6. BIODIVERSITY

6.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) assesses the likely significant effects (both alone and cumulatively with other projects) that the Proposed Development may have on Biodiversity, Flora and Fauna and prescribes mitigation measures that will be implemented to mitigate any likely effects that are identified. The residual impacts on biodiversity are then assessed. Particular attention has been paid to species and habitats of ecological importance. These include species and habitats with national and international protection under the Wildlife Acts 1976 (as amended) and the EU Habitats Directive 92/43/EEC. The full description of the Proposed Development is provided in Chapter 4 of this EIAR.

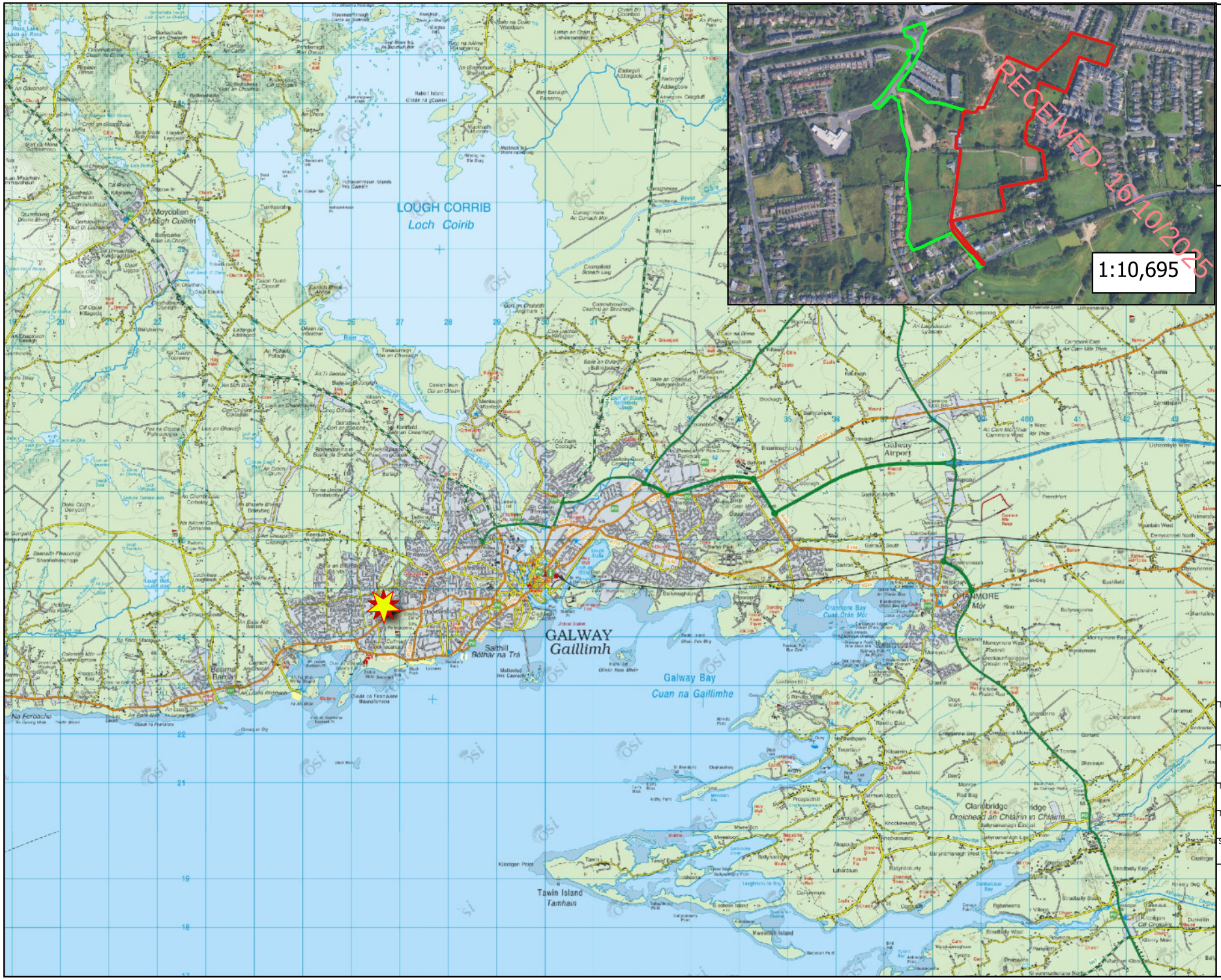
The chapter is structured as follows:

- The Introduction provides a description of the legislation, guidance and policy context applicable to Biodiversity, Flora and Fauna.
- This is followed by a comprehensive description of the ecological survey and impact assessment methodologies that were followed to inform the robust assessment of likely significant effects on ecological receptors.
- A description of the Baseline Ecological Conditions and Receptor Evaluation is then provided.
- This is followed by an Assessment of Effects which are described with regard to each phase of the Proposed Development: construction phase, operational phase and decommissioning phase. Potential Cumulative effects in combination with other projects are fully assessed.
- Proposed mitigation and best practice measures to avoid, reduce or offset any identified effects are described and discussed. This is followed by an assessment of residual effects taking into consideration the effect of the proposed mitigation and best practice measures.
- The conclusion provides a summary statement on the overall significance of predicted effects on Biodiversity, Flora and Fauna.

The following defines terms utilised in this chapter:

- For the purpose of this EIAR, the term 'EIAR Study Area' refers to the green line boundary, as shown in **Figure 6-1**, which encompasses an overall area of 8.74ha. The term 'Proposed Development site' or 'site' refers to the red line boundary, also shown in **Figure 6-1**, encompassing an area of 5.37ha.
- The Proposed Development refers to the proposed residential development, comprising 362 no. residential units, in 4 no. development areas, demolition of existing structures (333.8m^2), provision of a childcare facility (440m^2), provision of vehicular access and upgrades to existing access, provision of active travel and pedestrian access, public open space, bicycle and car parking spaces, public lighting, bin stores, signage, services, ESB substation, landscaping and all ancillary site development and enabling works, as described in Chapter 4 Description. The layout of the Proposed Development is illustrated in Figure 6-2.
- "Key Ecological Receptor" (KER) is defined as a species or habitat occurring within the zone of influence of the development upon which likely significant effects are anticipated.
- "Zones of Influence" (ZOI) for individual ecological receptors refers to the zone within which potential effects are anticipated. ZOIs differ depending on the sensitivities of

particular habitats and species and were assigned in accordance with best available guidance and through adoption of a precautionary approach.



Map Legend

- Site Location Point
- Planning Application (red line) Boundary
- EIAR Study Area Boundary

Drawing Title: Site Location

Project Title: Kingston Knocknacarra LRD East

Drawn By	Checked By
FK/ CK	PD/ SM
Project No.	Drawing No.
240142	Figure 6-1
Scale	Date
1:101,700	02.10.2025

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Map Legend

- Planning Application (red line) Boundary
- EIAR Study Area Boundary

Drawing Title

Proposed Site Layout

Project Title: Kingston Knocknacarra LRD East	
Drawn By: CK	Checked By: SM
Project No.: 240142	Drawing No.: Figure 6-2
Scale: 1:2,800	Date: 15.10.2025

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6.2 Requirements for Ecological Impact Assessment

National Legislation

The Wildlife Act, 1976 (as amended) is the principal piece of legislation governing protection of wildlife in Ireland. The Wildlife Act provides strict protection for species of conservation value. The Wildlife Act conserves wildlife (including game) and protects certain wild creatures and flora. These species are therefore considered in this report as ecological receptors. Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs) are heritage sites that are designated for the protection of flora, fauna, habitats and geological sites. Only NHAs are designated under the Wildlife (Amendment) Act 2017. These sites do not form part of the Natura 2000 network of European sites and the AA process, or screening for same, does not apply to NHAs or pNHAs. Proposed Natural Heritage Areas (pNHAs) were published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated[1] However, these sites are considered to be of significance for wildlife and habitats as they may form statutory designated sites in the future (NPWS, 2020).

The Flora (Protection) Order, 2022 (S.I. No. 235 of 2022) lists the species, hybrids and/or subspecies of flora protected under Section 21 of the Wildlife Acts. It provides protection to a wide variety of protected plant species in Ireland including vascular plants, mosses, liverworts, lichens and stoneworts. Under the Flora Protection Order, it is illegal to cut, pick, collect, uproot or damage, injure or destroy species listed or their flowers, fruits, seeds or spores or wilfully damage, alter, destroy or interfere with their habitat (unless under licence).

National Policy

Irelands 4th National Biodiversity Action Plan 2023-2030 (Department of Housing, Local Government and Heritage, 2024) (the "NBAP") strives for a "whole of government, whole of society" approach to the governance and conservation of biodiversity. It demonstrates Ireland's continuing commitment to meeting and acting on its obligations to protect Ireland's biodiversity for the benefit of future generations and will implement this through a number of key targets, actions and objectives.

The Wildlife (Amendment) Act 2023 introduced a new public sector duty on biodiversity. The legislation provides that every public body, as listed in the Act, is obliged to have regard to the objectives and targets in the NBAP. The NBAP sets out five key objectives as follows:

- Objective 1: Adopt a Whole-of Government, Whole of-Society Approach to Biodiversity. Proposed actions include capacity and resource reviews across Government; determining responsibilities for the expanding biodiversity agenda providing support for communities, citizen scientists and business; and mechanisms for the governance and review of this National Biodiversity Action Plan.
- Objective 2: Meet Urgent Conservation and Restoration Needs. Supporting actions will build on existing conservation measures. Efforts to tackle Invasive Alien Species will be elevated. The protected area network will be expanded to include the Marine Protected Areas. The ambition of the EU Biodiversity Strategy will be considered as part of an evolving work programme across Government.
- Objective 3: Secure Nature's Contribution to People. Actions highlight the relationship between nature and people in Ireland. These include recognising the tangible and intangible values of biodiversity, promoting nature's importance to our culture and heritage and recognising how biodiversity supports our society and our economy.
- Objective 4: Enhance the Evidence Base for Action on Biodiversity. This objective focuses on biodiversity research needs, as well as the development and strengthening of long-term monitoring

[1] https://www.npws.ie/protected-sites/nha (accessed 2nd October 2025).

programmes that will underpin and strengthen future decision-making. Action will also focus on collaboration to advance ecosystem accounting that will contribute towards natural capital accounts.

- Objective 5: Strengthen Ireland's Contribution to International Biodiversity Initiatives. Collaboration with other countries and across the island of Ireland will play a key role in the realisation of this Objective. Ireland will strengthen its contribution to international biodiversity initiatives and international governance processes, such as the United Nations Convention on Biological Diversity.

Such policies have informed the evaluation of ecological receptors recorded within the Site and the ecological assessment process.

European Legislation

Habitats and species of European importance are provided legal protection under the EU Habitats Directive 92/43/EEC (the Habitats Directive) and the EU Birds Directive 2009/147/EC (the Birds Directive). This legislation forms the cornerstone of Europe's nature conservation within the EU. It is built around two pillars: the Natura 2000 network of protected sites (hereafter referred to as European sites[2]) and the strict system of species protection. Both the Habitats and Bird Directives have been transposed into Irish law by Part XAB of the Planning and Development Acts 2000 (as amended) (from a land use planning perspective) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011).

Annex I of the Habitats Directive lists habitat types whose conservation requires the designation of Special Areas of Conservation (SAC). Priority habitats, such as Turloughs, which are in danger of disappearing within the EU territory are also listed in Annex I. Annex II of the Directive lists animal and plant species (e.g. marsh fritillary, Atlantic salmon, and Killarney fern) whose conservation also requires the designation of SAC. Annex IV lists animal and plant species in need of strict protection such as lesser horseshoe bat and otter, and Annex V lists animal and plant species whose taking in the wild and exploitation may be subject to management measures. In Ireland, species listed under Annex V include Irish hare, common frog and pine marten. Species can be listed in more than one Annex, as is the case with otter and lesser horseshoe bat which are listed in both Annex II and Annex IV.

The disturbance of species under Article 12 of the Habitats Directive (and in particular avoidance of deliberate disturbance of Annex IV species, particularly during the period of breeding, rearing, hibernation and migration and avoidance of deterioration or destruction of breeding sites or resting places) has been specifically assessed in this chapter.

The Birds Directive instructs Member States to take measures to maintain populations of all bird species naturally occurring in the wild state in the EU (Article 2). According to Recital 1 of the Birds Directive, Council Directive 79/409/EEC on the conservation of wild birds was substantially amended several times and in the interests of clarity and rationality, the Birds Directive codifies Council Directive 79/409/EEC. Such measures may include the maintenance and/or re-establishment of habitats in order to sustain these bird populations (Article 3). A subset of bird species has been identified in the Directive and are listed in Annex I as requiring special conservation measures in relation to their habitats. These species have been listed on account of inter alia: their risk of extinction; vulnerability to specific changes in their habitat; and/or due to their relatively small population size or restricted distribution. Special Protection Areas (SPAs) are to be identified and classified for these Annex I listed species and for regularly occurring migratory species, paying particular attention to the protection of wetlands (Article 4).

In summary, the species and habitats provided National and International protection under these legislative and policy documents have been considered in this Ecological Impact Assessment. A detailed

[2] *The term Natura 2000 network was replaced by 'European site' under the EU (Environmental Impact Assessment and Habitats) Regulations 2011 S.I. No. 473 of 2011.*

assessment of the likelihood of the Proposed Development having either a significant effect or an adverse impact on any relevant European Sites (i.e. SACs, cSACs[3],, SPAs or cSPAs) has been carried out in the Appropriate Assessment Screening Report (AASR) and Natura Impact Statement (NIS). A separate assessment has not been carried out in this chapter, to avoid duplication of assessments. However, the relevant conclusions have been cross-referenced and incorporated.

In addition to the above, the following legislation applies with respect to habitats, fauna, invasive species and water quality in Ireland and has been considered in the preparation of this chapter:

- The International Convention on Wetlands of International Importance especially Waterfowl Habitat (Concluded at Ramsar, Iran on 2 February 1971)
- S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009 and S.I. No. 722 of 2003 European Communities (Water Policy) Regulations 2003 which give further effect to EU Water Framework Directive (2000/60/EC).
- The following legislation applies with respect to non-native species - Regulation 49 and 50 of European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011) and European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024).

6.3 Review of Relevant Guidance and Sources of Consultation

The assessment methodology is based primarily upon the National Road Authority (NRA) *'s Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev 2* (NRA, 2009a) and the survey methodology is based on the NRA Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes (NRA, 2009b). Although these survey methodologies relate to road schemes, these standard guidelines are recognised survey methodologies that ensure good practice regardless of the development type.

In addition, the following guidelines were consulted in the preparation of this document to provide the scope, structure and content of the assessment:

- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018).

This assessment has been carried out in accordance with the Environmental Impact Assessment guidance as outlined in Chapter 1 of the EIAR.

This assessment has been prepared with respect to the various planning policies and strategy guidance documents listed below:

- Galway County Development Plan 2022-2028
- Galway City Council Development Plan 2023-2029
- Regional Spatial and Economic Strategy: for the Northern and Western Regional Assembly – Project Ireland 2040
- 4th National Biodiversity Action Plan 2023-2027

[3] *Candidate SAC (cSAC) are afforded the same protection as SACs. The process of making cSAC into SACs by means of Statutory instrument has begun and while the process if ongoing the term SAC will be used to conform with nomenclature used in the National Parks and Wildlife Services (NPWS) databased. The name applies to candidate SPAs.*

6.3.1 Statement of Authority

This report has been prepared by Fiona Killeen (B.Sc., (Env)) and Caroline Kelly (BSc., MSc., MCIEEM) and reviewed by Padraig Desmond (B.Sc. Ecology) and Sarah Mullen ((BSc., MSc. PhD). Fiona is an experienced Ecologist with over 2 years professional consultancy experience. Caroline is a Senior Ecologist with MKO and has over 9 years' professional experience as an ecological consultant. Padraig is a Project Ecologist at MKO and has over 5 years professional consultancy experience. Sarah is Project Director of Ecology in MKO and has over 10 years' professional experience in ecological consultancy.

The baseline ecological surveys were undertaken by MKO ecologists on the 20th of March 2024, 24th of April 2024, 15th May 2024 and 20th March 2025. Dedicated wintering bird survey were conducted by Fiona Killeen (B.Sc. (Env)), Ciara Lynn-Shehan (B.Sc. (Ecology), Mairead Kavanagh (B.Sc.), Tom Peters (B.Sc. M.Sc.). and Rachel Minogue (B.Sc. (Env)) of MKO on the 20th of March 2024, 29th of November 2024, 11th of December 2024, 23rd of January 2025, 13th of February 2025 and 20th of March 2025 . Three dedicated breeding bird surveys were carried out on the 24th of April, 15th of May and 12th of June 2024 by MKO ecologists.

Bat surveys were conducted in August 2023, April, May, June, July, August and September 2024 by MKO Ecologists; Laura McEntegert (B.Sc.), Fiona Killeen (B.Sc.), David Culleton (B.Sc.), Charlie Meehan (B.Sc., M.Sc.), Kate Greaney (B.Sc., M.Sc.) and Mairead Kavanagh (B.Sc.).

6.4 Methodology

The following sections describe the methodologies followed to establish the baseline ecological condition of the Proposed Development site and surrounding area. Ecological surveys were carried out across the EIAR Study Area, which includes lands to the west of the LRD application boundary. These lands will be the subject of a future planning application. Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological Baseline conditions are those existing in the absence of proposed activities (CIEEM, 2018).

6.4.1 Desk Study

The desk study undertaken for this assessment included a thorough review of available ecological data including the following:

- Review of NPWS Article 17 maps 2019, 2013 and 2007.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), EPA (Envision), Water Framework Directive (WFD) and Inland Fisheries Ireland (IFI).
- Data on potential occurrence of protected bryophytes – as per NPWS online map viewer; Flora Protection Order Map Viewer – Bryophytes[4].
- Review of relevant Plans, including the 4th National Biodiversity Action Plan 2023-2030, County Biodiversity Plan and the All Ireland Pollinator Plan 2015-2020.
- Review of the relevant data on protected species, publicly available National Biodiversity Data Centre (NBDC) web-mapper.
- Records from the NPWS web-mapper and review of specially requested records from the NPWS Rare and Protected Species Database for the hectads in which the Proposed Development is located.

[4] *NPWS, 2022, Online map viewer; Flora Protection Order Map Viewer – Bryophytes. Online, Available at: http://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=71f8df33693f48edbb70369d7fb26b7e, Accessed: 23.08.2023.*

- Potential for in-combination effects have been considered in Chapter 2 of this EIAR and Section 6.8 of this Chapter. This was informed by a review of the EIARs prepared for other plans and projects occurring in the wider area.

6.4.2 Scoping and Consultation

MKO undertook a scoping exercise during preparation of this EIAR, as described in Chapter 2, Section 2.5 of this EIAR.

Copies of all scoping responses are included in **Appendix 2-1** of this EIAR. The recommendations of the consultees have informed the EIAR preparation process and the contents of this Chapter. Table 2-3 in Chapter 2 of this EIAR describes where the comments raised in the scoping responses received have been addressed in this assessment. Table 6-1 provides a list of the organisations consulted with regard to biodiversity during the scoping process, and notes where scoping responses were received.

Table 6-1 Organisations consulted with regard to biodiversity

Consultee	Date Response Received and Concerns Raised
An Taisce	No response received to date
Bat Conservation Ireland	No response received to date
Birdwatch Ireland	No response received to date
Department of Agriculture, Food and the Marine	Automatic Response Received 30th April 2024
Department of Environment, Climate and Communications	Response received on 12th June 2024 **General ecological considerations** Assessment of the direct, indirect and cumulative significant effects of the project on biodiversity should be made with regard to: Natura 2000 sites, i.e. Special Areas of Conservation (SAC) designated under the EC Habitats Directive (Council Directive 92/43/EEC) and Special Protection Areas (SPA) designated under the EC Birds Directive (Directive 2009/147 EC) › Habitats and species protected under the Habitats Directive – Annex I habitats, Annex II species and their habitats, and Annex IV species and their breeding sites and resting places (wherever they occur), Bird species protected under the Birds Directive › Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur) › Other designated sites, or sites proposed for designation, such as Natural Heritage Areas and proposed Natural Heritage Areas, Nature Reserves and Refuges for Fauna or Flora, designated under the Wildlife Acts 1976 to 2023 › Species protected under the Wildlife Acts including protected flora (note Flora (Protection) Order 2022) › Important bird areas such as those identified by Birdwatch Ireland › Features of the landscape, which are of major importance for wild flora and fauna, such as those with a “stepping stone” and ecological corridors function, as referenced in Article 10 of the Habitats Directive › Other habitats of ecological value in a national to local context (such as those identified as locally important biodiversity areas within Local Biodiversity Action Plans and County Development Plans) › Red data book species

Consultee	Date Response Received and Concerns Raised
	› Biodiversity in general Reference should be made to the up-to-date National Biodiversity Action Plan, Galway City Development Plan, Galway City Biodiversity Action Plan, as well as the All-Ireland Pollinator Plan. **Likely significant effects on European sites:** The Department notes that the Galway Bay Complex SAC (Site Code: 000268) is located 1km to the southwest and that Lough Corrib SAC (Site Code: 000297) is 2.8km east of the site. The scope of works includes these for assessment however, the Inner Galway Bay SPA (Site Code: 004031) and Lough Corrib SPA (Site Code: 004042) have not been mentioned, and should be included for assessment. In relation to potential significant effects on a European site, assessments are carried out with respect to the implications for the conservation objectives of that site. Where available, the attributes, targets and notes specified as part of the conservation objectives will determine the scope and detail of surveys, data and analyses required to produce an NIS, if required. The NIS should present the scientific examination of all necessary evidence and data. It should be noted that the conservation objectives of a European site are wider in scope than the qualifying interests or special conservation interests alone, and will encompass other habitats and species, as well as aspects of habitat structure and function, and existing environmental problems and trends. The final analyses are carried out with respect to whether the conservation objective is to maintain or to restore the favourable conservation condition of the habitat or species in question within the site. The key concerns in relation to likely significant effects of the project alone and in combination with other plans and projects, on these European sites, in view of their conservation objectives, include the following: › Disturbance of potential resting/roosting sites for Annex II species (e.g. Lesser Horseshoe Bat) › Increased disturbance and displacement of species, and progressive habitat loss, fragmentation and deterioration surrounding European sites arising from the development, and loss of important ecological corridors › Added pressures on existing water services **Likely significant effects on the environment:** Under Article 10 of the Habitats Directive, member states must maintain and where possible enhance landscape features to improve the coherence of the Natura 2000 network. Particular note should be given to the EU Green Infrastructure Strategy. Opportunities for landscape enhancement should be considered within the landscape plan which should seek to integrate Green Infrastructure and 'Nature Based Surface Water Management' into the project design and consideration of Sustainable. Drainage Systems (SuDS) requirements. At a minimum, it is advised that areas of woodland and treelines on and bordering the site should be retained and protected by appropriate setback distances, landscaping and boundary treatments. The development of the site should be consistent with protective policies and objectives in the Galway City Development Plan. Recent habitat mapping is available for much of Galway City and should be sourced. Substantial data on species, particularly the more mobile species such as bats, are also available for parts of the city and the environmental assessment documentation associated with the proposed N6 Galway City Ring Road should be consulted.

Consultee	Date Response Received and Concerns Raised
	The Landscape Management Plan should be guided by valuable resources available as part of the National All-Ireland Pollinator Plan and planting of potential invasive species such as Cotoneaster (*Cotoneaster franchetii*) avoided. The procedures outlined in 'Guidance Note 08/18 Bats and Artificial Lighting in the UK' and Eurobats 'Guidelines for Consideration of Bats in Lighting Projects' should be consulted with respect to the overall lighting design. This should also take into consideration Dark Sky Ireland guidance "Best practice in public lighting", notably that "warm" colour temperatures should be used at 2700K or less. Final sign off and testing of the lighting scheme should be carried out at night to ensure that the lighting is directional and targeted and should not spill over onto treelines and hedgerows which can have adverse impacts on bats and biodiversity in general. Bat species are strictly protected under Annex IV of the Habitats Directive. **Ecological surveys required.** Ecological surveys should be carried out in accordance with recognised methodologies, and should provide a comprehensive description and evaluation of the ecological baseline of the site, and an assessment of the likely direct, indirect and cumulative effects of all aspects of the Proposed Development. Surveys should be carried out by suitably qualified persons at an appropriate time of the year depending on the species being surveyed for. The Environmental Impact Assessment Report (EIAR) should include the results of the surveys, and detail the survey methodology and timing of such surveys. It is expected by the Department, that in any survey methodology used, best practice will be adhered to and if necessary non-Irish methodology adapted for the Irish situation. The Chartered Institute of Ecology and Environmental Management's (CIEEM's) recent advice titled 'Advice note on the Lifespan of Ecological Reports and Surveys' should be noted. Specific attention should be given to the assessment of: › Hedgerows and ecological connectivity › Bird usage of the site and surrounding areas (notably for feeding and roosting) › Bats, including building inspections, roost presence/absence activity surveys, walked transects and automated static detectors. Any losses of semi-natural habitat associated with this Proposed Development such as woodland, scrub, hedgerows and other habitats should in the first instance be avoided where possible, and mitigated for where not. **Mitigation measures** Mitigation measures need to be assessed against the adverse effects the project or plan is likely to cause (alone or in-combination with other projects or plans). To assess mitigation measures, the following tasks must be completed: › List each of the measures to be introduced (e.g. noise bunds, tree planting) › Explain how the measures will avoid the adverse impacts on the site › Explain how the measures will reduce the adverse impacts on the site Then, for each of the listed mitigation measures: › Provide evidence of how they will be secured and implemented and by whom › Provide evidence of the degree of confidence in their likely success › Provide a timescale, relative to the project or plan, when they will be implemented Where residual impacts remain, further mitigation measures may be required.

Consultee	Date Response Received and Concerns Raised
	Monitoring Evidence should be provided of how the mitigation measures will be monitored, and, should mitigation failure be identified, how that failure will be rectified. The applicant should not use any proposed post construction monitoring as mitigation to supplement inadequate information in the assessment.
Galway County Council – Environmental Section	No response received to date
Inland Fisheries Ireland	Response received 27th May 2024 IFI note that the site is located within the Galway Bay North Catchment (catchment OD 31) and the Knock[Furbo]_SC_010 Sub catchment under the Water Framework Directive (WFD). There are no mapped watercourses within the site. The nearest EPA mapped watercourse to the site is the Knocknacarragh River (EPA Code: IE_WE_31K160960 – Order 1) which is at its closest to the site approximately 257 metres to the north. IFI recommend the incorporation of SuDS into the Proposed Development. Also attached a copy of the IFIs Urban Watercourse Planning Guide for reference.
Irish Wildlife Trust	Response received. Irish Wildlife Trust do not have staff capacity to respond to this consultation at the moment but will endeavour to respond if possible.
Irish Peatland Conservation Council	No response
Irish Raptor Study Group	No response
Irish Red Grouse Association	No response
The Heritage Council	No response
Waterways Ireland	Response received 3rd May 2024 No comment to make

6.4.3 Field Surveys

The dates on which ecological surveys, outlined in detail in the below subsections, were undertaken are provided in

Table 6-2.

