjacent to habitat suitable for nesting and foraging breeding birds. Construction works have the potential to result in temporary disturbance, via noise, personnel, and artificial lighting, which could affect the use of available habitat by breeding birds. Such disturbance events can result from the increased noise and human activity levels associated with heavy machinery and the construction works. Disturbance of birds within these habitats during construction works could result in displacement from suitable nesting and foraging habitats and reduced foraging success. For each section of the Proposed Development, the species potentially subject to significant effects are discussed at the top of Section 9A.5.6.10 above.

The extent of the effect of disturbance is the suitable nesting habitat/vegetation (e.g. hedgerows, scrub, and trees) and foraging habitat in the immediate vicinity of the CPO boundary. The magnitude of the effect is the reduced foraging success and the increased mortality rates of the eggs/chicks of breeding birds of a range of species. The effect is short-term and reversible. The timing of the construction works influences the magnitude (i.e. construction works between 1 March and 31 August, inclusive, are more likely to affect breeding birds). Due to its small extent, magnitude, and short-term nature, disturbance is predicted to result in a **not significant**, short-term, reversible, adverse effect on breeding birds.

### 9A.5.6.10.2 Operational phase

#### 9A.5.6.10.2.1 Accidental killing and injury

While the Proposed Development will remove and sever habitats used by breeding birds, such as hedgerow, woodland, and grassland, certain sections of habitat will also be retained adjacent to the carriageway. Additionally, proposed landscaping will add large areas of suitable nesting and foraging habitat close to the proposed road. Due to the proximity of this habitat to the carriageway, there is potential for birds to collide with vehicles, especially fledglings which are not able to fly as capably as adults. For each section of the Proposed Development, the species potentially subject to significant effects are discussed at the top of Section 9A.5.6.10 above.

The extent of the effect of accidental killing or injury is the proposed carriageways. The magnitude of the effect is the mortality of birds of a range of species. However, the mortality is not likely to be significantly greater than the current 'do-nothing' scenario. The effect is long-term and irreversible. Due to the small likely magnitude, in the absence of mitigation, accidental killing and injury is predicted to result in a **not significant, long-term, irreversible, adverse effect** on breeding birds.

#### 9A.5.6.10.2.2 Disturbance from noise, vibration, lighting, and human presence

There will be retained and new habitat adjacent to the new road which will be affected by the noise and/or vibration of new road traffic. This could affect the potential for this to support the same level of breeding birds (both in terms of populations and/or assemblage) as this habitat currently supports. For each section of the Proposed Development, the species potentially subject to significant effects are discussed at the top of Section 9A.5.6.10 above.

The extent of the effect of disturbance from noise, vibration, lighting, and human presence is the suitable nesting, commuting, and foraging habitat in the immediate vicinity of the proposed road. The magnitude of the effect is the displacement of nesting, commuting, and foraging birds. The duration of the effect is long-term, for the operational phase of the Proposed Development, and reversible. Because of the small extent and magnitude of the effect, disturbance is predicted to result in a **not significant**, long-term, reversible, adverse effect on breeding birds.

### 9A.5.6.11 Wintering birds

In terms of the Proposed Development, the main focus with respect to wintering birds related to Section 2 and parts of Section 3; as they related particularly with respect to Lough Swilly SPA and Lough Foyle SPAs alongside other sub-international designations (e.g. pNHAs, ASSI) which overlap with these designations.

#### 9A.5.6.11.1 Section 1

The habitats within and surrounding Section 1 are not suitable for supporting significant numbers of wintering birds. Therefore, no impact pathway exists for Section 1 to cause significant effects on wintering birds and Section 1 is not discussed further in relation to the impacts on wintering birds.

#### 9A.5.6.11.2 Section 2

The majority of the wintering bird species which were observed in significant numbers are qualifying interests of nationally and/or internationally designated sites for nature conservation of Lough Swilly and Lough Foyle. The impacts and effects on those wintering bird species are described in the assessment of the ornithological designated sites of Lough Swilly and Lough Foyle in Section 9A.5.2.6. However, multiple species were recorded which are not qualifying features of designated sites, but which may occur in numbers that could be of county or local importance.

The species which were identified as being relevant with respect to Section 2 are black-headed gull and lesser black-backed gull (*Larus fuscus*). All other species which were recorded occurred either: distant from the Proposed Development, very infrequently, and/or in insignificant numbers. For example, a single flock of 31 black-tailed godwit (approximately 3% of the average Lough Swilly I-WeBS peak count of 1,012) occurred at the proposed Swilly crossing during one windscreen survey, but was not recorded near the Proposed Development in significant numbers during any other survey.

Breeding black-headed gull is an SCI of Lough Swilly SPA, but not wintering black-headed gull. Black-headed gull is amber listed. During VP surveys at the proposed Swilly crossing, black-headed gull was frequently observed, with a maximum count of 132. However, they typically utilised the Letterkenny Waste Water Treatment Plant treatment (WWTP) ponds and were mostly airborne over the bridge crossing section of the estuary during surveys. The average I-WeBS peak count of black-headed gull at Lough Swilly is 2,613. Therefore, up to approximately 5% of the Lough Swilly wintering population utilise the area of the WWTP. Lough Swilly has the largest black-headed gull population of all I-WeBS sites in County Donegal. The sum of the averaged peak counts of every Donegal I-WeBS site is 3066. Therefore, the peak count recorded during VP surveys is approximately 4% of the countywide average I-WeBS peak count, and is considered to be of county importance.

Lesser black-backed gull is amber listed and was frequently observed during the 2022/23 VP surveys, both at the Manorcunningham/Big Isle VP and at the Airfield VP. Numbers were typically greater at the Airfield VP, where birds could be within 500 m of the Proposed Development. The maximum count of lesser black-backed gulls at the Airfield VP was 162, but on all other occasions the counts were significantly lower, with the next highest count being 18. The average I-WeBS peak count of lesser black-backed gull at Lough Swilly is 148. Therefore, the two highest peak counts were 109% and 12% of the Lough Swilly wintering population.

Lough Swilly has the largest lesser black-backed gull population of all I-WeBS sites in County Donegal. The sum of the averaged peak counts of every Donegal I-WeBS site is 168. Therefore, the two highest peak counts recorded during VP surveys are approximately 96% and 11% of the countywide average I-WeBS peak count, and are considered to be of county importance.

Both black-headed gulls and lesser black-backed gulls only occurred in significant numbers at locations >100 m outside the CPO boundary and outside any waterbodies downstream of the Proposed Development. Therefore, air, surface water, and groundwater pollution are not likely to cause significant effects and the only potential significant effect on these species is due to disturbance.

#### 9A.5.6.11.3 Section 3

Apart from the Swilly Burn floodplain which was found to support a wintering flock of whooper swan (see Section 9A.5.2.6), there were no important bird areas identified within the study area and the habitats present are unsuited to supporting significant aggregations of wintering birds or likely flyways for wintering species. Whooper swan is an SCI of Lough Swilly SPA and the Lough Foyle SPAs and the impacts and effects on whooper swan are described in the assessment of the ornithological designated sites of Lough Swilly and Lough Foyle in Section 9A.5.2.6.

Flocks of golden plover (listed on Annex I of the EU Birds Directive) and lapwing may utilise agricultural grasslands throughout the study area during the winter, but no flocks were recorded during surveys undertaken within the vicinity of the Proposed Development. Areas of wet grassland will also provide suitable habitat for dispersed populations of wintering snipe.

Small numbers of wintering waterbirds (including mallard, teal, widgeon, and redshank) are also likely to occur along the River Deele (W3-17/KER 3-13) 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.

### 9A.5.6.11.4 Construction phase

The following assessment supplements the assessments completed with respect to designated sites, particularly the European Sites, completed above, which considered specific species of wintering birds relevant to those designations.

#### 9A.5.6.11.4.1 Disturbance from noise, vibration, lighting, and human presence

How disturbance from noise, vibration, lighting, and human presence can affect wintering birds is explained in detail for the assessment of the ornithological designated sites of Lough Swilly and Lough Foyle in Section 9A.5.2.6. In summary, the upper extent of potential noise disturbance is considered to be 500 m from the CPO boundary (worst case) for the construction phase of the Proposed Development, based on a threshold of construction noise of 50 dB $L_{Aeq, 24hr}$, below which it is anticipated that it will have no disturbance effect. The distance is based on noisy construction equipment operating at site boundaries, with distance attenuation, neglecting the effects of air and ground absorption and assuming no topographical screening. The extent of vibration disturbance is considered to be 50 m from the CPO Boundary (worst case) during the construction phase.

**Section 2**

The WWTP ponds which the black-headed gulls frequently used are approximately 290 m from the proposed bridge at the nearest point. The viewshed of the Airfield VP, at which lesser black-backed gull were observed covers an area that comes within approximately 150 m of the Proposed Development and extends to beyond 500 m from the Proposed Development. Therefore, both black-headed gulls and lesser black-backed gulls will potentially be disturbed during the construction phase, although both of these species have relatively high tolerance to disturbance.

**Section 3**

With the exception of whooper swan, the impacts and effects on which are assessed in the assessment of the ornithological designated sites of Lough Swilly and Lough Foyle in Section 9A.5.2.6, there are no habitats along the Proposed Development which would support significant concentrations of wintering

waterbirds, apart from small numbers of duck and waders along the Swilly Burn (W3-14), River Deele (W3-17), and River Finn (W3-21). Any disturbance from construction activities at these sites would be within a limited extent (~100 m) of the Proposed Development and at worst result in a localized disturbance to very small numbers of birds, equating to an **imperceptible impact.**

**Overall Impact and Effects**

The extent of the effect of disturbance is the area within 500 m of the CPO boundary, and the magnitude is the number of relevant birds displaced from foraging and roosting habitat. In the vicinity of Section 2, due to the significance of the WWTP ponds for black-headed gulls and the area north of the airfield for lesser black-back gulls, the number of birds potentially displaced is considered significant. The disturbance during the construction phase will be short term (maximum 36 months) and is likely to be phased so that only certain areas will be affected at any one time. This will allow for disturbed birds to relocate into other suitable areas of habitat within the SPA both within the survey areas and in the wider SPA context, that have been shown to be suitable to support foraging and roosting wintering birds and would not going to be subject to disturbance. However, the effect is short-term and reversible, and there are alternative areas for utilisation by these bird species in the wider landscape. Due to the short-term nature of the impact, in the absence of mitigation, disturbance is likely to result in a **not significant, short-term, reversible, adverse effect** on black-headed gulls and lesser black-backed gulls.

#### 9A.5.6.11.4.2 Operational phase

**Disturbance from noise, vibration, lighting, and human presence**

As described in Section 9A.5.2.6, the upper extent of potential noise disturbance is considered to be 500 m from new scheme roadway centrelines (worst case) during the operational phase of the Proposed Development. 500 m was determined based on a threshold of operational noise of 50 dB $L_{Aeq, 24hr}$, below which it is anticipated that it will have no disturbance effect. The distance is based on a high estimate of potential noise from roads of this type and speed limit, with distance attenuation, neglecting the effects of air and ground absorption and assuming no topographical screening. The extent of vibration disturbance is considered to be 50 m from the CPO Boundary (worst case) during the construction phase.

**Section 2**

As discussed above, the WWTP ponds which the black-headed gulls frequently used are approximately 290 m from the proposed bridge at the nearest point. The viewshed of the Airfield VP, at which lesser black-backed gull were observed covers an area that comes within approximately 150 m of the Proposed Development and extends to beyond 500 m from the Proposed Development. Therefore, both black-headed gulls and lesser black-backed gulls will potentially be disturbed during the operational phase.

**Section 3**

As described above in relation to construction phase disturbance, the Proposed Development will, at worst result in a localized disturbance to very small numbers of birds, equating to an imperceptible impact.

**Overall Impact and Effects**

The extent of the effect of disturbance is the area within 500 m of the roadway centrelines and the magnitude is the number of relevant birds displaced from foraging and roosting habitat. In the vicinity of Section 2, due to the significance of the WWTP ponds for black-headed gulls and the area north of the airfield for lesser black-back gulls, the number of birds potentially displaced is considered significant. However, the proposed alignment of the N13 in the vicinity of the airfield is similar to the existing alignment. Therefore, noise levels are not expected to significantly increase north of the airfield. Given the distance of the proposed road from the WWTP ponds and the current industrial and suburban land uses in the vicinity of the WWTP, disturbance levels are also not anticipated to significantly increase at this location. Therefore, the magnitude of the effect is considered negligible. The effect is long-term, for the duration of the operational phase, and reversible. Due to the negligible magnitude, in the absence of mitigation, disturbance is likely to result in a **not significant**, **long-term, reversible, adverse effect** on black-headed gulls and lesser black-backed gulls.

## 9A.5.6.12 Common Frog, Smooth Newt, and Common Lizard

### 9A.5.6.12.1 Construction phase

#### 9A.5.6.12.1.1 Accidental killing or injury

Amphibians breed in ponds, bog pools, streams, quarries and drainage ditches. The land around the breeding site or pond needs to be rough with long grass and some scrub to give cover for terrestrial foraging, refuge, and hibernation. They hibernate under large stones, old logs, and hedgerows or at the bottom of ponds. Smooth newts are primarily terrestrial, only returning to waterbodies to breed. They tend to prefer habitats that offer protection from desiccation, such as long grass, marshes, woodland, and scrubland. Newts over-winter in refugia such as woodpiles and rotting logs. Due to the extent of habitat loss, including habitat likely to include opportunities to support amphibians, including their aquatic and terrestrial habitats used for breeding, foraging, refuge, and hibernation, it is expected that the construction works of the Proposed Development will interact with multiple amphibians, leading to injury and/or killing.

Common lizards can utilise a wide variety of habitats, but ideal habitats are damp, provide areas for basking, such as rocks, and provide adequate cover to escape predation. They hibernate from October to March and breed from March to May. Due to the extent of habitat loss, including habitat likely to include opportunities to support common lizards, it is expected that the construction works of the Proposed Development will interact with a number of common lizards, leading to injury and/or killing.

All three sections of the Proposed Development include habitats likely able to support common frog, smooth newt, and common lizard, including their aquatic and terrestrial habitats used for breeding, foraging, refuge, and hibernation.

The extent of the effect of accidental killing or injury is the CPO boundary, and the magnitude is the number of common frogs, smooth newts, and common lizards killed or injured. It is considered highly unlikely that a significant proportion of the local population (i.e. >1%) will be killed or injured. The potential for this impact will last for the duration of the construction phase and the effect is long-term and irreversible at the individual level, should a fatality occur, but short-term and reversible at the population level. Given the small magnitude, in the absence of mitigation, accidental killing or injury is likely to result in **not significant**, **short-term, reversible, adverse effects** on common frog, smooth newt, and common lizard. The habitats to be created through the proposed landscaping of the Proposed Development, is also likely to provide a beneficial increase to all three species in the medium- to long-term as the habitats establish and mature.

#### 9A.5.6.12.1.2 Habitat loss, fragmentation, and alteration

A study in Irish frogs estimated that approximately 2% of the land area of Ireland was suitable as frog breeding habitat, with the highest density of sampled frogs occurring in drainage ditches, as 86% of all breeding frogs observed occurred in this habitat (Reid *et al.,* 2013). The density of breeding adults was also observed to be associated with water bodies surrounded by scrub and long grass. Smooth newts will also utilise ponds and drainage ditches for breeding, so it is assumed that a similar percentage of the land area will support breeding newts.

