BusConnects Galway: Dublin Road

January 2025

Appropriate Assessment Screening and Natura Impact Statement

Main Report

BUS CONNECTS

SUSTAINABLE TRANSPORT FOR A BETTER CITY.

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1. INTRODUCTION

APEM Ireland was commissioned by Galway City Council to prepare an Appropriate Assessment (AA) screening report and a Natura Impact Statement (NIS) for the proposed BusConnects Galway: Dublin Road Project which consists of the alteration of existing road layouts, including junction layouts, footpaths, signalling, pedestrian crossings, drainage and other associated works.

1.1. Background

APEM Ireland have also prepared an EIAR Biodiversity Chapter for the BusConnects Galway: Dublin Road Project (APEM, 2024).

1.2. Site Description

The Proposed Development is located on the existing R338 Dublin Road, Galway, Co. Galway, between Sáilín to the west (53.28070N, -9.02980E) and the Martin Roundabout (53.2782002N, -8.9750626E) to the east (the Site). Refer to Figure 1 for the Site Location.

The western section of the Site, between Sáilín and the Skerritt Roundabout, comprises the existing hardstanding of the R338 and the adjacent footpaths. Outside the main road network are gardens of the existing dwellings, a school, a hospital and hotels comprising amenity grassland, ornamental shrub, young trees, recolonised bare ground and artificial surfaces.

The eastern section of the Site comprises the existing hardstanding of the R338 and the adjacent footpaths. Outside the main road network are gardens of the existing dwellings and carparks comprising amenity grassland and trees. There are also large sections of deciduous woodland, immature woodland, semi-natural grassland and scrub associated with Merlin Park and surrounding woodlands. There are no watercourses intersecting or adjacent, therefore no direct connectivity to the surrounding river network. Surface water from the Site currently exits the area via the existing surface water drainage network as well as over the road's edge on un-kerbed areas. The grassland within Merlin Park has been identified as Annex I habitat by previous studies[1] and recent field work undertaken for the EIAR Biodiversity Chapter (APEM, 2024). This Annex I habitat also includes potential food plant for Marsh fritillary (Euphydryas aurinia), a protected species under the Habitats Directive. A species-specific Marsh fritillary survey, as well as bat surveys, were also carried out to gather baseline data for the EIAR Biodiversity Chapter (APEM, 2024).

1.3. Brief Description of the Project

The proposed BusConnects Galway: Dublin Road project consists of the alteration to existing road layouts, including junctions, footpaths, signalling, pedestrian crossings, drainage and other associated works. Hereafter referred to as ''Proposed Development". A detailed description is provided in Section 3.

The aim of the Proposed Development, when in operation, is to provide enhanced walking, cycling and bus infrastructure on this key access corridor in Galway city and environs, which will enable and deliver efficient, safe, and integrated sustainable transport movement along the corridor. The objectives of the Proposed Development are described in Chapter 1 (Introduction) of the EIAR. The Proposed

[1] Page 18 and 19 of Inspector's Report :
https://plan.galwaycity.ie/VirtualViewerNetHTML5/index.html?documentId=18208_CORRESPONDENCE

Development, which is described in Chapter 4 (Proposed Development Description) of the EIAR has been designed to meet these objectives.

1.4. Aim of the Report

The aim of this report is to provide supporting information to assist the competent authority to carry out screening for appropriate assessment and, if necessary, appropriate assessment of the proposed BusConnects Galway: Dublin Road project.

1.5. Objectives of the Appropriate Assessment Process

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures to be addressed in the AA process[2]. The plan / project should first aim to avoid any significant effects by identifying potential impacts early and designing the project / plan to avoid such impacts. Secondly, if adverse impacts are likely, mitigation measures can be applied during the AA process to the point where no adverse impacts on the integrity of any Natura 2000 site(s) remain. If adverse effects on integrity remain, the plan / project may only proceed if there are no alternative solutions, or the plan / project is required for imperative reasons of overriding public interest (the 'IROPI test').

Article 6(3) and (4) define a step wise procedure to the AA Process, and this is set out in European Commission Guidance (2021), detailed in section 2.2.

1.6. Relevant Legislation and Policy

The legislation relevant to this report is as follows:

- EU Habitats Directive 92/43/EEC, European Communities (Natural Habitats) Regulations 1997, European Communities (Birds and Natural Habitats) Regulations 2011;
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended; and,
- Planning and Development Act 2000, as amended - PART XAB.

The relevant sections of the legislation are summarised in Appendix A of this report.

1.7. Evidence of Technical Competence and Experience

This report was prepared by Senior Terrestrial Ecologist Amy Adwan. Jason Guile and Michael Dobson carried out the technical review of this report.

Amy Adwan (Senior Terrestrial Ecologist) – Amy is a Senior ecologist with APEM Ireland and has 7 years' experience in the ecological sector in Ireland. She holds a BSc in Environmental Science from the University of Limerick. Amy is a qualified ecologist experienced in a wide range of ecological survey techniques and methodology including bats, mammals, freshwater and habitats. She has an extensive knowledge of environmental law with reference to Ireland as well as the EU and the Habitats Directive. Her expertise is focussed on compiling Appropriate Assessment reporting, including Screening for Appropriate Assessment and Natura Impact Statements, as well as reviews of same, in relation to relevant CJEU rulings and European Commission Guidance. She also undertakes Ecological Impact

[2] The objectives as outlined are based on those set out in Scott Wilson and Levett-Therivel, (2006).