Table 6-2 Dates of ecological surveys undertaken

Survey Type	Dates of Survey
Multi-disciplinary ecological walkover	20th of March 2024 24th of April 2024 15th of May 2024 20th of March 2025

Survey Type	Dates of Survey
Wintering Bird Survey	20th of March 2024 29th of November 2024 11th of December 2024 23rd of January 2025 13th of February 2025 20th of March 2025
Breeding Bird Survey	24th of April 2024 15th of May 2024 12th of June 2024
Invasive Species Survey	15th of May 2024
Bat survey and static detector collection	3rd of August 2023 24th of April 2024 2nd and 20th of May 2024 6th of June 2024 3rd of July 2024 4th of September 2024

6.4.3.1 Multi-disciplinary Walkover Surveys

Multidisciplinary walkover surveys, carried out in line with NRA (2009) guidelines, were undertaken on the 20th of March 2024, 24th of April 2024, 15th May 2024 and 20th March 2025. The surveys in April and May fall within the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith et al., 2011), while the surveys carried out in March, when vegetation cover is reduced, focused on identifying features which could potentially be used by protected mammals (e.g. potential roost features on trees which could support bats, mammal burrows etc.).

The walkover surveys were designed to detect the presence, or likely presence, of a range of protected species. The survey included a search for badger setts and areas of suitable habitat, potential features likely to be of significance to bats and additional habitat features for the full range of other protected species that are likely to occur in the vicinity of the Proposed Development (e.g. otter etc.). In addition, an inventory of other species of local biodiversity interest was compiled including invertebrates (butterflies, dragonflies, damselflies, beetles), plants, fungi etc.

The multi-disciplinary walkover surveys comprehensively covered the Proposed Development site. Habitats were identified in accordance with the Heritage Council's 'Guide to Habitats in Ireland' (Fossitt, 2000). Habitat mapping was undertaken with regard to guidance set out in 'Best Practice Guidance for Habitat Survey and Mapping' (Smith *et al.*, 2011). Plant nomenclature for vascular plants follows 'New Flora of the British Isles' (Stace, 2019).

During the multidisciplinary surveys, a search for Invasive Alien Species (IAS) listed under the First Scheule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and/or Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2011) was conducted.

6.4.3.2 Bird Surveys

Due to the close proximity of the site to the Lough Corrib SPA and Inner Galway Bay Complex SPA 6 no. dedicated wintering bird surveys and 3 no. dedicated breeding bird surveys were considered necessary to assess the sites' significance (if any) for both breeding and wintering birds (following the precautionary principle).

Winter Bird Surveys

The winter bird surveys were carried out on a monthly basis between November 2024 and March 2025. One survey in March 2024 was also undertaken. Surveys were conducted from eight predefined vantage points which offered as large a view as possible of potentially suitable wintering bird habitat within the EIAR Study Area and adjacent area. Following completion of the vantage point surveys, seven predefined transects were walked and any winter birds occurring within proximity to these transects, including their numbers and exhibited behaviours were recorded. Winter bird surveys followed the Irish Wetland Bird Survey (I-WeBS) methodology; the simple 'look-see' method, whereby all birds present within a predefined area are counted (Bibby *et al.*, 1992).

All observations were recorded, and detailed point data was gathered for each species observation, with all bird species denoted using standard British Trust for Ornithology (BTO) codes and with the number of each species recorded next to each registration. The target species recorded in the surveys were those covered by Irish Wetlands Bird Survey (I-WeBS) counts, i.e. all divers, grebes, cormorant, shag, herons, swans, geese, ducks, rails, crakes, waders, gulls and kingfisher. Target species also included Special Conservation Interest (SCI) species associated with SPAs in the likely zone of influence, any species listed on Annex I of the Birds Directive and any birds included on the Birds of Conservation Concern in Ireland 4: 2020-2026 (BoCCI) red list (Gilbert et al., 2021). In addition to this, all other bird species, including all common and widespread passerines, were recorded as incidentals where they occurred within the Proposed Development site.

Breeding Bird Surveys

Breeding bird surveys were carried out on a monthly basis between April and June 2024 (inclusive). Surveys were carried out in a similar fashion to the winter bird surveys in that surveys from the same eight vantage points were undertaken first, followed by transect surveys along the same seven transects. During the surveys, target species (SCIs of nearby SPAs, Annex I species and BoCCI red-listed species) were recorded both within and adjacent to the EIAR Study Area, with non-target species recorded as incidentals. All bird species were denoted using standard British Trust for Ornithology (BTO) codes and with the number of each species recorded next to each registration.

The locations of Vantage Points and walked transects undertaken over the course of the bird surveys carried out across the EIAR Study Area are shown in **Figure 6-3.**

Map Legend

- Planning Application (red line) Boundary
- EIAR Study Area Boundary
- Walked Transects
- Vantage Points

N

Drawing Title: Vantage Points and Walked Tansects

Project Title: Kingston Knocknacarra LRD East

Drawn By	Checked By
FK/ CK	SM
Project No.	Drawing No.
240142	Figure 6-3
Scale	Date
1:3,000	15.10.2025

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6.4.3.3 Bat Survey

A detailed Bat Report has been prepared by MKO bat ecologists and is attached to this document as **Appendix 6-1**. The methodologies of the bat surveys are summarised below.

6.4.3.3.1 *Daytime Bat Walkover*

The Daytime Bat Walkover (DBW) survey comprised a bat habitat suitability appraisal and preliminary roost assessment as set out in Sections 3.3.3.2 and 3.3.3.3 of the Bat Report. This was conducted as part of the multi-disciplinary ecological walkover survey.

6.4.3.3.2 *Bat Habitat Suitability Appraisal*

The Proposed Development site was assessed for its suitability to support roosting, foraging, and/or commuting bats. Connectivity with the wider landscape was also considered. Suitability was assessed according to the protocol set out in BCT Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th ed.) (Collins, 2023). The survey aimed to identify if the Proposed Development site provided suitable habitat for bats and to guide further survey efforts. The grading protocol, subdivided into None, Negligible, Low, Moderate, and High, is described fully in

Table 6-3.

Table 6-3 Protocol for assessing the suitability of habitats within the Proposed Development site for bats (abridged, Collins, 2023).

Suitability	Roosting Habitats	Commuting and Foraging Habitats
None	No habitat features on site likely to be used by any roosting bats at any time of the year. (i.e. a complete absence of crevices/ suitable shelter at all ground/ underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/ protection for flight-lines, or generate/ shelter insect populations available to foraging bats).
Negligible	Negligible habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats, i.e. unlikely to be suitable for maternity and not a classic cool/stable hibernation site but could be used by individual hibernating bats.	Habitat that could be used by small numbers of bats as flight-paths such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation - the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for flight paths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure with one or potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High

Suitability	Roosting Habitats	Commuting and Foraging Habitats
	habitat. These structures have the potential to support high conservation status which is established after presence is confirmed.	quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

6.4.3.3.3 Preliminary Bat Roost Assessments

Preliminary surveys were carried out to assess the bat roost potential of trees and buildings on site. Trees within the EIAR Study Area were examined from ground level to look for the presence of potential roost features (PRFs) that bats could use for roosting. Signs of confirmed roosts were also searched for (for example the presence of bat droppings etc.). Trees were visually assessed from ground level, for natural features of high value to roosting bats including knot holes, trunk hollows, splits/cracks in branches and areas of flaking bark and also for signs indicating possible bat use including droppings, staining and scratching of bark and any other potential roost features (PRFs) identified by Andrews (2013). Suitability for roosting was assessed according to Collins (2023) as outlined below.

Where present PRFs in trees were either categorised as PRF-Is; those features that are only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats; or PRF-Ms; features that could support multiple bats and may therefore be used as maternity colonies. The criteria used to categorise PRFs or suitability of buildings and trees as a roost are summarised in Table 6-4 below.

Table 6-4. Bat Roost Potential Categories (abridged, Collins, 2023)

Suitability	Description	Recommended Survey Number*	Recommended Survey Timings**
Low Roost Suitability or PRF-I Low potential is assigned to structures and trees with features that could support individual bats, opportunistically.	If no features are visible but owing to the size, age and structure, hidden features, sub-optimal for roosting bats, may occur that only an elevated inspection may reveal. In respect of ivy cover, this is not dense (i.e. providing PRF in itself) but may mask presence of PRF features. **Further survey may be required for buildings only or works may proceed using reasonable precautions (e.g. controlled working methods, under licence or supervision of a bat worker. Seasonal constraints may apply).**	**Buildings** – One survey visit. One dusk emergence survey. Although the number of required surveys should be judged on a case-by-case basis **Trees** – No further Surveys Required	**Buildings** – May to August **Trees** – No further Surveys Required
Moderate Roost Suitability Moderate potential is assigned to trees/structures with potential to support bat roosts but supports fewer features than a high potential building /	From the ground, building / tree appears to have features (e.g. holes, cavities or cracks) that may extend back into a cavity. However, owing to the characteristics of the feature, they are deemed to be sub-optimal for roosting bats.	**Buildings / trees** – Two separate dusk emergence survey visits. **Note:** Multiple survey visits should be spread to sample as much of	**Buildings / Trees** – May to September (with at least **one** of the surveys between May and August) **Note:** Survey timings should consider the prevailing conditions in the year of survey, which will vary

Suitability	Description	Recommended Survey Number*	Recommended Survey Timings**
tree and is unlikely to support a roost of high conservation value.	**Further survey is required to determine whether or not bats are present and if so, the bat species present. Appropriate mitigation and potentially licensing requirements may then be determined. Seasonal constraints may apply.**	the recommended survey period as possible, with surveys at least two weeks apart, preferably more.	geographically. The surveys should maximise the possibility of detecting maternity roosts, which can switch between pregnancy and lactation, and the **optimum coverage includes the pre-parturition, post-parturition and mating periods.**
High Roost Suitability or PRF-M Trees / buildings that are suitable for use by large numbers of bats on a regular basis	Features include holes, cracks or crevices that extend or appear to extend back to cavities suitable for bats. In buildings, examples include eaves, barge boards, gable ends and corners of adjoining beams, ridge and hanging tiles, behind roofing felt or within cavity walls. In trees, examples include rot holes, woodpecker holes, splits and flaking or raised bark which could provide roosting opportunities. Any ivy cover is sufficiently well-established and matted so as to create potential crevices beneath. **Further survey is required to determine whether or not bats are present and if so, the bat species present. Appropriate mitigation and potential licensing requirements may then be determined. Seasonal constraints may apply.**	**Buildings / trees** – Three separate dusk emergence survey visits. **Note:** Multiple survey visits should be spread to sample as much of the recommended survey period as possible, with surveys at least two weeks apart, preferably more.	**Buildings / trees** – May to September (with at least **two** of the surveys between May and August) **Note:** Survey timings should consider the prevailing conditions in the year of survey, which will vary geographically. The surveys should maximise the possibility of detecting maternity roosts, which can switch between pregnancy and lactation, and the **optimum coverage includes the pre-parturition, post-parturition and mating periods.**

6.4.3.3.4 *Bat Activity Surveys*

Night-time Bat Walkover Survey

Manual activity surveys were undertaken by two surveyors in the form of a Night-time Bat Walkover (NBW) survey. A representative transect route was selected throughout the EIAR Study Area. Transects were conducted as a standalone survey of the EIAR Study Area, with the survey commencing approximately 30 minutes before sunset and concluding approximately 2 hours after sunset. The aim of this survey was to identify the bat species using the site and gather any information on bat behaviour and important features used by bats. Transect routes were prepared with reference to the Proposed Development layout and initial walkover survey results.

Surveyors were equipped with active full spectrum bat detectors, the Batlogger M bat detector (Elekon AG, Lucerne, Switzerland) and all bat activity was recorded for subsequent analysis to confirm species identifications, as detailed in Section 3.3.3 of the Bat Report. Where possible, species identification was made in the field and any other relevant information was also noted, e.g., numbers, behaviour, features used, etc.

The survey was carried out during weather conditions suitable for bat surveying (Collins, 2023). Details of the survey are presented in Table 2-2 of the Bat Report. Conditions were suitable for bat surveys on the selected night of survey.

Static Detectors Surveys

In 2023, five full spectrum SM4 bat detectors (Wildlife Acoustics, Maynard, MA, USA), were deployed during the main bat activity period to record bat activity for an extended period. The detectors were deployed on the 3rd of August 2023 and collected on the 1st of September 2023. The five locations of static detectors were selected to represent the range of habitats present within the areas of the EIAR Study Area accessible at the time, and particularly suitable bat habitats. This data informed the scope for further survey effort in 2024.

In 2024, six full spectrum SM4 bat detectors were deployed across the EIAR Study Area. Detectors were deployed on the 2nd of May 2024 and collected on the 20th of May 2024. They were deployed in the same six locations on the 3rd of July 2024 and collected on the 30th of July 2024. The detector locations were spread out across the EIAR Study Area, including areas not previously surveyed in 2023, and covered a range of seasons i.e. spring, summer, autumn.

Settings used were those recommended by the manufacturer for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. Detectors were set to record from 30 minutes before sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method when provided with GPS coordinates. Static detector locations are shown in **Figure 2-1** of the Bat Report and presented in Table 2-3 of the Bat Report.

6.4.3.3.5 *Bat Call Analysis*

All recordings were later analysed using bat call analysis software Kaleidoscope Pro v.5.4.8 (Wildlife Acoustics, MA, USA). The aim of this was to identify, to a species or genus level, what bats were present within the EIAR Study Area over a period of time. Bat species were identified using established call parameters, to create site-specific custom classifiers. All identified calls were also manually verified.

Echolocation signal characteristics (including signal shape, peak frequency of maximum energy, signal slope, pulse duration, start frequency, end frequency, pulse bandwidth, inter-pulse interval and power spectra) were compared to published signal characteristics for local bat species (Russ, 1999). Myotis species (potentially Daubenton's bat (*M. daubentonii*), Whiskered bat (*M. mystacinus*), Natterer's bat (M. nattereri) are considered as a single group, due to the difficulty in distinguishing them based on echolocation parameters alone (Russ, 2012). The echolocation of Soprano pipistrelle (*Pipistrellus pygmaeus*) and Common pipistrelle (P. pipistrellus) are distinguished by having distinct (peak frequency of maximum energy in search flight) peak frequencies of ~55 kHz and ~46 kHz respectively. Some overlapping is possible between these species: where no certainty could be achieved, calls were identified to genus level.

Individual bats of the same species cannot be distinguished by their echolocation alone. Thus, 'bat passes' was used as a measure of activity (Collins, 2023). A bat pass was defined as a recording of an individual species/species group's echolocation containing at least two echolocation pulses and of maximum 15s duration.

Echolocation calls by brown long-eared bats (*Plectous auritus*) are intrinsically quiet and hard to record by static equipment. All data collected, including Noise files and Auto ID files are checked to ensure all calls for this species have been captured. However, a level of underrepresentation is expected for this species and is accounted for in the assessment of activity levels.

6.4.3.4 Non-volant Mammal Surveys

During the multidisciplinary walkover surveys, a comprehensive search of the EIAR Study Area for the presence of terrestrial mammal species was undertaken and the habitats present were assessed for their potential to support protected mammal species.

The survey included a search for signs of badger (*Meles meles*) and otter (*Lutra lutra*). The badger survey involved a search for all potential badger signs as per NRA (2009[5]) standard best practice guidance (latrines, badger paths and setts) and following CIEEM best practice competencies for species surveys (CIEEM, 2013). Badger surveys can be undertaken at any time of year and are most effective between November and April when vegetation cover is reduced (NRA, 2006). No limitations were identified, and a full and comprehensive survey was achieved.

The isolated drainage ditch located in the north-east of the Proposed Development site was surveyed for otter as per TII (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes). This involved a search for all otter signs e.g. spraints, scat, prints, slides, trails, couches and holts. During the survey, a search for signs of other protected mammal species including red squirrel and pine marten was also undertaken.

6.4.3.5 Invasive Species Survey

During the multi-disciplinary walkover surveys, a search for non-native invasive species was undertaken. The survey focused on the identification of invasive species listed under the First Scheule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and/or Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (As Amended) (S.I. 477 of 2011).

6.4.3.6 Survey limitations

Seasonal factors that affect distribution patterns and habits of species were taken into account when conducting the surveys. The potential of the site to support certain populations (in particular those of conservation importance that may not have been recorded during the field survey due to their seasonal absence or nocturnal/cryptic habits) was assessed.

The specialist studies, analysis and reporting have been undertaken in accordance with the appropriate guidelines. The habitats and species on the site were readily identifiable and comprehensive assessments were made during the field visit. No limitations in the scope, scale or context of the assessment have been identified.

6.4.4 Methodology for Assessment of Impacts and Effects

6.4.4.1 Identification of Target Receptors and Key Ecological Receptors

The methodology for assessment followed a precautionary approach with regard to the identification of Key Ecological Receptors (KERs). Following a comprehensive desk study "Target receptors" likely to occur in the zone of influence of the development were identified. The target receptors included habitats and species that were protected under the following legislation:

- Annexes of the EU Habitats Directive.

[5] TII/NRA (2009) guidelines (*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*).

- Qualifying Interests (QI) of Special Areas of Conservation (SAC) within the likely zone of influence.
- Special Conservation Interests (SCI) of Special Protection Areas (SPA) within the likely zone of influence.
- Species protected under the Wildlife Acts 1976 (as amended)
- Species protected under the Flora Protection Order 2022.

6.4.4.2 Determining Importance of Ecological Receptors

The importance of the ecological features identified within the site was determined with reference to a defined geographical context. This was undertaken following a methodology that is set out in Chapter 3 of the 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009). These guidelines set out the context for the determination of value on a geographic basis with a hierarchy assigned in relation to the importance of any particular receptor. The guidelines provide a basis for determination of whether any particular receptor is of importance on the following scales:

- International
- National
- County
- Local Importance (Higher Value)
- Local Importance (Lower Value)

The Guidelines clearly set out the criteria by which each geographic level of importance can be assigned. Locally Important (lower value) receptors contain habitats and species that are widespread and of low ecological significance and of any importance only in the local area. Internationally Important sites are either designated for conservation as part of the Natura 2000 Network (SAC or SPA) or provide the best examples of habitats or internationally important populations of protected flora and fauna. Specific criteria for assigning each of the other levels of importance are set out in the guidelines and have been followed in this assessment. Where appropriate, the geographic frame of reference set out above was adapted to suit local circumstances. In addition, and where appropriate, the conservation status of habitats and species is considered when determining the significance of ecological receptors.

Any ecological receptors that are determined to be of National or International, County or Local importance (Higher Value) following the criteria set out in NRA (2009) are considered to be Key Ecological Receptors (KERs) for the purposes of ecological impact assessment if there is a pathway for effects thereon. Any receptors that are determined to be of Local Importance (Lower Value) are not considered to be Key Ecological Receptors.

6.4.4.3 Characterisation of Impacts and Effects

The Proposed Development will result in a number of impacts. The ecological effects of these impacts are characterised as per the CIEEM 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (2018). These guidelines are the industry standard for the completion of Ecological Impact Assessment in the UK and Ireland.

6.4.4.4 Determining the Significance of Effects

The ecological significance of the effects of the Proposed Development are determined following the precautionary principle and in accordance with the methodology set out in Section 5 of CIEEM (2018).

For the purpose of Ecological Impact Assessment (EcIA), 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local (CIEEM, 2018).

When determining significance, consideration is given to whether:

- Any processes or key characteristics of key ecological receptors will be removed or changed
- There will be an effect on the nature, extent, structure and function of important ecological features
- There is an effect on the average population size and viability of ecologically important species.
- There is an effect on the conservation status of important ecological habitats and species.

The *Guidelines for assessment of Ecological Impacts of National Road Schemes*, (NRA, 2009) were also considered when determining significance and the assessment is in accordance with those guidelines. As per TII (NRA, 2009) and CIEEM (2018) best practice guidelines, the following key elements should also be examined when determining the significance of effects:

- The likely effects on 'integrity' should be used as a measure to determine whether an impact on a site is likely to be significant (NRA, 2009).
- A 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives (CIEEM, 2018).

Integrity

In the context of EcIA, 'integrity' refers to the coherence of the ecological structure and function, across the entirety of a site, that enables it to sustain all of the ecological resources for which it has been valued (NRA, 2009). Impacts resulting in adverse changes to the nature, extent, structure and function of component habitats and effects on the average population size and viability of component species, would affect the integrity of a site, if it changes the condition of the ecosystem to unfavourable.

Conservation status

An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status. According to CIEEM (2018) guidelines the definition for conservation status in relation to habitats and species are as follows:

- Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area
- Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

As defined in the EU Habitats Directive 92/43/EEC, the conservation of a habitat is favourable when:

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

The conservation of a species is favourable when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future

- There is and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.

According to the NRA/CIEEM methodology, if it is determined that the integrity and/or conservation status of an ecological feature will be impacted on, then the level of significance of that impact is related to the geographical scale at which the impact will occur (i.e. local, county, national, international).

6.4.4.5 Incorporation of Mitigation

Section 6.7 of this EIAR assesses the potential effects of the Proposed Development to ensure that all effects on sensitive ecological receptors are adequately addressed. Where significant effects on sensitive ecological receptors are predicted, mitigation is incorporated into the project design or layout to address such impacts. The implemented mitigation measures avoid, reduce or offset potential significant residual effects, post mitigation.

6.5 Establishing the Ecological Baseline

6.5.1 Desk Study

The following sections describe the results of an examination of available published material that was consulted as part of the desk study for the purposes of the ecological assessment. It provides a baseline of the ecology known to occur in the existing environment. Material reviewed includes the Site Synopses for designated sites within the zone of influence, as compiled by the National Parks and Wildlife Service (NPWS) of the Department of Culture, Heritage and the Gaeltacht, bird and plant distribution atlases and other research publications.

6.5.1.1 Designated Sites

6.5.1.1.1 *Designated Sites*

The potential for the Proposed Development to impact on sites that are designated for nature conservation was considered in this Chapter.

Special Areas of Conservation (SACs) and Special Protection Areas for Birds (SPAs) are designated under the EU Habitats Directive and EU Birds Directive, respectively and are collectively known as 'European Sites'. The potential for significant effects and/or adverse impacts on the integrity of European Sites is fully assessed in the Natura Impact Statement that accompanies this application. As per EPA Guidance 2022,

"a biodiversity section of an EIAR, should not repeat the detailed assessment of potential effects on European sites contained in a Natura Impact Statement" but should *"incorporate their key findings as available and appropriate"*. Section 6.7.6 of this EIAR provides a summary of the key assessment findings with regard to European Sites.

Natural Heritage Areas (NHAs) are designated under Section 18 the Wildlife (Amendment) Act 2000 and their management and protection is provided for by this legislation and planning policy. The potential for effects on these designated sites is fully considered in this Chapter.

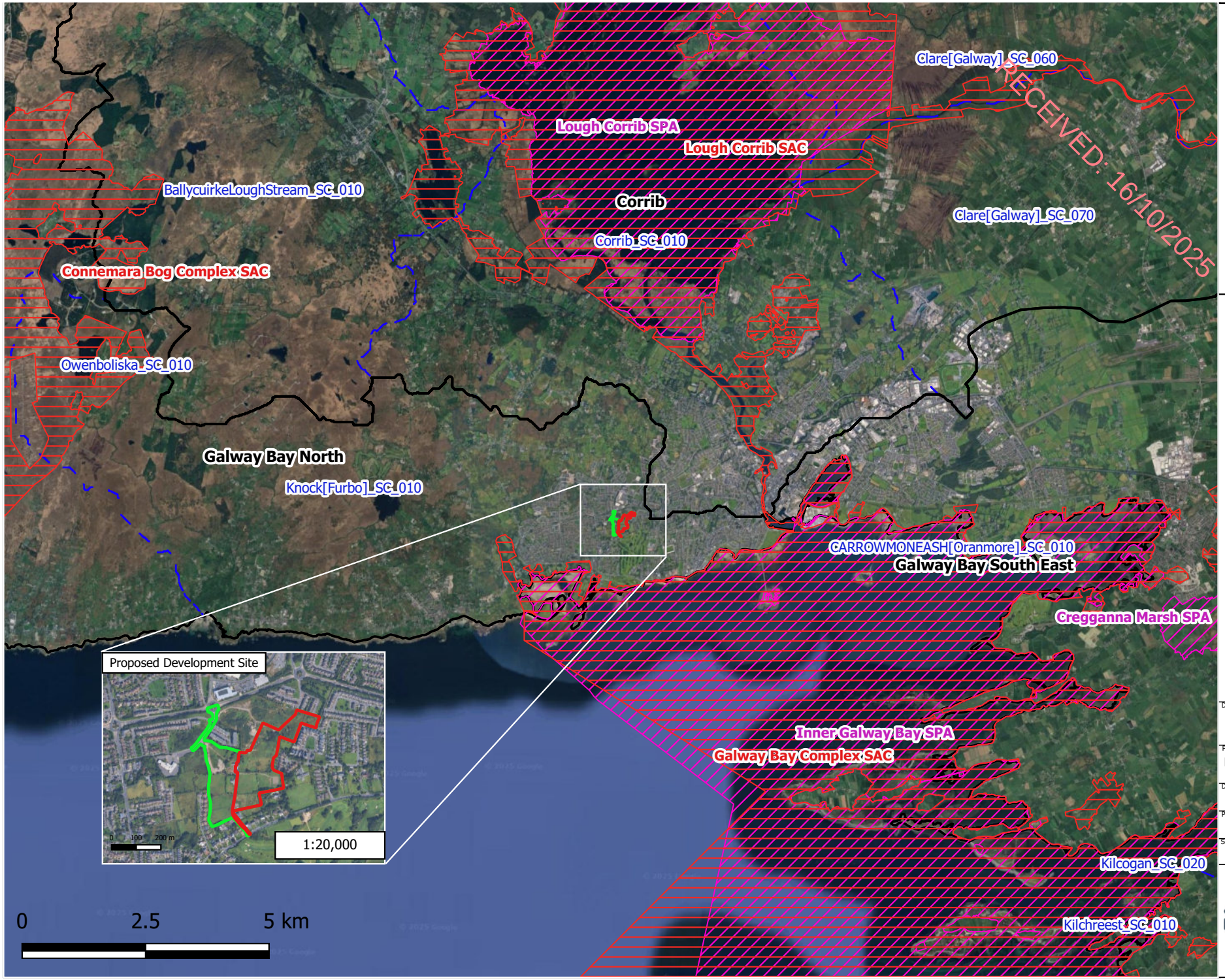
Proposed Natural Heritage Areas (pNHAs) were published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. However, the potential for effects on these designated sites is fully considered in this Chapter.