The Proposed Development will result in a significant direct loss of habitat suitable for use by amphibians for breeding, foraging, refuge, and commuting. Due to the linear nature of the Proposed Development, it will intersect areas of wet grassland, scrub, woodland, hedgerows, and treelines in addition to culverting a number of drainage ditches. The Proposed Development will result in a direct loss of habitat suitable for use by common lizards. Due to the linear nature of the Proposed Development, it will intersect such areas of suitable habitat.

This loss and fragmentation may impact on the dispersal, foraging, and commuting routes of common frogs, smooth newts, and common lizards. It can create habitat patch isolation and effectively cut off certain areas of suitable habitat from access by these species, which effectively means a loss of previously accessible foraging, breeding, and hibernation sites. This can affect the ability of these species to thrive and may jeopardise survival and reproductive success.

The construction of all three sections of the Proposed Development will result in a loss of habitats likely to be used by common frogs, smooth newts, and common lizards for breeding, foraging, refuge, and commuting.

The extent of the effect of habitat loss, fragmentation, and alteration is the CPO boundary, and the magnitude is the reduction in the area of utilisable habitat. However, the numerous culverts across the Proposed Development, the proposed mammal underpass in Section 1 (mainline chainage 3+200), and open span bridge designs provide some permeability across the proposed roads. The effect will be permanent and irreversible. Due to the numerous culverts likely to be utilisable by these species, in the absence of mitigation, habitat loss, fragmentation, and alteration is predicted to result in **not significant, permanent, reversible, adverse effects** on common frog, smooth newt, and common lizard.

#### 9A.5.6.12.2 Operational Phase

##### 9A.5.6.12.2.1 Accidental killing or injury

There is potential for common frogs, smooth newts, and common lizards to be road traffic casualties during the operational phase. There is also the potential for these species to fall into drainage gully pots and suffer fatalities.

Given the distribution of suitable habitats for common frog, smooth newt, and common lizard throughout all three sections of the Proposed Development, it is likely that they are widely dispersed in considerable numbers throughout the area, where there is a risk of them entering the carriageways.

The extent of the effect of accidental killing or injury is the length of the proposed road, and the magnitude is the number of common frogs, smooth newts, and common lizards killed or injured. The magnitude of effect is hard to assess, but there is the potential to affect thousands of individuals over the lifespan of the Proposed Development. However, it is considered unlikely that the Proposed Development will result in significantly greater mortality than the existing road network. The effect is long-term, for the operational phase of the Proposed Development, and reversible. Therefore, in the absence of mitigation, accidental killing or injury is predicted to result in **not significant**, **long-term, reversible, adverse effects** on common frog, smooth newt, and common lizard.

## 9A.6 Mitigation Measures

### 9A.6.1 Construction Phase

#### 9A.6.1.1 Overarching Mitigation Measures

The Applicant will ensure the implementation of the mitigation, monitoring and other environmental commitments set out in this Chapter (as mirrored within the NIS for the Proposed Development) after any approval as may be granted by the Commission for the Project. The Applicant will employ a suitably qualified and experienced Project Ecologist who will form part of the Employer's Site Representative Team and who will oversee the implementation of the mitigation and monitoring measures for the Proposed Development. The Project Ecologist will be appointed prior to the commencement of any construction or enabling works; including any post-consent, pre-construction site investigations. The Project Ecologist shall be responsible for carrying out regular audits of the ecology measures set out in the Contractor's Environmental Operating Plan (EOP) on behalf of the local authority.

The Applicant will ensure that the Contractor shall appoint a suitably qualified person(s), to the role of Environmental Clerk of Work(s) (ECoW) for each section. The appointed ECoW must hold a relevant degree (e.g., in Environmental Science, Ecology, or a related discipline) and demonstrate significant relevant experience, typically a minimum of 2-5 years in an ECoW or similar role.

The ECoW will be appointed prior to the commencement of any construction or enabling works. The ECoW will be responsible for and oversee the contractor's environmental management of the construction works. The ECoW will, as necessary, liaise with the relevant environmental stakeholders, e.g. NPWS, IFI, Loughs Agency, and keep the Project Ecologist informed of all liaisons, decisions and agreements.

- The Applicant will ensure that the Contract(s) for the construction of the Proposed Development allow for the regular checking of mitigation measures, monitoring and other environmental commitments, the cessation of construction works at any locations where these are not operating as planned, and the undertaking of corrective actions. In addition, the Contract(s) will include provision for the Project Ecologist to review and accept any corrective actions proposed by the Contractor(s) and/or their ECoW prior to their implementation (unless deemed urgent and necessary for the immediate protection of the environment), and monitoring of the efficacy of those corrective actions to ensure the aims and objectives of the environmental protection measures are achieved.

- In advance of works commencing on site, all personnel will receive on-site induction by the ECoW and Contractor relating to the ecological constraints and mitigation measures associated with the site. It will be the responsibility of the Contractor to ensure that any new personnel who are employed during the construction works also receive the on-site induction.

- Prior to the commencement of construction works, the scope, programme, and phasing of confirmatory pre-construction habitat and species surveys will be defined by the ECoW in consultation with the Applicant and Main Contractor. Given the duration of the construction works, these pre-construction habitat and species surveys will be appropriately phased, mindful of the planned work and seasonal constraints. This is to ensure that an up-to-date baseline is maintained to inform decision making. Some of these confirmatory surveys will be completed as part of Enabling Works set out in the Project Description; others will be completed as the phases of construction are progressed along the routes.

- As set out in detail in sections 9A.6.1.4.1 and 9A.6.1.4.4 below, it has been established that based on the current baseline information:-
    - No derogation licence is required in respect of otter (see section 9A.6.1.4.4 below); and,
    - Derogation licences have been received from NPWS (see Appendix C9A.06) in respect of impacts on seven bat roosts identified in Section 1 of the Proposed Development, one in Section 2 and four in Section 3. One derogation covers the roosts lost in both Section 1 and 2 of the Proposed Development and the other covers the roosts lost in Section 3 of the Proposed Development. The licence numbers are DER-BAT-2026-93 for Sections 1 and 2, and DER-BAT-2026-94 for Section 3.

- Mindful of the mobile nature of the species concerned (e.g. bats and otters), changes to the baseline environment may occur between the completion of this EIAR and the commencement of construction of the Proposed Development. Such changes will be identified by the confirmatory pre-construction surveys mentioned above, and where these surveys identify the establishment of any new bat roosts or otter holts/couching sites that give rise to the requirement for a further derogation licence, any such further derogation licence(s) will be obtained prior to undertaking any construction works that may contravene the strict protection afforded to bats under the EU Habitats Directive (as transposed). The scope of the confirmatory pre-construction surveys will be sufficient to inform any such future derogation licence application which may be required.

- The ECoW will oversee the implementation of the eradication of invasive alien species. However, the “sign off” of the works required to remove/eradicate invasive alien species will be completed by a specialist contractor specialising in such eradication.

- It is noted that an EOP will be prepared by the Contractors prior to the commencement of earthworks. The EOP will include all the mitigation measures set out below with respect to the construction phase. The EOP will be prepared in consultation with the ECoW. It will be the role of the ECoW to ensure that all the relevant ecological mitigation measures set out below and within the NIS are incorporated into the EOP and implemented thereafter.

In addition to the overarching measures above, IEF-specific measures are detailed below.

### 9A.6.1.2 Designated sites

#### 9A.6.1.2.1 River Finn SAC

Mitigation measures for the aquatic receptors of the River Finn SAC are included in Chapter 9B: Biodiversity – Aquatic. The construction phase mitigation measures with respect to otter and habitats and flora are set out in Sections 9A.6.1.4.4 and 9A.6.1.3, respectively.

#### 9A.6.1.2.2 River Foyle and Tributaries SAC (UK)

Mitigation measures for the aquatic receptors of the River Foyle and Tributaries SAC are included in Chapter 9B: Biodiversity – Aquatic. Similar to the River Finn SAC, the construction phase mitigation measures with respect to otter and habitats and flora are set out in Sections 9A.6.1.4.4 and 9A.6.1.3, respectively.

#### 9A.6.1.2.3 River Foyle and Tributaries ASSI

Mitigation measures for the aquatic receptors of the River Foyle and Tributaries ASSI are included in Chapter 9B: Biodiversity – Aquatic. The terrestrial receptors for which the River Foyle and Tributaries ASSI is designated and for which likely significant effects were identified are otter, terrestrial habitats, and bird species. Similar to the River Foyle and Tributaries SAC, the construction phase mitigation measures with respect to otter and habitats and flora are set out in Sections 9A.6.1.4.4 and Section 9A.6.1.3, respectively. The mitigation measures set out in Chapter 9B: Biodiversity – Aquatic sufficiently mitigate the impact of surface water pollution on birds of the ASSI.

#### 9A.6.1.2.4 River Foyle, Mongavlin to Carrigans pNHA

The impacts on the River Foyle, Mongavlin to Carrigans pNHA are considered the same as those on the River Foyle and Tributaries ASSI. Therefore, mitigation measures for these impacts are discussed in Section 9A.6.1.2.3 above.

#### 9A.6.1.2.5 Lough Swilly SAC

Mitigation measures for the aquatic receptors of Lough Swilly SAC are included in Chapter 9B: Biodiversity – Aquatic. The mitigation measures set out in Chapter 9B: Biodiversity – Aquatic sufficiently mitigate the impact of surface water pollution on Atlantic salt meadows. The construction phase mitigation measures with respect to otter and habitats and flora are set out in Sections 9A.6.1.4.4 and 9A.6.1.3, respectively.

#### 9A.6.1.2.6 Ornithological sites of Lough Swilly and Lough Foyle

**Surface water pollution**

The mitigation measures set out in Chapter 9B: Biodiversity – Aquatic sufficiently mitigate the impact of surface water pollution on ornithological sites of Lough Swilly and Lough Foyle.

**Habitat loss, fragmentation, and alteration**

Mitigation measures for habitat loss, fragmentation, and alteration are discussed with respect to habitats and flora in Section 9A.6.1.3 below.

**Construction phase disturbance from noise, vibration, lighting, and human presence**

Construction activities will typically be undertaken during daylight hours. It is proposed that the normal permitted working times will be 07.00 to 19.00 hours. Floodlights will be cowled and angled downwards to minimise light spillage outside of works areas. Lighting will be provided with the minimum luminosity sufficient for safety and security purposes and will be shut off at night when not in use or when works cease at the end of the day in order to minimise the effects of light pollution and disturbance to birds.

The extent of the blasting and piling operations is discussed as part of the Chapter 14: Noise & Vibration, which describes the noise assessment and mitigation measures to be undertaken in relation to noise and vibration impacts.

**Operational phase disturbance from noise, vibration, lighting, and human presence**

Public lighting for the operational phase is discussed in Chapter 4: Project Description. It is to be provided at roundabouts and mainline junctions, and the design follows best practice in relation to environmental issues, including ecology. In relation to lighting design for ecology, the design will be prepared with reference to *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (NRA, 2005b), *Guidelines for the Treatment of Bats during the Construction of National Road Schemes* (NRA, 2005c), and *Bat Mitigation Guidelines for Ireland* (Marnell *et al.*, 2022). These mitigation measures will also reduce light spill to areas utilised by wintering birds.

#### 9A.6.1.2.7 Lough Swilly including Big Isle, Blanket Nook & Inch Lake pNHA

The impacts on Lough Swilly including Big Isle, Blanket Nook & Inch Lake pNHA are considered the same as those on Lough Swilly SAC and Lough Swilly SPA. Therefore, mitigation measures for these impacts are discussed in Sections 9A.6.1.2.5 and 9A.6.1.2.6 above.

### 9A.6.1.3 KERs, Habitats and flora

#### 9A.6.1.3.1.1 Spread of invasive alien species

An Invasive Species Management Plan (ISMP) has been prepared and set out in Appendix C4.04. The strategy was prepared for the Proposed Development in line with *The Management of Invasive Alien Plant Species on National Roads – Standard* (TII, 2020a) and *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance* (TII, 2020b). The ISMP outlines the measures required to control invasive species.

Five scheduled invasive alien plant species (Japanese knotweed, Himalayan knotweed, giant rhubarb, Himalayan balsam, and rhododendron) and other invasive alien species were recorded within the study area, the locations of which are outlined in Appendices C09A.01 and C4.04. The presence of invasive alien species within the study area provides the potential for the spread of these species by the Proposed Development. These species are highly invasive and out-compete native flora to form single species stands. In the case of Japanese knotweed, its presence along watercourses is particularly significant, as contaminated soil or vegetative material washed from an infected area can result in the spread of this species downstream. Appropriate mitigation measures, including eradication, management, and control measures, are required within the proposed works area where each of these species are encountered to prevent the spread of these species.

To inform the eradication works, pre-construction invasive alien species surveys will be completed. This will be part of a suite of pre-construction surveys, the scope, programme, and phasing of which will be defined by the Project Ecologist/ECoW in consultation with the Applicant and Main Contractor prior to the commencement of site clearance and construction works. The Project Ecologist will co-ordinate any advanced works for the Authority. Given the duration of the construction works, the pre-construction surveys will need to be appropriately phased, mindful of the planned work and seasonal constraints. This is to ensure that an up-to-date baseline is maintained to inform decision making. Based on the findings of the pre-construction surveys, the adequacy of the mitigation will be reviewed and, if necessary, adjusted accordingly by the ECoW. Any adjustment to the mitigation measures will be agreed with the Local Authority in advance of them being implemented. The pre-construction surveys will be supplemented by further inspection by the ECoW (as deemed necessary by them) immediately prior to site clearance. The ECoW will update the ISMP following pre-construction surveys and as the construction phase of the Proposed Development progresses, following TII (2020a, 2020b) guidance.

Chapter 4: Project Description states that any invasive plant species identified within the lands made available will be dealt with prior to construction works taking place. It further states that an advance works contract may be undertaken to treat and/or remove stands of invasive plant species. Works to eradicate invasive species will be completed and signed off by suitably experienced personnel. At the time of writing, the works will be completed with reference to the following guidance:

- The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII, 2020b)
- Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (NRA, 2010),
- The Management of Waste from National Road Construction Projects (TII, 2017),
- The Knotweed Code of Practice. Managing Japanese Knotweed on Development sites. UK Environment Agency Environment Agency (2013).
- Inland Fisheries Ireland guidance regarding aquatic invasive species control (http://www.fisheriesireland.ie/Research/invasive-species).
- Invasive Species Ireland guidance (http://invasivespeciesireland.com).

No vegetation removal or works resulting in earth disturbance will be completed in any area known to support invasive alien species until the eradication of the invasive alien species has been completed and signed off by suitably experienced personnel.