Assessments (EcIA), Environmental Impact Assessment (EIA) and Preliminary Ecological Appraisal (PEA) reporting.

Jason Guile BSc (Principal Ecologist) – Jason is a Principal ecologist with APEM Ireland and has over 10 years' experience in ecological assessment and holds a BSc in Marine Biology/Oceanography from the University of Wales, Bangor and a HND in Coastal Conservation with Marine Biology from Blackpool and Fylde College. Jason has a wide range of experience in the preparation of Environmental Impact Assessment (EIA), Appropriate Assessment (AA) Screening reports and Natura Impact Statements (NIS). Jason was the lead ecologist on a range of projects in the UK, including large scale infrastructural schemes. Since moving to Ireland, he has been lead ecologist / author (EIAR, EcIA, AA Screening reports and NISs) for a number of projects including historic landfill remediation works, urban planning applications and commercial regeneration sites.

Dr Michael Dobson FLS, MCIEEM (Associate Director) – Mike is an Associate Director with APEM Ireland. He holds a BSc (Hons) in Biology from the University of Southampton and a PhD in freshwater ecology from the University of London (Queen Mary College). Mike spent 20 years as a research scientist, specialising in ecology and management of rivers and freshwater wetlands throughout Europe and East Africa, along with developing biotic indices for river quality assessment in Central America. He was Director of the Freshwater Biological Association for six years before joining APEM in 2013, working initially in the limnology and water quality team before moving in 2022 to APEM Ireland. Mike has written many peer-reviewed papers in ecology and biogeography, along with two undergraduate textbooks for Oxford University Press (both in their second editions) and seven identification guides to freshwater invertebrates of Britain and Ireland. He has extensive experience of survey design, data analysis and reporting, including publication and verbal reporting for non-technical audiences.

2. METHODS

2.1. Guidance and Practice Notes

This report has been compiled in accordance with guidance contained in the following documents:

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities. (Department of Environment, Heritage and Local Government, 2010 revision);
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 & PSSP 2/10. (Department of Environment, Heritage and Local Government);
- Assessment of Plans and Projects in Relation to Natura 2000 sites: Methodological Guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2021);
- Communication from the Commission on the precautionary principle (European Commission, 2000);
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC (European Commission, 2019);
- European Commission (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission;
- Office of the Planning Regulator (2021). Appropriate Assessment Screening for Development Management. OPR Practice Note PN01;
- Mullen *et al.,* (2021). Strict Protection of Animal Species: Guidance for Public Authorities on the Application of Articles 12 and 16 of the EU Habitats Directive to development / works undertaken on or on behalf of a Public Authority. National Parks and Wildlife Service Guidance Series;
- Fossitt (2000). A Guide to Habitats in Ireland. The Heritage Council; and
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

2.2. Assessment Methodology

The above referenced guidance sets out a staged process for carrying out Appropriate Assessment.

Stage 1 Screening: a pre-assessment stage ('screening') to determine the potential for the significant effects on the conservation objectives of European sites, which may arise from a proposed plan or project, either alone or in combination with other plans and projects (i.e., likely significant effects). Significant effects on a European site are those that would undermine the conservation objectives supporting the favourable conservation condition of the Qualifying Interest (QI) habitats and / or the QI / Special Conservation Interest (SCI) species of a European site(s). Significant effects can also be positive and may have beneficial effects on conservation objectives. This stage examines the likely significant effects of a project either alone or in combination with other projects upon any Natura 2000 site. A plan or project may be 'screened out', meaning it does not require progression to Stage 2. In order to screen out a project, it must be excluded, on the basis of objective information, that the plan or project, individually or in combination with other plans or projects, is likely to have a significant effect on the conservation objectives of a European site. Mitigation measures cannot be considered at Stage 1.

Stage 2 Appropriate Assessment (NIS): In this stage, there is a consideration of the impact of the project with a view to ascertaining whether there will be any adverse effect on the integrity of any Natura 2000 site either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. If adverse effects are identified, mitigation measures to avoid those effects can be considered at this stage. If, after considering mitigation measures, residual integrity levels impacts remain, the project cannot be authorised. The conclusion of stage 2 is either the project has no adverse residual integrity level effects, or it proceeds to Stage 3.

Stage 3 Assessment of Alternative Solutions: This stage examines alternative ways of implementing the project that, where possible, avoid any adverse impacts on the integrity of the Natura 2000 site.

Stage 4 Assessment where no alternative solutions exist and where adverse impacts remain: Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the sites will be necessary.

To ensure that the Proposed Development complies fully with the requirements of Article 6 of the Habitats Directive and all relevant Irish transposing legislation, this report has been compiled to enable the competent authority in relation to the Proposed Development to determine whether the Proposed Development, individually or in combination with another plan or project is likely to have a significant effect on a Natura 2000 site.

2.3. Zone of Influence

The '*zone of influence*' (ZoI) for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries. The zone of influence will vary for different ecological features depending on their sensitivity to an environmental change (CIEEM, 2018).