The following methodology was used to establish which sites that are designated for nature conservation have the potential to be impacted by the Proposed Development:

- Initially the most up to date GIS spatial datasets for European and Nationally designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) on the 2nd October 2025. The datasets were utilised to identify Designated Sites which could feasibly be affected by the Proposed Development.
- All Designated Sites that could potentially be affected were identified using a source-pathway - receptor model. To provide context for the assessment, all Designated Sites surrounding the Proposed Development site were considered. Information on these sites with regard to their conservation objectives is provided in Table 6-5. Sites that were further away from the Proposed Development were also considered but no complete source-pathway-receptor chain for significant effect was identified for any additional Designated Site.
- A map of all the European Sites is provided in **Figure 6-4** with all Nationally designated sites shown in **Figure 6-5**.

- Table 6-5 provides details of all relevant Nationally designated sites as identified in the preceding steps and assesses which are within the likely Zone of Influence. All European Designated Sites are fully described and assessed in the Natura Impact Statement report, submitted as part of the planning application for the Proposed Development.
- The designation features of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report (October 2025).

Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Influence and further assessment is required.



Map Legend

- Planning Application (red line) Boundary
- EIAR Study Area Boundary
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- WFD Hydrological Catchments
- WFD Hydrological Subcatchments

Drawing Title
European Designated Sites within the Likely Zone of Influence

Project Title
Kingston Knocknacarra LRD East

Drawn By	Checked By
NS	CK
Project No.	Drawing No.
240142	Figure 6-4
Scale	Date
1:100,000	16/10/2025

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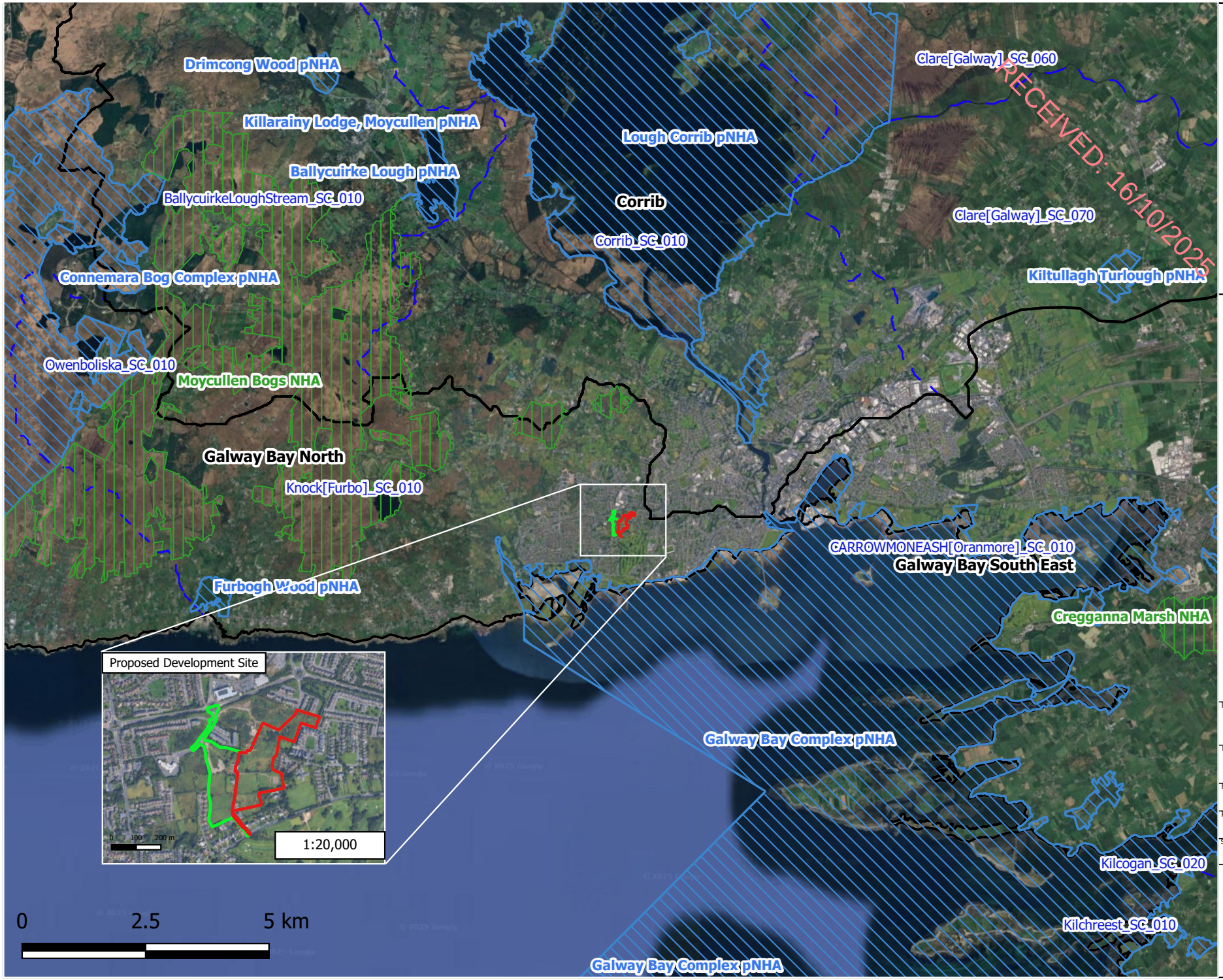

Map Legend

- Planning Application (red line) Boundary
- EIAR Study Area Boundary
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- WFD Hydrological Catchments
- WFD Hydrological Subcatchments

Drawing Title
Nationallly Designated Sites within the Likely Zone of Influence

Project Title
Kingston Knocknacarra LRD East

Drawn By	Checked By
NS	CK
Project No.	Drawing No.
240142	Figure 6-5
Scale	Date
1:100,000	16/10/2025

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Table 6-5: Identification of designated sites within the Likely Zone of Influence

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
Natural Heritage Area (NHA)		
Moycullen Bogs NHA [002364] **Distance: 1.8km**	› Peatlands	The Proposed Development is located 1.8km from this NHA. This NHA is designated for the protection of lowland blanket bogs, wetlands/lakes and faunal species such as red grouse. Given the distance between the Proposed Development and the NHA there is no potential for direct effects on the NHA. The Proposed Development site is located approx. 1.8km south/southeast of this NHA. There is no surface water connectivity between the Proposed Development and the NHA. While the Proposed Development is underlain by the same groundwater body (Spiddal) as the Moycullen Bogs NHA ,the Geological Survey Ireland (2004) description for this ground water body states 'flow paths are short, up to 100m, with groundwater discharging to nearby streams. Flow direction is generally south.' Therefore, groundwater flow direction from the site would be to the south, away from the NHA. Taking the above into account, there is no hydrological pathway for significant effects on the NHA. Due to the lack of hydrological (surface water and groundwater) connectivity between the NHA and the Proposed Development site, paired with the distance between the Proposed Development and the site , no complete source-pathway-receptor chain for likely significant effect was identified. As such, potential for direct or indirect effects on this Nationally Designated Site can be excluded. **Therefore, this Nationally Designated Site is not within the likely zone of influence, and no further assessment is required.**
Cregganna Marsh NHA [000253] **Distance: 10.8km** **Overlaps with Cregganna Marsh SPA [004142]**	› [A395] Greenland White-fronted Goose (Anser albifrons flavirostris)	The Proposed Development is located approx. 10.8km east of this NHA. This NHA overlaps with Cregganna Marsh SPA. The potential for likely significant effects on Cregganna Marsh SPA are detailed in Section 4.1 of the NIS, attached with the planning application for the Proposed Development. This NHA is designated for protection of wetlands and the protected species Greenland White-fronted Goose (*Anser albifrons flavirostris*). There is no surface water or groundwater connectivity between

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
		the Proposed Development site and this NHA and therefore no potential for indirect effects as a result of deterioration of water quality. Greenland white fronted goose was not recorded during the dedicated winter bird surveys conducted in 2024 and 2025 within the EIAR Study Area. The Proposed Development site is also outside the foraging range of this bird species (5-8km)[6]. As such there is no potential for *ex-situ* disturbance/displacement or loss of foraging habitat for this species. Due to the lack of hydrological (surface water and groundwater) connectivity between the NHA and the Proposed Development site, paired with the distance (10.8km) between the site and the NHA, and taking into consideration the results of the winter bird surveys undertaken across the EIAR Study Area, no complete source-pathway-receptor chain for significant effect was identified. As such, potential for direct or indirect effects on this Nationally Designated Site can be excluded. **Therefore, this Nationally Designated Site is not within the likely zone of influence, and no further assessment is required.**
Proposed Natural Heritage Area (pNHA)		
Galway Bay Complex pNHA [000268] **Distance: 0.8km** **Overlaps with Galway Bay Complex SAC [000268] & Inner Galway Bay SPA [004031]**	› [1140] Mudflats and sandflats not covered by seawater at low tide › [1150] Coastal lagoons › [1160] Large shallow inlets and bays › [1170] Reefs › [1220] Perennial vegetation of stony banks › [1310] Salicornia and other annuals colonising mud and sand	This site is designated for protection of wetland, coastal, and marine habitats and the protected species which inhabit them. The pNHA overlaps with Galway Bay Complex SAC and Inner Galway Bay SPA and the potential for the Proposed Development to result in likely significant effects on the SAC and SPA is assessed in the NIS which forms part of the planning application. The Proposed Development is located outside of and approx. 0.8km from this pNHA and as such there is no potential for direct effect. The potential for indirect effects on this pNHA, such as disturbance, displacement and ex-situ habitat loss, has also been considered. The Proposed Development site and this pNHA are located within the same hydrological sub-catchment (Knock [Furbo]_SC_010). There is potential hydrological connectivity between the

[6] *SNH (2016). Assessing connectivity with Special Protection Areas (SPAs). Scottish Natural Heritage, Inverness, Scotland.*

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
	› [1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) › [1355] Otter (Lutra lutra) › [1365] Harbour seal (Phoca vitulina) › [1410] Mediterranean salt meadows (Juncetalia maritimi) › [3180] Turloughs › [5130] Juniperus communis formations on heaths or calcareous grasslands › [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco Brometalia)(*important orchid sites) › [7210] Calcareous fens with Cladium mariscus and species of the Caricion davallianae › [7230] Alkaline fens › [A003] Great Northern Diver (Gavia immer) › [A017] Cormorant (Phalacrocorax carbo) › [A028] Grey Heron (Ardea cinerea) › [A046] Brent Goose (Branta bernicla hrota) › [A050] Wigeon (Anas Penelope) › [A052] Teal (Anas crecca) › [A056] Shoveler (Anas clypeata)	Proposed Development site and the Galway Bay Complex SAC in the form of surface water connection via the Knocknacarragh stream (EPA Code: 31K16) which discharges into Rusheen Bay, which is designated as part of this pNHA, approximately 1.7km downstream. The Knocknacarragh stream is culverted along the L-1010 in the north-west of the Proposed Development site. However, open sections of this watercourse exist in the wider surrounding area. Taking a precautionary approach, there is potential for indirect effects to the aquatic influenced species and habitats associated with this pNHA, via the potential for the deterioration to water quality resulting from pollutants arising due to works associated with the construction and operational phases of the Proposed Development. Both the site and this pNHA are underlain by the Spiddal Groundwater Body. Taking a precautionary approach, there is the potential for percolation of pollutants to groundwater during construction phase activities which has potential to result in significant effects on water quality in the pNHA which lies downgradient of the site. As stated by Geological Survey Ireland (2004), '*flow paths are short, up to 100m, with groundwater discharging to nearby streams. Flow direction is generally south.*' Further stated, '*Groundwater will discharge locally to streams and rivers crossing the aquifer and also to small springs and seeps. Owing to the poor productivity of the aquifers in this body it is unlikely that any major groundwater - surface water interactions occur'.* In light of this, and given the scale and duration of the works proposed, in the absence of mitigation, the construction and operational phases of the Proposed Development have potential to result in the deterioration of water quality in the pNHA via pollution to groundwaters through the percolation of polluting materials through the bedrock underlying the site. Surveys undertaken within the Proposed Development site recorded two invasive species which are listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and/or Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2011): Three-cornered leek (*Allium triquetrum*) and Sea buckthorn (*Hippophae rhamnoides*). In the absence of mitigation or treatment of these invasive species, the proposed works involved in the construction of the Proposed Development (excavations, earthworks and movement of excavated materials etc.) have the potential to exacerbate the spread of these species beyond the site boundary, including downstream to Galway Bay pNHA, via the surface water network or drainage network. The introduction of invasive species into Galway Bay pNHA, as a result of the construction of the Proposed Development, could result in degradation of the existing habitats present.

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
	• [A069] Red-breasted (Merganser Mergus serrator) • [A137] Ringed Plover (Charadrius hiaticula) • [A140] Golden Plover (Pluvialis apricaria) • [A142] Lapwing (Vanellus vanellus) • [A149] Dunlin Calidris (alpina alpina) • [A157] Bar-tailed Godwit (Limosa lapponica) • [A160] Curlew (Numenius Arquata) • [A162] Redshank (Tringa tetanus) • [A169] Turnstone (Arenaria interpres) • [A179] Black-headed Gull (Chroicocephalus ridibundus) • [A182] Common Gull (Larus canus) • [A191] Sandwich Tern (Sterna sandvicensis) • [A193] Common Tern (Sterna hirundo) • [A999] Wetlands	The Knocknacarragh stream (EPA Code: 31K16) is culverted in the vicinity of the Proposed Development site and therefore no suitable supporting habitat for otter associated with the pNHA exists within or directly adjacent to the Proposed Development site. In addition, no signs of otter activity were recorded during surveys undertaken. As such, there is no potential for *ex-situ* habitat loss or disturbance/displacement to otter associated with the construction and operational phases of the Proposed Development Grasslands occur in the south of the Proposed Development site. Individual curlew and common gull were infrequently recorded foraging within the Proposed Development site in 2024/2025 during dedicated winter bird surveys (see bird survey results in Section 6.6.1.4..3 below). It is highly likely that the curlew and gull species recorded on site were opportunists and are therefore not dependent on the habitats within the Proposed Development site. The Proposed Development site is surrounded by urban areas and no bird species for which this pNHA is designated were recorded utilizing the habitats during the bird surveys conducted during the 2024/2025 season. Despite the fact that the Proposed Development site is lcoated within the core foraging range for both Lapwing (*Vanellus vanellus*) and Brent Goose (*Branta bernicla hrota*) (Summers and Critchley, 1990, Lewis et. al. 2019), neither of these species were recorded during surveys undertaken. Therefore, it can be concluded that the Proposed Development site does not provide significant suitable supporting habitat for bird species associated with this pNHA and significant effects as a result of *ex-situ* habitat loss and/or disturbance/ displacement can be excluded. Taking a precautionary approach, a potential pathway for indirect effects on this pNHA via the deterioration of both surface and ground water quality resulting from the runoff of pollutants during the construction and operational phase of the Proposed Development was identified. **Therefore, it is considered that Galway Bay Complex pNHA is within the Likely Zone of Influence and further assessment is required.**
Lough Corrib pNHA [000297]	• [1029] Freshwater Pearl Mussel (Margaritifera margaritifera)	The Proposed Development is located outside of and approximately 2.6km to the south-west of this pNHA and as such there is no potential for direct effect. This site is designated for protection for its wetland and lake habitats as well as the protected bird species which inhabit them. The pNHA

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
Distance: 2.6km **Overlaps with Lough Corrib SAC [000297] & & Lough Corrib SPA [004042]**	› [1092] White-clawed Crayfish (Austropotamobius pallipes) › [1095] Sea Lamprey (Petromyzon marinus) › [1096] Brook Lamprey (Lampetra planeri) › [1106] Salmon (Salmo salar) › [1303] Lesser Horseshoe Bat (Rhinolophus hipposideros) › [1355] Otter (Lutra lutra) › [1393] Slender Green Feather-moss (Drepanocladus vernicosus) › [1833] Slender Naiad (Najas flexilis) › [3110] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) › [3130] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea › [3140] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. › [3260] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation › [6210] Semi-natural dry grasslands and scrubland facies	overlaps with Lough Corrib SAC and Lough Corrib SPA and the potential for the Proposed Development to result in likely significant effects on the SAC and SPA is assessed in the NIS which forms part of the planning application. The potential for indirect effects on this pNHA has also been considered. The species and habitats for which the site is designated are terrestrial, groundwater dependant, and aquatic in nature and are located 2.6km east of the Proposed Development boundary. No designated habitat or signs designated species were identified within the Proposed Development site during the surveys conducted to inform this assessment. There is no surface water connectivity between the Proposed Development site and this pNHA. Further, the Proposed Development site is underlain by a separate groundwater body (Spiddal) to the pNHA (Maam- Clonbur, Cong-Robe, Clare-Corrib, Ross Lake). Therefore, due to the buffering distance of approx. 2.6km, and the lack of a hydrological connection, there is no potential for indirect effects in the form of water/ habitat deterioration to the aquatic or groundwater influenced habitats and species associated with this pNHA. The Proposed Development site is located approx. 33km southeast from the nearest mapped foraging grounds for Lesser Horseshoe (LHS) bat for which this pNHA is designated and thus is outside the core foraging range of 2.5km for this bat species. As such, there is no potential for indirect effects to this species in the form of ex-situ habitat loss, disturbance or displacement during the construction and operational phases of the Proposed Development. Furthermore, this species was not recorded during the bat surveys undertaken to inform this assessment. A small, isolated drainage ditch was identified in the north of the Proposed Development site. No bird species were recorded utilizing this habitat on any occasion and no other wetland habitats exist within or directly adjacent to the Proposed Development site. No water was recorded at this small habitat on multiple occasions throughout 2024 and 2025. There is no potential for direct or indirect effects on the habitat 'Wetland' as a result of the Proposed Development. No significant suitable supporting habitat for waterbirds exists within the Proposed Development site. Grassland habitats recorded in the Proposed Development site have some potential to provide suitable supporting habitat for bird species such as Greenland white fronted goose which are known to

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
	on calcareous substrates (Festuco-Brometalia) (* important orchid sites) › [6410] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) › [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the Rhynchosporion › [7210] Calcareous fens with Cladium mariscus and species of the Caricion davallianae › [7220] Petrifying springs with tufa formation (Cratoneurion) › [7230] Alkaline fens › [8240] Limestone pavements › [91A0] Old sessile oak woods with Ilex and Blechnum in the British Isles › [91D0] Bog woodland › [A051] Gadwall (Anas strepera) › [A056] Shoveler (Anas clypeata) › [A059] Pochard (Aythya farina) › [A061] Tufted Duck (Aythya fuligula) › [A065] Common Scoter (Melanitta nigra) › [A082] Hen Harrier (Circus cyaneus) › [A125] Coot (Fulica atra)	forage/graze on semi-natural and improved grasslands (SNH, 2016). No Greenland White-fronted geese were recorded within the Proposed Development site during the surveys undertaken. One Common gull was recorded within the wider EIAR Study Area, but not within the Proposed Development site, during surveys undertaken. As significant numbers of designated birds were not recorded on site during the suite of bird surveys undertaken, it can be concluded that the habitats present on site do not constitute a significant ex-situ foraging resource for these species. Therefore, likely significant effects on these bird species, as a result of ex-situ habitat loss and/or disturbance/ displacement during construction can be excluded. Due to the lack of hydrological connectivity between sites paired with the distance between sites, and absence of significant supporting ex-situ habitat, no source-pathway-receptor-chain has been identified. As such, potential for direct or indirect impact on this pNHA can be excluded. **Therefore, this Nationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required.**

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
	› [A140] Golden Plover (Pluvialis apricaria) › [A179] Black-headed Gull (Chroicocephalus ridibundus) › [A182] Common Gull (Larus canus) › [A193] Common Tern (Sterna hirundo) › [A194] Arctic Tern (Sterna paradisaea) › [A395] Greenland White-fronted Goose (Anser albifrons flavirostris) › [A999] Wetlands	
Ballycuirke Lough pNHA [000228] **Distance: 6.8km**	› Wetlands and wildfowl	The Proposed Development site is located outside the boundary of and 6.8km from this pNHA and as such there is no potential for direct effect. This site is designated for its wetland and lake habitats as well as the protected bird species (Common and Herring Gull) which inhabit them. There is no surface water connectivity between the Proposed Development and this pNHA and the Proposed Development is underlain by a different groundwater body (Spiddal) than this pNHA (Ross Lake). One Common gull was recorded within the wider EIAR Study Area, but not within the Proposed Development site, during surveys undertaken. As significant numbers of designated birds were not recorded on site during the suite of bird surveys undertaken, it can be concluded that the habitats present on site do not constitute a significant *ex-situ* foraging resource for these species. Therefore, likely significant effects on these bird species, as a result of ex-situ habitat loss and/or disturbance/ displacement during construction can be excluded. Due to the absence of hydrological connectivity between sites, paired with the distance between sites, and absence of significant supporting ex-situ habitat, no potential for significant effect on the pNHA has been identified. **Therefore, this Nationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required.**

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
Furbogh Wood pNHA [001267] **Distance: 7.8km**	› Woodland	The Proposed Development is located outside the boundary of this pNHA and as such there is no potential for direct effect. This site is designated for protection for its native Oak-Hazel-Birch woodland. Due to the distance between sites, no source-pathway-receptor chain was identified for indirect effects on the terrestrial habitats of this pNHA. **Therefore, this Nationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required.**
Killarainy Lodge, Moycullen pNHA [002083] **Distance: 9.3km**	› Natterer's Bat (Myotis nattereri).	The Proposed Development is located outside the boundary of this pNHA and as such there is no potential for direct effect. This site is designated for protection as it is a nursery roost of the Natterer's Bat (*Myotis nattereri*). Due to the distance between the sites, no source-pathway-receptor-chain for significant effect on the roost associated with this pNHA was identified. As such, potential for direct or indirect effects on this pNHA can be excluded. **Therefore, this Nationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required.**
Connemara Bog Complex pNHA [0020234] **Distance: 9.9km** **Overlaps with Connemara Bog SAC [002034] & Connemara Bog SPA[004181]**	› [1065] Marsh Fritillary (Euphydryas aurinia) › [1106] Salmon (Salmo salar) › [1150] Coastal lagoons › [1170] Reefs › [1355] Otter (Lutra lutra) › [1833] Slender Naiad (Najas flexilis) › [3110] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) › [3130] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea	The Proposed Development is located outside the boundary of this pNHA and as such there is no potential for direct effect. The potential for indirect effects on this pNHA has also been considered. The pNHA overlaps with Connemara Bog Complex SAC and Connemara Bog SPA and the potential for the Proposed Development to result in likely significant effects on the SAC and SPA is assessed in the NIS which forms part of the planning application. This site is designated for protection for its terrestrial, aquatic groundwater dependent terrestrial, coast and marine habitats and protected species which inhabit these habitats. The Proposed Development site is located approx. 9.9km east of this pNHA. The Proposed Development site and this pNHA are partially located within the same hydrological sub-catchment (Knock[Furbo]_SC_010), however, no surface water connectivity exists between the Proposed Development site and this pNHA. Both the pNHA and the Proposed Development site are underlain by the Spiddal groundwater body. However, despite being underlain by the same

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
	uniflorae and/or Isoeto-Nanojuncetea › [3160] Natural dystrophic lakes and ponds › [3260] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation › [4010] Northern Atlantic wet heaths with Erica tetralix › [4030] European dry heaths › [6410] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) › [7130] Blanket bogs (* if active bog) › [7140] Transition mires and quaking bogs › [7150] Depressions on peat substrates of the Rhynchosporion › [7230] Alkaline fens › [91A0] Old sessile oak woods with Ilex and Blechnum in the British Isles › [A017] Cormorant (Phalacrocorax carbo) › [A098] Merlin (Falco columbarius) › [A140] Golden Plover (Pluvialis apricaria) › [A182] Common Gull (Larus canus	groundwater body and partially sharing the same sub-catchment, there is no potential for hydrological connectivity due to the distance between sites and the nature of the groundwater body comprising of short flow paths and a tendency for groundwater to flow southwards (Geological Survey Ireland, 2004). As such, due to the intervening distance of approx. 10km, and the lack of a hydrological connection, there is no potential for indirect effects in the form of water/ habitat deterioration to the aquatic or groundwater influenced habitats and species associated with this pNHA resulting from pollution during the construction and operational phases of the Proposed Development. No significant suitable supporting habitat for otter (*Lutra lutra*) were recorded within or directly adjacent to the Proposed Development site. In addition, Devil's-Bit Scabious (*Succisa prantensis*), which is the food plant upon which the larval stage of Marsh Fritillary butterfly (*Euphydryas aurinia*) depends, and as such a key habitat requirement for this species, was not recorded within the Proposed Development site. As such, there is no potential for indirect effects to any fauna species in the form of *ex-situ* habitat loss, disturbance or displacement during the construction and operational phases of the Proposed Development. Due to the lack of hydrological connectivity between sites paired with the distance between sites, and absence of significant supporting habitat for designated fauna species, no source-pathway-receptor chain has been identified. As such, potential for direct or indirect impact on this pNHA can be excluded. **Therefore, this Nationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required.**

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
Drimcong Wood pNHA [001260] **Distance: 10.4km**	› Woodland, lake and wetland habitats	The Proposed Development site is located outside the boundary of this pNHA and as such there is no potential for direct effect. This site is designated for protection for its woodland, lake, and wetland habitats. The Proposed Development is located approx. 10.4km southeast of this pNHA. Given the distance between the sites, no source-pathway-receptor chain was identified for indirect effects on the terrestrial habitats of this pNHA. There is no surface water connectivity between the Proposed Development and this pNHA. The Proposed Development is located within a different groundwater body (Spiddal) than this pNHA (Ross Lake). Due to the absence of hydrological connectivity between the sites paired with the distance between the sites, no source-pathway-receptor-chain for effect has been identified. **Therefore, this Nationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required.**
Kiltullagh Turlough pNHA [000287] **Distance: 10.4km**	› Turlough	The Proposed Development is located outside the boundary of this pNHA and as such there is no potential for direct effect. This site is designated for protection for its groundwater dependent turlough habitat. There is no surface water connectivity between this Proposed Development and this pNHA and the Proposed Development is underlain by a different groundwater body (Spiddal) than this pNHA (Clarinbridge). Due to the lack of hydrological connectivity between the sites paired with the distance between the sites, no source-pathway-receptor chain for effect has been identified. **Therefore, this Nationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required.**
Ross Lake And Woods pNHA [001312] **Distance: 12.4km** **Overlaps with Ross Lake and Woods SAC [001312]**	› Woodland › Wetland › [1303] Lesser Horseshoe Bat (Rhinolophus hipposideros) › [3140] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	The Proposed Development is located outside the boundary of this pNHA and as such there is no potential for direct effect. The potential for indirect effects on this pNHA has also been considered. The pNHA overlaps with Ross Lake and Woods SAC and the potential for the Proposed Development to result in likely significant effects on the SAC is assessed in the NIS which forms part of the planning application.