Asian clam (*C. fluminea*) an invasive alien animal species has been recorded at the downstream end of the Swilly Burn near the proposed bridge (Site W3-14). There are no instream works at this or any other major river crossings in the Foyle catchment (rivers Deele, Swilly Burn, Finn) but instream works are required on smaller tributaries of the Foyle catchment main channels. To avoid transference of clams or their waterborne juvenile stages, construction personnel are strictly forbidden to enter the water at the major bridge crossing locations. If accidental contact with water occurs in the rivers of Section 3: Swilly Burn, Deele or Finn and/or Section 2: Swilly Estuary or Isle Burn (Lesliehill) - before moving to other areas within the catchment or any outside river, lake or estuary catchment the following biosecurity protocol shall be carried out:

- **Check** – Remove any visible matter, including any clams you can see, along with plant material or mud. Empty boots or drain all river water from containers.
- **Clean** – Washdown all clothing, equipment and any other gear that was in contact with river water using tap-water onto grass (or a dedicated washdown area within the site compound), at least 50 m away from any watercourse and not into a stormwater drain system.
- For any absorbent surfaces of equipment and/or materials that accidentally come into contact with river water use a suitable disinfection method for the item: (1) Hot water - Soak in hot tapwater (55°C) for at least 5 minutes; (2) Diluted bleach - Soak in household bleach in a 10% (1 in 10) ratio with water for 1 hour; (3) Virkon® Aquatic – use a spray bottle of solution according to manufacturer's instructions to douse the equipment; (4) Freezing – overnight until solid.
- **Dry** – Allow gear to dry to touch, inside and out, then leave it to dry for at least 48 hours (2 days) before using again.

To avoid potential transfer of aquatic alien species or pathogens, there shall be no abstraction from any natural watercourse as part of construction activities. Any construction related water requirements will be served by tanker sourced from a municipal treatment supply.

#### 9A.6.1.3.1.2 Unintended incursion

To avoid unintended incursion by personnel, equipment, and materials, the construction site boundary will be fenced off and site access/egress points constructed. In addition to the fencing of the CPO boundary as part of the enabling works, any other vegetation within the CPO boundary which is capable of being retained during the construction works will be fenced off with suitable protective fencing, to be specified by the ECoW. This includes the retention of trees, hedgerow, woodland, etc. Only site access/egress points will be used by personnel and equipment.

Signage will be placed at intervals along the fencing stating, "no access or storage of materials beyond this point" (or similar). The signage will face inwards into the construction site.

As part of the on-site ECoW induction for construction personnel, it will be stated that there will be no access to personnel or equipment and no storage of construction materials beyond the fenced construction boundary.

#### 9A.6.1.3.1.3 Surface water pollution

Mitigation measures for the impacts of surface water pollution are included in Chapter 9B: Biodiversity – Aquatic.

#### 9A.6.1.3.1.4 Air pollution

The impacts and effects on air quality (including dust) are set out in the Chapter 12: Air Quality. The chapter includes mitigation with respect to air quality, including limits on dust emissions. This mitigation will also address potential impacts on habitats from air quality changes during construction.

#### 9A.6.1.3.1.5 Globeflower

The spread of invasive alien species is the only impact with potential to result in a significant effect on globeflower. However, a precautionary pre-construction survey for the presence/absence of globeflower along the affected section of the River Finn (in the vicinity of the new bridge crossing) will be completed at the appropriate time of year.

This will be part of a suite of pre-construction surveys, the scope, programme, and phasing of which will be defined by the ECoW in consultation with the Applicant and Main Contractor prior to the commencement of construction works. Given the duration of the construction works, the pre-construction surveys will need to be appropriately phased, mindful of the planned work and seasonal constraints. This is to ensure that an up-to-date baseline is maintained to inform decision making. Based on the findings of the pre-construction surveys, the adequacy of the mitigation for globeflower will be reviewed and, if necessary, adjusted accordingly by the ECoW. Any adjustment to the mitigation measures will be agreed with the Local Authority in advance of them being implemented. The pre-construction surveys will be supplemented by further inspection by the ECoW (as deemed necessary by them) immediately prior to site clearance.

### 9A.6.1.4 Fauna

#### 9A.6.1.4.1 Bats – roosting

#### 9A.6.1.4.1.1 Roost loss and accidental killing or injury

As part of the Proposed Development, seven bat roosts have been identified in Section 1, one in Section 2 and four in Section 3 that will be lost as a result of the Proposed Development. Two separate derogation licence applications have been submitted to NPWS in December 2025. These Derogation Licences have been received and are provided in Appendix C9A.06. One derogation (Derogation Licence Number: DER-BAT-2026-93) covers the roosts lost in both Section 1 and 2 of the Proposed Development and the other (Derogation Licence Number: DER-BAT-2026-94) covers the roosts lost in Section 3 of the Proposed Development.

Derogation licences granted by NPWS are published on their Bat Derogations Issued 2026 webpage (See Link: Bat Derogations 2026 | National Parks & Wildlife Service https://www.npws.ie/licensesandconsents/disturbance/application-for-derogation/derogations-issued-2026/bat-derogations), along with the application and supporting documents.

Mindful of the mobile nature of bats, pre-construction bat surveys will be undertaken, and these will verify if the identified roosts remain in place and will identify any new roosts established. Should the pre-construction surveys identify any additional bat roosts, modified and/or additional bat derogation licence applications will be submitted to NPWS for approval. Applications for any additional derogation licences will be submitted and obtained prior to undertaking construction works that may disturb those bat roosts.

The need for derogation licences will need to be kept under review by the ECoW as the works progress; based on the findings of the pre-construction surveys completed.

The status, with respect to bat roosting, of any buildings to be demolished (in whole or in part) and any trees to be removed (or subject to significant tree surgery) will be confirmed through the completion of pre-construction surveys at the appropriate time of year (typically May to September) by the ECoW (and

appropriately qualified personnel, if required). The surveys will be completed with reference to the following guidance (or relevant guidance at time of survey):

- NPWS *Bat Mitigation Guidelines for Ireland* (v.2) (Marnell *et al.*, 2022)
- BCT *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th Ed) (Collins, 2023)

Pre-construction bat roosting surveys will be part of a suite of pre-construction surveys; the scope, programme, and phasing of which will be defined by the ECoW in consultation with the Applicant and Main Contractor prior to the commencement of construction works. Given the duration of the construction works, the update surveys will need to be appropriately phased, mindful of the planned work and seasonal constraints. This is to ensure that an up-to-date baseline is maintained to inform decision making, including with respect to the need for derogation licensing. Some of these surveys will be completed as part of Enabling Works set out in Chapter 4: Project Description; others will be completed as the phases of construction are progressed along the route.

Based on the findings of the pre-construction surveys, the adequacy of the mitigation for roosting bats will be reviewed and, if necessary, adjusted accordingly by the ECoW. The pre-construction surveys will also inform the need or otherwise for derogation licensing. Any adjustment to the mitigation measures will be agreed with the Local Authority in advance of them being implemented. The pre-construction surveys will be supplemented by further inspection by the ECoW (as deemed necessary by them) immediately prior to site clearance.

There will be no demolition of buildings or removal of trees with bat roost potential (potential to be determined by the ECoW) unless the ECoW has confirmed that the buildings or trees do not support roosting bats (confirmed via survey) or unless the demolition/removal is completed under the provisions of a derogation licence. Following the pre-construction survey, bat roosts located within the CPO boundary will be clearly identified to all personnel working in the vicinity of the roost. Temporary boundary tape fencing (or similar) can be used at the discretion of the ECoW to identify such roosts, subject to such measures themselves not impacting on the use of the roost.

Removal or significant disturbance (wholly or partially) of roosts will be completed in accordance with the necessary derogation licence and with reference to *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (NRA, 2005b), *Guidelines for the Treatment of Bats during the Construction of National Road Schemes* (NRA, 2005c), and *Bat Mitigation Guidelines for Ireland* (Marnell *et al.*, 2022). The need for licences will be determined by the ECoW. The need for additional mitigation for derogation licensing purposes will be reviewed and determined by the ECoW and relayed, as necessary to the Local Authority.

All vegetation removal shall be monitored by the ECoW to ensure there is no disturbance of protected species (e.g. otter, bats, hedgehog, shrew, etc.). If disturbance of roosting bats occurs, the ECoW will contact NPWS.

By way of enhancement and in addition to any provision of alternative roosting structures which may be required, depending on the findings of pre-construction surveys, with respect to derogation licensing, 10 no. bat boxes per 1 km of new carriageway will be erected in pairs at suitable locations along the route of the proposed road. Suitable locations will be determined by the ECoW based on locations available to erect, proximity to artificial lighting, and connectivity to foraging and commuting habitats. The bat boxes will be Schwegler-type (woodcrete) boxes (or similar) and a range of different types of boxes (e.g. 2f, 1FF, 3FF, 1FW, 1FE, and 1FTH) will be used. In addition, bat tubes (Schwegler) are required to be inserted into suitable bridges and culverts (minimum dimension of 2.5m x 2.5m). Two bat tubes are erected inside culverts while 4-8 bat tubes are inserted into the bridges (e.g. proposed bridge over the Deele River in Ballindrate and bridge over the River Finn in Lifford).

In relation to Building 41 (Section 3), this structure was recorded as a maternity roost for soprano pipistrelles. While it is not located within the CPO, it is located within 20 m of the boundary of the CPO, and the proposed road route will be located both south and north of the structure. This is likely to result in disturbance to the roost and therefore, if preconstruction surveys identify that the roost is still present, it is recommended that an alternative bat house is constructed to provide an alternative roosting site. Please see detail of the bat house in Appendix C9A.04.

#### 9A.6.1.4.1.2 Construction phase disturbance from noise, vibration, lighting, and human presence

Eleven bat roosts were identified within 20 m of the CPO boundary. The identified bat roosts will be clearly identified to all personnel working in the vicinity of the roost. Temporary boundary tape fencing (or similar) can be used at the discretion of the ECoW to identify such roosts, subject to such measures themselves not impacting on the use of the roost.

Construction activities will typically be undertaken during daylight hours. It is proposed that the normal permitted working times will be 07.00 to 19.00 hours. Floodlights will be cowled and angled downwards to minimise light spillage outside of works areas. Lighting will be provided with the minimum luminosity sufficient for safety and security purposes and will be shut off at night when not in use or when works cease at the end of the day in order to minimise the effects of light pollution and disturbance to bats.

The extent of the blasting and piling operations is discussed as part of the Chapter 14: Noise & Vibration, which describes the noise assessment and mitigation measures to be undertaken in relation to noise and vibration impacts.

#### 9A.6.1.4.1.3 Habitat loss, fragmentation, and alteration

The design of the proposed road includes the following “built in” features which will mitigate the impacts of habitat loss, fragmentation, and alteration for bat roosting:

- Open-span bridge design over the River Finn, Swilly, Cloghroe, Backlees, Swilly Burn, and Deele; under which bats can freely pass.
- Large culverts at watercourse crossings also provide opportunities for use by bats.
- The detailed landscaping of the Proposed Development will seek to ensure that habitat connectivity is reinstated in the form of scrub, hedgerows, treelines, and woodland.

#### 9A.6.1.4.1.4 Operational phase disturbance from noise, vibration, lighting, and human presence

Public lighting for the operational phase is discussed in Chapter 4: Project Description. It is to be provided at roundabouts and mainline junctions, and the design follows best practice in relation to environmental issues, including ecology. In relation to lighting design for ecology, the design will be prepared with reference to *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (NRA, 2005b), *Guidelines for the Treatment of Bats during the Construction of National Road Schemes* (NRA, 2005c), *Bat Mitigation Guidelines for Ireland* (Marnell *et al.*, 2022) and *Bats and Artificial Lighting at Night* (BCT and ILP, 2023).

### 9A.6.1.4.2 Bats – commuting and foraging

#### 9A.6.1.4.2.1 Operational phase disturbance from noise, vibration, lighting, and human presence

Public lighting for the Proposed Development’s operational phase is discussed with respect to roosting bats mitigation measures in Section 9A.6.1.4.1 above.

#### 9A.6.1.4.2.2 Habitat loss, fragmentation, and alteration

The design of the proposed road includes the following “built in” features which will aid connectivity for commuting and foraging bats across the proposed road corridor:

- Open-span bridge design over the River Finn, Swilly, Cloghroe, Backlees, Swilly Burn, and Deele; under which bats can freely pass.
- Large culverts at watercourse crossings also provide commuting opportunities for use by bats.
- The detailed landscaping of the Proposed Development will seek to ensure that habitat connectivity is reinstated in the form of scrub, hedgerows, treelines, and woodland.

#### 9A.6.1.4.2.3 Construction phase disturbance from noise, vibration, lighting, and human presence

Construction activities will typically be undertaken during daylight hours. It is proposed that the normal permitted working times will be 07.00 to 19.00 hours. Floodlights will be cowled and angled downwards to minimise light spillage outside of works areas. Lighting will be provided with the minimum luminosity sufficient for safety and security purposes and will be shut off at night when not in use or when works cease at the end of the day in order to minimise the effects of light pollution and disturbance to bats.

The extent of the blasting and piling operations is discussed as part of the Chapter 14: Noise & Vibration, which describes the noise assessment and mitigation measures to be undertaken in relation to noise and vibration impacts.

### 9A.6.1.4.3 Badger

#### 9A.6.1.4.3.1 Loss of setts

No active badger setts have been identified that show evidence of potential breeding evidence within the footprint of the Proposed Development. Therefore, the need to provide artificial setts has not been identified. However, as badgers are a mobile species and their status and range can change over time, pre-construction surveys will be undertaken to identify if any setts and potential breeding setts are present.

If any potential setts are identified, best practice mitigation will be implemented in conjunction with the ECoW to include the following measures.

No construction personnel or machinery will be used within 30 m of active badger setts (extended to 50 m for active setts during the breeding season; December–June, inclusive), unless those setts have been adequately closed and excluded with appropriate mitigation provided. During the pre-construction survey, setts located within the CPO boundary or within 50 m of this boundary will be clearly marked with temporary fencing, demarking the exclusions zones within the CPO boundary, and the areas in which vehicles are prohibited will be clearly marked by fencing and signage, until the time that the setts have been excluded.

In the event that setts are to be closed (wholly or partially), this will be completed with reference to the Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes (NRA, 2006a). It is assumed that all active setts at the time of construction and within the CPO boundary will need to be closed. Where required, evacuation and destruction of active badger setts will be carried out under the supervision of an appropriately qualified ecologist. Evacuation and destruction will be undertaken during the period 1 July to 30 November. If a breeding sett or significant numbers of setts within a close proximity require closure then an artificial sett will be provided and constructed in line with the guidelines (NRA, 2005a). An example of and construction guidance for an artificial sett is provided in Appendix C9A.07, taken as an extract from NatureScot (2018) Guidance for the Creation of Artificial Setts.

The location of an artificial sett will be determined by the location of the active setts to be closed or excluded, following the pre-commencement surveys. However, an exercise has been undertaken to identify appropriate areas within the CPO boundary that artificial setts can be located during the construction period. An appropriate location for an artificial sett in the vicinity of the most active area for badgers is at the north of the Section 1 CPO boundary between approximate mainline chainage 3+100 and 3+300.

All vegetation removal shall be monitored by the ECoW to ensure there is no disturbance of protected species (e.g. otter, bats, hedgehog, shrew, etc.). If disturbance of a sett occurs, the ECoW will contact NPWS. Where dense vegetation prevents adequate determination of the presence or absence of setts as part of the pre-construction surveys, these areas will require monitoring during vegetation clearance to ensure that any setts present will be found and treated appropriately.