Irish guidance (DoEHLG, 2010)[3] states, for the ZoI of plans, that "*A distance of 15 km is currently recommended in the case of plans, and derives from UK guidance (Scott Wilson et al, 2006)*". The guidance goes on to state that "*for projects, the distance could be much less than 15 km, and in some cases less than 100 m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, the sensitivities of the ecological receptors, and the potential for in-combination effects.*"

In determining the ZoI, an initial distance of 15 km is considered, but the Source – pathway – Receptor (S-P-R) model is also applied. Office of the Planning Regulator (OPR) Practice Note (2021) describes the S-P-R model for determining the ZoI of a project, identifying all pathways via which a designated site could be affected irrespective of distance. This model also reflects guidance described in CIEEM (2018) above.

The ZoI for this project is discussed in section 4.1 of this report.

2.4. Desk Study

A desk study was carried out to collate information available on Natura 2000 sites within the potential zone of influence of the project. This comprised a review of the following publications, websites, data sources and datasets:

- Google Maps[4];
- Geohive[5];
- Galway City Council planning portal[6];

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[3] *Appropriate Assessment of Plans and Projects in Ireland -Guidance for Planning Authorities*
[4] https://www.google.ie/maps (last accessed 13/11/23)
[5] https://www.geohive.ie/ (last accessed 13/11/24)
[6] https://www.galwaycity.ie/planning/online-planning-system (last accessed 13/11/2024).

- National Parks and Wildlife Service (NPWS) website[7];
- National Biodiversity Data Centre (NBDC)[8];
- Environmental Protection Agency (EPA) Maps[9];
- Geological Survey of Ireland (GSI)[10];
- National Parks and Wildlife Service – Information on the status of EU protected habitats in Ireland (Article 17[11] and Article 12[12] Reports and datasets); and
- Inland Fisheries Ireland (IFI)[13].

2.5. Consultation Events and Stakeholder Engagement

Although non-statutory consultations have no legal status, The National Transport Authority (NTA) and Galway City Council (GCC) have chosen to carry out consultation to seek views from those likely to be interested in or affected by the Proposed Development, which can then be taken into consideration in the decision-making process and the design going forward.

The primary objective of the non-statutory public consultation process was and is to provide opportunities for members of the public and interested stakeholders to contribute to the planning and design of the Proposed Development and to inform the development process. Public participation in the planning and design of the Proposed Development was encouraged from an early stage through on-the-ground engagement and information and media campaigns.

The first Non-Statutory Public Consultation (NSPC) undertaken by Traffic Infrastructure Ireland (TII) and their consultant ran for a period of 12 weeks from the 8th October 2020 to 7th January 2021. This consultation was held fully online as were all meetings due to COVID-19 restrictions in place at the time. Due to changes in the Public Spending Code, revised NTA Project Approval Guidelines and proposed revised layouts along Bus Corridors (NTA Preliminary Design Guidance Booklet for BusConnects Core Bus Corridor_2021-05-05), the Strategic Assessment Report was redrafted and the scheme was subject to a revised Concept Development and Option Selection phase including a 2nd Non-Statutory Public Consultation.

The second NSPC – Emerging Preferred Route was undertaken in January 2023. In advance of the public consultation, a briefing to elected members of GCC was held on Wednesday 11th January 2023. The public consultation commenced on Friday 13th January 2023 and had a duration of four weeks.

On the 11th January 2023, a registered letter was sent out to potentially affected landowners and stakeholders with a copy of a 24-page brochure attached. The brochure included information on the scheme objectives, the option selection process, photomontages and drawings of the Emerging Preferred Route. A brochure drop was also carried out to approximately 400 homes and businesses in close proximity to the scheme. This ensured that the consultation was accessible to non-internet users and those who do not regularly follow local news.

Continuous consultation with an open public event was held in Renmore Community Centre on Monday 23rd January 2023. The Aerial Overview video was played on screen on a loop. A1 drawings showing

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[7] https://www.npws.ie/protected-sites (last accessed 13/11/24)
[8] www.biodiversityireland.ie (last accessed 13/11/24)
[9] http://gis.epa.ie/(last accessed 13/11/24)
[10] https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx (last accessed 13/11/24)
[11] https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17 (last accessed 13/11/24)
[12] Article 12 Data | National Parks & Wildlife Service (last accessed 13/11/24)
[13] https://www.fisheriesireland.ie/ (last accessed 13/11/24)

the Emerging Preferred Route were displayed. In addition to the above, a virtual information room was created, having had a total of 1,665 visitors.

A total of 91 submissions were received from the various platforms of which 13 no. submissions were received via email, 66 no. submissions were received via the online submission form and 12. no were received through phone calls/voicemails using the dedicated phone line for the project.

The majority of feedback was positive with 86% expressing their overall support for the scheme. The positive feedback concentrated on the merits of the segregation of the cyclists/pedestrians from the live traffic, and also there was a good response to the proposed junction improvements.

Environmental concerns raised include loss of green space and hedges (3%) and concerns for the impact to Annex 1 habitats at Merlin Park Meadows (5%).