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
		This site is designated for protection for its lake and wetland habitats and a breeding colony of Lesser Horseshoe bat (Rhinolophus hipposideros). Due to the terrestrial nature of the Lesser Horseshoe bat for which the site is designated and the distance from the pNHA, it can be determined that the Proposed Development site lies outside the core foraging range of 2.5km for this bat species, and therefore no potential pathway for indirect effects exists. Furthermore, this species was not recorded during the bat surveys undertaken to inform this assessment. No surface water connectivity exists between the Proposed Development site and this pNHA. The Proposed Development site is underlain by a different groundwater body (Spiddal) than the Ross Lake and Woods pNHA (Ross Lake). Due to the lack of hydrological and groundwater connectivity, paired with the large distance between this SAC and the Proposed Development site, no source-pathway-receptor-chain for likely significant effect in terms of water quality has been identified. **Therefore, this Nationally Designated Site is not within the Likely Zone of Influence, and no further assessment is required.**
East Burren Complex [001936] **Distance: 13.2km** **Overlaps with East Burren Complex SAC[001926]**	› [1065] Marsh Fritillary (Euphydryas aurinia) › [1303] Lesser Horseshoe Bat (Rhinolophus hipposideros) › [1355] Otter (Lutra lutra) › [3140] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. › [3180] Turloughs › [3260] Water courses of plain to montanane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation › [4060] Alpine and Boreal heaths	The Proposed Development is located outside the boundary of these pNHAs and as such there is no potential for direct effect. The potential for indirect effects on these pNHAs has also been considered. These pNHAs overlap with the East Burren Complex SAC and Moneen Mountains SAC and the potential for the Proposed Development to result in likely significant effects on these SACs is assessed in the NIS which forms part of the planning application. No signs of otter activity or significant suitable supporting habitat otter (*Lutra lutra*) were recorded, within, or directly adjacent to, the Proposed Development site. In addition, Devil's-Bit Scabious (*Succisa prantensis*), which is the food plant upon which the larval stage of Marsh Fritillary butterfly (*Euphydryas aurinia*) depends, and as such a key habitat requirement for this species, was not recorded within the Proposed Development site. With regards to Lesser Horseshoe Bat (*Rhinolophus*

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
	› [5130] Juniperus communis formations on heaths or calcareous grasslands › [6130] Calaminarian grasslands of the Violetalia calaminariae › [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) › [6510] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) › [7210] Calcareous fens with Cladium mariscus and species of the Caricion davallianae › [7220] Petrifying springs with tufa formation (Cratoneurion) › [7230] Alkaline fens › [8240] Limestone pavements › [8310] Caves not open to the public › [91E0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	*hipposideros*), this species was not recorded during the bat surveys undertaken to inform this assessment. Furthermore, given the significant distance which exists between the Proposed Development site and these pNHAs (up to 14.3km) it can be determined that the Site lies outside the core foraging range (2.5km) for this species. As such, there is no potential for indirect effects to any terrestrial fauna species in the form of *ex-situ* habitat loss, disturbance or displacement during the construction and operational phases of the Proposed Development. In relation to the aquatic and groundwater dependant terrestrial habiats for which these pNHAs are designed, there is no surface water connectivity between sites and the sites are underlain by different groundwater bodies (Spiddal and Ballyvaughan Uplands/Burren). Due to the lack of hydrological connectivity between sites paired with the distance between sites, no complete source-pathway-receptor-chain for likely significant effects has been identified. **Therefore, these Nationally Designated Sites are not within the Likely Zone of Influence, and no further assessment is required.**
Moneen Mountain pNHA [000052] **Distance: 14.3km** **Overlaps with Moneen Mountain SAC [000054]**	› [1065] Marsh Fritillary Euphydryas aurinia › [1303] Lesser Horseshoe Bat Rhinolophus hipposideros › [3180] Turloughs* › [4060] Alpine and Boreal heaths	

Designated Site and distance from Proposed Development	Features of Interest	Likely Zone of Influence Determination
	› [5130] Juniperus communis formations on heaths or calcareous grasslands › [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) › [7220] Petrifying springs with tufa formation (Cratoneurion)* › [8240] Limestone pavements*	

6.5.1.2 Article 17 Reporting

A review of the Irish Reports for Article 17 of the Habitats Directive (92/42/EEC), including the Irish Semi-Natural Grassland Survey datasets, National Survey of Native Woodlands and Ancient and Long-Established Woodland datasets was carried out as part of this assessment.

Available NPWS datasets were downloaded and overlain on the Proposed Development site boundary. No habitats from any of these datasets were mapped within or adjacent to the Proposed Development site. The list below contains the Article 17 habitats in the wider surrounding area:

- [4030] Dry Heaths located approximately 0.7km northwest of the Proposed Development boundary.
- [1330] Atlantic salt meadows located 0.85km south of the Proposed Development boundary.
- [1140] Tidal Mudflats and Sandflats located 0.9km south of the Proposed Development boundary.
- [1160] Large Shallow Inlets and Bays located 0.9km south of the Proposed Development boundary.

It is noted that the mapped Article 17 habitats of [1330], [1140], and [1160] are located 1.9km downstream of Proposed Development site via the Knocknacarragh stream (EPA code: 31K16).

6.5.1.3 Protected Flora

The NPWS Flora (Protection) Order 2022 online map viewer[7] was consulted on the 13th OCtober 2025 for records of FPO species within or adjacent to the Proposed Development site boundary. Slender Cottongrass (*Eriophorum gracile*) and Small-white Orchid (*Pseudorchis albida*) were the only rare or protected plant species recorded within the 10km grid square (M22) within which the Proposed Development is located (FPO 2022 Map Viewer). No additional FPO species were identified.

Table 6-6: Species listed designated under the Flora Protection Order (FPO) 2022 or the Irish Red Data Book

Common Name	Scientific Name	Status
Slender Cottongrass	*Eriophorum gracile*	Red List NT, FPO (2022)
Small-white Orchid	*Pseudorchis albida*	Red List VU, FPO (2022)

Near Threatened (NT), Vulnerable (VU), Critically Endangered (CR), Regionally Extinct (RE)

6.5.1.4 National Biodiversity Data Centre (NBDC) Records

A search of the NBDC website was conducted on the 7th of April 2025. This helped to inform survey effort and provide a baseline of likely species composition in the area. Records of protected fauna (excluding birds) recorded from hectad M22 are provided in Table 6-7. Table 6-8 lists all the protected bird species recorded within the hectad M22 which pertains to the study area.

[7] *Available at:* https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=a41ef4e10227499d8de17a8abe42bd1e

Table 6-7. NBDC records for protected fauna records (excl. birds)

Common name	Scientific name	Designation
Common Newt	*Lissotriton vulgaris*	WA
Common frog	*Rana temporaria*	HD Annex V, WA
Marsh Fritillary	*Euphydryas aurinia*	HD Annex II,
Bottle-nosed Dolphin	*Tursiops truncatus*	HD Annex II, IV, WA
Common Dolphin	*Delphinus delphis*	HD Annex IV, WA
Common Porpoise	*Phocoena phocoena*	HD Annex II, IV, WA
Common Seal	*Phoca vitulina*	HD Annex II, V, WA
Cuvier's Beaked Whale	*Ziphius cavirostris*	HD Annex IV, WA
Grey Seal	*Halichoerus grypus*	HD Annex II, V, WA
Long-finned Pilot Whale	*Globicephala melas*	HD Annex IV, WA
Minke Whale	*Balaenoptera acutorostrata*	HD Annex IV, WA
Pygmy Sperm Whale	*Kogia breviceps*	HD Annex IV, WA
Striped Dolphin	*Stenella coeruleoalba*	HD Annex IV, WA
Leathery Turtle	*Dermochelys coriacea*	HD Annex IV, WA
Hedgehog	*Erinaceus europaeus*	WA
Otter	*Lutra lutra*	HD Annex II, IV, WA
Pine marten	*Martes martes*	HD Annex V, WA
Badger	*Meles meles*	WA
Irish Hare	*Lepus timidus subsp. hibernicus*	HD Annex V, WA
Irish Stoat	*Mustela erminea subsp. hibernica*	WA
Daubenton's bat	*Myotis daubentonii*	HD Annex IV, WA
Natterer's Bat	*Myotis nattereri*	HD Annex IV, WA
Leisler's bat	*Nyctalus leisleri*	HD Annex IV, WA
Soprano pipistrelle	*Pipistrellus pygmaeus*	HD Annex IV, WA
Common Pipistrelle	*Pipistrellus pipistrellus sensu lato*	HD Annex IV, WA
Brown Long-eared Bat	*Plecotus auritus*	HD Annex IV, WA
Lesser Horseshoe Bat	*Rhinolophus hipposideros*	HD Annex II, IV, WA
Red Squirrel	*Sciurus vulgaris*	WA

Common name	Scientific name	Designation
Common Lizard	*Zootoca vivipara*	WA
Pygmy Shrew	*Sorex minutus*	WA

Table 6-8: NBDC records for Birds

Common name	Scientific name	Designation
Arctic Tern	*Sterna paradisaea*	Annex I
Barn Owl	*Tyto alba*	BoCCI Red List
Bar-tailed Godwit	*Limosa lapponica*	Annex I
Black-headed Gull	*Larus ridibundus*	BoCCI Red List
Black-throated Diver	*Gavia arctica*	Annex I
Common Scoter	*Melanitta nigra*	BoCCI Red List
Common Tern	*Sterna hirundo*	Annex I
Corncrake	*Crex crex*	Annex I, BoCCI Red List
Curlew	*Numenius arquata*	Annex I, BoCCI Red List
Dunlin	*Calidris alpina*	Annex I
Great Northern Diver	*Gavia immer*	Annex I
Grey Partridge	*Perdix perdix*	BoCCI Red List
Hen harrier	*Circus cyaneus*	Annex I
Herring Gull	Larus argentatus	BoCCI Red List
Little Egret	*Egretta garzetta*	Annex I
Little Gull	*Larus minutus*	Annex I
Little Tern	*Sternula albifrons*	Annex I
Mediterranean Gull	*Larus melanocephalus*	Annex I
Merlin	*Falco columbarius*	Annex I
Northern Lapwing	*Vanellus vanellus*	BoCCI Red List
Northern Pintail	*Anas acuta*	BoCCI Red List
Northern Shoveler	*Anas clypeata*	BoCCI Red List
Peregrine	*Falco peregrinus*	Annex I
Red Grouse	*Lagopus lagopus*	BoCCI Red List

Common name	Scientific name	Designation
Red Knot	*Calidris canutus*	BoCCI Red List
Sandwich Tern	*Sterna sandvicensis*	Annex I
Golden plover	*Pluvialis apricaria*	Annex I, BoCCI Red List
Snowy Owl	*Bubo scandiaca*	Annex I
Twite	*Carduelis flavirostris*	BoCCI Red List
Whooper Swan	*Cygnus cygnus*	Annex I
Yellowhammer	*Emberiza citrinella*	BoCCI Red List
Redshank	*Tringa totanus*	BoCCI Red List
Kingfisher	*Alcedo atthis*	Annex I

Annex 1 = EU Birds Directive; BoCCI = Birds of Conservation Concern in Ireland.

6.5.1.5 NPWS Protected Species Records

An information request was also sent to the NPWS scientific data unit requesting records from the Rare and Protected Species Database on the 15th of March 2024. A response was received on the 17th January 2025 detailing records within a 10km radius of the site. Table 6-9 lists rare and protected species records obtained from NPWS.

Table 6-9. NPWS records for rare and protected species

Common Name	Scientific Name	Status
Common Lizard	*Zootoca vivipara/Lacerta vivipara*	WA
Common Newt	*Lissotriton vulgaris*	WA
Common Frog	*Rana temporaria*	WA, Annex V
Sea Lamprey	*Petromyzon marinus*	Annex II
Hedgehog	*Erinaceus europaeus*	WA
Otter	*Lutra lutra*	WA, Annex II, Annex IV
Badger	*Meles meles*	WA
Harbour seal	*Phoca vitulina*	WA, Annex II, Annex V
Harbour Porpoise	*Phocoena phocoena*	WA, Annex II, Annex IV
Lesser Horseshoe Bat	*Rhinolophus hipposideros*	WA, Annex II, Annex IV
Small-white Orchid	*Pseudorchis albida*	FPO, VU
Irish Hare	*Lepus timidus subsp. hibernicus*	Annex V, WA
Lapwing	*Vanellus vanellus*	BOCCI Red

Common Name	Scientific Name	Status
Curlew	*Numenius arquata*	BOCCI Red
Henbane	*Hyoscyamus niger*	NT
Yellow Bird's-nest	*Monotropa hypopitys*	NT
Yellow Horned-poppy	*Glaucium flavum*	NT
Autumn Gentian	*Gentianella amarella subsp. hibernica*	NT
Field Gentian	*Gentianella campestris*	NT
Irish Whitebeam	*Sorbus hibernica*	VU
Good-King-Henry	*Chenopodium bonus-henricus*	VU
Slender Cottongrass	*Eriophorum gracile*	FPO, NT
Barn Owl	*Tyto alba*	BOCCI Red
Snipe	*Gallinago gallinago*	BOCCI Red
Greater Knapweed	*Centaurea scabiosa*	NT
Sea-kale	*Crambe maritima*	NT
Dwarf Spurge	*Euphorbia exigua*	NT
Dwarf Mallow	*Malva neglecta*	NT
West European Hedgehog	*Erinaceus europaeus*	WA
Irish Stoat	*Mustela erminea subsp. hibernica*	WA
Knotted Hedge-parsley	*Torilis nodosa*	NT
Awlwort	*Subularia aquatica*	VU
Spiked Sedge	*Carex spicata*	NT
Dense-flowered Orchid	*Neotinea maculata*	NT

VU = Vulnerable, NT = Near Threatened, WA = Wildlife Act, Flora Protection Order (FPO), Birds of Conservation Concern Ireland (BoCCI)

6.5.1.6 Invasive Species

The NBDC database also contains records of invasive species identified within the relevant hectad (M22). Records of invasive species listed in the Third Schedule of the First Scheule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and/or European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) for hectad M22 are provided in Table 6-10.

Table 6-10. NBDC records for invasive species (hectad M22)

Common Name	Scientific Name
*American Mink	*Mustela vison*
*Japanese Knotweed	*Fallopia japonica*
*Rhododendron	*Rhododendron ponticum*
*Wireweed	*Sargassum muticum*
*Roach	Rutilus rutilus
*Water Fern	Azolla filiculoides
*Canadian Waterweed	*Elodea canadensis*
*Japanese and Giant Knotweed hybrid	*Fallopia japonica x sachalinensis = F. x bohemica*
*Giant Knotweed	*Fallopia sachalinensis*
*Giant-rhubarb	*Gunnera tinctoria*
*Himalayan Knotweed	*Persicaria wallichii*
* Himalayan Balsam	*Impatiens glandulifera*
*Spanish Bluebell	*Hyacinthoides hispanica*
*Three-cornered Garlic	*Allium triquetrum*
*Zebra Mussel	*Dreissena polymorpha*
+Brown Rat	*Rattus norvegicus*

**Species subject to restrictions under Regulations 49 and 50 and are included in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) include legislative measures to deal with the introduction, dispersal, dealing in and keeping of non-native species.*

6.5.1.7 Freshwater Pearl Mussel (*Margaritifera margaritifera*)

The site is not located within any *Margaritifera* catchment. The NPWS *Margaritifera* Sensitive Area map (Version 8, 2017) was consulted during the desk study. There is no surface water connectivity between the Proposed Development site and any *Margaritifera* catchment.

6.5.1.8 Hydrology

On a regional scale, the site is located within Hydrometric Area 31 - Galway Bay North. It lies within the Galway Bay North catchment and the Knock [Furbo]_SC_010 sub-catchment, as defined under the Water Framework Directive (WFD). A regional hydrology map is provided in **Figure 8-1** of Chapter 8.

At the local scale, the site is situated within the Knocknacarragh_010 sub-basin. There are currently no open surface watercourses present on the site. One isolated drainage ditch of approx. 30m is present in the north-east of the Proposed Development site. This drainage ditch has no connectivity to watercourses in the surrounding area and stagnant water was observed in it during surveys undertaken. The nearest surface water feature is the Knocknacarragh_010 Stream, which originates northwest of the site at Letteragh and flows southward for approximately 3km before discharging to the sea.

A substantial portion of the lower reach of the Knocknacarragh Stream is culverted, extending nearly to its sea outfall at Rusheen Bay, near Blakes Hill in Salthill. A local hydrology map is provided in **Figure 8-2** of Chapter 8.

6.5.1.8.1 *Water Quality*

River Basin Management Plans (RBMPs) have been published for all River Basin Districts in Ireland in accordance with the requirements of the Water Framework Directive. The online EPA Envision map viewer provides access to water quality information at individual waterbody status for all the River Basin Districts in Ireland. The site is located within the Galway Bay North catchment [Code: 31] and the Knock[Furbo]_SC_010 (Code: 31_7). The EPA Envision map viewer was consulted on 13th October 2025 regarding the water quality status of the rivers which run adjacent to and downstream of the Proposed Development site. The WFD River Waterbody Status 2016 -2021 for these watercourses are listed in Table 6-11 below.

Table 6-11: Watercourses within and downstream of the site with relevant water quality statuses

Name	Location	Status	Risk
Knocknacarragh_010 [Code: E_WE_31K160960]	North of the Proposed Development boundary. Flowing in a south-westerly direction to Galway Bay.	Poor	Review
Barna (Stream)_010 [Code: IE_WE_31B010200]	Located 0.9km west of the Proposed Development boundary. Flowing in a southerly direction exiting into the Galway Bay.	Moderate	Review

Status– WFD River Waterbody Status 2016 -2021 Risk – WFD River Waterbodies Risk

6.5.1.9 Conclusions of the Desktop Study

The desktop study has provided information about the existing environment in Hectad M22.

No mapped Article 17 habitat exists within or directly adjacent to the Proposed Development site. The Proposed Development site is located in close proximity to Knocknacarragh Stream (EPA code: 31K16) which is culverted. The Knocknacarragh Stream flows downstream into Galway Bay Complex SAC/pNHA and Inner Galway Bay SPA and these are further considered in the Natura Impact Statement prepared for the Proposed Development and/or in Section 6.7.6 below.

The desk study identified that a variety of protected faunal species are known to occur within the area, including bats, otter and badger. The mammal species records identified during the desk study informed the survey methodologies undertaken during the site visits. The mammal species recorded within the relevant hectad have widespread range and distributions in Ireland and are likely to be recorded frequently throughout Ireland (Marnell *et al*, 2009[8]). The site is not located within a freshwater pearl mussel 'sensitive area'.

The desk study also provided useful information to inform the ecological surveys undertaken on site as well as the identification of pathways for potential impacts on sensitive ecological receptors.

[8] *Marnell, F., Kingston, N. & Looney, D. (2009) Ireland Red List No. 3: Terrestrial Mammals, National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.*

6.6 Ecological Walkover Survey Results

As noted in Section 6.4, ecological surveys were carried out across the EIAR Study Area which includes lands to the west of the LRD application boundary. The lands to the west will be the subject of a future planning application. The results presented in the below subsections comprise all data gathered during surveys of the entire EIAR Study Area. Where data presented relates only to the lands within the LRD application boundary this is clearly stated.

6.6.1 Description of Habitats, Flora & Fauna within the Ecological Survey Area

A total of nine habitats/ habitat mosaics were recorded within the Proposed Development site and wider EIAR Study Area (Table 6-12). A habitat map outlining the distribution of habitats identified within the Proposed Development Site and wider EIAR Study Area is provided in Figure 6-6 and a habitat map with the site layout plan overlain is provided in **Figure 6-7**.

Table 6-12: Habitats recorded within the Proposed Development site wider EIAR Study Area

Habitat Name	Fossitt Code
Recolonizing bare ground/Spoil and bare ground	ED3/ED2
Treeline	WL2
Buildings and artificial surfaces	BL3
Stone walls and other stonework	BL1
Dry meadows and grassy verges	GS2
Dry calcareous and neutral grassland	GS1
Scrub	WS1
Hedgerow	WL1
Drainage ditch	FW4

Map Legend

- Planning Application (red line) Boundary
- EIAR Study Area Boundary
- Drainage Ditches (FW4)
- Hedgerows (WL1)
- Treelines (WL2)
- Stone walls and other stonework (BL1)
- Buildings and artificial surfaces (BL3)
- Spoil and bare ground (ED2)
- Recolonising bare ground (ED3)
- Improved agricultural grassland (GA1)
- Dry calcareous and neutral grassland (GS1)
- Dry meadows and grassy verges (GS2)
- Scrub (WS1)

Drawing Title

Habitat Map

Project Title: Kingston Knocknacarra LRD East	
Drawn By: FK/ CK	Checked By: SM
Project No.: 240142	Drawing No.: Figure 6-6
Scale: 1:3,000	Date: 15.10.2025

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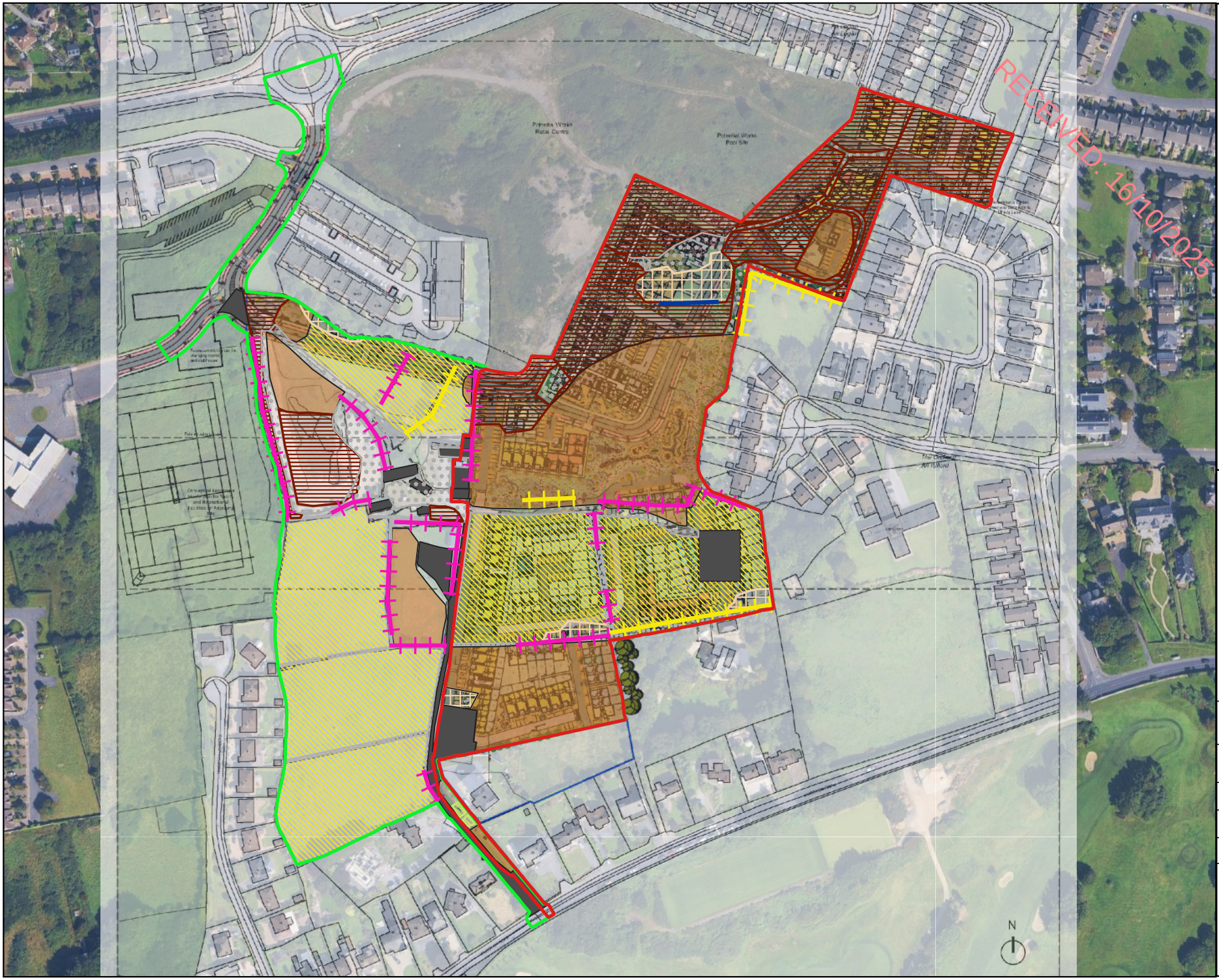

Map Legend

- Planning Application (red line) Boundary
- EIAR Study Area Boundary
- Drainage Ditches (FW4)
- Hedgerows (WL1)
- Treelines (WL2)
- Stone walls and other stonework (BL1)
- Buildings and artificial surfaces (BL3)
- Spoil and bare ground (ED2)
- Recolonising bare ground (ED3)
- Improved agricultural grassland (GA1)
- Dry calcareous and neutral grassland (GS1)
- Dry meadows and grassy verges (GS2)
- Scrub (WS1)

Drawing Title
Habitat Map with Site Layout Overlain

Project Title
Kingston Knocknacarra LRD East

Drawn By	Checked By
FK/ CK	SM
Project No.	Drawing No.
240142	Figure 6-7
Scale	Date
1:3,000	14.10.2025

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6.6.1.1 Habitats within the Proposed Development Site Boundary

The northern portion of the Proposed Development site is comprised largely of large mounds of exposed gravel, rock piles, mulch, rubble and revegetating areas occurring as mosaics of Recolonising bare ground (ED3)/Spoil and bare ground (ED2). The other habitats recorded within the northern portion of the site include transitional grassland, classified as Dry meadows and grassy verges (GS2), and Scrub (WS1) with Treelines (WL2) along the eastern boundary. Treelines (WL2) are found along the site boundary occasionally.

The southern portion of the Proposed Development site is dominated by Dry calcareous and neutral grassland (GS1), with Dry meadows and grassy verges (GS2) occurring less frequently. Patches of Scrub (WS1) occur towards the boundaries and existing areas of Buildings and Artificial Surfaces (BL3) and their associated access tracks (Spoil and bare ground (ED2)) are also present. Stone walls and other stonework (BL1), Treeline (WL2) and Hedgerow (WL1) habitats are found along field boundaries.