#### 9A.6.1.4.3.2 Habitat loss, fragmentation, and alteration

The design of the Proposed Development includes the “built in” open-span bridge designs over the River Finn, Cloghroe, Backlees, Swilly Burn, Deele, and Swilly Estuary and the mammal underpass in Section 1 (mainline chainage 3+200) which will aid connectivity for badger across the proposed road corridor.

Box culverts will include mammal ledges were possible and, if not possible, associated dry passes will be included. Dry passes will be included adjacent to pipe culverts where required. The dry passes are included purely to facilitate animal passage. The locations and types of mammal underpasses or other permeability measures in Sections 1, 2, and 3 are summarised in Table 9A-10, Table 9A-11, and Table 9A-12, respectively (see culvert and bridge locations in the drainage drawings: EIAR Drawings 4.40, 4.41, and 4.42).

**Table 9A-10: Locations of Mammal Mitigation Measures for Section 1**

| Mitigation Ref. | Culvert Name | Location/Road Name | Chainage | Culvert Type | Mitigation Type | Species[26] |
|---|---|---|---|---|---|---|
| MUP.S1.01 | S1-CUL.01 | L-6564 Connector Road | 1+300 | Box | Ledge | Otter |
| MUP.S1.02 | S1-CUL.06 | L-6564 Connector Road | 0+105 | Pipe | Drypass | Badger |
| MUP.S1.03 | S1-CUL.07 | L-6564 Connector Road (Farm Access) | 0+270 | Pipe | Drypass | Otter, badger |
| MUP.S1.04 | S1-CUL.08 | L-6564 Connector Road | 0+355 | Box | Ledge | Otter, badger |
| MUP.S1.05 | S1-CUL.09 | Mainline Section 1 | 0+220 | Pipe | Drypass | Otter, badger |
| MUP.S1.06 | S1-CUL.10 | LX-1002 Link | 0+208 | Box | Ledge | Otter, badger |
| MUP.S1.07 | S1-CUL.11 | LX-1002 Link (Farm Access) | 0+200 | Box | Ledge | Otter, badger |
| MUP.S1.08 | River Finn Bridge | Mainline Section 1 | 2+400 | Bridge | Natural bank | Otter, badger |
| MUP.S1.09 | S1-CUL.12 | L-2754 Realignment (Farm Access) | 0+060 | Box | Ledge | Otter |
| MUP.S1.10 | S1-CUL.13 | L-2754 Realignment | 0+155 | Box | Ledge | Otter |
| MUP.S1.11 | N15P032 | Mainline Section 1 | 3+200 | Pedestrian /Wildlife Underpass | Underpass | Badger |
| MUP.S1.12 | S1-CUL.14 | L-2734 Tie-in (Domestic Access) | 0+335 | Box | Ledge | Otter |
| MUP.S1.13 | None | L-2784 CONNECTOR | 0+170 | None | Drypass | Badger |
| MUP.S1.14 | River Backlees Bridge | River Backlees Bridge | 4+125 | Bridge | Natural bank | Otter |
| MUP.S1.15 | S1-CUL.19 | Existing N13 | 0+680 | Box | Ledge | Otter, badger |
| MUP.S1.16 | S1-CUL.20 | Existing N13 (Farm Access) | 0+470 | Box | Ledge | Otter, badger |
| MUP.S1.17 | S1-CUL.21 | LX-1007-1 Northern Link Road | 1+610 | Box | Ledge | Otter, badger |
| MUP.S1.18 | S1-CUL.22 | LX-1007-1 Northern Link Road | 1+765 | Box | Ledge | Otter, badger |
| MUP.S1.19 | S1-CUL.25 | L-2714 Realignment (Farm Access) | 0+375 | Box | Ledge | Otter, badger |
| MUP.S1.20 | S1-CUL.28 | N15 Tie-in East | 0+155 | Twin Box | Ledge | Otter, badger |
| MUP.S1.21 | None | L-7084 Connector | 1+300 | None | Drypass | Badger |
| MUP.S1.22 | S1-CUL.29 | Mainline Section 1 | 7+920 | Pipe | Drypass | Badger |
| MUP.S1.23 | S1-CUL.30 | L-6674 Realignment | 0+505 | Box | Ledge | Otter, badger |

[26] Structure designed primarily for this species; however, structure could also be used for passage by other small mammal species also.

| Mitigation Ref. | Culvert Name | Location/Road Name | Chainage | Culvert Type | Mitigation Type | Species[26] |
|---|---|---|---|---|---|---|
| MUP.S1.24 | S1-CUL.31 | LX-1011 Connector Road | 0+025 | Box | Ledge | Otter |
| MUP.S1.25 | S1-CUL.33 | L-6674 Realignment | 0+615 | Box | Ledge | Otter, badger |
| MUP.S1.26 | S1-CUL.34 | L-6674 Realignment | 0+310 | Box | Ledge | Otter |
| MUP.S1.27 | S1-CUL.35 | Existing N13 (Cycleway) | N/A | Box | Ledge | Otter |
| MUP.S1.28 | S1-CUL.36 | Mainline Section 1 | 8+500 | Box | Ledge | Otter |
| MUP.S1.29 | N/A | River Cloghroe Bridge | 0+300 | Bridge | Natural bank | Otter, badger |

**Table 9A-11: Locations of Mammal Mitigation Measures for Section 2**

| Mitigation Ref. | Culvert Name | Location/Road Name | Chainage | Culvert Type | Mitigation Type | Species[27] |
|---|---|---|---|---|---|---|
| MUP.S2.01 | S2-CUL.07 | L-1094 Connector Road | 0+235 | Pipe | Drypass | Otter |
| MUP.S2.02 | S2-CUL.08 | L-1094 Link | 0+129 | Pipe | Drypass | Otter |
| MUP.S2.03 | S2-CUL.09 | LX-2004 | 0+024 | Pipe | Drypass | Otter |
| MUP.S2.04 | S2-CUL.12 | L-5784 Realignment | 0+400 | Pipe | Drypass | Otter |
| MUP.S2.05 | S2-CUL.13 | Mainline Section 2.1 | 1+411 | Pipe | Drypass | Otter |
| MUP.S2.06 | S2-CUL.14 | Mainline Section 2.1 | 1+680 | Pipe | Drypass | Otter |
| MUP.S2.07 | S2-CUL.15 | Mainline Section 2.1 (Farm Access) | 1+687 | Pipe | Drypass | Otter |
| MUP.S2.08 | S2-CUL.16 | L-1114 Realignment | 0+130 | Box | Ledge | Otter |
| MUP.S2.09 | S2-CUL.16A | Existing N13 | 0+625 | Box | Ledge | Otter |
| MUP.S2.10 | S2-CUL.17 | Farm Access (at NX-2000 Link, CH1+830) | n/a | Box | Ledge | Otter |
| MUP.S2.11 | S2-CUL.18 | NX-2000 Link | 1+630 | Box | Ledge | Otter |
| MUP.S2.12 | S2-CUL.19 | LX-2011 Connector Road | 0+550 | Box | Ledge | Otter |
| MUP.S2.13 | S2-CUL.20 | LX-2010 Link | 0+150 | Box | Ledge | Otter |
| MUP.S2.14 | S2-CUL.21 | LX-2008 Bonagee Link | 0+200 | Box | Ledge | Otter |
| MUP.S2.15 | S2-CUL.22 | LX-2011 Connector Road | 0+238 | Box | Ledge | Otter |
| MUP.S2.16 | S2-CUL.23 | River Swilly Link | 1+218 | Box | Ledge | Otter |
| MUP.S2.17 | S2-CUL.24 | River Swilly Link | 0+942 | Box | Ledge | Otter |
| MUP.S2.18 | S2-CUL.25 | River Swilly Link | 0+750 | Box | Ledge | Otter |
| MUP.S2.19 | N/A | Swilly Estuary Bridge | 0+500 | Bridge | Natural bank | Otter, badger |
| MUP.S2.20 | S2-CUL.26 | LX-2010 Tie-in | 0+056 | Box | Ledge | Otter |
| MUP.S2.21 | S2-CUL.27 | LX-2010 Tie-in | 0+325 | Pipe | Drypass | Otter |
| MUP.S2.22 | S2-CUL.29 | L-1154 West Tie-in | 0+151 | Box | Ledge | Otter, badger |
| MUP.S2.23 | S2-CUL.30 | LX-2013 Link South | 0+120 | Box | Ledge | Otter, badger |
| MUP.S2.24 | S2-CUL.31 | Trimnagh Link | 0+048 | Box | Ledge | Otter, badger |
| MUP.S2.25 | Existing culvert | Mainline Section 2.1 | 1+250 | Unknown | N/A | Otter, badger |

[27] Structure designed primarily for this species; however, structure could also be used for passage by other small mammal species also.

| Mitigation Ref. | Culvert Name | Location/Road Name | Chainage | Culvert Type | Mitigation Type | Species[27] |
|---|---|---|---|---|---|---|
| MUP.S2.26 | S2-CUL.32 | LX-5824 Tie-in | 0+128 | Box | Ledge | Otter, badger |
| MUP.S2.27 | River Isle Burn Active Travel Bridge Location | Mainline Section 2.1 | 3+400 | Bridge | Natural bank | Otter |

**Table 9A-12: Locations of Mammal Mitigation Measures for Section 3**

| Location Chainage | Reference | Key Actions |
|---|---|---|
| 0+700 | MUP.S3.S01 | ▪ Mammal passage along stream and adjacent two access tracks.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 1+100 | MUP.S3.S02 | ▪ Mammal passage along stream and adjacent two access tracks.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 1+780 | MUP.S3.S03 | ▪ Mammals passage across mainline, side road and access track.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 2+020 | MUP.S3.S04 | ▪ Mammal passage along stream.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 2+190 | MUP.S3.S05 | ▪ Mammal passage across disused railway.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 2+400 | MUP.S3.S06 | ▪ Mammal passage along stream crossing on N14 Link road.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 3+700 | MUP.S3.S07 | ▪ Mammal passage across mainline and side road.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 4+100 | MUP.S3.S08 | ▪ Mammal passage along drainage culvert.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 4+500 | MUP.S3.S09 | ▪ Mammal passage along stream crossing on mainline and side road to accommodate deer.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 5+700 | MUP.S3.S10 | ▪ Mammal passage along drainage culvert.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 6+560 | MUP.S3.S11 | ▪ Mammal passage along stream crossing on mainline and N14.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 7+130 | MUP.S3.S12 | ▪ Mammal passage across mainline.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 7+400 | MUP.S3.S13 | ▪ Mammal passage along stream crossing.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 8+200 | MUP.S3.S14 | ▪ Mammals passage across mainline, N14 and access track.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 8+900 | MUP.S3.S15 | ▪ Mammal passage across mainline.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 9+240 | MUP.S3.S16 | ▪ Mammal passage along stream crossing on mainline.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 10+050 | MUP.S3.S17 | ▪ Mammals passage along stream crossing on mainline and N14.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 10+380 | MUP.S3.S18 | ▪ Mammals passage along stream crossing on mainline.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 11+500 | MUP.S3.S19 | ▪ Mammals passage along both banks of Swilly Burn on mainline.<br>▪ Associated landscape planting to tie-in to existing vegetation. |

| Location Chainage | Reference | Key Actions |
|---|---|---|
| 11+650 | MUP.S3.S20 | ▪ Mammals passage along stream culvert.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 11+960 | MUP.S3.S21 | ▪ Mammals passage along stream culvert.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 12+800 | MUP.S3.S22 | ▪ Mammals passage along drainage culvert.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 13+880 | MUP.S3.S23 | ▪ Mammals passage across mainline and L-2444 link.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| L-2444 road | MUP.S3.S24 | ▪ Mammals passage along drainage culvert on L-2444.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| L-2444 road | MUP.S3.S25 | ▪ Mammals passage along farm underpass on L-2444.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 14+400 | MUP.S3.S26 | ▪ Mammals passage along both banks of River Deele.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 14+830 | MUP.S3.S27 | ▪ Mammals passage along drainage culvert.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 14+940 | MUP.S3.S28 | ▪ Mammals passage along drainage culvert.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 15+140 | MUP.S3.S29 | ▪ Mammals passage along drainage culvert.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 15+580 | MUP.S3.S30 | ▪ Mammals passage along drainage culvert.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 15+800 | MUP.S3.S31 | ▪ Mammals passage along drainage culvert.<br>▪ Associated landscape planting to tie-in to existing vegetation. |
| 16+630 | MUP.S3.S32 | ▪ Mammals passage along both banks of River Finn.<br>▪ Associated landscape planting to tie-in to existing vegetation. |

Badger fencing, which will tie into the permeability measures discussed above, is described below in relation to the operational phase accidental killing or injury mitigation measures. The boundary fencing of the Proposed Development must not exclude badgers from accessing the permeability measures. If fencing is required that would otherwise block access, it must be permeable for badgers (e.g. timber post and rail fencing without mesh). To maximise badger accessibility to the landscaped habitats within the CPO boundary, where badger fencing is required in the vicinity of setts it is to be installed as close as practicable to the proposed carriageways and any boundary fencing which would otherwise block access to the landscaped habitats is to be permeable for badgers.

#### 9A.6.1.4.3.3 Operational Phase Accidental Killing or Injury

Badger fencing, to the specification set out in *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes* (NRA, 2005a), will be provided 50 m either side of each bridge or culvert and on both sides of the carriageway. The fencing is to be tied into the bridge abutment or culvert/dry pass headwall, as necessary. Where gates are necessary within sections covered by such fencing, they will require concrete sills and mammal resistant mesh attached to the gate to exclude mammals from accessing the proposed road.

Based on the findings of the pre-construction surveys, badger fencing will be provided along the Proposed Development within a 500 m radius of the outer edge of a sett. Fencing will be mirrored on the opposite side of the carriageway, consistent with *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes* (NRA, 2005a). Where overlaps occur with the badger fencing of bridges, culverts, and dry passes, the fencing will be tied-in to ensure continuity and effectiveness of the fencing to minimise the risk of badgers entering onto the carriageway.

#### 9A.6.1.4.3.4 Construction phase accidental killing or injury

Any excavations greater than 30 cm in depth which are left open overnight will either be temporarily covered over or a temporary ramp (e.g. scaffold board at suitable angle) inserted. This to prevent the entrapment of badgers within the excavations and/or to enable their escape from the excavation.

#### 9A.6.1.4.3.5 Operational phase disturbance from noise, vibration, lighting, and human presence

Public lighting for the Proposed Development's operational phase is discussed with respect to roosting bats mitigation measures in Section 9A.6.1.4.1 above.

### 9A.6.1.4.4 Otter

#### 9A.6.1.4.4.1 Surface water pollution

The mitigation measures set out in Chapter 9B: Biodiversity – Aquatic sufficiently mitigate the impact of surface water pollution on otter.