Consultations were also conducted with organisations such as the National Parks and Wildlife Service (NPWS), local environmental groups and relevant local authorities these are considered in this report. Where practicable, the information and advice received from the consultation process was subsequently incorporated into the design of the Proposed Development and otherwise addressed in this assessment. Issues raised during the consultation process with the prescribed bodies and interested parties with regards to Appropriate Assessment included the following:

Development Applications Unit, Department of Housing, Local Government & Heritage (DAU): Comments provided related to the assessment of the impacts of the Proposed Development on biodiversity and the Merlin Park Grasslands (Annex I Hay Meadow), the completion of ecological surveys (such as trees, hedgerows, bats, birds, etc.) alien invasive species, mitigation and monitoring measures and Construction Environmental Management Plans (CEMP).

2.6. Screening Report

The approach taken in preparing the AA screening report is summarised as follows:

- Identify Natura 2000 sites within the potential ZoI of the project;
- Identify the qualifying interests of the Natura 2000 sites and review their conservation objectives;
- Review whether there is potential for the qualifying interests to be affected by the project based on information such as the vulnerabilities of the Natura 2000 site, proximity to the Site and the nature and scale of the works associated with the project, certain design and standard measures may be taken into account at Stage 1 in assessing likely significant effects;
- Consider the likelihood of the identified potential impacts, in the absence of mitigation, occurring based on the information collated and professional judgement;
- Consider the likelihood of cumulative effects arising from the project in-combination with other plans and projects; and
- Identify the likelihood of significant effects on Natura 2000 sites occurring because of the project.

2.7. Natura Impact Statement

The approach to preparing the Natura Impact Statement (NIS) is summarised as follows:

- Progress from the Stage 1 screening and identify any Natura 2000 Sites which are screened in;
- Describe the elements of the project that are likely to give rise to significant effects on the Natura 2000 Sites;
- Set out the conservation objectives of the Natura 2000 sites;
- Assess and describe how the project will affect the QI and SCI species and habitats of the Natura 2000 sites;

- Assess and Describe how the integrity of Natura 2000 sites are likely to be affected by the project;
- Identify and describe what measures are to be introduced to avoid, reduce or remedy the adverse effects on the integrity of the Natura 2000 sites; and,
- Consider findings and determine if potential for adverse effects on the integrity of any Natura 2000 sites remains after such measures have been implemented.

The approach taken in preparing both the screening report and NIS are based on standard methods and best practice guidance, as listed in the references section of this report.

2.8. Cumulative Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a proposed project results in individually insignificant impacts that, when considered in-combination with impacts of other proposed or permitted plans and projects, can result in significant effects (CIEEM, 2018).

Other plans and projects to be considered would include the following types of future development within the same ZoI:

- Proposals for which consent has been applied which are awaiting determination in any regulatory process (not necessarily limited to planning permission);
- Projects which have been granted consent (not limited to planning permissions) but which have not yet been started or which have been started but are not yet completed (i.e., under construction); and
- Proposals for which consent has not been applied.

3. DETAILED DESCRIPTION OF THE PROJECT

The Proposed Development has an overall length of approximately 3.9km, the extent of which is set out in Figure 1. The Proposed Development comprises the provision of public transport facilities and active travel facilities from east of the Moneenageisha Junction to the Doughiska Junction. This route is a main arterial route into Galway City Centre for both commuters and tourists. It also runs adjacent to the Atlantic Technological University (ATU), Merlin Park Hospital, Bon Secours Hospital and a number of schools and other amenity locations. Throughout the Proposed Development, bus stops will be enhanced to improve the overall journey experience for bus passengers, and cycle facilities will be substantially improved with segregated cycle tracks provided along the links and protected junctions with enhanced signalling for cyclists provided at junctions.

The temporary construction compound will be located on an existing sports pitch adjacent to the Connacht Hotel just north of the R338 road.

Moreover, pedestrian facilities will be upgraded, and additional signalised crossings be provided. In addition, urban realm works will be undertaken at key locations with higher quality materials, planting and street furniture provided to enhance pedestrians' experience.

For the majority of the works associated with the Proposed Development, it is envisaged that normal working hours will be followed. In specific circumstances, such as road crossings or road resurfacing, the works will be carried out at night.

The works on the R338 Dublin Road comprise the installation of inbound and outbound bus lanes, raised adjacent cycle tracks and footpaths on both sides of the road. This is to be achieved via a combination of carriageway widening, repurposing of existing traffic lanes and setting back the existing footpath. Additional land will be required throughout the Proposed Development.

The Proposed Development ties in with the Galway BusConnects: Cross City Link scheme at the western extremity. Additional land for the proposed cross-section widening and construction of new footpaths and cycleways is primarily to the south of the existing R338 towards the junction with Renmore Park. Two single storey buildings on the south of the existing R338 at the Brothers of Charity lands will require demolition to facilitate the widening at this point. A Temporary Construction Compound will be set up in the sports field immediately west of the Connacht Hotel. Between Renmore Park Junction and Ballyloughane Road junction, the additional land required is primarily to the north, with impacts on Galway City Council lands, the landscaped green area at the front of the Connacht Hotel, the green area at the front of Glenina Heights housing estate, the former Galwegians RFC sports grounds and the landscaped green area at the front of Flannery's Hotel. There is an impact to the south on the car park of a convenience store at the R338 junction with Renmore Road, where a property to the north of the road creates a pinch point.