A description of the main habitats within the EIAR Study Area, which includes the Proposed Development site, is provided below.

6.6.1.1.1 *Recolonising bare ground (ED3) & Spoil and bare ground (ED2)*

The majority of the northern parcel of the EIAR Study Area, and much of the Proposed Development site, has been subject to deposition of construction waste and consists mainly of large mounds of exposed gravel, mulch, rubble, stones, and areas of exposed gravel. A small pocket of disturbed ground dominated by willow scrub (WS1), large stone piles and uneven grassy mounds was recorded. Vegetative regrowth in the form of forb and woody species including bramble and gorse was recorded recolonising these areas. This area is therefore categorised as a mosaic habitat of Recolonising bare ground (ED3)/Spoil and Bare Ground (ED2). Vegetation has been cleared/mulched in the north-east of the Proposed Development site and is subject to regrowth (Plate 6-1 to Plate 6-3). Machinery tracks identified in the north of the EIAR Study Area have been classified as Recolonising bare ground (ED3) habitat. Semi-mature conifers, a mature Italian alder (*Alnus cordata*) and a single ash tree (*Fraxinus excelsior*) were recorded in the north-east of the Proposed Development site.

Recolonising spoil heaps, rocks piles and earth mounds were identified in the north of the EIAR Study Area. These areas have been recolonised by a variety of species including Bracken (*Pteridium aquilinum),* Common Sedge (*Carex nigra*), White Clover (*Trifolium repens*), Field Horsetail (*Equisetum arvense*), Springy turf-moss (*Rhytidiadelphus squarrosus),* Pointed Spear-moss (*Calliergonella cuspidata),* Heath plait-moss *(Hypnum jutlandicum),* Field Wood-rush *(Luzula campestris),* Sow thistle (*Sonchus spp.),* Nettle (*Urtica dioica*), Creeping Buttercup (*Ranunculus repens*), Germander Speedwell (*Veronica chamaedrys*), Ragwort (*Jacobaea vulgaris*), Dandelion (*Taraxacum vulgaria*), Creeping Thistle (*Cirsium arvense*), Tansy (*Tanacetum vulgare*), Yellowwort (*Blackstonia perfoliate*), Common Figwort (*Scrophularia nodosa*), Bush Vetch (*Vicia sepium*), Red Clover (*Trifolium Pratense*) and Hawkweed (*Hieracium hibernicum*). Herb-Robert (*Geranium robertianum*), Hedge Mustard (*Sisymbrium officinale*), Greater Bird's-foot Trefoil (*Lotus pedunculatus),* Hop Trefoil *(Trifolium campestre*), Black Medick (*Medicago lupulina),* Common Sorrel (*Rumex acetosa*), Cat's Ear (*Hypochaeris radicata*), Kidney vetch (*Anthyllis vulneraria*), Bittersweet (*Solanum dulcamara*), Red Valerian (*Centranthus ruber*), Great Mullein (*Verbascum Thapsus),* Foxglove (*Digitalis purpurea*), Field Bindweed (*Convolvulus arvensis*), Rosebay Willowherb (*Chamaenerion angustifolium*), Sticky Mouse-ear (*Cerastium glomeratum*), Field Forget-me-not (*Myosotis arvensis*), Rapeseed (*Brassica napus*), Oxeye Daisy (*Leucanthemum vulgare*), Sweet Vernal Grass (*Anthoxanthum odoratum*), Mouse-ear Hawkweed (*Pilosella officinarum*), Weld (*Reseda luteola*), Ribwort Plantain (*Plantago lanceolata),* Greater Plantain (*Plantago major),* Yarrow (*Achillea millefolium*), Gorse (*Ulex europaeus*), Bramble (*Rubus fruticosus*), Pignut (*Conopodium majus*), Colt's Foot (*Tussilago farfara),* Silverweed (*Potentilla anserina*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Cleavers (*Galium aparine*), Self-heal (*Prunella vulgaris*), Scarlet Pimpernel (*Anagallis arvensis*) and Yorkshire Fog (*Holcus lanatus*) were also occurred.

Butterfly bush (*Buddleja davidii*) was recorded growing extensively on the large rock piles throughout the northern portion of the EIAR Study Area. This plant species is considered a second schedule, medium impact invasive species, as per the National Biodiversity Data Centre (NBDC).

Plate 6-1. View of mulched vegetation and machinery tracks classified as Recolonising bare ground (ED3) /Spoil and bare ground (ED2) in the north of the EIAR Study Area .

Plate 6-2. View of recolonising rock and stone piles located in the north of the EIAR Study Area. Dry meadows and grassy verges (GS2) habitat was also recorded in this section of the EIAR Study Area .

Plate 6-3. View of black pine and Italian alder trees in the north-east of the Proposed Development site, occurring in an area of Recolonising bare ground ED3/Spoil and bare ground ED2 and Dry meadows and grassy verges (GS2) habitat.

6.6.1.1.2 Treeline (WL2)

Treeline (WL2) habitat dominated by mature Sycamore (*Acer pseudoplatanus*) and Ash (*Fraxinus excelsion*) trees was recorded in the centre of the EIAR Study Area acting as a field boundary adjacent to the existing stables (Plate 6-4). A treeline (WL2) habitat was recorded at the south-eastern boundary of the EIAR Study Area, also dominated by sycamore trees.

Plate 6-4. View of section of treeline (WL2) habitat dominated by ash and sycamore, recorded in the west of the EIAR Study Area.

6.6.1.1.3 Buildings and Artificial surfaces (BL3) and Stone walls and other Stonework (BL1)

Stone walls were recorded throughout the EIAR Study Area (Plate 6-5) and are categorised as Stone walls and other stonework (BL1). The vast majority of field margins throughout the EIAR Study Area are delineated by old and lightly vegetated stone walls.

Existing residential and farm buildings exist in the centre of the EIAR Study Area. Residential dwellings and dog kennels are located in the centre and south of the EIAR Study Area classified as Buildings and artificial surfaces (BL3). The EIAR Study Area is immediately surrounded by residential dwellings to the north, south and east. The existing access road in the south of the Proposed Development site, old farm buildings, modern stables, horse-riding arena and hay barns were classified as Buildings and artificial surfaces (BL3) (Plate 6-6, Plate 6-7). Species recorded at the old farm buildings include Ivy (*Hedera hibernica)*, Rusty Back Fern (*Asplenium ceterach*), Maiden Hair Spleenwort (*Asplenium trichomanes*), Polypody (*Polypodium spp.*) and Hart's Tongue Fern (*Asplenium scolopendrium*). Woody species recorded surrounding the stables in the centre of the EIAR Study Area include Hawthorn, Sycamore and Privet (*Ligustrum spp.).* Himalyan Honeysuckle *(Leycesteria formosa)* was recorded by a field margin in the west of the EIAR Study Area. This plant species is not listed on the Third Schedule (S.I.447 2011) European Communities (Birds and Natural Habitats) Regulation 2011 or the First Schedule (S.I. 374/2024 -European Union (Invasive Alien Species) Regulations 2024. This plant is considered an invasive species of medium impact according to the NBDC.

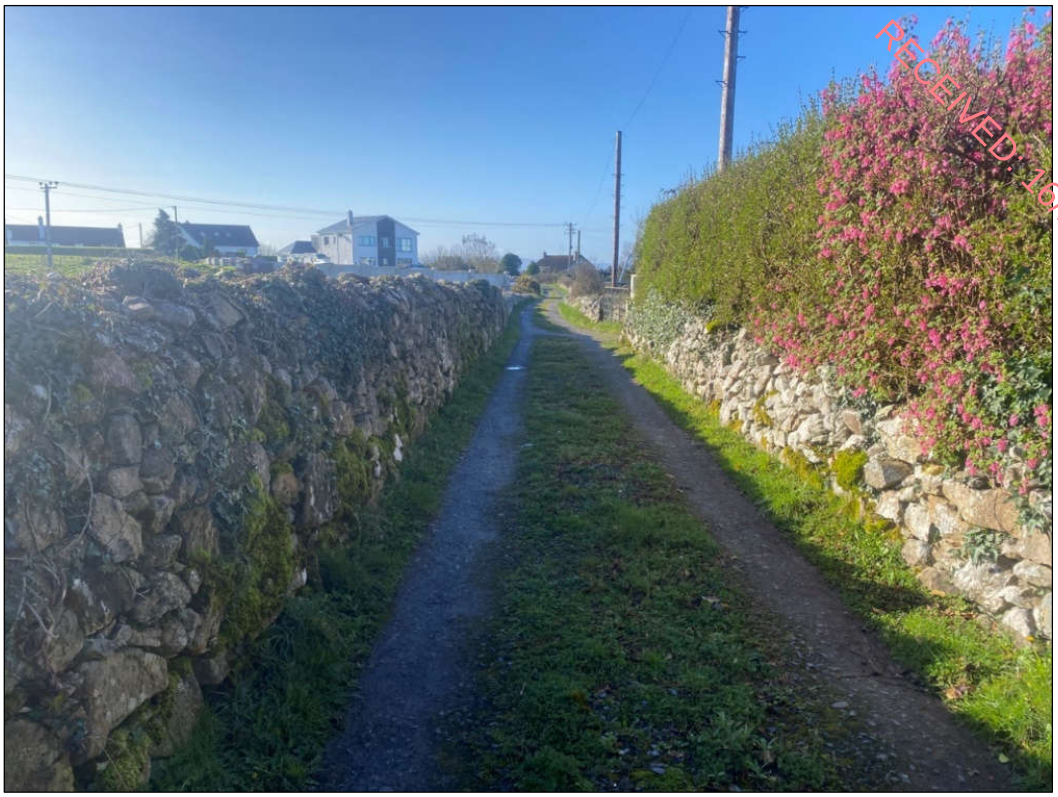

Plate 6-5. View of stone walls classified as Stone walls and other stonework (BL1) located in the south of the EIAR Study Area adjacent to the existing residential dwelling classified as Buildings and artificial surfaces (BL3).

Plate 6-6. View of old stone farm sheds and newly built stables classified as Buildings and artificial surfaces (BL3) located in the centre of the EIAR Study Area.

Plate 6-7. View of fenced horse-riding sand arena located in the east of the Proposed Development site classified as Buildings and artificial surfaces (BL3).

6.6.1.1.4 Dry Meadows and Grassy Verges (GS2)

Dry meadows and grassy verges (GS2) habitat occurs throughout the EIAR Study Area and comprises a large proportion of the Proposed Development site. The grassy verges identified running along the existing road and farm tracks in the south of the Proposed Development site are categorised as Dry meadows and grassy verges (GS2). Unmanaged grassland habitat, categorised as Dry meadows and grassy verges (GS2), was identified in the centre of the EIAR Study Area (Plate 6-8). This grassland is currently ungrazed. Semi-mature Basket Willows (*Salix viminalis*) were recorded in this section of the EIAR Study Area. Butterfly bush was recorded adjacent to this habitat by the eastern boundary while stone walls, hedgerow and individual mature trees delineated the northern and southern portions of the EIAR Study Area.

A mosaic of Dry meadows and grassy verges (GS2)/Dry calcareous and neutral grassland (GS1) was recorded in the south-east of the site by the dog kennels, along the edges of the existing road/access tracks and colonising the disturbed ground in the north of the site (Plate 6-9 and Plate 6-10).

Species recorded in this habitat include Ribwort Plantain (*Plantago lanceolata*), Dandelion, Meadow Buttercup (*Ranunculus acris*), Creeping Buttercup (*Ranunculus repens*), Yarrow (*Achillea millefolium*), Germander Speedwell (*Veronica chamaedrys*), Red Clover, Broad leaved Willowherb (*Epilobium montanum),* Sweet Vernal Grass (*Anthoxanthum odoratum*), Marsh Thistle (*Cirsium palustre),* Meadow grass (*Poa annua*), Common Vetch (*Vicia sativa ssp. segetalis*), Ragwort, Bramble (*Rubus fruticosus agg.*), Cocks' foot (*Dactylis glomerata*), Nettle, Meadow Foxtail (*Alopecurus pratensis*), Common Dog Violet (*Viola riviniana*), Curly dock (*Rumex crispus*), Common Bent Grass (*Agrostis capillaris*), Pignut, Sow thistle, Hogweed (*Heracleum sphondylium*), Red Fescue (*Festuca rubra*), Yorkshire Fog (*Holcus lanatus*), Cowslip (*Primula veris*), Greater Willowherb (*Epilobium hirsutum*), Sorrel, Yellow Flag Iris (*Iris pseudacorus*), Silverweed (*Potentilla anserina*), Hedge Mustard (*Sisymbrium officinale*), Cleavers, Cuckoo Flower (*Cardamine pratensis*), Soft Rush (*Juncus effusus*), Common Poppy (*Papaver rhoeas*), White Clover, Bracken (*Pteridium aquilinum*), Hart's Tongue Fern, Herb Robert and Bittersweet (*Solanum dulcamara*).

A hardy Fuchsia (*Fuchsia spp.)* bush occurs by the roadway in the south of the Proposed Development site. Hedge Woundwort (*Stachys sylvatica*) was recorded by the roadside.

Plate 6-8. View of unmanaged Dry meadows and grassy verges (GS2) recorded in the centre of the EIAR Study Area.

Plate 6-9. View of Dry meadows and grassy verges (GS2)/Dry calcareous and neutral grassland (GS1) habitat in the south of the Proposed Development site by the dog pens.

6.6.1.1.5 Dry Calcareous and Neutral Grassland GS1

The majority of the southern portion of the Proposed Development site is dominated by managed Dry calcareous and neutral grassland (GS1) habitat and is considered a species rich grassland (Plate 6-10). Stone walls categorised as Stone walls and other stonework (BL1) make up field margins in the southern portion of the Proposed Development site. The grassland is heavily poached in areas due to grazing (Plate 6-11).

Species recorded in areas of Dry Calcareous and Neutral Grassland (GS1) include Ribwort Plantain, Oxeye Daisy (*Leucanthemum vulgare*), Cowslip, Buttercups (*Ranunculus bulbosus & Ranunculus acris*), Field Rush, Red Clover (*Trifolium pratense*), Dandelion, Dock (*Rumex spp.*), Ragwort (*Jacobaea vulgaris*), Field Speedwell (*Veronica persica),* Germander Speedwell (*Veronica chamaedrys*), White Clover (*Trifolium repens*), Hawksbit (*Leontodon spp.*), Common Mouse-ear (*Cerastium fontanum*), Thyme Leaved Speedwell (*Veronica serpyllifolia*), Daisy (*Bellis perennis*), Curly Dock (*Rumex crispus*), Silverweed, Greater Plantain (*Plantago major*), Sorrel, Nettle, Meadow Grass (*Poa annua*), Rough Meadow Grass (*Poa trivialis*), Birds Foot Trefoil (*Lotus corniculatus*), *Festuca spp.,* Knapweed (*Centaurea nigra*), Yarrow (*Achillea millefolium*), Sweet Vernal (*Anthoxanthum odoratum*), Redshank (*Persicaria maculosa*), Selfheal and Pignut. Meadowsweet (*Filipendula ulmaria*) and Meadow Vetchling (*Lathyrus pratensis*) were also found.

Common Haircap (*Polytrichum commune),* Hypnum moss *(Hypnum compressiforme),* Springy Turf-moss *(Rhytidiadelphus squarrosus),* Silky Wall Feather-moss *(Homalothecium sericum)* were recorded on a stoney outcrop in the east of the Proposed Development site.

This habitat does not align with the Annex I habitat type 'Semi-natural dry grassland and scrubland facies on calcareous substrates (Festuco-Brometea) [6210]' owing to its species composition which demonstrates a lack of positive indicator species typical of this Annex I habitat type. Only one high-quality positive indicator species (Cowslip) and three positive indicator species (*Ranunculus bulbosus, Leontodon spp.* and *Lotus corniculatus)* were recorded here, while four negative indicator species occurred (Nettle, White clover, Ragwort, Curly dock).

Plate 6-10. View of unmanaged dry calcareous and neutral grassland (GS1) and stone wall (BL1) located in the south of the Proposed Development site.

Plate 6-11. View of heavily poached area in the south-west of the EIAR Study Area due to horses grazing the fields.

6.6.1.1.6 Scrub (WS1)

Two small, isolated pockets (approx. 0.052ha) of Hawthorn and Blackthorn dominated Scrub (WS1) habitat occur in the east of the Proposed Development site (Plate 6-12). Species recorded include Curly Dock (*Rumex crispus*), Ribwort Plantain, Germander Speedwell, Ivy Leaved Speedwell (*Veronica hederifolia*), Meadow Buttercup, Pignut, Knapweed (*Centaurea nigra)*, Herb Robert (*Geranium robertianum*), Field Wood Rush (*Luzula campestris*), Wood Avens (*Geum urbanum*), Wood dock (*Rumex sanguineus*), Lesser Celandine (*Ficaria verna ssp verna*), Enchanter's nightshade (*Circaea lutetiana*), Lords and Ladies (*Arum maculatum*), Hart's Tongue Fern (*Asplenium scolopendrium*), Hawksbit (*Leontodon spp.*), Bramble, Sticky Mouse ear, Hogweed, Common Haircap, Common Feather Moss (*Kindbergia praelonga*), Ivy, Ground Elder (*Aegopodium podagraria*), Barren Strawberry (*Potentilla sterilis*), Forget-me-knot (*Myosotis spp.*) and Nettle.

A third isolated pocket of Gorse dominated Scrub (WS1) habitat occurs in the south of the Proposed Development site by the existing road. Other species recorded in this habitat include Bramble and Bindweed.

Scrub (WS1) habitat dominated by Goat Willow (*Salix caprea*) (0.12ha) occurs in the north of the Proposed Development site (Plate 6-13). Ground flora recorded includes Butterbur (*Petasites hybridus*), Primrose (*Primula vulgaris*), Creeping Buttercup, Bramble and Ivy.

Plate 6-12. View of hawthorn dominated Scrub (WS1) habitat recorded in the south of the Proposed Development site.

Plate 6-13. View of isolated willow scrub (WS1) habitat recorded in the north of the Proposed Development site.

6.6.1.1.7 Hedgerow (WL1)

Hedgerow (WL1) habitat, dominated by hawthorn, was recorded within the Proposed Development site (Plate 6-14). This habitat was typically isolated and associated with old stone walls delineating the field boundaries within the Proposed Development site. Ground flora identified included Common Dog Violet (*Viola riviniana*), Pignut (*Conopodium majus*), Germander Speedwell (*Veronica chamaedrys*), Herb Robert (*Geranium robertianum*), Cowslip (*Primula veris*), Nettle (*Urtica dioica*), Tutsan (*Hypericum androsaemum*), Creeping Bent (*Agrostis stolonifera*), Docks (*Rumex spp.*), Lesser Celandine (*Ficaria verna*), Daisy (*Bellis perennis*) and Cleavers (*Galium spp.).*

Individual mature trees/shrubs such as Ash, Blackthorn, *Sorbus spp.*,Wych Elm (*Ulmus procera*), Beech and Holly were also recorded within the hedgerows on site.

Plate 6-14. View of hawthorn dominated hedgerow (WL1) habitat recorded in the east of the Proposed Development site.

6.6.1.1.8 Drainage ditch (FW4)

A small isolated ditch, best classified as a Drainage ditch (FW4), with no connectivity to any other drainage features, was recorded in the north-east of the Proposed Development site, adjacent to the willow scrub (WS1) habitat (Plate 6-15). Small amounts of stagnant water were recorded in parts of this ditch, along with Silverweed (*Potentilla anserina*), Watercress (*Nasturtium officinale)* and *Juncus spp.* No water was present in the drainage ditch during summer months.

Plate 6-15. View of stagnant water in isolated drainage ditch (FW4) in the north of the Proposed Development site, adjacent to willow scrub (WS1) habitat.

6.6.1.2 Protected Flora

No rare and protected plant species were recorded within the site. No botanical species listed under the Flora (protection) Order (1999, as amended 2022), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded on the site. All species recorded are common in the Irish landscape.

6.6.1.3 Invasive species

During field surveys, a search for Invasive Alien Species (IAS) listed under the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) and/or Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2011) was conducted. Three-cornered garlic (*Allium triquetrum*) was found in the south and centre of the Proposed Development site (Plate 6-16). Spanish bluebell (*Hyacinthoides hispanica*) was recorded south and north of the Proposed Development site but not within the Proposed Development site boundary itself.

Sea buckthorn (*Hippophae rhamnoides*) saplings were recorded within the EIAR Study Area, in lands to the west of the Proposed Development site (Plate 6-17). No additional species listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 or Third Schedule of the Birds and Natural Habitats Regulations 2011 were recorded within the Proposed Development site during the surveys. The locations of invasive species recorded within, and in close proximity to, the Proposed Development site is shown in **Figure 6-8.**

Plate 6-16. View of blooming three-cornered garlic located within the centre of the Proposed Development site by the hedgerow habitat.

Plate 6-17. View of Sea buckthorn sapling recorded in lands to the west of the Proposed Development site.

Map Legend

- Three cornered garlic
- Sea buckthorn
- EIAR Study Area Boundary
- Planning Application (red line) Boundary

Drawing Title
Invasive Species Recorded

Project Title
Kingston Knocknacarra LRD East

Drawn By	Checked By
FK/ CK	PD/ SM
Project No.	Drawing No.
240142	Figure 6-8
Scale	Date
1:3,000	13.10.2025

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6.6.1.4 Fauna in the Existing Environment

The walkover survey was designed to detect the presence, or likely presence, of a range of protected species, including birds, bats, otter and badger. Potential suitable habitats were investigated for signs of animal presence.

No significant evidence or signs of protected faunal species was recorded during the general multidisciplinary walkover surveys on 20th of March 2024, 24th of April 2024 and 15th of May 2024. As such, no further additional dedicated faunal surveys were conducted. In addition to the above survey dates, searches for faunal signs/sightings were also made during other surveys undertaken, including bat surveys and bird surveys.

The following subsections provide a breakdown of the species recorded within the Proposed Development site boundary during the site visits and assessments.

6.6.1.4.1 *Badger*

During the surveys carried out in 2024, a comprehensive search for badger and signs of badger was undertaken. No signs of badger including setts, latrines or tracks were recorded within the site of the Proposed Development. The Proposed Development will not result in a loss of habitat or cause disturbance to badger.

6.6.1.4.2 *Otter*

No signs of otter, including resting or breeding sites were recorded. The drainage ditch (approx. 33m) was deemed unsuitable supporting habitat for otter given its isolated, urban nature and the absence of water within it during surveys undertaken. There are no EPA mapped or unmapped watercourses within the Proposed Development site. Therefore, no suitable supporting habitat for this Annex II species exists within the Proposed Development site. The Proposed Development will not result in a loss of any habitat for otter.

The Knocknacarragh stream which lies to the north of the Proposed Development site is culverted where it occurs in proximity to the Proposed Development site and is therefore unsuitable habitat for local populations of otter. Much of the Knocknacarragh stream in the vicinity of the Proposed Development site has been converted in recent years to improve drainage in the area with only small isolated open sections of this watercourse remaining.

6.6.1.4.3 *Birds*

Dedicated wintering and breeding bird surveys were conducted by MKO ecologists to investigate the importance of potential supporting habitats for bird species and to establish how bird species interact with and utilise the habitats within the Proposed Development site. The wintering and breeding bird surveys were carried out in line with the methodologies described in Section 6.4.3.2 above. No significant limitations were observed.

Winter Bird Surveys

The target bird species recorded within and flying over the EIAR Study Area, which includes the Proposed Development site, are shown in Table 6-13 below. Any species of conservation concern (i.e. those listed on the amber list or higher of Birds of Conservation Concern in Ireland (2021)), recorded during the winter bird surveys are also shown in Table 6-13.

Species of interest including Meadow pipit (*Anthus pratensis*), Kestrel (*Falco tinnunculus*), Greater black backed gull (*Larus marinus*), Lesser black backed gull (*Larus fuscus*), Herring gull (*Larus argentatus*), Common gull (*Larus canus*), Black headed gull (*Larus ridibundus*), Snipe (*Gallinago gallinago*), Redwing

(*Turdus iliacus*), Curlew (*Numenius arquata*), and Cormorant (*Phalacrocorax carbo*) were recorded during the surveys undertaken.

Four Meadow pipits were recorded foraging in the south of the site on the 20th of March 2024, 29th of November 2024, 13th of February 2025 and the 20th of March 2025. One Kestrel was recorded hunting/hovering over gorse and bramble scrub habitat in the north of the site on the 29th of November 2024.

Lesser black backed gulls, herring gulls and black headed gulls, were observed flying over and adjacent to the Proposed Development site, and also perched on the apartment block located west of the site. None of these gull species were recorded utilising the habitats within the Proposed Development site during the surveys undertaken. However, one Common gull was recorded foraging in the grassland in the south of the wider EIAR Study Area on the 29th of November 2024.

Two Snipe were flushed from the scrub and grassland habitats in the north of the EIAR Study Area on the 29th of November 2024 and the 13th of February 2025. A total of twenty-five Redwing were recorded foraging within the EIAR Study Area during surveys undertaken on the 29th of November, 11thof December 2024, 23rd of January 2025, 13th of February and 20th of March 2025. One Curlew was recorded foraging in the grassland in the east of the site on the 29th of November 2024. Two Curlew were recorded flying over the southern parcel of the EIAR Study Area in a southerly direction on the 11th of December 2024 and one landed in the grazed pasture in the south of the EIAR Study Area on this day. One Curlew was recorded flying/foraging on each of the 23rd of January 2025 and 13th of February 2025.

Three Cormorants were recorded flying over the EIAR Study Area on the 20th of March 2025.