#### 9A.6.1.4.4.2 Loss or disturbance of holts and couching sites

Based on the current baseline, no holts or couching sites will be lost or disturbed, and therefore, no derogation licensing is required with respect to otter. However, mindful of the mobile nature of otter, the need for derogation licencing for any particular phase of works will need to be informed by the findings of the pre-construction surveys. The level of surveying will need to be sufficient to inform any derogation licensing which may be required. The need for derogation licensing will be determined by the ECoW. The acquisition of derogation licences may be completed, in part, during the Enabling Works set out in Chapter 4: Project Description. The need for derogation licences will need to be kept under review by the ECoW as the works progress; based on the findings of the pre-construction surveys completed.

The following pre-construction otter surveys will be completed:

- The sections of the rivers which will be traversed by the new bridges, and which will lie adjacent to the CPO boundary will be surveyed for otter holts or resting places (plus any other signs of otter activity) 200 m upstream and downstream of these locations; measured from the outer edge of the construction footprint.
- The sections of any other watercourse within the construction footprint or within 200 m of the construction footprint will be surveyed for otter holts or resting places (plus any other signs of otter activity).
- The otter surveys will be completed with reference to *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes* (NRA, 2006)

Pre-construction otter surveys will be part of a suite of pre-construction surveys; the scope, programme, and phasing of which will be defined by the ECoW in consultation with the Applicant and Main Contractor prior to the commencement of construction works. Given the duration of the construction works, the pre-construction surveys will need to be appropriately phased, mindful of the planned work and seasonal constraints. This is to ensure that an up-to-date baseline is maintained to inform decision making, including with respect to the need for derogation licensing. Some of these surveys will be completed as part of Enabling Works set out in Chapter 4: Project Description; others will be completed as the phases of construction are progressed along the route.

Based on the findings of the pre-construction surveys, the adequacy of the mitigation for otter will be reviewed and, if necessary, adjusted accordingly by the ECoW. The pre-construction surveys will also inform the need or otherwise for derogation licensing. Any adjustment to the mitigation measures will be agreed with the Local Authority in advance of them being implemented. The pre-construction surveys will be supplemented by further inspection by the ECoW (as deemed necessary by them) immediately prior to site clearance.

No construction personnel will be allowed to work, and no machinery will be used within 150 m of otter holts unless subject to the provisions of a derogation licence. The location of otter holts will be determined during

the pre-construction survey. During the pre-construction survey, otter holts located within the CPO boundary or within 150 m of this boundary will be clearly identified to all personnel working in the vicinity of the holt. Temporary boundary tape fencing (or similar) can be used at the discretion of the ECoW to identify such holts, subject to such measures themselves not impacting on the use of the holt. Neither blasting nor pile-driving will be undertaken within 150 m of an active holt during the breeding season; unless subject to provisions of a derogation licence.

In the event that holts are to be closed (wholly or partially), this will be completed in accordance with the necessary derogation licence and with reference to the *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes* (NRA, 2006). The need for licences will be determined by the ECoW. The need for additional mitigation for derogation licensing purposes will be reviewed and determined by the ECoW and relayed, as necessary to the Local Authority. It is assumed that all active holts at the time of construction and within the CPO boundary will need to be closed in accordance with a derogation licence. Currently, no active holts are located within the CPO boundary, and no derogation licence is necessary. Where required, evacuation and destruction of holts will be carried out under the supervision of an appropriately qualified ecologist under licence from the NPWS. In the event that derogation licence(s) will be required, these could require the loss of holt(s) to be compensated through the construction of artificial holt(s). The locations of such holts will be determined by the ECoW in liaison with the Contractor and the requirement of any derogation licence. The above provisions regarding temporary boundary tape fencing will apply to such artificial holts.

All vegetation removal shall be monitored by the ECoW to ensure there is no disturbance of protected species (e.g. otter, bats, hedgehog, shrew, etc.). If disturbance of an otter holt occurs, the ECoW will contact NPWS. Where dense vegetation prevents adequate determination of the presence or absence of holts as part of the pre-construction surveys, these areas will require monitoring during vegetation clearance to ensure that any holts present will be found and treated appropriately.

#### 9A.6.1.4.4.3 Habitat loss, fragmentation, and alteration

The design of the Proposed Development includes the “built in” open-span bridge designs over the River Finn, Cloghroe, Backlees, Swilly Burn, Deele, and Swilly Estuary which will aid connectivity for otter across the proposed road corridor.

Box culverts will include mammal ledges were possible and, if not possible, associated dry passes will be included. Dry passes will be included adjacent to pipe culverts where required. The dry passes are included purely to facilitate animal passage. The locations and types of mammal underpasses or other permeability measures in Sections 1, 2, and 3 are summarised above in Table 9A-10, Table 9A-11, and Table 9A-12, respectively**.**

#### 9A.6.1.4.4.4 Construction Phase Accidental Killing or Injury

Any excavations greater than 30 cm in depth which are left open overnight will either be temporarily covered over or a temporary ramp (e.g. scaffold board at suitable angle) inserted. This to prevent the entrapment of otters within the excavations and/or to enable their escape from the excavation.

#### 9A.6.1.4.4.5 Operational Phase Accidental Killing or Injury

Otter fencing, to the specification set out in *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes* (NRA, 2006), will be provided 50 m either side of each bridge or culvert and on both sides of the carriageway. The fencing will be tied into the bridge abutment or culvert/dry pass headwall, as necessary. Where gates are necessary within sections covered by such fencing, they will require concrete sills and mammal resistant mesh attached to the gate to exclude mammals from accessing the proposed road.

#### 9A.6.1.4.5 Other protected mammals (hedgehog, pygmy shrew, red squirrel, pine marten, Irish stoat, Irish hare, deer species)

##### 9A.6.1.4.5.1 Habitat loss, fragmentation, and alteration

The design of the Proposed Development includes the "built in" open-span bridge designs over the River Finn, Cloghroe, Backlees, Swilly Burn, Deele, and Swilly Estuary, the mammal underpass in Section 1 (mainline chainage 3+200), and the Section 3 deer underpass (mainline chainage 4+500 (N14A045)) which will aid connectivity for mammals across the proposed road corridor.

Box culverts will include mammal ledges where possible and, if not possible, associated dry passes will be included. Dry passes will be included adjacent to pipe culverts where required. The dry passes are included purely to facilitate animal passage. The locations and types of mammal underpasses or other permeability measures in Sections 1, 2, and 3 are summarised above in Table 9A-10, Table 9A-11, and Table 9A-12, respectively**.**

##### 9A.6.1.4.5.2 Construction phase accidental killing or injury

Any excavations greater than 30 cm in depth which are left open overnight will either be temporarily covered over or a temporary ramp (e.g. scaffold board at suitable angle) inserted. This is to prevent the entrapment of mammals within the excavations and/or to enable their escape from the excavation.

All vegetation removal shall be monitored by the ECoW to ensure there is no disturbance of protected species. If disturbance occurs, the ECoW will treat each species appropriately (e.g. relocate hedgehogs, shrews, etc.) to avoid accidental killing or injury.

##### 9A.6.1.4.5.3 Operational phase accidental killing or injury

Mammal fencing, to the specification set out in *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes* (NRA, 2006), will be provided 50 m either side of each bridge or culvert and on both sides of the carriageway. The fencing will be tied into the bridge abutment or culvert/dry pass headwall, as necessary. Where gates are necessary within sections covered by such fencing, they will require concrete sills and mammal resistant mesh attached to the gate to exclude mammals from accessing the proposed road. This will help in keeping Irish hare from the carriageway, but will have limited impact on hedgehog, pygmy shrew, red squirrel, pine marten, Irish stoat, and deer species, which can likely pass through, jump over, or climb over the fence.

#### 9A.6.1.4.6 Breeding Birds

##### 9A.6.1.4.6.1 Accidental killing or injury

All vegetation removal or demolition of buildings will be completed outside the breeding bird season (March to August, inclusive) unless it is confirmed that no breeding birds are present within 5 m of the proposed vegetation removal by the ECoW immediately prior to the vegetation being removed. This includes any required vegetation removal for the implementation of derogated measures with respect to otters or badgers. Once vegetation is confirmed as being absent of breeding birds, vegetation shall be removed within 24 hrs. Breeding birds can be present in most habitats at the appropriate time of year; including habitats which are of negligible ecological value in their own right (e.g. modern agricultural buildings).

##### 9A.6.1.4.6.2 Habitat loss, fragmentation, and alteration

By way of enhancement, 6 no. bird boxes per 1 km of new carriageway will be erected at suitable locations along the route of the proposed road. Suitable locations will be determined by the ECoW based on locations available to erect, proximity to operational sources of disturbance, and connectivity to foraging and commuting habitats. In the absence of suitable structures (e.g. retained trees, bridge structures, and buildings) to erect the boxes, they will be pole-mounted in suitable locations. The bird boxes will be Schwegler-type (woodcrete) boxes (or similar) and a range of different types of boxes (e.g. 1B, 2H, and 17C) will be used.

#### 9A.6.1.4.6.3 Construction phase disturbance from noise, vibration, lighting, and human presence

Floodlights will be cowled and angled downwards to minimise light spillage outside of works areas. Lighting will be provided with the minimum luminosity sufficient for safety and security purposes and will be shut off at night when not in use or when works cease at the end of the day in order to minimise the effects of light pollution and disturbance to birds.

The extent of the blasting operations is discussed as part of the Chapter 14: Noise & Vibration, which describes the noise assessment and mitigation measures to be undertaken in relation to noise and vibration impacts.

#### 9A.6.1.4.6.4 Operational phase disturbance from noise, vibration, lighting, and human presence

Public lighting for the Proposed Development's operational phase is discussed with respect to roosting bats mitigation measures in Section 9A.6.1.4.1 above. These measures will also mitigate impacts on breeding birds.

### 9A.6.1.4.7 Wintering birds

#### 9A.6.1.4.7.1 Construction phase disturbance from noise, vibration, lighting, and human presence

Floodlights will be cowled and angled downwards to minimise light spillage outside of works areas. Lighting will be provided with the minimum luminosity sufficient for safety and security purposes and will be shut off at night when not in use or when works cease at the end of the day in order to minimise the effects of light pollution and disturbance to bats.

The extent of the blasting and piling operations is discussed as part of the Chapter 14: Noise & Vibration, which describes the noise assessment and mitigation measures to be undertaken in relation to noise and vibration impacts.

#### 9A.6.1.4.7.2 Operational phase disturbance from noise, vibration, lighting, and human presence

Public lighting for the Proposed Development's operational phase is discussed with respect to roosting bats mitigation measures in Section 9A.6.1.4.1 above. These measures will also mitigate impacts on wintering birds.

### 9A.6.1.4.8 Amphibians and Reptiles

#### 9A.6.1.4.8.1 Construction phase accidental killing or injury

Any excavations greater than 30 cm in depth which are left open overnight will either be temporarily covered over or a temporary ramp (e.g. scaffold board at suitable angle) inserted. This to prevent the entrapment of common frog, smooth newt, and common lizard within the excavations and/or to enable their escape from the excavation.

All vegetation removal shall be monitored by the ECoW to ensure there is no disturbance of protected species. If disturbance occurs, the ECoW will treat each species appropriately (e.g. relocate amphibians, etc.) to avoid accidental killing or injury.

Should site clearance works at flooded or waterlogged sections of the Proposed Development be required during the spring to early summer period, salvage and translocation of spawn or tadpoles will be undertaken, under appropriate licence from the NPWS. The creation of numerous attenuation ponds along the proposed road development will provide additional breeding habitat for amphibians and any spawn, tadpoles, or adults will be translocated to these ponds if they have sufficient vegetation established within and in their vicinity at the time of translocation.

#### 9A.6.1.4.8.2 Habitat loss, fragmentation, and alteration

The design of the Proposed Development includes the "built in" open-span bridge designs over the River Finn, Cloghroe, Backlees, Swilly Burn, Deele, and Swilly Estuary and the mammal underpass in Section 1

(mainline chainage 3+200) which will aid connectivity for common frog, smooth newt, and common lizard across the proposed road corridor.

Box culverts will include mammal ledges were possible and, if not possible, associated dry passes will be included. Dry passes will be included adjacent to pipe culverts where required. The dry passes are included purely to facilitate animal passage. The locations and types of mammal underpasses or other permeability measures in Sections 1, 2, and 3 are summarised above in Table 9A-10, Table 9A-11, and Table 9A-12, respectively. These will also allow passage by amphibians and reptiles .

## 9A.6.2 Operational Phase

### 9A.6.2.1 Overarching Mitigation Measures

With respect to mitigation measures identified during the operational phase of the Proposed Development, unless otherwise specified, Donegal County Council will be responsible for implementing these measures. Section 9A.6.1 describes features which will be installed as mitigation measures during the construction phase (e.g. bat boxes). To ensure their continued functioning during the operational phase, Donegal County Council will be responsible for the monitoring and maintenance of these features, which is described in the following sections.

Any vegetation in retained land will be managed during the operational phase in line with the Biodiversity Management Plan (BMP) (TT_MGT0337-RPS-P3-ZZZ-RP-E-EN0001), which has numerous measures which prioritise the general enhancement of biodiversity. In addition to this overarching measure, IEF-specific measures are detailed below.

### 9A.6.2.2 Designated sites

#### 9A.6.2.2.1 River Finn SAC

Mitigation measures for the aquatic receptors of the River Finn SAC are included in Chapter 9B: Biodiversity – Aquatic. The operational phase mitigation measures with respect to otter, set out in Section 9A.6.2.4.4 will avoid, minimise, and mitigate impacts on the River Finn SAC.

#### 9A.6.2.2.2 River Foyle and Tributaries SAC (UK)

Mitigation measures for the aquatic receptors of the River Foyle and Tributaries SAC are included in Chapter 9B: Biodiversity – Aquatic. Similar to the River Finn SAC, the operational phase mitigation measures with respect to otter are set out in Sections 9A.6.2.4.4.

#### 9A.6.2.2.3 River Foyle and Tributaries ASSI

Mitigation measures for the aquatic receptors of the River Foyle and Tributaries ASSI are included in Chapter 9B: Biodiversity – Aquatic. The operational phase mitigation measures with respect to otter and habitats and flora are set out in Sections 9A.6.2.4.4 and 9A.6.2.3, respectively.

#### 9A.6.2.2.4 River Foyle, Mongavlin to Carrigans pNHA

The impacts on the River Foyle, Mongavlin to Carrigans pNHA are considered the same as those on the River Foyle and Tributaries ASSI. Therefore, mitigation measures for these impacts are discussed in Section 9A.6.2.2.3 above.

#### 9A.6.2.2.5 Lough Swilly SAC

Mitigation measures for the Estuaries QI habitat of Lough Swilly SAC are included in Chapter 9B: Biodiversity – Aquatic. These measures will also avoid, minimise, and mitigate impacts on further-downstream QIs of Lough Swilly SAC, including Atlantic salt meadows. The operational phase mitigation measures with respect to otter, set out in Section 9A.6.2.4.4 will avoid, minimise, and mitigate non-significant impacts on Lough Swilly.

#### 9A.6.2.2.6 Ornithological sites of Lough Swilly and Lough Foyle

Mitigation measures for aquatic receptors are included in Chapter 9B: Biodiversity – Aquatic, which will also mitigate the impact of surface water pollution on ornithological sites of Lough Swilly and Lough Foyle.