The access to Belmont estate is proposed to be realigned to tie in with the Ballyloughane Road junction. Further east at ATU Galway City, the alignment of the cycle lane and footpath to the north is set behind the existing tree line. A new "cyclops" junction is proposed to replace the Skerritt roundabout. Between the Skerritt junction and the eastern extremity of the scheme the additional required land is primarily to the north of the existing R338. This impacts the former Corrib Great Southern Hotel site (now derelict), green space at the front of Woodhaven estate, agricultural land and HSE lands as part of Merlin Park Hospital including The Meadows which is being treated as a mosaic of an Annex I grassland habitat. At the eastern end beyond a realigned Doughiska Road junction, the scheme ties in with the Martin junction.

Throughout the Proposed Development and where possible, existing signage will be retained or relocated. Additional new signage will also be required at locations throughout the scheme. Excavation depths for installation of new signage will be no deeper than 1 m.

New road markings will be applied throughout the Proposed Development following resurfacing works. Utility covers will be raised to match new ground heights where applicable.

Drainage gullies will be relocated to the new kerb edge and will connect back to existing drainage. Sustainable Urban Drainage Systems (SuDS) will be incorporated within hardscape areas to locally manage surface water run-off and reduce demand for piped surface water drainage infrastructure.

Works will involve the diversion of utilities where present. These will be either retained, protected or diverted as required. Carriageway widening works will require the existing footpath to be broken out, full road build-up to be constructed and jointed to the existing adjacent carriageway, and replacement footpath/raised adjacent cycle lane to be constructed.

4. APPROPRIATE ASSESSMENT SCREENING

This section of the report identifies the potential ZoI of the project, provides information on the Natura 2000 sites within the identified ZoI and sets out the potential impacts and effects and the likelihood of significant effects.

4.1. Identification of Natura 2000 Sites

The first step in identification of relevant Natura 2000 sites is to determine the potential ZoI of the project, after which any Natura 2000 sites within this area can be identified and the potential for these sites to be affected by the project can be evaluated by considering:

- Scale and type of the project;
- Proximity to the project;
- QIs and SCIs of Natura 2000 sites; and
- Ecological[14] and Landscape[15] connectivity.

Following the guidance for ZoI quoted in section 2.1, an initial search radius of 15 km was used, as well as the S-P-R model, to determine which Natura 2000 sites may have connectivity to the Proposed Development. The conservation interests of these European sites were examined in order to ascertain whether there could be potential physical or ecological connectivity to the project and the associated likely project impacts. Additionally, any Natura 2000 sites beyond the initial 15 km buffer with hydrological or physical connectivity were also identified for further examination.

Table 1 details the European Sites within the initial 15 km search radius and any other sites identified using the S-P-R model. Figure 2 shows Natura 2000 sites detailed in Table 1. The closest Natura 2000 sites to the Site are the Galway Bay Complex SAC and the Inner Galway Bay SPA, located 65 m from the Proposed Development. The Lough Corrib SAC and SPA are located c. 1.5 km and c. 3.9 km from the Proposed Development respectively. Other sites identified within the initial search are the Creggana Marsh SPA, Lough Fingall Complex SAC, Rahasane Turlough SPA, Rahasane Turlough SAC, Kiltiernan Turlough SAC, Castletaylor Complex SAC, Connemara Bog Complex SAC, East Burren Complex SAC, Ardrahan Grassland SAC, and Ross Lake and Woods SAC.

The features of the project that may result in likely significant effects are briefly discussed to outline the potential ZoI for impacts.

There is no national guidance pertaining to ZoI for excavations. The Scottish Environment Protection Agency specifies ZoI for Ground Water Dependent Terrestrial Ecosystems (GWDTE), from excavations deeper than 1 m, to be a 250 m buffer around the works area. However, it is not proposed that excavation depths will greater than 1 m, and there are no GWDTE within 250 m of the Site.

Non-native invasive flora species have been identified within the lands (gardens and woodland etc) to be used for the Proposed Development. The species are identified as high and medium risk (Kelly *et*

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[14] Connectivity is defined as a measure of the functional availability of the habitats needed for a particular species to move through a given area. Examples include the flight lines used by bats to travel between roosts and foraging areas or the corridors of appropriate habitat needed by some slow colonising species if they are to spread (CIEEM, 2018).

[15] Landscape connectivity is a combined product of structural and functional connectivity, i.e., the effect of physical landscape structure and the actual species use of the landscape (Kettunen et al., 2007).

al., 2013). There is potential for the invasive species to be spread within the Proposed Development and to outside the Site.

Generally, birds can experience disturbance impacts if a disturbance incident occurs within 500 m of foraging, nesting, or roosting areas (Holloway, 1997; Maarten & Henkensj, 1997; Scarton, 2018). The Proposed Development has the potential to result in the displacement of birds / mammals due to construction activities and increased human activity, coupled with loss of suitable feeding and/or breeding/wintering habitat within the surrounding landscape as the displacement of birds from areas within and surrounding developments can effectively amount to habitat loss and this habitat is no longer used by the birds once displaced (Drewitt and Langston, 2006).

Otter can experience disturbance if present within c. 150 m of works (NRA, 2008). The construction phase of the Proposed Development will be up to 24 months. There is, therefore, potential for seasonal displacement of birds due to loss of suitable feeding and/or breeding/wintering habitat during the construction stage of the Proposed Development. There is also potential for seasonal displacement of QI species (i.e., otter, harbour seal and lesser horseshoe bat) due to disturbance during key seasonal stages of the lifecycle of the species.