Table 6-13.Target Bird species, and amber listed bird species, recorded during the Winter Bird Surveys

Species	Peaks of individuals	Notes	Date observed	Status
Meadow pipit (*Anthus pratensis)*	4	• Foraging within the EIAR Study Area	20th March 2024 29th November 2024 13th February 2025 20th March 2025	BoCCI Red Listed
Kestrel (*Falco tinnunculus)*	1	• Hovering/hunting over habitats in the north of the EIAR Study Area	29th November 2024	BoCCI Red Listed
Lesser black backed gull (*Larus fuscus)*	8	• Flying over the EIAR Study Area	29th November 2024 11th December 2024 13th February 2025 20th March 2025	BoCCI Amber Listed
Snipe (*Gallinago gallinago)*	2	• Flushed from scrub within the north of the EIAR Study Area • Flushed from grassland in the center of the EIAR Study Area	29th November 2025 13th February 2025	BoCCI Red Listed
Redwing (*Turdus iliacus)*	25	• Heard in the south of the EIAR Study Area in grassland • Foraging within the grasslands within the south and west of the EIAR Study Area	29th November 2024 11th December 2024 23rd January 2025 13th February 2025 20th March 2025	BoCCI Red Listed
European Herring gull (*Larus argentatus)*	20	• Juvenile & adults flying over the EIAR Study Area	20th March 2024 29th November 2024 11th December 2024 23rd January 2025 13th February 2025	BoCCI Amber Listed

Species	Peaks of individuals	Notes	Date observed	Status
		• Perched on apartments outside the Proposed Development site	20th March 2025	
Common gull (*Larus canus)*	5	• Flying over the the EIAR Study Area • Foraging in grassland within the the EIAR Study Area	20th March 2024 29th November 2024 11th December 2024 23rd January 2025	BoCCI Amber Listed
Black headed gull (*Larus ridibundus)*	15	• Flying over the the EIAR Study Area	20th March 2024 29th November 2024 11th December 2024 23rd January 2025 13th February 2025 20th March 2025	BoCCI Amber Listed
Curlew (*Numenius arquata)*	5	• 3 x Foraging on grassland within the Proposed Development site • Flying over the Proposed Development site • 1 x Flushed from the grassland in the east of the EIAR Study Area	29th November 2024 11th December 2024 23rd January 2025 13th February 2025	BoCCI Red Listed
Cormorant (*Phalacrocorax carbo*)	3	• Flying over the western parcel of the EIAR Study Area in a northerly direction	20th March 2025	BoCCI Amber Listed
Goldcrest (*Regulus regulus)*	1	• Perched	13th February 2025	BoCCI Amber Listed
House sparrow (*Passer domesticus*)	1	• Foraging within the EIAR Study Area	29th November 2024 11th December 2024 20th March 2025	BoCCI Amber Listed
Linnet (*Linaria cannabina*)	27	• Foraging within the EIAR Study Area	29th November 2024 23rd January 2025 13th February 2025	BoCCI Amber Listed
Starling (*Sturnus vulgaris*)	36-46	• Foraging within the grasslands of the EIAR Study Area	20th March 2024 29th November 2024 11th December 2024 23rd January 2025 13th February 2025 20th March 2025	BoCCI Amber Listed
Greenfinch (*Chloris chloris*)	1	• Perched	20th March 2025	BoCCI Amber Listed
Woodcock (*Scolopax rusticola*)	1	• Flushed from within the EIAR Study Area	13th February 2025	BoCCI Red Listed

In addition to the above target species, the following non-target bird species, which are all included on the BoCCI Green list, were also recorded across the EIAR Study Area during winter bird surveys undertaken:

- Black cap (*Sylvia atricapilla*)
- Blackbird (*Turdus merula*),
- Blue tit (*Cyanistes caeruleus*)
- Bullfinch (*Pyrrhula pyrrhula*)
- Chaffinch (*Fringilla coelebs*)
- Collared dove (*Streptopelia decaocto*)

- Dunnock (*Prunella modularis*)
- Feral pigeon (*Columba livia f. domestica*)
- Goldfinch (*Carduelis carduelis*)
- Great tit (*Parus major*)
- Greater black backed gull (*Larus marinus*)
- Grey heron (*Ardea cinerea*)
- Hooded crow (*Corvus cornix*)
- Jackdaw (*Coloeus monedula*)
- Little egret (*Egretta garzetta*)
- Long tailed tit (*Aegithalus caudatus*)
- Magpie (*Pica pica*)
- Mistle thrush (*Turdus viscivorus*)
- Pheasant (*Phasianus colchicus*)
- Pied wagtail (*Motacilla alba yarrellii*)
- Robin (*Erithacus rubecula*)
- Rook (*Corvus frugilegus*)
- Siskin (*Spinus spinus*)
- Song thrush (*Turdus philomelos*)
- Stone chat (*Saxicola rubicola*)
- Wood pigeon (*Columba palumbus*)
- Wren (*Troglodytes troglodytes*)

Breeding Bird Surveys

Target species, as well as any species of conservation concern (i.e. those listed on the amber list or higher of Birds of Conservation Concern in Ireland (2021)), recorded during the dedicated surveys undertaken are detailed below in Table 6-14.

Species of interest including Common gull and Herring gull were recorded during the surveys undertaken. None of the 4 no. target species recorded were identified within or directly adjacent to the EIAR Study Area during the breeding bird surveys conducted by MKO. One Buzzard was recorded flying over the EIAR Study Area on the 15th of May 2024. Five Common gulls and twelve Herring gulls were recorded flying over the EIAR Study Area on the 24th of April and 15th of May 2024. One Little egret was recorded flying over the EIAR Study Area on the 12th of June 2024.

Table 6-14. Target Bird species, and amber listed bird species, recorded during the Breeding Bird Surveys

Species	Number of individuals	Notes	Date	Status
Common Gulls (*Larus canus)*	5	Flying over the EIAR Study Area Seen perched on roof of apartments outside the Proposed Development site	24th April 2024 15th May 2024	BoCCI Amber Listed
Herring Gull (*Larus argentatus*)	12	Flying over the EIAR Study Area Seen perched on roof of apartments outside the Proposed Development site	24th April 2024 15th May 2024	BoCCI Amber Listed
Goldcrest (*Regulus regulus)*	1	Foraging in willow scrub within the Proposed Development site	24th April 2024	BoCCI Amber Listed
Tree sparrow (*Passer montanus*)	5	Seen and heard foraging/flying within the Proposed Development site in basket willows	24th April 2024 12th June 2024	BoCCI Amber Listed

Species	Number of individuals	Notes	Date	Status
House sparrow (*Passer domesticus*)	5	Foraging within the EIAR Study Area	15th May 2024	BoCCI Amber Listed
Linnet (*Linaria cannabina*)	3	Foraging within the EIAR Study Area	24th April 2024 15th May 2024 12th June 2024	BoCCI Amber Listed
Starling (*Sturnus vulgaris*)	8	Foraging within the grasslands on the EIAR Study Area	24th April 2024 15th May 2024 12th June 2024	BoCCI Amber Listed
Willow warbler (*Phylloscopus trochilus*)	3	Heard and seen foraging in the willow scrub in the Proposed Development site	24th April 2024 15th May 2024 12th June 2024	BoCCI Amber Listed
Swallow (*Hirundo rustica*)	13	Feeding/flying over grassland in south of the EIAR Study Area	24th April 2024 15th May 2024 12th June 2024	BoCCI Amber Listed

In addition to the above target species, the following non-target bird species, which are all included on the BoCCI Green list, were also recorded across the EIAR Study Area during breeding bird surveys undertaken:

- Buzzard (*Buteo buteo*)
- Little egret (*Egretta garzetta*)
- Coal tit (*Periparus ater*)
- Song thrush (*Turdus philomelos*)
- Magpie (*Pica pica*)
- Robin (*Erithacus rubecula*)
- Wren (*Troglodytes troglodytes*)
- Blue tit (*Cyanistes caeruleus*)
- Wood pigeon (*Columba palumbus*)
- Feral pigeon (*Columba livia f. domestica*)
- Jackdaw (*Coloeus monedula*)
- Dunnock (*Prunella modularis*)
- Chaffinch (*Fringilla coelebs*)
- Pied wagtail (*Motacilla alba yarrellii*)
- Collared dove (*Streptopelia decaocto*)
- Chiffchaff (*Phylloscopus collybita*)

Target species identified utilising the habitats within the EIAR Study Area during the winter surveys include Snipe (*Gallinago gallinago*), Redwing (*Turdus iliacus*), Kestrel (*Falco tinnunculus*), Meadow pipit (*Anthus pratensis)*, Common gull (*Larus canus)*, Curlew (*Numenius arquata)* and Woodcock *(Scolopax rusticola*). The remaining target bird species recorded during the wintering and breeding bird surveys between March 2024 and March 2025 were recorded entirely outside of the EIAR Study Area.

Only two SCI bird species (associated with Inner Galway Bay SPA/Lough Corrib SPA) were observed utilizing the habitats within the EIAR Study Area throughout the surveys conducted in 2024 and 2025 – Common Gull and Curlew. One Common gull was recorded within grassland habitat to the west of the Proposed Development site on one occasion, and 4 no. Curlew were recorded foraging in the southern grass pastures of the EIAR Study Area. No other SCI bird species associated with any Special Protection Areas were recorded within the EIAR Study Area. The Proposed Development site is isolated and surrounded by urban built up areas and does not provide significant suitable supporting habitat for Red Listed and SCI bird species.

No target species were recorded utilising the habitats within the EIAR Study Area during the breeding bird surveys conducted in 2024, although a number species, which although were not target species for

the purpose of these surveys, are of some conservation concern (i.e. amber-listed species), were recorded foraging in scrub and grassland habitats within the site.

Only three BoCCI Red-listed bird species were recorded using the habitats within the EIAR Study Area– Redwing, Snipe and Meadow pipits. These species are of high conservation value. Redwing are common wintering visitors and were recorded on almost every winter bird survey. It is not anticipated that these species are dependent on the semi-urban habitats within and surrounding the Proposed Development site. As such, these species are not considered dependent on the habitats occurring within the Proposed Development site as described above in this Chapter.

No Red-listed bird species or SCI bird species were recorded utilizing any habitats within or directly adjacent to the Proposed Development site throughout the breeding bird surveys conducted i.e. from April to June 2024.

Old swallows' nests were recorded within the old farm sheds in the centre of the site. No swallows were observed entering or exiting these buildings during the bird surveys carried out. Two feral pigeons (*Columba livia*) were recorded nesting in two farm buildings in the centre of the site. Magpie nests were recorded in the willow scrub habitat in the north of the site. Multiple rook nests were recorded in the trees located outside the eastern site boundary.

A buzzard was recorded flying over the Proposed Development site on one occasion.

The pockets of blackthorn, hawthorn and willow scrub within the Proposed Development site have potential to provide cover and nesting habitat for a range of common bird species. The grassland habitat consists of short swards in the south of the site as it is constantly grazed by horses throughout the year. However, tall grassy swards develop in late summer which provide increased shelter, food source and foraging habitat for birds, particularly passerines. The grassland in the north/centre of the site is unmanaged and is therefore considered more suitable to provide cover for ground nesting birds like pheasants.

Although grassland pastures exist within the Proposed Development site, the site is considered urban/ semi-urban in nature, with existing high levels of anthropogenic activity in the form of surrounding human activity, noise, lighting etc. The main habitats recorded within the Proposed Development site include Scrub (WS1), Recolonising Bare Ground (ED3), Spoil and Bare Ground (ED2), Dry Calcareous and Neutral Grassland (GS1), Dry Meadows and Grassy Verges (GS2), Hedgerow (WL1), Treeline (WL2), and Buildings and Artificial Surfaces (BL3) and Stone walls and other Stonework (BL1). As such, the Proposed Development site does not provide any significant supporting habitat for SCI species associated with Inner Galway Bay SPA.

Based on survey findings, and the habitat composition, the site does not provide significant supporting habitat for wintering wildfowl or waders associated with any SPA. The Proposed Development site is isolated and surrounded by urban built up areas and does not provide significant suitable supporting habitat for Red Listed and SCI bird species. It is likely that the bird species utilising the grassland habitats within the site are opportunistic and are not heavily dependent on the habitats contained within the site boundary.

6.6.1.4.4 Bats

Bat survey results are summarised in the following subsections, and a dedicated Bat Report has been prepared by MKO and is attached as Appendix 6-1. Bat surveys were carried out across the entirety of the EIAR Study Area. Where the results relate to lands beyond the boundary of the Proposed Development site, which is the subject of this application, this is highlighted appropriately.

Bat Habitat Appraisal

A bat walkover was undertaken on the 3rd August 2023. Follow up walkover and inspection surveys were conducted on the 20th March 2024. During these surveys, habitats within the study area were assessed for their suitability for bats to roost, forage and commute. Connectivity with the wider landscape was also considered to determine habitat suitability.

With regard to foraging and commuting bats, the Proposed Development site is considered of *Moderate* suitability due to the large amount of scrub habitat, current lack of artificial lighting, access to roosting resources and network of treelines and hedgerows throughout the site. However, there is low habitat diversity and lack of connectivity to the wider landscape. Built and open areas, such as building yards and open grassland are considered of *Low* suitability; however, they are usually surrounded by linear habitats and do not limit connectivity within the site.

With regard to roosting bats, the structures within the wider EIAR Study Area contain multiple access points and potential roosting features. There are no structures which offer bat roosting potential within the boundary of the Proposed Development site. Existing trees include mature deciduous trees which present suitable roosting spaces for bats, in varying capacity. Where trees are proposed for felling, they were subject to a roost inspection which is described in Section 6.4.3.3.3. In general, the site has a *Low* suitability to host roosting bats within its grounds.

Details of the assessment of existing man-made structures within the wider EIAR Study Area for their suitability to host roosting bats are presented below Trees within the Proposed Development footprint are also assessed in more detail.

Preliminary Roost Assessment

PRF Structures

Ten structures were identified as part of the roost assessment effort. Each building was subjected to an interior inspection, to detect evidence of bat use. The majority of the buildings are located in close proximity to each other, within a farmyard located in the centre of the EIAR Study Area. The location of the buildings is shown in **Figure 3-1** of the Bat Report (Appendix 6-1).

Stone Shed 1

Stone Shed 1 is a derelict old stone dwelling with a corrugated roof located within the farmyard (IG Ref: M 26647 24686). Multiple access points were identified within crevices in the stone walls, and in gaps in the roof and doorways. Evidence of feeding remains were found within the structure. It was assigned a *Moderate* roosting potential. The shed was subject to a dusk emergence survey on the 2nd of May and 4th September 2024. This structure will not be demolished as part of the current application. This structure is not contained within the current application boundary and is therefore not assessed further in this report.

Stone Shed 2

Stone Shed 2 is a derelict stone shed with a partially collapsed asbestos roof located to the southwest of Stone Shed 1 (IG Ref: M 26631 24667). No evidence of roosting bats was found within the derelict shed, however numerous access points and a number of gaps suitable for crevice dwelling bats were identified. It was assigned a Moderate roosting potential. The shed was subject to a dusk emergence survey on the 20th of May and 3rd of July 2024. This structure will not be demolished as part of the current application. This structure is not contained within the current application boundary and is therefore not assessed further in this report.

Stone Shed 3

Stone Shed 3 is a plastered stone stable building with a corrugated roof southeast of Stone Shed 1 (IG Ref: M 26654 24678). Gaps in the doors and a large crack in the north-facing wall provide access for bats to the interior. No evidence of roosting bats was found within the derelict shed, and little roosting potential was identified. It was assigned a *Low* roosting potential. The shed was subject to a dusk emergence survey on 2nd of May and 4th September 2024. This structure will not be demolished as part of the current application. This structure is not contained within the current application boundary and is therefore not assessed further in this report.

Large Shed

The Large Shed is a farm building currently used for storage and machinery (IG Ref: M 26680 24691) The structure is located on the eastern side of the farmyard and is proposed for demolition under the current application. No evidence of roosting bats was found within. Multiple access points were identified but no roosting features were present. It was assigned a *Negligible* roosting potential. This structure is contained within the current application boundary and is further assessed in Section 6.7.

Shed

The Shed is a newly built concrete structure used for livestock (IG Ref: M 26679 24676). The structure is open at the southern side. This structure will be demolished to facilitate the proposed residential development. No evidence of roosting bats was found within. It was assigned a *Negligible* roosting potential. This structure is contained within the current application boundary and is further assessed in Section 6.7.

Stables

The Stables is a newly built concrete structure with a corrugated iron roof located to the north of the Large Shed (IG Ref: M 26675 24699). The stables will be demolished to facilitate the proposed residential development. No evidence of roosting bats was found within the Stables, and no potential roost features were identified. It was assigned a *Negligible* roosting potential. This structure is contained within the current application boundary and is further assessed in Section 6.7.

Small Steel Shed

The Small Steel Shed is a newly constructed corrugated steel structure (IG Ref: M 26652 24660). No evidence of roosting bats was found within the derelict shed. It was assigned a *Negligible* roosting potential. This structure will not be demolished as part of the current application. This structure is not contained within the current application boundary and is therefore not assessed further in this report.

Lean-to Shed

The Lean-to Shed is a corrugated iron shed that is connected to a stone wall on its south and eastern sides (IG Ref: M 26659 24665). The north face of the structure is completely open. Interior roof felt provides roosting potential within this structure, though no evidence of roosting bats was found. It was assigned a *Low* roosting potential. This structure will not be demolished as part of the current application. This structure is not contained within the current application boundary and is therefore not assessed further in this report.

Occupied House

The Occupied House is located in the centre of the site (IG Ref: M 26662 24635). The structure was inspected on the 20th August 2024. The roof of the structure has been newly renovated. The attic is currently in use. No evidence of roosting bats was found within the house and no access points for roosting bats were identified. It was assigned a *Negligible* roosting potential. This structure will not be demolished as part of the current application. This structure is not contained within the current application boundary and is therefore not assessed further in this report.

Bungalow

The Bungalow is a derelict structure located just outside the southern boundary of the Proposed Development site (IG Ref: M 26693 24436). Access was not granted for an interior inspection in 2023, but the structure was inspected in 2024. No evidence of roosting bats was found within structure during the interior inspection on 20th March 2024, however a small number of gaps suitable for crevice dwelling bats was identified. Two Soprano pipistrelles were observed emerging from the structure during surveys in 2023. It was assigned a *Low* roosting potential. A demolition proposal for the bungalow has been granted in 2021 as part of a previous planning application. A derogation licence to remove the roost has been granted by NPWS on 25th April 2024, subject to conditions outlined in the Bat Report (**Appendix 6-1**). This structure is not contained within the current application boundary and is therefore not assessed further in this report.

PRF Trees

The EIAR Study Area comprised a network of treelines and hedgerows bordering existing tracks and roads, as well as grassland. Deciduous trees identified throughout the EIAR Study Area were assessed for their potential to host roosting bats. The majority of linear features comprised hedgerows with sparse, immature trees with *Negligible* potential roosting features. Details of the assessment are presented in **Table 3-5 of the Bat Report**, and the location of the trees assessed is presented in **Figure 3-1** in the Bat Report (**Appendix 6-1**). Three trees which contained PRFs occur within the boundary of the Proposed Development site. These trees were all subject to detailed inspections and no signs of roosting bats was recorded.

Bat Activity Surveys

Dusk Emergence Surveys

Nine structures with roosting potential were identified within the EIAR Study Area during surveys carried out at early design stages. Four of the structures within the EIAR Study Area were subjected to dusk emergence surveys. A dusk emergence survey was carried out at the Bungalow on the 3rd August 2023. Two Soprano pipistrelles were observed emerging from the southeast corner of the roof of the structure. However, this building is not within the Proposed Development site and is not assessed further in this report. The results of the completed dusk surveys are summarised in Section 3.2.2 of the Bat Report.

Stone Shed 1

Two dusk emergence surveys were carried out at Stone Shed 1. During the first survey on the 2nd of May 2024, no bats were observed emerging from the structure. A low level of Soprano and Common pipistrelle foraging activity was recorded in the mature trees to the north of the structure. During the second dusk emergence survey on the 4th September, four Soprano pipistrelles were observed emerging from the structure. Three individuals emerged from the southern aspect, while one emerged from a gap between the roof and stone wall at the northern side. During the survey, constant foraging activity was recorded in the trees to the north. This structure is not located within the Proposed Development site boundary and is not assessed further in this report.

Stone Shed 2

Two dusk emergence surveys were undertaken at Stone Shed 2. One bat was observed emerging from the structure during the 20th May emergence survey. There was foraging activity along the treeline to the west of the structure. No bats emerged from the structure during the second survey on the 3rd of July. Some low foraging and commuting pipistrelle activity was recorded from the southeast, flying towards the north and west. This structure is not located within the Proposed Development site boundary and is not assessed further in this report.

Stone Shed 3

Stone Shed 3 was surveyed on the same dates as Stone Shed 1. No bats were observed emerging from the structure during either of the surveys. This structure is not located within the Proposed Development site boundary and is not assessed further in this report.

Lean-to shed

A dusk emergence survey was conducted on the lean-to shed on the 3rd of July 2024. No bats were observed emerging from the structure during the survey. This structure is not located within the Proposed Development site boundary and is not assessed further in this report.

Night-time Bat Walkovers

Manual activity surveys also comprised night-time bat walkovers at dusk. A night walkover survey was undertaken on the 3rd August 2023. In 2024, night walkover surveys took place on the 24th April and 6th of June. Bat activity was recorded on all surveys, with a total of 6 bat passes in 2023, and 134 bat passes in 2024.

Walkover surveys were aimed at assessing the use of linear features and other habitats by bats. The April survey encompassed the northern section of the site, while the June survey was undertaken within the central and southern area of the site. Bat activity was dominated by Soprano pipistrelles, with most of this taking place at the mature treeline outside of the eastern border of the site. Common pipistrelles and Leisler's bats were also recorded to a lesser extent.

No roosting activity was observed during the surveys.

Static Detectors Surveys

In total 67,852 bat passes were recorded across 2023 and 2024. Analysis of the detector recordings positively identified six bats to species level with *Myotis* genus also present. Soprano pipistrelle (*Pipistrellus pygmaeus*) made up the vast majority of the activity recorded within the site (n=47,469), followed by Common pipistrelle (*Pipistrellus pipistrellus*) (n=14,665). Leisler's bat *(Nyctalus leisleri*) (n=4,016) and Brown Long-eared bat (*Plecotus auratus*) (n=1,525). *Myotis* spp. (n=137) and Nathusius' pipistrelle (*Pipistrellus nathusii*) (n=40). No instances of lesser horseshoe bat were recorded at the site despite the site being located within the current known range for this species.

Overall bat activity was lowest during August 2023. However, *Myotis* spp. and Nathusius' pipistrelle activity was highest during August 2023. May and July of 2024 recorded similar activity and species composition, though Leisler's bat activity was much higher in May than in July. Brown long-eared bat activity was also highest in the May 2024 season.

The highest single night activity was recorded on the 23rd July 2024, with over 280 bat passes per hour. Activity was higher during the 2024 surveys (May and July) than that of the 2023 (August) survey. Activity on all nights was dominated by Soprano pipistrelle, with Common pipistrelle and Leisler's bat alsorecorded. Brown long-eared bat activity was highest during the May 2024 survey, specifically between the 8th and 11th May 2024. Myotis spp. activity was low throughout the months surveyed. Nathusius' pipistrelle activity was low throughout, though the majority of activity was recorded during the August 2023 survey. Analysis of the detector recordings also highlighted the median bat passes per hour, per species, per detector, per month surveyed. The median bat passes per hour were higher in May than during July 2024 at all detectors, with the exception of D04. The median bat activity varied greatly between May and July 2024 at D02. Species composition was similar at all detectors, with soprano pipistrelle dominant at all detectors in all seasons. Brown long-eared bat activity was highest at D03 in May and July 2024. August 2023 had low brown long-eared bat activity.

6.6.1.4.5 Other species

No evidence of other protected taxa including invertebrates or amphibians, species listed in Annex II or IV of the EU Habitats Directive, or other species of conservation concern was identified within the boundaries of the Proposed Development site. The Proposed Development will not result in a loss of any significant supporting habitat for other protected fauna species.

Pollinator species recorded utilising the species rich grassland within the Proposed Development included butterflies including, Peacock (*Aglais io*), Tortoiseshell (*Aglais urticae*), Orange Tip (*Leycesteria formosa*) and Small White (*Pieris rapae*).

Foxes were also recorded within the EIAR Study Area site as incidental sightings of urban fauna.

6.6.2 Importance of Ecological Receptors

Table 6-15 lists all identified receptors and assigns them an ecological importance in accordance with the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009). This table also provides the rationale for this determination and identifies the habitats that are Key Ecological Receptors (KERs). These ecological receptors are considered in Section 6.7 of this report, and mitigation/ measures will be incorporated into the Proposed Development where required, to avoid potential significant impacts on these KERs.