Public lighting for the Proposed Development's operational phase is discussed with respect to construction phase mitigation measures in Section 9A.6.1.2.6. These mitigation measures, implemented at construction phase, are to be maintained throughout the operational phase of the Proposed Development. These mitigation measures will reduce light spill to areas utilised by wintering birds.

#### 9A.6.2.2.7 Lough Swilly including Big Isle, Blanket Nook & Inch Lake pNHA

The impacts on Lough Swilly including Big Isle, Blanket Nook & Inch Lake pNHA are considered the same as those on Lough Swilly SAC and Lough Swilly SPA. Therefore, mitigation measures for these impacts are discussed in Sections 9A.6.2.2.5 and 9A.6.2.2.6 above.

### 9A.6.2.3 Habitats and flora

Maintenance of the Proposed Development will be carried out in line with TII guidance (2020b) to mitigate the spread of invasive alien species. Aside from adherence to the BMP, discussed in regard to overarching mitigation measures in Section 9A.6.2.1, no additional mitigation measures for habitats and flora are proposed to be implemented during the operational phase.

### 9A.6.2.4 Fauna

#### 9A.6.2.4.1 Bats – roosting

##### 9A.6.2.4.1.1 Roost loss

All bat boxes and the bat house to be provided for Section 3 will be subject to annual inspection and maintenance. Any damaged or lost boxes will be replaced or rectified with same within two months of the annual inspection.

Operational phase disturbance from noise, vibration, lighting, and human presence is not predicted to result in significant effects on roosting bats. Nonetheless, in addition to the overarching mitigation measure described in Section 9A.6.2.1, it is proposed that measures are implemented during the operational phase to mitigate this impact.

##### 9A.6.2.4.1.2 Operational phase disturbance from noise, vibration, lighting, and human presence

Public lighting for the Proposed Development's operational phase is discussed with respect to construction phase mitigation measures in Section 9A.6.1.4.1. These mitigation measures, implemented at construction phase, are to be maintained throughout the operational phase of the Proposed Development.

#### 9A.6.2.4.2 Bats – commuting and foraging

##### 9A.6.2.4.2.1 Operational phase disturbance from noise, vibration, lighting, and human presence

Public lighting (See EIAR Drawings 4.54, 4.55 and 4.56) for the Proposed Development's operational phase is discussed with respect to construction phase mitigation measures in Section 9A.6.1.4.2. These mitigation measures, implemented at construction phase, are to be maintained throughout the operational phase of the Proposed Development.

Aside from adherence to the BMP, discussed in regard to overarching mitigation measures in Section 9A.6.2.1, no additional mitigation measures for commuting and foraging bats are proposed to be implemented during the operational phase.

#### 9A.6.2.4.3 Badger

##### 9A.6.2.4.3.1 Habitat loss, fragmentation, and alteration and operational phase accidental killing or injury

The features to allow the continued movement or badgers and otters across the road corridor and prevent them accessing the carriageway (i.e. open-span bridges, box and pipe culverts and ledges, and badger/otter fencing.) will be subject to annual inspection to ensure their continued functionality for the movement of these species and other protected animal species. The inspections will identify any maintenance required to maintain their functionality and any remedial actions necessary to maintain such functionality.

#### 9A.6.2.4.4 Otter

##### 9A.6.2.4.4.1 Surface water pollution

Surface water pollution mitigation measures are set out in Chapter 9B: Biodiversity – Aquatic.

##### 9A.6.2.4.4.2 Operational phase accidental killing or injury

The maintenance of features to allow the passage of otter across the proposed road corridor and prevent access to the proposed road, discussed with respect to badger in Section 9A.6.2.4.3 above, will mitigate the impact of operational phase accidental killing or injury on otter.

#### 9A.6.2.4.5 Other protected mammals (hedgehog, pygmy shrew, red squirrel, pine marten, Irish stoat, Irish hare, deer species)

##### 9A.6.2.4.5.1 Habitat loss, fragmentation, and alteration

The maintenance of features to allow the passage of mammals across the proposed road corridor and prevent access to the proposed road, discussed with respect to badger in Section 9A.6.2.4.3 above, will mitigate the impact of habitat loss, fragmentation, and alteration on other mammals.

##### 9A.6.2.4.5.2 Operational phase accidental killing or injury

The maintenance of features to allow the passage of mammals across the proposed road corridor and prevent access to the proposed road, discussed with respect to badger in Section 9A.6.2.4.3 above, will mitigate the impact of operational phase accidental killing or injury on other mammals.

#### 9A.6.2.4.6 Breeding Birds

##### 9A.6.2.4.6.1 Habitat loss, fragmentation, and alteration

All Schwegler bird boxes will be subject to annual inspection and maintenance. Any damaged or lost boxes will be replaced with same within two months of the annual inspection.

#### 9A.6.2.4.7 Wintering birds

##### 9A.6.2.4.7.1 Operational phase disturbance from noise, vibration, lighting, and human presence

Public lighting for the Proposed Development's operational phase is discussed with respect to construction phase mitigation measures in Section 9A.6.1.2.6. These mitigation measures, implemented at construction phase, are to be maintained throughout the operational phase of the Proposed Development.

#### 9A.6.2.4.8 Amphibians and Reptiles

##### 9A.6.2.4.8.1 Habitat loss, fragmentation, and alteration and operational phase accidental killing or injury

The maintenance of features to allow the passage of mammals across the proposed road corridor, discussed with respect to badger in Section 9A.6.2.4.3 above, will also allow passage of reptiles and amphibians under

the road corridors and will mitigate the impact of habitat loss, fragmentation, and alteration on common frog, smooth newt, and common lizard.

## 9A.7 Predicted Residual Impacts

A summary of the impact assessment both without and with mitigation is summarised in Table 9A-13. With the implementation of mitigation measures described in Section 9A.6, significant residual effects have been identified for WN6 wet willow-alder-ash woodland, several KERs, and commuting and foraging bats.

There will be a locally significant effect of habitat loss, fragmentation, and alteration on WN6 wet willow-alder-ash woodland. However, the locally significant loss of approximately 2.38 ha of WN6 across Sections 1 and 3 is offset with the creation of approximately 113 ha of mixed broadleaved woodland (WD1) along the entirety of the Proposed Development.

There will be locally significant effects of habitat loss, fragmentation, and alteration on numerous KERs. However, the significant effects on KERs will also be largely offset by the proposed creation and long-term ecological management of new woodlands, hedgerows, and grasslands which will be delivered by the Proposed Development.

There will be a locally significant effect of habitat loss, fragmentation, and alteration on commuting and foraging bats. In the short-term, the effect will be significant. However, in the medium- to long-term, the effect will be non-significant particularly due to the extent of landscaping which will be delivered combined with the design of the crossings over key corridors such as those along the River Finn and Swilly.

**Table 9A-13: Predicted Residual Impacts of the Proposed Development and their Significance**

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| River Finn SAC, River Foyle and Tributaries SAC, River Foyle and Tributaries ASSI, and River Foyle, Mongavlin to Carrigans pNHA (international) | Construction | Otter – accidental killing or injury | There is potential for otter to be killed or injured during construction through accessing areas of construction, including excavations. | **Internationally significant, short- to medium-term, reversible, adverse effect** | Pre-construction surveys;<br>monitoring of site clearance works;<br>fencing;<br>measures at excavations | Not significant |
| | | Otter – habitat loss, fragmentation, and alteration | The design of the Proposed Development ensures that the extent of otter habitat will be unaffected. Therefore, there will be no significant decline in the distribution of otter along the River Finn SAC and its catchment. | **Internationally significant, permanent but reversible, adverse effect on the River Finn SAC**, and not significant effects on the other designated sites | Otter fencing;<br>culverts and dry passes | Not significant |
| | | Otter – loss or disturbance of holts and couching sites | Based on the existing baseline, no confirmed couching sites or holts along the River Finn or its tributaries will be lost or disturbed as a result of the Proposed Development. | Not significant | Pre-construction surveys;<br>monitoring of site clearance works;<br>culverts and dry passes. | Not significant |
| | | Otter – surface water pollution | Habitat deterioration due to surface water pollution could indirectly impact otter. | **Internationally significant, short-term, reversible, adverse effect** | See **Chapter 9B: Biodiversity – Aquatic** | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| | | Otter – disturbance from noise, vibration, lighting, and human presence | During the construction phase, there is potential for disturbance from construction activities to influence otter movement. | **Internationally significant, short-term, reversible, adverse effect** | See Chapter 14: Noise & Vibration; construction lighting measures | Not significant |
| | Operational | Otter – accidental killing or injury | Road collisions between vehicles and otter are a known and identified risk to otter and therefore the operation of the road has, in principle, the potential to result in road collisions and otter fatalities or injuries. This has been accounted for early in the design of the Proposed Development to provide open-span designs at the bridge crossing over the River Finn to allow continued passage by otter even at times of flood. In addition, the design of water crossings of any tributaries of the River Finn also includes provisions to enable the continued safe passage of otter along these watercourses. | **Internationally significant, long-term, reversible, adverse effect** | Otter fencing; culverts and dry passes | Not significant |
| | | Otter – surface water pollution | Habitat deterioration due to surface water pollution could indirectly impact otter. However, the design of the Proposed Development includes features such as attenuation ponds and interceptors will result in imperceptible to potentially slightly positive operational phase impacts on surface waters. | Not significant | See Chapter 9B: Biodiversity – Aquatic | Not significant |
| River Foyle and Tributaries ASSI and River Foyle, Mongavlin to Carrigans pNHA (international) | Construction | Bird species – surface water pollution | Habitat deterioration due to surface water pollution may result in indirect impacts on bird species. | **Internationally significant, short-term, reversible, adverse effect** | See Chapter 9B: Biodiversity – Aquatic | Not significant |
| | Operational | Bird species – surface water pollution | Habitat deterioration due to surface water pollution may result in indirect impacts on bird species. However, the design of the Proposed Development includes features such as attenuation ponds and interceptors will result in imperceptible to potentially slightly positive operational phase impacts on surface waters. | Not significant | See Chapter 9B: Biodiversity – Aquatic | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| | Construction | Terrestrial habitats – spread of invasive alien species | Construction activities could lead to the dispersal of invasive species either via machinery, materials, clothing, or personnel. | **Internationally significant, long-term, reversible, adverse effect** | Invasive species mitigation measures | Not significant |
| | Operational | Terrestrial habitats – spread of invasive alien species | Operational activities can lead to the introduction and/or dispersal through landscape management activities or maintenance of the road infrastructure | **Internationally significant, long-term, reversible, adverse effect** | Invasive species mitigation measures | Not significant |
| Lough Swilly SAC and Lough Swilly including Big Isle, Blanket Nook & Inch Lake pNHA (international) | Construction | Atlantic salt meadows – unintended incursion | Incursion by personnel, equipment and/or construction materials outside of construction footprint. | Not significant | Measures to prevent unintended incursion into retained habitats | Not significant |
| | | Atlantic salt meadows – surface water pollution | Habitat deterioration due to surface water pollution. | **Internationally significant, short-term, reversible, adverse effect** | See Chapter 9B: Biodiversity – Aquatic | Not significant |
| | Operational | Atlantic salt meadows – surface water pollution | Habitat deterioration due to surface water pollution. However, the design of the Proposed Development includes features such as attenuation ponds and interceptors will result in imperceptible to potentially slightly positive operational phase impacts on surface waters. | Not significant | See Chapter 9B: Biodiversity – Aquatic | Not significant |
| | Construction | Otter – accidental killing or injury | There is potential for otter to be killed or injured during construction through accessing areas of construction, including excavations. | **Internationally significant, short- to medium-term, reversible, adverse effect** | Pre-construction surveys;<br>monitoring of site clearance works;<br>fencing;<br>measures at excavations | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| | | Otter – habitat loss, fragmentation, and alteration | The Swilly bridge structure has been designed to provide unhindered passage beneath the new bridge structure for otter once constructed even at times of flood. Likewise, new structures (e.g. culverts) on tributaries of the SAC will be designed to include provisions for the continued passage of otter along these tributaries. Therefore, the design of the Proposed Development ensures that the extent of otter habitat will be unaffected. | **Internationally significant, permanent but reversible, adverse effect** | Otter fencing;<br>culverts and dry passes | Not significant |
| | | Otter – loss or disturbance of holts and couching sites | Based on the existing baseline, no confirmed couching sites or holts along or upstream of Lough Swilly SAC will be lost or disturbed as a result of the Proposed Development. | Not significant | Pre-construction surveys;<br>monitoring of site clearance works;<br>culverts and dry passes. | Not significant |
| | | Otter – surface water pollution | Habitat deterioration due to surface water pollution could indirectly impact otter. | **Internationally significant, short-term, reversible, adverse effect** | See Chapter 9B: Biodiversity – Aquatic | Not significant |
| | | Otter – disturbance from noise, vibration, lighting, and human presence | During the construction phase, there is potential for disturbance from construction activities to influence otter movement. | **Internationally significant, short-term, reversible, adverse effect** | See Chapter 14: Noise & Vibration;<br>construction lighting measures | Not significant |
| | Operational | Otter – accidental killing or injury | Road collisions between vehicles and otter are a known and identified risk to otter and therefore the operation of the road has the potential to result in road collisions and otter fatalities or injuries. This has been accounted for early in the design of the Proposed Development to provide a bridge design over Lough Swilly which will allow the continued passage by otter even at times of flood. | **Internationally significant, long-term, reversible, adverse effect** | Otter fencing;<br>culverts and dry passes | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| | | Otter – surface water pollution | Habitat deterioration due to surface water pollution could indirectly impact otter. However, the design of the Proposed Development includes features such as attenuation ponds and interceptors will result in imperceptible to potentially slightly positive operational phase impacts on surface waters. | Not significant | See Chapter 9B: Biodiversity – Aquatic | Not significant |
| Ornithological Designations of Lough Swilly and Lough Foyle: Lough Swilly SPA, Lough Foyle SPA (Irl), Lough Foyle SPA (UK), Lough Foyle Ramsar site, Lough Foyle ASSI, Lough Swilly pNHA, Roe Estuary Nature Reserve, Blanket Nook Wildlife Sanctuary, Inch Levels Wildfowl Reserve (international); and Port Lough pNHA (national) | Construction | Disturbance from noise, vibration, lighting, and human presence | Although individuals of relevant bird species are likely to be disturbed during construction and operation, it is not considered that the level of disturbance will prevent the favourable conservation status of these species being maintained with respect to their respective designated sites. This is due to the negligible significance of the habitat of these species within the context of the wider landscape. | Not significant | See Chapter 14: Noise & Vibration; construction lighting measures | Not significant |
| | | Surface water pollution | Habitat deterioration due to surface water pollution. | **Internationally significant, short-term, reversible, adverse effect** on all sites aside from Port Lough pNHA, which will experience **no significant effects** | See Chapter 9B: Biodiversity – Aquatic | Not significant |
| | Operational | Disturbance from noise, vibration, lighting, and human presence | Although individuals of relevant bird species are likely to be disturbed during construction and operation, it is not considered that the level of disturbance will prevent the favourable conservation status of these species being maintained with respect to their respective designated sites. This is due to the negligible significance of the habitat of these species within the context of the wider landscape. | Not significant | See Chapter 14: Noise & Vibration; operational lighting measures | Not significant |
| | | Surface water pollution | Habitat deterioration due to surface water pollution. However, the design of the Proposed Development includes features such as attenuation ponds and interceptors will result in imperceptible to potentially slightly positive operational phase impacts on surface waters. | Not significant | See Chapter 9B: Biodiversity – Aquatic | Not significant |