The implementation of new lighting during the operational phase of the Proposed Development will have potential for disturbance to nocturnal mammal species, including otter and bats. Slower flying species (e.g., lesser horseshoe bats) avoid illuminated areas and therefore lose foraging grounds if they are lit. This results in slower flying species having to use poorer quality foraging sites and losing out on prey, which are attracted to the surrounding lit areas, a so called 'vacuum effect' (BCT[16]).

The Institute of Air Quality Management 'Guidance on the Assessment of dust from demolition and construction' (Holman et al., 2014 and IAQM 2024) states that "*Dust can have two types of effect on vegetation: physical and chemical. Direct physical effects include reduced photosynthesis, respiration and transpiration through smothering. Chemical changes to soils or watercourses may lead to a loss of plants or animals for example via changes in acidity. Indirect effects can include increased susceptibility to stresses such as pathogens and air pollution. These changes are likely to occur only as a result of long-term demolition and construction works adjacent to a sensitive habitat. Often impacts will be reversible once the works are completed, and dust emissions cease*". The guidance prescribes potential dust emission risk classes to ecological receptors. The guidance specifies that, for sensitive ecological receptors (European sites), sensitivity to dust is 'High' up to 20 m from the source and reduces to 'Medium' over 50 m from the source and to 'Low' over 100 m from the source. The study area for dust is also described as "*up to 50 m from the boundary of the proposed works Site or either side of the construction traffic route (for a distance of up to 500 m from the entrance of the proposed works Site) for the identification of ecological receptors*".

Disturbance due to noise varies between species and is dependent on the nature of the noise source and sensitivity of the species e.g., the potential effects of anthropogenic sound on fish can range from direct mortality to no obvious behavioural responses and are dependent on the class of sound i.e., either continuous or impulsive (Popper & Hawkins, 2014 and 2019). Similarly, for birds, disturbance response (e.g., becoming alert or a flight response) can vary depending on season, species sensitivity, and weather.

The Proposed Development will be connected to the closest water bodies (Lough Atalia and Galway Bay) via the existing drainage/ stormwater network. The removal of the existing artificial surfaces and vegetation could lead to an increase in polluting material present in surface water run-off (i.e., sediment,

[16] https://www.bats.org.uk/about-bats/threats-to-bats/lighting

cement/concrete substances), potentially impacting water quality and aquatic receptors (e.g., fish, macroinvertebrates, otter) of receiving water bodies.

The earthworks required for the stripping of existing hard surfaces may liberate concrete particles into surface water run-off. Wet concrete poured for the different stages of construction or rinsing of truck chutes on-Site could lead to contamination of receiving waters via surface water run-off. The release of concrete and other cement-based products to an aquatic environment can have the effect of altering the levels of pH, nitrate, phosphate, total solids, total suspended solids, total dissolved solids, turbidity and biochemical oxygen demand (BOD) in the water. Cement products are particularly harmful to aquatic life due to the associated change in alkalinity in the water, which can cause burns to fish skin.

Standing water in excavations could contain an increased concentration of suspended solids. If the standing water were to become part of the surface water run-off, it would release the increased sediment load, potentially impacting water quality and aquatic sensitivities of receiving water bodies.

Inappropriate site management of excavations and stockpiled material could lead to loss of silt laden run-off and/or suspended solids through run-off and as dust particles, as such having potential to alter the physicochemical conditions of receiving water bodies.

Demolition and site clearance will require movement of heavy machinery, which can lead to impacts on receiving water bodies due to spillage of fuels and hydrocarbons. Hydrocarbons are toxic to flora and fauna, including fish, and these chemicals tend to be persistent in the environment. They are also a nutrient supply for adapted micro-organisms, which can rapidly deplete dissolved oxygen in waters, resulting in death of aquatic organisms.

Table 1: European Sites within Initial 15 km Search Radius

Site Name	Distance (km) [17]	Qualifying Interests and Conservation Objective	Pathway	Receptor	Considered further in screening. Y/N
Inner Galway Bay SPA (004031)	0.055	▪ Black-throated Diver (*Gavia arctica*) [A002] ▪ Great Northern Diver (*Gavia immer*) [A003] (M) ▪ Cormorant (*Phalacrocorax carbo*) [A017] (M) ▪ Grey Heron (*Ardea cinerea*) [A028] (M) ▪ Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] (M) ▪ Wigeon (*Anas penelope*) [A050] (M) ▪ Teal (*Anas crecca*) [A052] (M) ▪ Red-breasted Merganser (*Mergus serrator*) [A069] (M) ▪ Ringed Plover (*Charadrius hiaticula*) [A137] (M) ▪ Golden Plover (*Pluvialis apricaria*) [A140] (M) ▪ Lapwing (*Vanellus vanellus*) [A142] (M) ▪ Dunlin (*Calidris alpina*) [A149] (M) ▪ Bar-tailed Godwit (*Limosa lapponica*) [A157] (M) ▪ Curlew (*Numenius arquata*) [A160] (M) ▪ Redshank (*Tringa totanus*) [A162] (M) ▪ Turnstone (*Arenaria interpres*) [A169] (M) ▪ Black-headed Gull (*Chroicocephalus ridibundus*) [A179] (M) ▪ Common Gull (*Larus canus*) [A182] (M) ▪ Sandwich Tern (*Sterna sandvicensis*) [A191] (M) ▪ Common Tern (*Sterna hirundo*) [A193] (M) ▪ Wetland and Waterbirds [A999] (M) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004031.pdf	There is indirect hydrological connectivity via the stormwater network within Galway City and the outfall locations within Lough Atalia and Galway Bay. Due to the nature of the project and the noise emissions to be released during the construction stage, along with the Site being within the core feeding range for the QI species, identified by Johnson (2014) and SNH (2016), the SPA is considered within the ZoI of the Proposed Development.	All bird species and wetland habitat (All QIs)	Y

[17] Distances indicated are the closest geographical distance between the Proposed Development and the European site boundary as determined through the use of GIS.