Table 6-15: Key Ecological Receptors identified during the assessment

Ecological feature or species	Reason for inclusion as a KER	KER
Designated sites	**Nationally Designated Sites** Galway Bay Complex pNHA is located approximately 900m south of the Proposed Development site. The site is underlain by the Spiddal groundwater body and the groundwater vulnerability in this area is deemed 'extreme', 'high' and 'exposed rock'. The Proposed Development site is located within the Knock[Furbo]_SC_010 hydrological sub-catchment. This pNHA is partially located within the same hydrological sub-catchment. Taking a precautionary approach and given the nature and scale of the Proposed Development there is potential for indirect effects on this pNHA via percolation of pollutants to groundwater and run off of pollutants to surface water during the construction and operational phases of the Proposed Development. As such, this pNHA site has been identified as being within the likely Zone of Influence. This designated site has been assessed as of *National Importance* and is included as a KER as there is potential for indirect effects on this site during the construction and operational stage of the development via water pollution.	**Yes**
	European Designated Sites The following European sites are identified as being within the Likely Zone of Influence and are assessed fully in the NIS that accompanies this application: › Galway Bay Complex SAC › Inner Galway Bay SPA These sites are assigned *International Importance* and are included as a KER as there is potential for indirect effects on the sites during the construction and operational stage of the development via water pollution and invasive species.	**Yes**
Ramsar site	Inner Galway Bay Ramsar site has potential groundwater and surface water connectivity with the Proposed Development and has been identified as being within the likely Zone of Influence. This site has been assessed as of *International Importance* and is included as a KER as there is potential for indirect effects on this site during the construction and operational stage of the development via water pollution.	**Yes**
Habitats		

Ecological feature or species	Reason for inclusion as a KER	KER
Local Importance (Lower Value) › Stone Walls and other Stonework (BL1) › Dry meadows and grassy verges GS2) › Recolonising bare ground (ED3) › Spoil and bare ground (ED2) › Drainage ditch (FW4) › Buildings and artificial surfaces (BL3)	These habitats will be lost to facilitate the Proposed Development. These habitats, although some contain small areas of semi-natural habitat that are of some local importance for wildlife, are common and widespread in the local and wider landscape and their loss is not considered significant at any geographical scale. These habitats are assigned *local importance (lower value)* and are therefore not included as KERs.	No
Local Importance (Higher Value) › Hedgerow (WL1) › Treeline (WL2) › Scrub (WS1) › Dry Calcareous and Neutral grassland (GS1)	Hedgerow, Treeline and Scrub habitats identified within the Proposed Development site have been classified as habitats of *Local Importance (higher value)* as they provide nesting/ roosting habitat, cover, commuting corridors, foraging habitat and serve in maintaining connectivity to the wider landscape for a variety of local and protected fauna. Dry calcareous and neutral grassland habitat has also been classified as a habitat of *Local Importance (higher value)* as it is species rich and is considered of high ecological and biodiversity value in a local context. As there will be some loss of these habitats, they are included as KERs.	**Yes**
Fauna		
Birds	Following on from the bird survey results, the Proposed Development site does not provide significant suitable supporting habitat which SCI bird species or protected bird species are dependent on. However, treelines, scrub and hedgerow within the site provide a small amount of nesting and foraging habitat for a range of common bird species. As there will be some loss of these habitats, taking a highly precautionary approach, birds have been assessed as of *Local Importance (higher value)* and are included as a KER.	**Yes**
Badger	Badgers are protected under the Wildlife Act 1976 (as amended). Grassland habitats occur within the Proposed Development site and therefore the Proposed Development site has the potential to provide suitable foraging habitat for this species. However, no signs or evidence of badgers (including snuffle holes, latrines or setts) were recorded within the Proposed Development site during the surveys conducted. As such, badger are not included as a KER.	**No**
Additional protected fauna (e.g. Irish hare etc.).	The recorded evidence suggests that the Proposed Development site is not utilised by populations of species of higher than local significance and no potential for significant effects on additional species have been identified at the population level. Due to the small footprint and nature of the Proposed Development, they are unlikely to be significantly affected by the Proposed Development.	**No**

Ecological feature or species	Reason for inclusion as a KER	KER
	For this reason, other faunal species are not considered further in this EIAR. Significant effects are not anticipated.	
Bats	Based on the information identified within the desk study, the assessment of the habitats and features on site during the site visit, and the results of the bat surveys, bat species have been identified as of *Local Importance (Higher Value).* The site is surrounded by roads and residential dwellings and is relatively isolated from the surrounding environment, however bats were observed commuting into the site, which presents suitable foraging and roosting habitat, primarily along existing mature treelines. A pathway for impact was identified in the form of commuting, foraging and roosting habitat loss and disturbance/ displacement effect as a result of the introduction of artificial lighting. All bat species in Ireland are protected under the Bonn Convention (1992), Bern Convention (1982) and the EU Habitats Directive (92/43/EEC). Additionally, in Ireland bat species are afforded further protection under the Birds and Natural Habitats Regulations (2011) and the Wildlife Acts 1976 (as amended). Therefore, bat species are considered as KERs.	**Yes**
Invasive species	First Schedule and Third Schedule invasive plant species were recorded within the Proposed Development Site. Three-cornered leek was recorded within the construction footprint while Sea buckthorn was recorded in close proximity to the Propsoed Development boundary. If left unmanaged and untreated, these species are at risk of spreading further in the surrounding locality. **Therefore, First schedule invasive species are included as a KER for further assessment.**	**Yes**
Receiving Surface and Ground Waters and Aquatic Species and Habitats	**Receiving Surface and Ground Waters** The Proposed Development will result in increased hard standings thus influencing surface water run-off flow rates discharging into the surrounding surface water network and receiving surface waters (e.g. Knocknacarragh_010 watercourse and downstream aquatic receptors) . Excavation works, proposed during the construction phase to facilitate the Proposed Development, has the potential to result in the release of contaminants such as hydrocarbons or sediment which could percolate through the bedrock, resulting in pollution to the underlying ground water body. Following a precautionary principal, a potential pathway for indirect effects was identified in the form of deterioration of surface and ground water quality resulting from pollution,	**Yes**

Ecological feature or species	Reason for inclusion as a KER	KER
	associated with the construction and operational phases of the Proposed Development. **Receiving Surface and Ground Waters are therefore considered KERs.**	
	Aquatic Species and Habitats Rusheen Bay and Galway Bay, which are considered tidal mudflat habitat and a bay habitat, have been assigned *International Importance*, as they potentially corresponds to the Annex I habitat ' Tidal mudflats and sandflats [1140]' and 'Large shallow inlets and bays [1160]', which are QIs of Galway Bay SAC. There is potential for indirect effects on downstream aquatic species and the habitats upon which they depend, via water pollution. These species may include a variety of waterfowl, amphibians, salmonid and coarse fish, lamprey species, white clawed crayfish (*Austropotamobius pallipes*), European eel (*Anguila anguila*), Otter (*Lutra lutra*) aquatic invertebrates and other aquatic species. **Aquatic habitats and species listed are therefore considered as KERs.**	**Yes**

6.7 Ecological Impact Assessment

6.7.1 Do-Nothing Scenario

The site of the Proposed Development consists predominantly of grazed grassland, and acts as a material dumping ground in the north. The Recolonising Bare Ground (ED3)/ Spoil and Bare Ground (ED2) habitats in the north of the site are likely to continue to be colonised by successional ruderal species, including invasive species. Similarly, the First Schedule Invasive plant species Three-cornered leek would remain unmanaged, likely spreading further afield. The willow Scrub (WS1) habitat in the north of the site would likely remain isolated, having a low biodiversity value while providing some shelter for faunal species in an urban setting. The Dry meadows and grassy verges (GS2) habitat in the center and north of the site would likely become encroached by bramble and bracken under its current regime. The grazed Dry calcareous and neutral grassland (GS1) to the south of the site, are likely to remain subject to their current grazing regime.

Should the Proposed Development not proceed, the existing site would likely remain under its current management and remain in its current state would be subject to alternative development proposals. It should be noted that commercial and industrial developments are proposed to the north and west of the Proposed Development site, as detailed in the cumulative assessment of this EIAR. The increased human activity levels and machinery associated would likely decrease the biodiversity value of the already isolated habitats within the site.

6.7.2 Construction Phase

6.7.2.1 Impacts on Habitats

The habitats considered as Local Importance (Lower Value) that will be lost to the footprint of the Proposed Development include;

- Spoil and bare Ground (ED2)/Recolonising bare ground (ED3)
- Drainage ditch (FW4)
- Dry Meadows and Grassy Verges (GS2)
- Stone Walls and other Stonework (BL1)
- Building and artificial surfaces (BL3)

The Proposed Development will result in some loss of Dry Meadows and Grassy Verges (GS2), a mosaic of Spoil and bare Ground (ED2)/Recolonising bare ground (ED3) and an isolated dry Drainage ditch (FW4) located in the north-east of the site. The existing horse-riding arena in the east of the Proposed Development site, categorised as Building and artificial surfaces (BL3), will also be removed to facilitate the Proposed Development site. Stone walls (BL1) acting as field boundaries will be removed to facilitate the Proposed Development. Loss of these habitats to the construction footprint is not considered to be significant at any geographic scale. These habitats, while they contain small areas of semi-natural habitat that are of some importance to wildlife, are common and widespread in the locality. These habitats are not considered as Key Ecological Receptors (KERs) as they are of *Local Importance (Lower Value).* The effect is assessed as non-significant impact on a receptor of *Local Importance (Lower Value)* and therefore no mitigation is required. Consequently, their loss does not constitute a significant effect on biodiversity, and they are not considered further in this assessment.

Two small sections of Scrub (WS1) habitat dominated by hawthorn in the south-east of the site will be removed to facilitate the Proposed Development site. The willow Scrub (WS1) habitat in the north of the site will be entirely removed to facilitate the Proposed Development. The Proposed Development will result in loss of individual trees as well as Treeline (WL2) and Hedgerow (WL2) habitats. Dry calcareous and neutral grassland (GS1) habitat will be lost to facilitate the Proposed Development. These habitats are of relatively high biodiversity value and are considered to be of Local Importance

(*Higher Value*) in the local landscape as they have the potential to provide suitable supporting habitat for faunal species such as birds and bats. Therefore, these habitats have been identified as KERs.

The following subsection considers the potential impact on these habitats during the construction phase of the Proposed Development.

6.7.2.1.1 Assessment of Effects of the loss of Treelines (WL2), Hedgerow(WL1), Scrub (WS1) and Dry calcareous and neutral grassland (GS1)

Table 6-16 Assessment of impacts on treelines, hedgerow, scrub and Dry calcareous and neutral grassland

Description of Effect	There will be a loss of approx. 0.201ha of Scrub (WS1) habitat throughout the site to facilitate the Proposed Development. Species to be removed include hawthorn, gorse and willow. Additionally, approx. 217m of Treeline (WL2), dominated by sycamore and ash, and approx. 180m of hawthorn dominated Hedgerow (WL1) will be lost in the site to facilitate the proposed access road. There will be a loss of approx. 1.31ha of Dry calcareous and neutral grassland (GS1) habitat throughout the site to facilitate the Proposed Development. This is considered a relatively species rich grassland, but does not conform to any Annex I habitat. The loss of grassland (GS1), hawthorn and willow scrub (WS1), hedgerow (WL1) and treeline (WL2) habitat within the Proposed Development site may result in habitat fragmentation, and the loss of potential nesting/ commuting and foraging habitat for a range of local wildlife.
Assessment of Significance prior to mitigation	The loss of approximately 0.201ha of Scrub (WS1), 1.31ha of Dry calcareous and neutral grassland (GS1) habitats, approx. 180m of Hedgerow (WL1) and approx. 217m of Treeline (WL2) to facilitate the Proposed Development is considered significant at a local geographical scale only.
Mitigation	A landscape design report has been prepared by CSR and is provided in **Appendix 6-3.** In order to compensate for the loss of scrub, calcareous grassland, hedgerow and treeline the following biodiversity-friendly measures have been proposed. › The use of native species will generally be preferred. However, a complimentary element of non-native species will also be used, where appropriate to achieve particular aims or requirements. › The planting of predominantly pollinator friendly shrub and herbaceous species will integrate the scheme in line with the 'All Ireland Pollinator Plan'. › Significant additional native tree planting mitigates necessary removals and ultimately will significantly increase the sites tree and vegetation cover overtime. › Proposed tree planting includes a selection of native and naturalised trees such as alder, beech, birch, cherry, oak, pine, rowan, sycamore and whitebeam. The use of such trees will provide vertical scale and structure to the landscape over time, as well as ecological benefits. › Approximately 238 linear metres of clipped beech hedgerow will be provided. Although the proposed beech hedgerows are likely to be of lower ecological value to the existing native hedgerows on site, they will result in a net gain in terms of hedgerow habitat post-construction. › Whilst the proposed landscaping does not provide replacement treelines to offset the loss of those currently on site, it does provide for the planting of approximately 1,310m^2 of woodland understorey, comprised of native species (hazel, holly, spindle and guelder-rose), in addition to 202 parkland, open space and feature trees and 389 street trees which will be comprise of native and non-native species. Therefore, it is likely that the Proposed Development will result in a net gain in terms of overall number of trees within the site. › Approximately 784m^2 of wildflower meadow of Irish provenance, sourced from Design By Nature, or equivalent, will be created. A low frequency mowing regime

	in these areas will reduce the overall volume maintenance in the scheme and contribute to a reduction of carbon footprint. The proposed landscape plan aims to create a number of linear green corridors suitable for bat feeding
Residual Effect following Mitigation	Following the implementation of the landscape plan, there will be a residual effect, significant at the local geographic scale, owing to the removal of linear vegetation and species rich grassland. Overtime, as the planted trees and wildflower meadow become established and mature the effect of the change in habitats within the site will become insignificant, meaning that overtime the residual effect will be reduced.

6.7.2.2 Impacts on Water Quality

Table 6-17. Assessment of impacts on Water Quality

Description of Effect	No EPA mapped or unmapped watercourses were recorded within the Proposed Development site, although the Knocknacarragh stream was recorded adjacent to the northern boundary. A small, isolated dry drainage ditch (FW4) was recorded in the north of the site. Excavation works such as stock piling within the site are proposed to facilitate the Proposed Development. Excavations are required to construct the attenuation tanks and drainage piping networks. Concrete pouring is required. In the absence of mitigation there is potential for deterioration to both surface and ground water quality at a local level during construction via the release of pollutants and other contaminants to receiving surface waters such as the Knocknacarragh Stream and via the percolation of pollutants to the underlying groundwater body. These impacts on water quality are fully described in Chapter 8: ' Hydrology and Hydrogeology' of this EIAR and are described here in relation specifically to biodiversity
Assessment of Significance prior to mitigation	The deterioration to water quality in the local area due to pollutants resulting from the construction phase works to facilitate the Proposed Development would be considered **significant at the local geographic scale only**.
Mitigation	All identified potential pathways for impact on water quality during the construction phase are robustly averted through the use of best practice measures which have been incorporated into the design of the project. A project-specific Construction Environmental Management Plan (CEMP) has been prepared by MKO and is attached to this planning. The plan covers all potentially polluting activities and includes an emergency response plan (Section 5 of the CEMP). The following summarises the measures are prescribed for the protection of surface and ground waters, as detailed in the CEMP: › Any run-off generated on-site will undergo the necessary filtration process. › The works will be managed to ensure there will be no silt-laden run-off beyond the site boundary. This will be achieved through the use of appropriate excavation techniques during the initial construction works. Where necessary, silt fencing will be installed downslope of the construction areas, particularly where drains or drainage pathways are present. These measures will serve as a protective measure to contain silt material within the site. › Any requirement for temporary fills or stockpiles will be damped down or covered with polyethylene sheeting as required to avoid sediment release associated with heavy rainfall. › Excavations will be carried out using a suitably sized excavator and, in all circumstances, excavation depths and volumes will be minimised where practically possible. › Excavated spoil will be stockpiled and contained entirely within the confines of the site boundaries. Any stockpile areas will be surrounded with silt fencing, if deemed necessary to prevent runoff. › Works shall not take place at periods of high rainfall and shall be scaled back if or suspended if heavy rain is forecast during excavation works.

High rainfall' is defined as follows:
    - >10 mm/hr (i.e. high intensity local rainfall events);
    - >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day);
- In the event of encountering groundwaters during excavation, groundwater will be pumped out of the excavation using a pump equipped with a silt bag on the discharge pipe, if necessary, to capture any silty material prior to subsequent natural percolation to ground. The area surrounding the silt bag will be surrounded by silt fencing if deemed necessary.
- No wastewater will be discharged on-site during the construction phase. Toilet facilities will be provided in a prefabricated sanitary unit which will be placed in the construction compound. This unit will have an enclosed wastewater holding tank which will be fitted with a fill level alarm and will be emptied on an as needed basis by the appropriately licensed contractor.
- Good construction practices will be implemented at the site. This will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provides guidance on the control and management of water pollution from construction sites, as outlined in *Control of Water Pollution from Construction Sites, guidance for consultants and contractors* (CIRIA, 2001). This guidance will be adhered to throughout the construction phase to ensure that surface water generated on site contains minimum sediment.

The following mitigation measures are proposed to avoid release of cement leachate from the site:

- No batching of wet-cement products will occur on site.
- Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place. Where possible pre-cast elements for culverts and concrete works will be used.
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site.
- Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.
- Use weather forecasting to plan dry days for pouring concrete.
- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.

The following measures are proposed to avoid release of hydrocarbons at the site:

- Minimal refuelling or maintenance of construction vehicles or plant will take place on site. Where possible, off-site refuelling will occur at a controlled fuelling station;
- On-site re-fuelling will be undertaken using a double skinned bowser or a refuelling truck with spill kits kept onboard;
- All oils, fuels, paints and other chemicals will be stored in a secure bunded construction hardstand area. Refuelling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any drainage systems. A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available and construction staff will be familiar with the emergency procedures and use of the equipment;
- A temporary drainage system shall be installed prior to the commencement of the construction works;
- All works shall be undertaken in accordance with the CIRIA document, 'Control of Water Pollution from Construction Sites, guidance for consultants and contractors'
- All plant and machinery will be serviced before being mobilised to site;
- No plant maintenance will be completed on site, any broken down plant will be removed from site to be fixed;
- Concrete batching will take place off site, wash down and wash out of concrete trucks will take place off site and any excess concrete is not to be disposed of on site. Pumped concrete will be monitored to ensure there is no accidental discharge. Mixer washings are not to be discharged into surface water drains/sewers;

	› Discharge from any vehicle wheel wash areas is to be directed to on-site settlement tanks/ponds, debris and sediment captured by vehicle wheel washes are to be disposed off-site at a licensed facility; › Foul drainage discharge from the construction compound will be transported off site to a licensed facility until a connection to the public foul drainage network has been established.
Residual Effect following Mitigation	With the implementation of the prescribed mitigation measures, no significant residual effects are predicted.

6.7.2.3 Invasive Species

Table 6-18. Assessment of Potential effects associated with Invasive Alien Species

Description of Effect	Small, isolated pockets of Three-cornered leek were recorded within the Proposed Development site within the construction footprint. In addition, individual saplings and juvenile stands of Sea buckthorn were recorded within the wider EIAR Study Area in lands to the west of the Proposed Development site.
Assessment of Significance prior to mitigation	In the absence of best practice and appropriate mitigation, works associated with the construction of the Proposed Development (e.g. earthworks, soil stripping, tracking of heavy machinery through the site etc) has the potential to exacerbate the spread of these invasive plant species to the wider environment, which would be considered significant at the local geographic scale.
Mitigation	An Invasive Species Management Plan (ISMP) has been prepared as part of this planning application and is attached as **Appendix 6-2**. A dedicated invasives species survey of the Proposed Development site will be carried out prior to commencement of works on site to determine if the species has spread further throughout the site or if any other invasive species have established in the interim. Surveys will be undertaken during the summer months (June - July) when the extent of the infestation will be fully visible. The treatment methodologies within the management plan have been carefully considered and are proposed to eradicate Sea buckthorn and Three-cornered leek and manage their spread further within the Proposed Development site. These treatment measures have been considered as part of the planning application. An ecologist will be on site to supervise the treatment. The infested areas will be marked out with posts and hazard tape prior to any machinery ingress or works within or near this area. The treatment methodologies are included in the ISMP attached as **Appendix 6-2**.
Residual Effect following Mitigation	Following the incorporation of the ISMP, no significant effects with regards to invasive plant species are anticipated at any geographic scale.

6.7.2.4 Impacts on Fauna

6.7.2.4.1 *Assessment of Potential Effects on Bats*

Table 6-19 Assessment of the potential impacts on bats during the construction phase

Description of Effect	**Habitat Loss** The Proposed Development site contains some individual mature trees with suitable roosting potential. The three structures which will be removed as a result of the proposed development (the stables, shed and large shed – refer to **Appendix 6-1** for detail) were all deemed to offer Negligible roosting potential for bats. Three trees which were identified as having the potential to support roosting bats will be removed to facilitate the proposed development. No signs of roosting bats were recorded within the structures or mature trees surveyed within the Proposed Development site, meaning that the Proposed Development will not result in the loss of any confirmed bat roosts. Existing stone walls will also be removed to accommodate the new roads. Following the precautionary principle, the construction phase of the Proposed Development has the potential to result in some habitat loss for local bat species, and potential direct effect on roosting bats. Potential effects on bats may include: • Direct impacts via removal of potential bat roosting habitat through removal of existing mature trees which offer roosting potential. • Indirect impacts via the removal of foraging and commuting habitat within the Proposed Development site. • Indirect impacts such as disturbance during the proposed works through increased noise/human activity/lighting. Scrub, hedgerow, treelines and stone walls will be removed to facilitate the Proposed Development. These habitats are used by foraging and commuting bats in the locality. With regards to foraging and commuting bats, the Proposed Development site is considered to have Moderate suitability due to the large amount of scrub habitat, current lack of artificial lighting, access to roosting resources and network of treelines and hedgerows throughout the site. However, there is low habitat diversity and lack of connectivity to the wider landscape. Built and open areas, such as building yards and open grassland are considered of Low suitability; however, they are usually surrounded by linear habitats and do not limit connectivity within the site. The Proposed Development will result in the loss of sub-optimal foraging and commuting bat habitat.
	Disturbance During the construction phase, no works are proposed during nighttime hours. Lighting may be required during dark winter mornings and evenings and will be provided via the use of Portable Light Towers. This will result in an increase in artificial lighting compared to baseline levels, which has the potential to disturb and/or displace bats during construction. In addition, whilst the site is currently disused, the construction phase of the Proposed Development will result in an increase in disturbance to local bat species in the form of noise. In the absence of appropriate design, the development has the potential to disturb local bat populations.
Assessment of Significance prior to mitigation	**Habitat Loss** No evidence of roosting bats was identified and therefore no significant effects in terms of loss of roosting resource is anticipated. In terms of commuting and foraging resource, the loss of individual mature trees, treelines and hedgerows within the Proposed Development site is considered **significant at a local geographic scale only.**
	Disturbance In the absence of mitigation, the potential for temporary disturbance during the construction phase to local bat populations would be considered **significant at the local geographic scale only.**

Mitigation	**Habitat Loss** As described in Section 6.7.2.1.1, a landscape plan has been designed to compensate for the loss of existing habitats within the Proposed Development site, including linear features and mature trees which are of use to local bat populations. The following measures, included in the proposed landscape plan may offer benefits to local bat populations post construction. › The proposed landscape plan aims to create a number of linear green corridors suitable for bat feeding. › Significant additional native tree planting mitigates necessary removals and ultimately will significantly increase the sites tree and vegetation cover. › Proposed tree planting includes a selection of native and naturalised trees such as alder, beech, birch, cherry, oak, pine, rowan, sycamore and whitebeam. The use of such trees will provide vertical scale and structure to the landscape over time, as well as ecological benefits. › Approximately 238 linear metres of clipped beech hedgerow will be provided. Although the proposed beech hedgerows are likely to be of lower ecological value to the existing native hedgerows on site, they will result in a net gain in terms of hedgerow habitat post-construction. › Whilst the proposed landscaping does not provide replacement treelines to offset the loss of those currently on site, it does provide for the planting of approximately 1,310m^2 of woodland understorey, comprised of native species (hazel, holly, spindle and guelder-rose), in addition to 202 parkland, open space and feature trees and 389 street trees which will be comprise of native and non-native species. Therefore, it is likely that the Proposed Development will result in a net gain in terms of overall number of trees within the site. › The use of native species will generally be preferred. However, a complimentary element of non-native species will also be used, where appropriate to achieve particular aims or requirements. In addition, the following measures will assist in reducing the impact of habitat loss on local bats during construction: › A pre-commencement survey is recommended on each of the structures to assess the buildings prior to any works. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the survey in 2023 and 2024. › 3 trees identified as PRF-I are proposed for removal. While no roosting bats were recorded within any of the trees identified as PRF-Is, given the transient nature of tree roosts and in recognition of the fact that bats are a mobile species, a pre-commencement survey, at the appropriate time of year, will be undertaken on trees to be felled/pruned with suitable potential roost features, by a qualified ecologist to ensure there are no roosting bats. The requirement for a pre-commencement survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the surveys in 2024. If a bat roost is identified within any of the trees to be removed/pruned, a bat derogation licence will be obtained from the NPWS, prior to felling and the felling activity will be supervised by a qualified ecologist.
	Disturbance To limit the risk of potential disturbance to bats during the construction phase; › While no roosting bats were recorded within any of the trees identified as PRF-Is, given the transient nature of tree roosts and in recognition of the fact that bats are a mobile species , a pre-construction survey will be undertaken on trees to be felled/pruned by a qualified ecologist to ensure there are no roosting bats. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the surveys in 2023. If a bat roost is identified within any of the trees to be removed/pruned, or within trees in their proximity, a bat derogation licence will be obtained from the NPWS, prior to felling, and the felling activity will be supervised by a qualified ecologist.

	› The pre-construction survey will either involve a dawn re-entry survey of the trees to be felled, and/or an inspection of the potential roosting features, depending on access availability and time of the year. Due to the potential for opportunistic use at any time of the bat activity season, and potential use during winter, the following precautionary measures are also recommended: o Trees will be nudged two or three times prior to limb removal, with a pause of 30 seconds in between, to allow potential bats to wake and move. o Felled trees will be left in-situ for a minimum of 24 hours prior to sawing or mulching, to allow any bats present to escape (National Roads Authority, 2006). The methodology of British Standard WS 5228-1:2009+A1:2014 "Code of Practice for Noise and Vibration Control on Construction and Open Sites" Part I, will be employed during works, where required, to minimise emission of any noise. In addition, the following best practice measures will be employed: › All plant and equipment for use will comply with Statutory Instrument No 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996". Plant will be chosen to avoid significant low-frequency noise emissions which increase nuisance potential. › Noisier plant will be positioned to optimise screening by other plant. Plant machinery will be turned off when not in use.
Residual Effect following Mitigation	Following the implementation of the landscape plan, there will be a residual effect on local bat populations, significant at the local geographic scale, owing to the removal of linear vegetation and species rich grassland. Overtime, as the planted trees and wildflower meadow become established and mature the effect of the change in habitats on local bats will become insignificant, meaning that overtime the residual effect will be reduced.

6.7.2.4.2 Assessment of Potential Effects on Birds

Table 6-20: Assessment of Potential Impacts on Birds during the construction phase

Description of Effect	There will be a loss of approx. 0.201ha of Scrub (WS1) habitat throughout the site to facilitate the Proposed Development. Species to be removed include hawthorn, gorse and willow. Additionally, approx. 217m of Treeline (WL2) and approx. 180m of Hedgerow (WL1) will be lost in the site to facilitate the Proposed Development and access road. There will be a loss of approx. 1.31ha of Dry calcareous and neutral grassland (GS1) habitat throughout the site to facilitate the Proposed Development. This is considered a relatively species rich grassland, although it did not conform to any Annex I habitat. The loss of these habitats within the Proposed Development site may result in habitat fragmentation and in the loss of foraging and nesting habitat for a range of local common and widespread bird species. The construction phase of the Proposed Development has the potential to result in some habitat loss and disturbance to local bird species, potentially leading displacement from the area. In addition, if site clearance is undertaken during the bird nesting season, it could potentially lead to the destruction or disturbance of nests and potentially to mortality to juvenile birds in the nest.
Assessment of Significance prior to mitigation	In the absence of mitigation, the potential for temporary disturbance and mortality during the construction phase to local bird populations would be considered **significant at the local geographic scale only**.
Mitigation	As described in Section 6.7.2.1.1, a landscape plan has been designed to compensate for the loss of existing habitats within the Proposed Development site, including linear features, mature trees and grasslands which are of use to local bird populations. The following measures, included in the proposed landscape plan are likely to provide suitable nesting and foraging resources to local bird populations post construction:

	› Significant additional native tree planting mitigates necessary removals and ultimately will significantly increase the sites tree and vegetation cover. › Proposed tree planting includes a selection of native and naturalised trees such as alder, beech, birch, cherry, oak, pine, rowan, sycamore and whitebeam. The use of such trees will provide vertical scale and structure to the landscape over time, as well as ecological benefits (e.g. trees which produce berries provide an additional foraging resource to birds). › Approximately 238 linear metres of clipped beech hedgerow will be provided. Although the proposed beech hedgerows are likely to be of lower ecological value to the existing native hedgerows on site, they will result in a net gain in terms of hedgerow habitat post-construction. › Whilst the proposed landscaping does not provide replacement treelines to offset the loss of those currently on site, it does provide for the planting of approximately 1,310m^2 of woodland understorey, comprised of native species (hazel, holly, spindle and guelder-rose), in addition to 202 parkland, open space and feature trees and 389 street trees which will be comprise of native and non-native species. Therefore, it is likely that the Proposed Development will result in a net gain in terms of overall number of trees within the site. This will increase the available nesting habitat for local birds. › Approximately 784m^2 of wildflower meadow of Irish provenance, sourced from Design By Nature, or equivalent, will be created. A low frequency mowing regime in these areas will reduce the overall volume maintenance in the scheme and contribute to a reduction of carbon footprint. The creation of a wildflower meadow may provide suitable nesting habitat for ground-nesting birds as well as additional foraging opportunities and cover from predation. Site clearance to facilitate the construction phase of the Proposed Development will be undertaken outside of the nesting bird season (1st March – 31st August) to ensure compliance with the Wildlife Act. If vegetation clearance is required during the nesting bird season, this will be preceded by a nesting bird survey and all clearance works supervised by an appropriately qualified ecologist.
Residual Effect following Mitigation	Following the implementation of the landscape plan, there will be a residual effect on local bird populations, significant at the local geographic scale, owing to the removal of linear vegetation and species rich grassland. Overtime, as the planted trees and wildflower meadow become established and mature the effect of the change in habitats on local bird populations will become insignificant, meaning that overtime the residual effect will be reduced.