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|---|---|---|---|---|---|---|
| Habitats: HH3 wet heath,<br><br>WD1 (Mixed) Broadleaved Woodland,<br><br>WD2 (Mixed) Broadleaved/ Conifer Woodland,<br><br>WN2 Oak-ash-hazel woodland,<br><br>WN6 Wet Willow-Alder-Ash Woodland,<br><br>WL1 and WL2 Hedgerows and Treelines (local (higher));<br><br>WN1 Oak-Birch-Holly Woodland,<br><br>WN4 Wet Pedunculate Oak-Ash Woodland, | Construction | Habitat loss and fragmentation | The landscape design of the Proposed Development includes the creation of WD1 and WL1. Existing habitats to be lost are:<br>HH3 Wet Heath: Loss/fragmentation of approximately 0.14 ha within the CPO boundary.<br>WD1 (Mixed) Broadleaved Woodland: within the CPO boundary, WD1 occurs in parcels totalling approximately 19.7 ha in area, approximately 4.9 ha of which is in mosaic with WS1 scrub and WS2 immature woodland. The entirety of the mosaic parcels will be removed and approximately 13.1 ha of the WD1 parcels will be removed.<br>WD2 (Mixed) Broadleaved/Conifer Woodland: within the CPO boundary, WD2 occurs in parcels totalling approximately 15.4 ha in area, approximately 14.7 ha of which is to be removed.<br>WN1 Oak-Birch-Holly Woodland: WN1 occurs in a single parcel approximately 0.03 ha in area, all of which is to be removed.<br>WN2 Oak-ash-hazel woodland: WN2 occurs in parcels totalling approximately 2.3 ha within the CPO boundary, approximately 1.3 ha of which is to be removed<br>WN4 Wet Pedunculate Oak-Ash Woodland: within the CPO boundary, WN4 occurs in a single parcel approximately 0.36 ha in area, approximately 0.27 ha of which is to be removed.<br>WN5 Riparian Woodland: within the CPO boundary, WN5 riparian woodland occurs in parcels totalling approximately 0.79 ha in area, approximately 0.18 ha of which is to be removed.<br>WN6 Wet Willow-Alder-Ash Woodland: within the CPO boundary, WN6 occurs in parcels totalling approximately 3.2 ha, approximately 2.4 ha of which is to be removed.<br>WL1 and WL2 Hedgerows and Treelines: there is approximately 49.8 km of WL1 hedgerows and WL2 treelines (35 km of WL1 and 14.8 km of WL2) within the CPO boundary, approximately 36.5 km (27.7 km of WL1 and 8.8 km of WL2) of which is to be removed. | **Locally significant, permanent, irreversible, adverse effect** on WN6.<br><br>**Locally significant, short-term, reversible, adverse effects** on WD1, WD2, and WL1/WL2, but in the medium- to long-term, the landscape design will result in **significant beneficial effects.**<br><br>**Not significant effects** on HH3, WN1, WN2, WN4, and WN5.<br><br>**Significant long-term, beneficial effects** on WD1, WD2, and WL1/WL2. | None | **Locally significant, permanent, irreversible, adverse effect** on WN6.<br><br>**Locally significant, short-term, reversible, adverse effects** on WD1, WD2, and WL1/WL2, but in the medium- to long-term, the landscape design will result in **significant beneficial effects.**<br><br>**Not significant effects** on HH3, WN1, WN2, WN4, and WN5.<br><br>**Significant long-term, beneficial effects** on WD1, WD2, and WL1/WL2. |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| WN5 Riparian Woodland (county) | | Unintended incursion | Incursion by personnel, equipment and/or construction materials outside of construction footprint. | County-level **significant, permanent, irreversible, adverse effect** on WN4 and WN5.<br><br>**Locally significant, permanent, irreversible, adverse effect** on HH3, WD1, WD2, WN2, WN6, and WL1/WL2.<br>Not significant effect on WN1. | Measures to prevent unintended incursion into retained habitats | Not significant |
| | | Surface water pollution | Habitat deterioration due to surface water pollution. | **Locally significant, deteriorating, adverse effect** on HH3.<br>Not significant effects on all other habitats. | See Chapter 9B: Biodiversity – Aquatic | Not significant |
| | | Groundwater pollution | Habitat deterioration due to groundwater pollution. | Not significant | See Chapter 9B: Biodiversity – Aquatic | Not significant |
| | | Air pollution | Habitat deterioration due to air pollution. | Not significant | See Chapter 12: Air Quality | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| | | Spread of invasive alien species | Construction activities could lead to the dispersal of invasive species either via machinery, materials, clothing, or personnel. | County-level **significant, reversible, adverse effect** on WN1, WN4, and WN5.<br>**Locally significant, reversible, adverse effect** on HH3, WD1, WD2, WN2, WN6, and WL1/WL2. | Invasive species mitigation measures | Not significant |
| | Operational | Surface water pollution | Habitat deterioration due to surface water pollution. However, the design of the Proposed Development includes features such as attenuation ponds and interceptors will result in imperceptible to potentially slightly positive operational phase impacts on surface waters. | Not significant | See Chapter 9B: Biodiversity – Aquatic | Not significant |
| | | Air pollution | Habitat deterioration due to air pollution. | Not significant | See Chapter 12: Air Quality | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| KERs | Construction | Habitat loss, fragmentation, and alteration | The Proposed Development will result in the removal of areas of the KERs and contribute to the fragmentation of the remaining areas of the KERs. This impact varies significantly between different KERs, with some KERs being almost entirely removed and negligible areas of other KERs being removed. | Locally **significant, permanent, irreversible, adverse effect** on KERs 1-1, 1-3, 2-1, 2-2, 2-3, 3-2, 3-3, 3-4, 3-5, 3-6, 3-7, 3-9, 3-10, 3-11, 3-14, and 3-16.<br>Locally **significant, short-term, adverse effect** on KER 2-5.<br>Not significant effects on KERs 1-2, 1-4, 2-4, 3-1, 3-8, 3-12, 3-13, and 3-15. | None | Locally **significant, permanent, irreversible, adverse effect** on KERs 1-1, 1-3, 2-1, 2-2, 2-3, 3-2, 3-3, 3-4, 3-5, 3-6, 3-7, 3-9, 3-10, 3-11, 3-14, and 3-16.<br>Locally **significant, short-term, adverse effect** on KER 2-5.<br>Not significant effects on KERs 1-2, 1-4, 2-4, 3-1, 3-8, 3-12, 3-13, and 3-15. |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| | | Unintended incursion | Incursion by personnel, equipment and/or construction materials outside of construction footprint. | County level **significant, permanent, irreversible, adverse effect** on KERs 1-2, 1-4, 3-13; locally **significant, permanent, irreversible, adverse effect** on all other KERs with the exception of KER 3-4. | Measures to prevent unintended incursion into retained habitats | Not significant |
| | | Air pollution | Habitat deterioration due to air pollution. | Not significant | See Chapter 12: Air Quality | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| | | Spread of invasive alien species | Construction activities could lead to the dispersal of invasive species either via machinery, materials, clothing, or personnel. | Internationally **significant, long-term, reversible, adverse effect** on KER 3-15;<br>County-level **significant, long-term, reversible, adverse effect** on KERs 1-2, 1-4, 3-13;<br>Locally **significant, long-term, reversible, adverse effect** on all other KERs. | Invasive species mitigation measures | Not significant |
| | Operational | Air pollution | Habitat deterioration due to air pollution. | Not significant | See Chapter 12: Air Quality | Not significant |
| Globeflower (national) | Construction | Spread of invasive alien species | Construction activities could lead to the dispersal of invasive species either via machinery, materials, clothing, or personnel. | **Nationally significant, reversible, adverse effect** | Invasive species mitigation measures | Not significant |
| Bats – roosting (local (higher)) | Construction | Roost loss | Roosts ranging in size from one to seven bats and containing common pipistrelle, soprano pipistrelle, Leisler's bat, Natterer's bat, Daubenton's bat, and undetermined *Myotis* sp. are to be removed. Other structures to be demolished and trees to be felled have varying degrees of suitability for roosting bats. | **Locally significant, long-term, reversible, adverse effect** | Pre-construction surveys;<br>derogation licensing (see Appendix C9A.06);<br>monitoring of site clearance works;<br>compensatory roosting opportunities | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| | | Accidental killing or injury | If the felling/demolition occurs while bats are inside the feature, there is a risk of bats being killed or injured. | Locally **significant, long-term, reversible, adverse effect** | Pre-construction surveys;<br>monitoring of site clearance works | Not significant |
| | | Disturbance from noise, vibration, lighting, and human presence | Small number of known roosts to be retained are within 20 m of CPO boundary and therefore, disturbance of these roosts is likely. | Locally **significant, short-term, reversible, adverse effect** | See Chapter 14: Noise & Vibration;<br>construction lighting measures | Not significant |
| | | Habitat loss, fragmentation, and alteration | Small number of roosts occur outside the CPO boundary and there is potential for additional unidentified roosts to the present outside the CPO boundary. Most of these will experience significant habitat loss within their immediate environs, including a reduction in available habitat for foraging and severance of potential commuting/foraging routes to and from the roosts. | Not significant | Measures to prevent unintended incursion into retained habitats | Not significant |
| | Operational | Disturbance from noise, vibration, lighting, and human presence | Small number of bat roosts were identified within 20 m of the CPO boundary, and additional confirmed or suspected roosts are present at greater distances from the CPO boundary. There is also the potential for additional unidentified roosts to the present outside the CPO boundary. Such roosts could be indirectly impacted through disturbance (noise, vibration and/or use of artificial lighting) during the operational phase. | Not significant | See Chapter 14: Noise and Vibration;<br>operational lighting measures | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| Bats – commuting and foraging (local (higher)) | Construction | Habitat loss, fragmentation, and alteration | The Proposed Development will result in the loss of foraging habitat. These include the loss approximately 36.5 km of hedgerow and treelines, the bridging, culverting, or modification of approximately 8.6 km of drainage ditches, streams, and rivers, and the loss of approximately 53.2 ha of woodlands and scrub (i.e. WD1, WD2, WD3, WN1, WN2, WN4, WN5, WN6, WS1, and WS2 (including mosaic habitats)) and approximately 100 ha of wet grasslands. The linear nature of the Proposed Development will result in severance of key corridors likely to be used by the bat assemblage to move through the landscape for foraging and commuting purposes (i.e. hedgerows, treelines, drainage ditches, rivers, and streams).<br>In the short-term, the effect will be significant. However, in the medium- to long-term the effect will be non-significant particularly due to the extent of landscaping which will be delivered combined with the design of the crossings over key corridors such as those along the River Finn and Swilly, which are open span and will allow continued commuting and foraging routes. | Locally **significant, short-term, adverse effect.** However, in the medium- to long-term the effect will be non-significant, due to the landscaping. | In relation to the River Finn, an open-span bridge design is proposed which will avoid any significant fragmentation or severance of the River Finn as a key commuting route for the local bat assemblages. | Locally **significant, short-term, adverse effect.** However, in the medium- to long-term the effect will be non-significant, due to the landscaping. |
| | | Disturbance from noise, vibration, lighting, and human presence | Construction lighting and noise may affect the foraging and commuting behaviour of bats. | Not significant | See Chapter 14: Noise & Vibration;<br>construction lighting measures | Not significant |
| | Operational | Disturbance from noise, vibration, lighting, and human presence | Road lighting and traffic noise will affect the foraging and commuting behaviour of bats. The linear nature of the Proposed Development will compound the impact, as disturbance may deter bats from crossing the proposed road, further fragmenting their foraging habitat. | **Locally significant, long-term, reversible, adverse effect** | See Chapter 14: Noise & Vibration;<br>operational lighting measures | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| Badger (local (higher)) | Construction | Accidental killing or injury | There is potential for badger to be killed or injured during construction through accessing areas of construction, including excavations. | Not significant | Pre-construction surveys;<br>monitoring of site clearance works;<br>fencing;<br>measures at excavations | Not significant |
| | | Loss of setts | The Proposed Development will result in the loss of one active sett, and one partially used sett, as well as disused setts and potential disused setts during the construction phase based on current baseline. | **Locally significant, partially permanent and irreversible, adverse effect** | Pre-construction surveys;<br>monitoring of site clearance works;<br>badger fencing;<br>culverts and dry passes | Not significant |
| | | Disturbance of setts | There are active setts in close proximity to the proposed works which could be subject to disturbance during the construction due to vibration and noise. | Not significant | See Chapter 14: Noise & Vibration | Not significant |
| | | Habitat loss, fragmentation, and alteration | Badgers will forage within most habitats and therefore it is likely that the local population forages widely. The Proposed Development will result in a loss of linear habitat and will sever foraging habitats, resulting in a change in the use of the landscape by different badger clans local to the Proposed Development. | **Locally significant, permanent, irreversible, adverse effect** | Badger fencing;<br>culverts and dry passes | Not significant |
| | Operational | Accidental killing or injury | There is a risk of badgers being road traffic casualties, particularly in light of the known levels of badger activity within the vicinity of the Proposed Development. | **Locally significant, long-term, irreversible, adverse effect** | Badger fencing;<br>culverts and dry passes | Not significant |
| | | Disturbance from noise, vibration, lighting, and human presence | The operational phase of the Proposed Development will result disturbance, particularly from traffic noise, which may affect nearby setts. | Not significant | See Chapter 14: Noise & Vibration;<br>operational lighting measures | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| Otter (international) | Construction | Accidental killing or injury | There is potential for otter to be killed or injured during construction through accessing areas of construction, including excavations. | **Internationally significant, short- to medium-term, reversible, adverse effect** | Pre-construction surveys;<br>monitoring of site clearance works;<br>fencing;<br>measures at excavations | Not significant |
| | | Habitat loss, fragmentation, and alteration | The design of the Proposed Development ensures that the extent of otter habitat will be unaffected. Therefore, there will be no significant decline in the distribution of otter along the catchments crossed by the Proposed Development. | **Internationally significant, permanent but reversible, adverse effect** | Otter fencing;<br>culverts and dry passes | Not significant |
| | | Loss or disturbance of holts and couching sites | Based on the existing baseline, no confirmed couching sites or holts will be lost or disturbed as a result of the Proposed Development. | Not significant | Pre-construction surveys;<br>monitoring of site clearance works;<br>culverts and dry passes. | Not significant |
| | | Surface water pollution | Habitat deterioration due to surface water pollution could indirectly impact otter. | **Internationally significant, short-term, reversible, adverse effect** | See Chapter 9B: Biodiversity – Aquatic | Not significant |
| | | Disturbance from noise, vibration, lighting, and human presence | During the construction phase, there is potential for disturbance from construction activities to influence otter movement. | **Internationally significant, short-term, reversible, adverse effect** | See Chapter 14: Noise & Vibration;<br>construction lighting measures | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| | Operational | Accidental killing or injury | Road collisions between vehicles and otter are a known risk and therefore the operation of the road has, in principle, the potential to result in otter fatalities or injuries. This has been accounted for early in the design of the Proposed Development to provide open-span designs at the bridge crossings over the River Finn, Cloghroe, Backlees, Swilly Burn, Deele, and Swilly Estuary to allow continued passage by otter even at times of flood. | **Internationally significant, long-term, reversible, adverse effect** | Otter fencing; culverts and dry passes | Not significant |
| | | Surface water pollution | Habitat deterioration due to surface water pollution could indirectly impact otter. However, the design of the Proposed Development includes features such as attenuation ponds and interceptors will result in imperceptible to potentially slightly positive operational phase impacts on surface waters. | Not significant | See Chapter 9B: Biodiversity – Aquatic | Not significant |
| Hedgehog and pygmy shrew (local (higher)) | Construction | Accidental killing or injury | There is potential for hedgehog or pygmy shrew to be killed or injured during construction through site clearance or accessing areas of construction, including excavations. | Not significant | Monitoring of site clearance works; measures at excavations | Not significant |
| | | Habitat loss, fragmentation, and alteration | The Proposed Development will result in a loss of linear, woodland and pastoral habitat likely to be used by foraging pygmy shrew and foraging and hibernating hedgehog. Additionally, the linear nature of the pro-posed development will result in the severing of habitats, further reducing the area of utilisable habitats and impacting on population dynamics of pygmy shrews and hedgehogs. | **Locally significant, permanent, irreversible, adverse effects** | Culverts and dry passes | Not significant |
| | Operational | Accidental killing or injury | There is potential for hedgehog and pygmy shrew to be road traffic casualties during the operational phase. There is also the potential for these species to fall into drainage gully pots and suffer fatalities. | Not significant | Culverts and dry passes | Not significant |
| Red squirrel and pine marten (local (higher)) | Construction | Accidental killing or injury | There is potential for red squirrel or pine marten to be killed or injured during construction through accessing areas of construction, including excavations. | Not significant | Monitoring of site clearance works; fencing; measures at excavations | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| | | Habitat loss, fragmentation, and alteration | The Proposed Development will result in a loss of linear and woodland habitat potentially used by red squirrel and pine marten. Additionally, the linear nature of the Proposed Development will result in the severing of habitats, further reducing the area of utilisable habitats and impacting on population dynamics of red squirrel and pine marten. | **Locally significant, permanent, irreversible, adverse effects** | Mammal fencing; culverts and dry passes | Not significant |
| | Operational | Accidental killing or injury | There is potential for red squirrel and pine marten to be road traffic casualties during the operational phase. | Not significant | Mammal fencing; culverts and dry passes | Not significant |
| Irish stoat (local (higher)) | Construction | Accidental killing or injury | There is potential for Irish stoat to be killed or injured during construction through accessing areas of construction, including excavations. | Not significant | Monitoring of site clearance works; fencing; measures at excavations | Not significant |
| | | Habitat loss, fragmentation, and alteration | The Proposed Development will result in a loss of linear, woodland, and pastoral habitat likely to be used by foraging Irish stoat. Additionally, the linear nature of the Proposed Development will result in the severing of habitats, further reducing the area of utilisable habitats and impacting on population dynamics of Irish stoats. | **Locally significant, permanent, irreversible, adverse effect** | Mammal fencing; culverts and dry passes | Not significant |
| | Operational | Accidental killing or injury | There is potential for Irish stoat to be road traffic casualties during the operational phase. | Not significant | Mammal fencing; culverts and dry passes | Not significant |
| Irish hare (local (higher)) | Construction | Accidental killing or injury | There is potential for Irish hare to be killed or injured during construction through site clearance or accessing areas of construction, including excavations. | Not significant | Monitoring of site clearance works; fencing; measures at excavations | Not significant |
| | | Habitat loss, fragmentation, and alteration | The Proposed Development will result in a loss of grassland habitat likely to be used by Irish hare. Additionally, the linear nature of the Proposed Development will result in the severing of habitats, further reducing the area of utilisable habitats and impacting on population dynamics of Irish hare. | **Locally significant, permanent, irreversible, adverse effect** | Mammal fencing; culverts and dry passes | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| | Operational | Accidental killing or injury | There is potential for Irish hare to be road traffic casualties during the operational phase. | Not significant | Mammal fencing; culverts and dry passes | Not significant |
| Deer species (local (higher)) | Construction | Accidental killing or injury | There is potential for deer to be killed or injured during construction through accessing areas of construction, including excavations. | Not significant | Monitoring of site clearance works; fencing; measures at excavations | Not significant |
| | | Habitat loss, fragmentation, and alteration | The Proposed Development will result in a loss of woodland and scrub habitat likely to be used by deer. Additionally, the linear nature of the Proposed Development will result in the severing of foraging habitats, further reducing the area of utilisable habitats for any existing deer; notably for red deer in the vicinity of Sections 1 and 3. | **Locally significant, permanent, irreversible, adverse effect on red deer** | Mammal underpasses, the open-span bridge design, and box culverts. A deer underpass with associated deer fencing will be provided at the PDCZ in Doorabble and Ballyholey Far. | Not significant |
| | Operational | Accidental killing or injury | There is potential for deer to be road traffic casualties during the operational phase. | Not significant | Mammal fencing | Not significant |
| Breeding birds (local (higher)) | Construction | Accidental killing or injury | Numerous bird species, including red- and amber-listed species have the potential to nest within the CPO boundary. Due to the extent of loss of habitat likely to include significant opportunities to support breeding birds, their active nests, and dependent young, there is a potential for killing or injuring breeding birds and/or their dependent young. | **Locally significant, long-term, irreversible, adverse effect** | Timing and monitoring removal of features which could support breeding birds. | Not significant |
| | | Habitat loss, fragmentation, and alteration | The Proposed Development will result in the loss of large areas of various habitats with potential to host nesting birds and suitable for foraging. | Not significant | Provision of and maintenance of bird boxes | Not significant |
| | | Disturbance from noise, vibration, lighting, and human presence | During construction, increased light and noise could have an indirect impact on bird species. | Not significant | See Chapter 14: Noise & Vibration; construction lighting measures | Not significant |