Site Name	Distance (km) [17]	Qualifying Interests and Conservation Objective	Pathway	Receptor	Considered further in screening. Y/N
Galway Bay Complex SAC (000268)	0.063	▪ Mudflats and sandflats not covered by seawater at low tide [1140] (M) ▪ Coastal lagoons [1150] (R) ▪ Large shallow inlets and bays [1160] (M) ▪ Reefs [1170] (M) ▪ Perennial vegetation of stony banks [1220] (M) ▪ Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] ▪ Salicornia and other annuals colonising mud and sand [1310] (M) ▪ Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] (R) ▪ Mediterranean salt meadows (Juncetalia maritimi) [1410] (R) ▪ Turloughs [3180] (M) ▪ Juniperus communis formations on heaths or calcareous grasslands [5130] (R) ▪ Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] (M) ▪ Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] (M) ▪ Alkaline fens [7230] (M) ▪ Limestone pavements [8240] ▪ *Lutra lutra* (Otter) [1355] (R) ▪ *Phoca vitulina* (Harbour Seal) [1365] (M) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000268.pdf	There is indirect hydrological connectivity via the stormwater network within Galway City and the outfall locations within Lough Atalia and Galway Bay, the SAC is considered within the ZoI of the Proposed Development.	All mobile aquatic species and habitats (All QIs)	Y
Lough Corrib SAC (000297)	1.5	▪ Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] (R) ▪ Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] (R) ▪ Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140] (R) ▪ Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] (M)	This SAC is upstream of any outfall locations and the Site itself. Thus, there is no downstream hydrological connection. However, as there are mobile aquatic species designated in this SAC, (e.g., Salmon and lamprey) that migrate within Galway Bay,	All mobile aquatic species that may migrate through Galway Bay and bat species	Y

Site Name	Distance (km) [17]	Qualifying Interests and Conservation Objective	Pathway	Receptor	Considered further in screening. Y/N
		▪ Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] (M) ▪ Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] (M) ▪ Active raised bogs [7110] (R) ▪ Degraded raised bogs still capable of natural regeneration [7120] (refer to 7110) ▪ Depressions on peat substrates of the Rhynchosporion [7150] (refer to 7110) ▪ Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] (M) ▪ Petrifying springs with tufa formation (Cratoneurion) [7220] (M) ▪ Alkaline fens [7230] (M) ▪ Limestone pavements [8240] (M) ▪ Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] (M) ▪ Bog woodland [91D0] (M) ▪ *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] (R) ▪ *Austropotamobius pallipes* (White-clawed Crayfish) [1092] (M) ▪ *Petromyzon marinus* (Sea Lamprey) [1095] (R) ▪ *Lampetra planeri* (Brook Lamprey) [1096] (M) ▪ *Salmo salar* (Salmon) [1106] (M) ▪ *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] (R) ▪ *Lutra lutra* (Otter) [1355] (M) ▪ *Najas flexilis* (Slender Naiad) [1833] (R) ▪ *Hamatocaulis vernicosus* (Slender Green Feathermoss) [6216] (M) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000297.pdf	there is an indirect pathway for impacts. The Site is also within the Core Sustenance Zone (CSZ) of 2km for Lesser Horseshoe Bat (BCT 2016 and Vincent Wildlife Trust 2022). The SAC is considered within the ZoI of the Proposed Development.	(Sea lamprey, brook lamprey, lesser horseshoe bat, otter)	

Site Name	Distance (km) [17]	Qualifying Interests and Conservation Objective	Pathway	Receptor	Considered further in screening. Y/N
Cregganna Marsh SPA (004142)	3.8	▪ Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] (R) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004142.pdf	Although the Site is within the core feeding range for the QI species, identified by Johnson (2014) as 8km, there are no suitable habitats within the footprint of the Proposed Development. There are no records of this species within 2km of the Site (NBDC Accessed 2023) and the only record within 10km is located within the SPA. Therefore, the SPA is assessed as outside of the ZoI of the Proposed Development.	n/a	N
Lough Corrib SPA (004042)	3.9	▪ Gadwall (*Anas strepera*) [A051] (R) ▪ Shoveler (*Anas clypeata*) [A056] (R) ▪ Pochard (*Aythya ferina*) [A059] (R) ▪ Tufted Duck (*Aythya fuligula*) [A061] (R) ▪ Common Scoter (*Melanitta nigra*) [A065] (M) ▪ Hen Harrier (*Circus cyaneus*) [A082] (R) ▪ Coot (*Fulica atra*) [A125] (R) ▪ Golden Plover (*Pluvialis apricaria*) [A140] (M) ▪ Black-headed Gull (*Chroicocephalus ridibundus*) [A179] (R) ▪ Common Gull (*Larus canus*) [A182] (R) ▪ Common Tern (*Sterna hirundo*) [A193] (R) ▪ Arctic Tern (*Sterna paradisaea*) [A194] (R) ▪ Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] (R) ▪ Wetland [A999] (M) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004042.pdf	There is no direct hydrological connectivity between the Site and the SAC, nor indirect connectivity via the stormwater network within Galway City and the outfall locations within Lough Atalia and Galway Bay as the SPA is up stream of the outfall locations. Due to the overlap in QIs between the SPA and the Inner Galway Bay SPA and along with the Site being within the core feeding range for the QI species, identified by Johnson (2014) and SNH (2016), the SPA is considered within the ZoI of the Proposed Development.	All bird species and wetland habitats (All QIs)	Y