6.7.3 Biosecurity and Site Hygiene

Three-cornered leek (*Allium triquetrum*) and Sea Buckthorn (*Hippophae rhamnoides*), invasive species listed on the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024), were recorded within, or in close proximity, to the Proposed Development site boundary. An Invasive Species Management Plan (ISMP) has been prepared by MKO and is attached as **Appendix 6-2**. The proposed methodologies for treatment and eradication of both First Schedule invasive plant species are detailed in the ISMP.

All of the identified Three-cornered leek and Sea buckthorn within, or in close proximity to, the Proposed Development site will be treated and eradicated.

As stated in Section 5 of the ISMP, ' *The following measures will be adhered to throughout the duration of the proposed construction works:*

- *The ecologist will give a Toolbox Talk to all staff in relation to Three-cornered leek and Sea buckthorn and their management on site.*
- *A designated bio-secure area/exclusion zone will be set up at the Three-cornered Leek and Sea buckthorn locations to prevent disturbance in these areas.*
- *Prior to leaving the invasive species exclusion zones, all boots and clothing will be thoroughly brushed down to remove any contaminated material prior to leaving the area.*

- *The contractor will assign a member of their team as Environmental Officer to ensure the management plan is adhered to throughout the proposed works.*
- *All works in relation to First Schedule and Third Schedule invasive species will be supervised by the Ecological Clerk of Works (ECoW).*
- *As a precautionary measure, machinery will be thoroughly cleaned down before entering the site to prevent potential spread of invasive species from elsewhere.*
- *Clean down will be carried out using brushes and shovels and power washing avoided insofar as possible. This is to prevent potentially contaminated run-off spreading outside the site.*
- *All measures prescribed in the invasive species management plan will be incorporated into the contractor's respective method statements for works.*

To avoid the introduction of invasive species to the site the following best practice measures are recommended:

- *Any material imported to the site should be screened for invasive species by a suitably qualified ecologist before transportation to the site.*
- *All machinery should be thoroughly cleaned down prior to arriving on the site to avoid the potential spread of invasive species from elsewhere.'*

6.7.4 Operational Phase

An assessment of the potential impacts on water quality, habitats and fauna as a result of the operational phase of the development is presented in this section. A range of mitigation measures to ensure that there are no significant residual effects on biodiversity as a result of the Proposed Development are also included in the sections below.

6.7.4.1 Impacts on Habitats

The operation of the Proposed Development will not result in any additional land take or loss of any habitats and as such there is no potential for any significant effects in this regard. There will be no additional loss or degradation of terrestrial habitats associated with the operational phase of the Proposed Development. Potential for impacts on aquatic and other sensitive habitats as well as bats, identified as KERs during operation is assessed in detail in the tables below.

6.7.4.2 Impacts on Water Quality

6.7.4.2.1 *Assessment of Potential Effects on Water Quality*

Table 6-21 Assessment of Potential Impacts on Water Quality

Description of Effect	The Proposed Development will result in increased hard surfaces within the Proposed Development site which has the potential to result in indirect impacts on aquatic ecological receptors as a result of deterioration in water quality arising from the run-off of pollutants, if surface water run-off is not adequately treated, during the operational phase of the development. The operational phase of the Proposed Development will result in a significant increase in foul water generated in the locality, compared to existing conditions. If not adequately constructed and treated, there is potential for indirect impacts on surface and ground water quality. As described in the accompanying Natura Impact Statement, the potential for adverse effects on the qualifying features of European Sites were identified - Galway Bay Complex SAC and Inner Galway Bay SPA. In the absence of mitigation there is potential for the deterioration to water quality to impact the aquatic influenced QIs/SCIs designated as part of these European sites during the operational phase. These impacts on water quality are fully described in Chapter 8: ' Hydrology and Hydrogeology' of this EIAR and are described here in relation specifically to biodiversity.
Assessment of Significance prior to mitigation	In the absence of mitigation, the potential for a deterioration in water quality of the receiving environment during the construction phase would be considered **significant at the local geographic scale only**.
Mitigation	Potential for effects on water quality associated with the production of foul waters and surface water runoff from the site has been fully mitigated through appropriate design and mitigation as fully described in Section 4.6 'Operational Phase' and Section 8.5.5 of the EIAR. Sections 8.5.5.2 and 8.5.5.3 of Chapter 8 'Hydrology and Hydrogeology', describe the assessment of impacts in relation to surface and foul waters during the operation of the Proposed Development. Both assessments conclude that with the implementation of mitigation, '*no significant effects in terms of water quality are expected due to the proposed development'* during the operational phase. In terms of foul waters generated, it is anticipated that the Proposed Development will result in the generation of 995 P.E. Generated foul waters will outfall to an existing Uisce Eireann 225mm foul sewer located to the west of the Proposed Development from which it will flow via the foul water network to Galway Mutton Island Wastewater Treatment Plant (WWTP) before ultimately discharging to the coastal waters of Galway Bay. According to the most recently published Annual Environmental Report for Galway

	Mutton Island WWTP[9], the WWTP was built with a design capacity of 170,000 P.E. and currently has a remaining capacity of 27,089 P.E. The discharge from the WWTP does not have an observable negative impact on the Water Framework Status or coastal/ transitional water quality of the receiving waters. Moreover, based on the results of effluent monitoring, it is fully compliant with the Emission Limit Values as set in its EPA discharge licence. A letter has been received from Uisce Eireann confirming that a water connection can be facilitated for the Proposed Development. In consideration of the remaining capacity which can accommodate the predicted foul loadings associated with the operation of the Proposed Development, and the available data regarding the WWTP's current compliance in operation, there is no potential for the Proposed Development to result in likely significant effects on receiving waters, with respect to foul waters generated. The surface water design includes a range of SuDS measures which have been strategically located across the development and will control the rate of surface water discharge to the receiving Galway City Council network and increase the quality of such discharge. Measures include tree pits, infiltration trenches, swales, rain gardens, permeable paving, attenuation structures, a hydrobrake device and petrol interceptor. The detailed mitigation measures are not repeated here to reduce repetition throughout the document, but are described in Section 8.5.5.2, Chapter 8; the measures used to mitigate the risk of release of hydrocarbons and other pollutants and for sediment control during the construction phase will also be employed as required during the operational phase. Drainage management measures employed during the construction phase will ensure that runoff from the operational development will be effectively managed to ensure that there will be no deterioration in water quality.
Residual Effect following Mitigation	With the implementation of the prescribed mitigation measures, no significant residual effects are predicted.

6.7.4.3 Impacts on Fauna

The operational phase of the Proposed Development will not result in any loss of supporting habitat for protected fauna. As described previously in this EIAR, there will be no additional loss of habitat.

Taking a precautionary approach there is potential for indirect effects on aquatic species which may occur in the wider receiving environment, such as otter, salmonids, European eel and aquatic invertebrates, and the aquatic habitats upon which they depend, due to run off of pollutants from hardstanding areas and from storm water and foul water if not treated adequately during the operational phase. Run off of pollutants to watercourses and habitats within and downstream of the site could potentially affect water and habitat quality and supporting habitat quality for these species. The potential for deterioration of water quality and habitat degradation has been assessed in Section 6.7.4.2.1 above and is not repeated here.

Following mitigation outlined in the preceding sections there is no potential for any significant residual effect at any geographic scale as a result of the Proposed Development.

6.7.4.3.1 *Assessment of Potential Effects on Bats*

Table 6-22 Assessment of Potential Effects on bats

Description of Effect	**Habitat Fragmentation and Disturbance** The operational phase of the Proposed Development will result in increased human activity and noise within the Proposed Development site. In addition, the lighting plan outlined for the operational phase of this development will increase artificial lighting throughout the site. Lighting has the potential to affect bats by fragmenting their commuting and foraging habitats

[9] Uisce Éireann (2025). Annual Environmental Report 2024- Galway City- D0050-01.

	and disturbing roosting locations, causing abandonment of suitable habitats unusable due to increased risks of predation and inability to adapt to artificial lighting levels. Therefore, the potential for effects on bats requires consideration. Limited light spillage was noted into the site from surrounding roads, housing estates and back gardens, which partially illuminated the north-eastern section of the site. Given the existing unlit Proposed Development site is located in an urban-suburban area of Galway City, and surrounded by residential and industrial developments it must be considered that bat species in the area are likely accustomed to some levels of disturbance as a result of light spill and human traffic. The proposed landscaping for the Proposed Development will include for the provision of amenity areas increasing human traffic, primarily during working hours. Furthermore, the proposed landscaping plan will, overtime, increase connectivity for foraging and commuting bats in the wider environment of the Proposed Development site. The installation of artificial lighting will primarily focus on illuminating the proposed internal roadways, car parking areas, paths and walkways, with lighting outside of these areas limited, especially towards the site's perimeters. Luminaires specifications are presented in the lighting report prepared by Moloney- Fox Consultants (**Appendix 6-4**).
Assessment of Significance prior to mitigation	In the absence of mitigation, disturbance (from lighting during operation) to local bat populations would be considered **Not significant at any geographic scale** due to the low usage of the site by local bat populations**.** However, mitigations have been proposed to mitigate for any potential impacts during the operational phase of the development.
Mitigation	**Habitat Fragmentation and Disturbance** The lighting plan for the operational phase of the Proposed Development, has been designed by Moloney- Fox Consultants with consideration of Bat Conservation Ireland (Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers, BCI, 2010) and Bat Conservation Trust (Guidance Note 08/23 Bats and Artificial Lighting in the UK, ILP, 2023) guidelines, to minimise light spillage, thus reducing any potential disturbance to bats. The operational lighting plan has been designed in collaboration with project ecologists to avoid significant effects on wildlife by design and to mitigate any unavoidable impacts. A dark corridor has been incorporated into the design of the Proposed Development to maintain suitable foraging and commuting habitat. Artificial lighting towards these features will be avoided or kept to a minimum, with unavoidable light spill limited to 1Lux. In addition the lighting plan has been designed to limit lighting along the site perimeters to 1lux or lower where lighting the perimeter is not necessary (e.g. the central eastern perimeter). The majority of luminaires to be installed have been designed to have a 0 Degree tilt to ensure limited unwanted light spill. Where a 0 degree tilt cannot be achieved, the tilt is limited to 5 degrees.
Residual Effect following Mitigation	**Habitat Fragmentation and Disturbance** With the implementation of the prescribed mitigation measures, no significant residual effects on bats are predicted as a result of the operational phase of the development.

6.7.5 Decommissioning Phase

It is not intended that the Proposed Development will be removed, as permanent planning permission is being sought for this development. The Proposed Development will form an integral part of the Knocknacarra community area. Therefore, it is intended that the Proposed Development will be retained as permanent and will not be decommissioned.

6.7.6 Effects on Designated Sites

Galway Bay Complex SAC and Inner Galway Bay SPA were identified within the likely zone of influence.

In relation to European sites, a Natura Impact Statement (NIS) has been prepared to provide the competent authorities with the information necessary to complete an Appropriate Assessment for the Proposed Development in compliance with Article 6(3) of the Habitats Directive.

As per the aforementioned EPA Guidance (2022), *"a biodiversity section of an EIAR, should not repeat the detailed assessment of potential effects on European sites contained in a Natura Impact Statement"* but should *"incorporate their key findings as available and appropriate"*. This section provides a summary of the key assessment findings with regard to Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

The NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites.

The findings presented in the NIS are that:

'*For the reasons set out in detail in this NIS, in the light of the best scientific knowledge in the field, all aspects of the Proposed Development which, by itself, or in combination with other plans or projects, which may affect the relevant European Sites have been considered.*

The NIS contains information which the competent authority, may consider in making its own complete, precise and definitive findings and conclusions and upon which it is capable of determining that all reasonable scientific doubt has been removed as to the effects of the Proposed Development on the integrity of the relevant Natura 2000 sites.

In conclusion, in the light of the conclusions of the assessment which it shall conduct on the implications for the European sites concerned, the competent authority is enabled to ascertain that the Proposed Development will not adversely affect the integrity of any of the European sites concerned'.

One nationally designated site - Galway Bay Complex pNHA - was identified as being within the zone of influence and in included as a KER. This pNHA site lies within the boundaries of the European Site Galway Bay Complex SAC & Inner Galway Bay SPA and has been assessed and considered under that designation in the accompanying NIS.

6.8 Cumulative impacts

The Proposed Development was considered in combination with other plans and projects in the area that could result in cumulative impacts on the Key Ecological Receptors (KERs) identified in Section 6.6.2 of this report, including European Sites, Nationally designated sites, habitats and fauna. This included a review of online Planning Registers and served to identify past, present and future plans and projects, their activities and their predicted environmental effects. The projects considered are listed in Chapter 2: Background of the Proposed Development.

6.8.1 Assessment of Plans

The following development plans have been reviewed and taken into consideration as part of this assessment:

- Adopted Galway County Development Plan 2022-2028
- Galway City Development Plan
- Ireland's 4th National Biodiversity Action Plan 2023-2030

- Northern and Western Regional Assembly – Regional Spatial and Economic Strategy 2020-2032

The review focused on policies and objectives that relate to designated sites for nature conservation, biodiversity and protected species. An overview of the search results with regard to plans is provided in Table 6-23.

European sites are considered in the Natura Impact Statement that accompanies the planning application.

Table 6-23: Assessment of Plans

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
Galway County Development Plan **2022 – 2028**	**NHB 1 Natural Heritage and Biodiversity of Designated Sites, Habitats and Species** Protect and where possible enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts) and extend to any additions or alterations to sites that may occur during the lifetime of this plan. Protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI 94 of 1999). Support the protection, conservation and enhancement of natural heritage and biodiversity, including the protection of the integrity of European sites, that form part of the Natura 2000 network, the protection of Natural Heritage Areas, proposed Natural Heritage Areas, Ramsar Sites, Nature Reserves, Wild Fowl Sanctuaries (and other designated sites including any future designations) and the promotion of the development of a green/ ecological network. **NHB 2 European Sites and Appropriate Assessment** To implement Article 6 of the Habitats Directive and to ensure that Appropriate Assessment is carried out in relation to works, plans and projects likely to impact on European sites (SACs and SPAs), whether directly or indirectly or in combination with any other plan(s) or project(s). All assessments must be in compliance with the European Communities (Birds and Natural Habitats) Regulations 2011. All such projects and plans will also be required to comply with statutory Environmental Impact Assessment requirements where relevant. **NHB 3 Protection of European Sites** No plans, programmes, or projects etc. giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects	The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity, protected species and designated sites. The Proposed Development has been designed in order to avoid loss of sensitive habitats where possible and where some loss has been identified; appropriate mitigation and enhancement measures have been incorporated into the Proposed Development. No potential for negative cumulative impacts when considered in conjunction with the current proposal were identified. The Proposed Development is compliant with the policies and objectives outlined in the Plan. No projects identified within the Development Plan were found to occur in the wider area surrounding the Proposed Development.

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	NHB 4 Ecological Appraisal of Biodiversity Ensure, where appropriate, the protection and conservation of areas, sites, species and ecological/networks of biodiversity value outside designated sites. Where appropriate require an ecological appraisal, for development not directly connected with or necessary to the management of European Sites, or a proposed European Site and which are likely to have significant effects on that site either individually or cumulatively. **NHB 7 Mitigation Measures** Require mitigating measures in certain cases where it is evident that biodiversity is likely to be affected. These measures may, in association with other specified requirements, include establishment of wildlife areas/corridors/parks, hedgerow, tree planting, wildflower meadows/marshes and other areas. With regard to residential development, in certain cases, these measures may be carried out in conjunction with the provision of open space and/or play areas. measures may be carried out in conjunction with the provision of open space and/or play areas. **NHB 9 Protection of Bats and Bats Habitats** Seek to protect bats and their roosts, their feeding areas, flight paths and commuting routes. Ensure that development proposals in areas which are potentially important for bats, including areas of woodland, linear features such as hedgerows, stonewalls, watercourses and associated riparian vegetation which may provide migratory/foraging uses shall be subject to suitable assessment for potential impacts on bats. This will include an assessment of the cumulative loss of habitat or the impact on bat populations and activity in the area and may include a specific bat survey. Assessments shall be carried out by a suitably qualified professional and where development is likely to result in significant adverse effects on bat populations or activity in the area, development will be prohibited or require mitigation and/or compensatory measures, as appropriate. The impact of lighting on bats and their roosts and the lighting up of objects of cultural heritage must be adequately assessed in relation to new developments and the upgrading of existing lighting systems. **WR 1 Water Resources**	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	Protect the water resources in the plan area, including rivers, streams, lakes, wetlands, springs, turloughs, surface water and groundwater quality, as well as surface waters, aquatic and wetland habitats and freshwater and water dependant species in accordance with the requirements and guidance in the EU Water Framework Directive 2000 (2000/60/EC), the European Union (Water Policy) Regulations 2003 (as amended), the River Basin District Management Plan 2018 – 2021 and other relevant EU Directives, including associated national legislation and policy guidance (including any superseding versions of same) and also have regard to the Freshwater Pearl Mussel Sub-Basin Management Plans. **WR 2 River Basin Management Plans** It is a policy objective of the Council to implement the programme of measures developed by the River Basin District Projects under the Water Framework Directive in relation to: Surface and groundwater interaction, Dangerous substances, Hydro-morphology, Forestry, On site wastewater treatment systems, Municipal and industrial discharges, Urban pressures, Abstractions.	
Galway City Council Development Plan 2023- 2029	**Policy 5.2 Protected Spaces: Sites of European, National and Local Ecological Importance** **1.** Protect European sites that form part of the Natura 2000 network (including Special Protection Areas and Special Areas of Conservation) in accordance with the requirements in the EU Habitats Directive (92/43/EEC), EU Birds Directive (2009/147/EC) and associated national legislation. **2.** Ensure that all plans or projects within the Plan area will only be authorised and / or supported after the competent authority has ascertained based on scientific evidence, screening for appropriate assessment and /or a Habitats Directive Assessment that: **i.** The plan or project will not give rise to an adverse direct, indirect or secondary effect on the integrity of any European site (either individually or in combination with other plans or projects); or **ii.** The plan or project will have an adverse effect on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation	The Development Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity, protected species, designated sites and other natural heritage interests. The Proposed Development will not result in any significant effects on the conservation objectives of any designated sites, will not negatively impact on the ecological network of the local area and has appropriate environmental assessments prepared for it. The Proposed Development is in compliance with the objectives outlined within the Galway City Council Development Plan.

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or **iii.** The plan or project will have an adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000. **4.** Protect, conserve and support the development of an ecological network throughout the city which will improve the ecological coherence of the Natura 2000 network in accordance with Article 10 of the Habitats Directive. **10.** Protect and conserve rare and threatened habitats and their key habitats, (wherever they occur) listed under Annex I and Annex IV of the EU Habitats Directive (92/43EEC) and listed for protection under the Wildlife Acts 1976-2000 and plant species listed in the Flora Protection Order 2015. **11.** Ensure that plans and projects with the potential to have a significant impact on European sites (SAC or SPA) whether directly, indirectly or in combination with other plans or projects are subject to Appropriate Assessment, under Article 6 of the Habitats Directive (92/43EEC) and associated legislation and guidelines, to inform decision making. **14.** Support and implement measures to control and manage alien/invasive species, where appropriate in accordance with the EU (Birds and Natural Habitats) Regulations 2011. **Policy 5.3 Blue Spaces: Coast, Canals and Waterways** **1.** Protect and maintain the integrity of the coastal environment and waterways by avoiding significant impacts and meeting the requirements of statutory bodies, national and European legislation and standards.	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
	2. Conserve and protect natural conservation areas within the coastal area and along waterways and ensure that the range and quality of associated habitats and the range and populations of species are maintained.	
National Biodiversity Action Plan 2023-2030	**Objective 1: Adopt a Whole-of Government, Whole of-Society Approach to Biodiversity.** Proposed actions include capacity and resource reviews across Government; determining responsibilities for the expanding biodiversity agenda providing support for communities, citizen scientists and business; and mechanisms for the governance and review of this National Biodiversity Action Plan. **Objective 2: Meet Urgent Conservation and Restoration Needs.** Supporting actions will build on existing conservation measures. Efforts to tackle Invasive Alien Species will be elevated. The protected area network will be expanded to include the Marine Protected Areas. The ambition of the EU Biodiversity Strategy will be considered as part of an evolving work programme across Government. **Objective 3: Secure Nature's Contribution to People.** Actions highlight the relationship between nature and people in Ireland. These include recognising the tangible and intangible values of biodiversity, promoting nature's importance to our culture and heritage and recognising how biodiversity supports our society and our economy. **Objective 4: Enhance the Evidence Base for Action on Biodiversity.** This objective focuses on biodiversity research needs, as well as the development and strengthening of long-term monitoring programmes that will underpin and strengthen future decision-making. Action will also focus on collaboration to advance ecosystem accounting that will contribute towards natural capital accounts. **Objective 5: Strengthen Ireland's Contribution to International Biodiversity Initiatives.** Collaboration with other countries and across the island of Ireland will play a key role in the realisation of this Objective. Ireland will strengthen its contribution to international biodiversity initiatives and international governance processes, such as the United	The Biodiversity Action Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the biodiversity, protected species, designated sites and other natural heritage interests. A comprehensive NIS has been submitted along with this application in which cumulative impacts with regard to European Sites is assessed. No potential for negative cumulative impacts when considered in conjunction with the Proposed Development were identified.

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on Biodiversity
Northern and Western Regional Assembly – Regional Spatial and Economic Strategy 2020-2032	**Regional Policy Objective 5.5** – Ensure efficient and sustainable use of all our natural resources, including inland waterways, peatlands, and forests in a manner which ensures a healthy society a clean environment and there is no net contribution to biodiversity loss arising from development supported in this strategy. Conserve and protect designated areas and natural heritage area. Conserve and protect European sites and their integrity. **Regional Policy Objective 5.7** - Ensure that all plans, projects and activities requiring consent arising from the RSES are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate	The guidance document was comprehensively reviewed, with particular reference to policies and objectives that relate to the biodiversity, protected species and designated sites. A comprehensive Natura Impact Statement has been submitted along with this application. No potential for negative cumulative impacts when considered in conjunction with the current proposal were identified.

6.8.2 Assessment of Projects

As described in Section 2.3.2 of the EIAR, relevant projects have been assessed in-combination with the Proposed Development and include planning applications in the vicinity of the site, within the zone of influence of all habitats and species considered in this report. These have not been repeated here to reduce the duplication of information within this EIAR. However, they have been fully considered in the assessment with further detail provided below. In addition, Section 6.8.4 concludes on their potential for impacts on biodiversity.

Other smaller developments within the wider environment, as fully described in Table 2.1 of this EIAR, have been considered within this cumulative impact assessment. In order to avoid repetition within the EIAR, these have not been repeated below.

Future phases of residential development are likely to occur in lands to the immediate west of the Proposed Development site. The lands here are of a similar composition to the Proposed Development site, with respect to habitats present. The cumulative impact of future phases of development here will be assessed in any subsequent planning application for those lands, when the design and particulars of such proposals have been identified.

6.8.3 Existing Habitats and Land Uses

The potential for the Proposed Development to result in a cumulative loss or deterioration of habitats, or impact on the KER species identified, was considered in relation to the existing land uses in the area.

The Proposed Development is located in waste ground, which generally provides low value habitats for faunal species. The grazed grasslands occurring in the south of the site are considered species rich and hold a higher biodiversity value thus achieving local importance higher value status. The Proposed Development will result in the loss of approximately 217m of treelines and 180m of hedgerow habitat. The proposed landscaping will provide 238m of clipped beech hedgerow, which although likely to be of a lower ecological value to the existing native hedgerows, will result in a net gain of hedgerow habitat within the site. Whilst the proposed landscaping does not provide replacement treelines to offset the loss of those currently on site, it does provide for the planting of approximately 1,310m^2 of woodland understorey, comprised of native species, in addition to 202 parkland, open space and feature trees and 389 street trees which will be comprise of native and non-native species. Therefore, it is likely that the Proposed Development will result in a net gain in terms of overall number of trees within the site. The Proposed Development will not contribute to any overall net loss of high value habitat, it has been deliberately designed to be located on habitats of low value for faunal species.

6.8.4 Assessment of Cumulative Effects

The residual impacts of the Proposed Development are considered cumulatively with other plans and projects as described in Sections 6.8.1 and 6.8.2. Particular focus has been placed on those plans and projects that are in closest proximity to the Proposed Development and those that could be potentially affected via downstream surface water.

Following the detailed surveys undertaken and impact assessment provided in Section 6.7, it is concluded that there will be no significant residual habitat loss, disturbance or deterioration of water quality associated with the Proposed Development and therefore it cannot contribute to any cumulative effect when considered in combination with other plans and projects.

No significant effects as a result of the Proposed Development in relation to disturbance, displacement or mortality of faunal species has been identified. Therefore, there is no potential for the Proposed Development to contribute to any cumulative effect in this regard.

The Proposed Development will not result in any significant residual effects on biodiversity and will not contribute to any cumulative effect when considered in combination with other plans and projects.

In the review of the projects and plans that was undertaken, no connection that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Proposed Development.

6.9 Conclusion

Following consideration of the residual effects (post mitigation) it is concluded that the Proposed Development will not result in any significant effects on any of the identified KERs. No significant effects on receptors of International, National or County Importance were identified.

The potential for effects on European Designated Sites are fully described in the Natura Impact Statement that accompanies this application. The NIS concludes that in view of best scientific knowledge and on the basis of objective information, the Proposed Development either individually or in combination with other plans or projects, is not likely to have significant effects on the European Sites that were assessed as part Appropriate Assessment process. No potential for impacts on any nationally designated site was identified.

Provided that the Proposed Development is operated in accordance with the design, best practice and mitigation that is described within this application, significant individual or cumulative effects on ecology are not anticipated at the international, national or county scales or on any of the identified KERs.