| IEF (attributed value) | Project Stage | Impact | Characterisation of Unmitigated Impact on IEF | Effect without Mitigation | Mitigation | Likely Significance of Effects of Residual Impacts |
|---|---|---|---|---|---|---|
| | Operational | Accidental killing or injury | Due to the proximity of suitable nesting and foraging habitat to the carriageway, there is the potential for birds to collide with vehicles. | Not significant | None | Not significant |
| | | Disturbance from noise, vibration, lighting, and human presence | There will be retained habitat adjacent to the new road which will be affected by the noise and/or vibration of new road traffic. | Not significant | See Chapter 14: Noise & Vibration; operational lighting measures | Not significant |
| Wintering birds (international) | Construction | Disturbance from noise, vibration, lighting, and human presence | Areas utilised by black-head gull and lesser black-backed gull may be subject insignificant levels of disturbance during construction. | Not significant | See Chapter 14: Noise & Vibration; construction lighting measures | Not significant |
| | Operational | Disturbance from noise, vibration, lighting, and human presence | Areas utilised by black-head gull and lesser black-backed gull may be subject to insignificant levels of disturbance during operation of the proposed road. | Not significant | See Chapter 14: Noise & Vibration; operational lighting measures | Not significant |
| Smooth newt, common frog, and common lizard (local (higher)) | Construction | Accidental killing or injury | There is potential for smooth newt, common frog, and common lizard to be killed or injured during construction through site clearance or accessing areas of construction, including excavations. | Not significant | Monitoring of site clearance works; measures at excavations | Not significant |
| | | Habitat loss, fragmentation, and alteration | The Proposed Development will result in a significant direct loss of habitat suitable for use by smooth newt, common frog, and common lizard for breeding, foraging, refuge, and commuting. Due to its linear nature, the Proposed Development will intersect suitable habitats, potentially impacting the dispersal, foraging, and commuting routes of smooth newt, common frog, and common lizard. | Not significant | Culverts and dry passes | Not significant |
| | Operational | Accidental killing or injury | There is potential for smooth newt, common frog, and common lizard to be road traffic casualties during the operational phase. There is also the potential for these species to fall into drainage gully pots and suffer fatalities. | Not significant | Culverts and dry passes | Not significant |

## 9A.8 Interactions and Cumulative Effects

Interactions between terrestrial biodiversity impacts and other environmental impacts and the cumulative effects of the Proposed Development with reference to other plans and projects on terrestrial biodiversity is set out in Chapter 19: Interactions & Cumulative Effects.

## 9A.9 Transboundary Effects

The River Finn upstream of Lifford / Strabane in Section 3 of the Proposed Development forms the international border between the Republic of Ireland (ROI) (County Donegal) and Northern Ireland (NI) (County Tyrone). The river at this location is under conservation designation in both jurisdictions, ROI River Finn SAC and NI River Foyle and Tributaries SAC.

Section 3 of the Proposed Development includes the N14/N15 to A5 Link south of Lifford to the border with Northern Ireland on the River Finn where it will connect to a proposed Trunk Road T3 (A5 Western Transport Corridor to Land Frontier), which in-turn will connect to the proposed A5 Western Transport Corridor (WTC). A proposed Trunk Road T3 (of approximately 79 metres of new road) will provide a link between the proposed A5 WTC in Northen Ireland and the Project, meeting at the border between Northern Ireland and Ireland.

The distance across the River Finn and its floodplain between the proposed N14/N15 junction and the A5 WTC junction is approximately 500m. The proposed N14/N15 to A5 Link bridge design for the crossing of the River Finn is an eight-span structure with an overall length of approximately 284 m. It consists of a 63m main span that clears the River Finn, plus 33m southern and 191m northern approach structures and involves construction of:

- One abutment and six bridge piers across the floodplain in County Donegal (ROI).
- One abutment and one bridge pier, plus 79 m of approach road connecting to the A5 WTC in County Trone (NI).

In June 2025, the High Court in Northern Ireland made a judgement regarding the A5 WTC whereby the permission granted for sections 2 and 3 of the A5 WTC was quashed. That decision has been appealed to the Court of Appeal in Northern Ireland.

The proposed N14/N15 to A5 Link including the proposed bridge over the River Finn (i.e. the link between the N14/N15 Lifford Junction and a proposed Trunk Road T3) will not be constructed until such time as a proposed Trunk Road T3 / Section 1 of the A5 WTC has been constructed or is under construction. Therefore, the following has been considered:

- In the scenario where the A5 WTC is not a confirmed/ committed scheme in Northern Ireland, the construction of the N14/N15 to A5 Link, including the bridge over the River Finn, will not proceed.
- In the scenario where the N14/N15 to A5 Link is constructed (including the Trunk Road T3) it will be constructed as one project both in Ireland and Northern Ireland. However, this is likely to only be constructed if/ when the A5 WTC is a confirmed/ committed scheme in Northern Ireland.

The scenarios with and without the N14/ N15 to A5 Link from the Proposed Development to the A5 WTC are therefore considered in this Chapter with respect to potential transboundary effects on terrestrial receptors.

The Environmental Impact Statement / Environmental Statement (EIAR / EIS), Natura Impact Statement / Habitats Regulations Assessment (NIS / HRA) and technical drawings for the N14 / N15 to A5 Link (ROD, 2011a, 2011b) underpinning the 2011 T3 Trunk Road Order were reviewed by the lead author of the current chapter. The documents describe the baseline environment of the River Finn at and downstream of the crossing location and prescribes mitigation measures to avoid and prevent water quality degradation in the construction phase.

The proposed N14 / N15 to A5 Link for the current development comprises the same bridge design, construction methods and mitigations for the proposed Trunk Road T3 and the previously approved scheme by An Bord Pleanála, permission ref: 05. HA0033.

Refer to detailed assessment of effects for the currently proposed N14/N15 to A5 Link bridge within Section 9A.5 construction phase operation phase and Section 9A.6 **(**Mitigation Measures), above. Effects were considered in the context of the ROI River Finn SAC, its Qualifying Interests and conservation objectives (NPWS, 2017a) and the contiguous UK River Foyle and Tributaries SAC, its qualifying features and conservation objectives (NIEA, 2024).

In the scenario where the A5 WTC is a confirmed/ committed scheme in Northern Ireland and the N14/N15 to A5 Link is constructed:

- With implementation of the specified design and mitigation measures (Section 9A.6), the residual impacts of the proposed N14/N15 to A5 Link on terrestrial receptors will be **not significant**. The Proposed Development will not affect the conservation status of Otter, which is the only terrestrial Qualifying Interest / Feature species present in the reasonable Zone of Influence, and will have no adverse effect on conservation objectives or overall integrity of the ROI River Finn SAC and NI River Foyle and Tributaries SAC.

In the scenario where the A5 WTC is not a confirmed/ committed in Northern Ireland and the N14/N15 to A5 Link is not constructed:

- There will be a lessening of the potential for direct and indirect effects on water quality and terrestrial receptors related to the bridge construction. There will be no temporary construction or permanent footprint within the River Finn floodplain and therefore less loss effect on the wet grassland (GS4) habitat and drainage ditches (FW4) and will remain as **not significant**. There will still be one swale drainage channel discharging to existing ephemeral drains outside the SAC boundary on the Finn floodplain from Section 3 Attenuation Pond No. 16. These drains currently outfall to the River Finn and there is no requirement for an additional drainage outfall directly to the river itself. Therefore, the potential for disturbance or risk of injury or killing to otter will also be reduced and will remain as **not significant**.
- With all mitigations employed in the areas of sediment and pollutant loss control during the construction phase of southern Section 3 (Finn catchment), the residual impact on aquatic receptors of the River Finn will be **indirect neutral to temporary negative not significant**. Therefore, any potential for negative impacts on terrestrial receptors downstream of the river crossing, such as habitats or the potential for reduced food supply of otters will remain as **not significant**.

## 9A.10 Conclusion

The chapter of the Environmental Impact Assessment Report (EIAR) identifies, describes, and presents an assessment of the likely significant effects of the Proposed Development on terrestrial biodiversity. The assessment has been made with reference to Chapter 4 – Project Description based on a terrestrial ecology baseline for habitats and species collated, refined and updated over an 8-year period (2017 to 2025). Standard assessment methodologies have been applied during the preparation of this Chapter both for the collation of the baseline information and the completion of the impact assessment.

Important Ecological Features (IEFs) were identified and evaluated based on the baseline information collated; these IEFs included designated sites (international, national and regional/local), habitats and notable/protected species and/or species/habitat assemblages. The findings of the ecology baseline informed the design of the Proposed Development (*e.g.* open-span bridge designs), and these were “built-in” to the Project Description of the Proposed Development.

Initially, an assessment of potential impacts and significant effects was completed in the absence of consideration of mitigation for both the construction and operational phases of the Proposed Development. Significant adverse effects were identified for a number of IEFs including designated sites, habitats and species. This informed the development of a comprehensive package of mitigation measures. The Proposed Development was then re-assessed and residual effects identified. No residual significant adverse effects on any of the terrestrial biodiversity IEFs were identified in the medium to long-term.

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