Site Name	Distance (km) [17]	Qualifying Interests and Conservation Objective	Pathway	Receptor	Considered further in screening. Y/N
Lough Fingall Complex SAC (000606)	10.7	▪ Turloughs [3180] (R) ▪ Alpine and Boreal heaths [4060] (M) ▪ Juniperus communis formations on heaths or calcareous grasslands [5130] (M) ▪ Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] (R) ▪ Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] (M) ▪ Limestone pavements [8240] (M) ▪ *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] (M) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000606.pdf	There is no direct or indirect connectivity (hydrological, ecological or landscape) between the Site and the SAC. The Site is beyond the CSZ of the QI Lesser Horseshoe Bat and there are no other mobile QIs, therefore, the SAC is assessed as outside of the ZoI of the Proposed Development.	n/a	N
Rahasane Turlough SPA (004089)	12.9	▪ Whooper Swan (*Cygnus cygnus*) [A038] (R) ▪ Wigeon (*Anas penelope*) [A050] (M) ▪ Golden Plover (*Pluvialis apricaria*) [A140] (R) ▪ Black-tailed Godwit (*Limosa limosa*) [A156] (M) ▪ Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] (R) ▪ Wetland and Waterbirds [A999] (M) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004089.pdf	There is no direct or indirect hydrological/ landscape connectivity between the Site and the SPA. Furthermore, the SPA is, outside the core feeding range for Whooper swan (5km), Wigeon (2.8km), and Greenland White-fronted Goose (8km). There is no defined core feeding range for Golden plover and Black-tailed Godwit, however, there are no suitable habitats within the scheme footprint for the QI species and should they be present within the ZoI they will be assessed as QI's of the Inner Galway Bay SPA. The SPA is assessed as outside of the ZoI of the Proposed Development.	n/a	N

Site Name	Distance (km) [17]	Qualifying Interests and Conservation Objective	Pathway	Receptor	Considered further in screening. Y/N
Rahasane Turlough SAC (000322)	13.0	▪ Turloughs [3180] (M) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000322.pdf	There is no direct or indirect connectivity (hydrological, ecological or landscape) between the Site and the SAC, coupled with the lack of mobility of this QI, therefore, the SAC is assessed as outside of the ZoI of the Proposed Development.	n/a	N
Kiltiernan Turlough SAC (001285)	13.5	▪ Turloughs [3180] (M) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001285.pdf	There is no direct or indirect connectivity (hydrological, ecological or landscape) between the Site and the SAC, coupled with with the lack of mobility of this QI, therefore, the SAC is assessed as outside of the ZoI of the Proposed Development.	n/a	N
Castletaylor Complex SAC (000242)	13.6	▪ Turloughs [3180] (R) ▪ Alpine and Boreal heaths [4060] (R) ▪ Juniperus communis formations on heaths or calcareous grasslands [5130] (M) ▪ Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] (R) ▪ Limestone pavements [8240] (R) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000242.pdf	There is no direct or indirect connectivity (hydrological, ecological or landscape) between the Site and the SAC, coupled with none of the other QIs being mobile, therefore, the SAC is assessed as outside of the ZoI of the Proposed Development.	n/a	N
Connemara Bog Complex SAC (002034)	14.3	▪ Coastal lagoons [1150] (M) ▪ Reefs [1170] (M) ▪ Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] (M) ▪ Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] (M)	There is no direct or indirect connectivity (hydrological, ecological or landscape) between the Site and the SAC, therefore, the SAC is	n/a	N

Site Name	Distance (km) [17]	Qualifying Interests and Conservation Objective	Pathway	Receptor	Considered further in screening. Y/N
		▪ Natural dystrophic lakes and ponds [3160] (M) ▪ Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] (M) ▪ Northern Atlantic wet heaths with *Erica tetralix* [4010] (R) ▪ European dry heaths [4030] (R) ▪ Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] (M) ▪ Blanket bogs (* if active bog) [7130] (R) ▪ Transition mires and quaking bogs [7140] (R) ▪ Depressions on peat substrates of the Rhynchosporion [7150] (R) ▪ Alkaline fens [7230] (R) ▪ Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] (M) ▪ *Euphydryas aurinia* (Marsh Fritillary) [1065] (M) ▪ *Salmo salar* (Salmon) [1106] (R) ▪ *Lutra lutra* (Otter) [1355] (M) ▪ *Najas flexilis* (Slender Naiad) [1833] (M) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002034.pdf	assessed as outside of the ZoI of the Proposed Development.		
East Burren Complex SAC (001926)	14.5	▪ Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140] (R) ▪ Turloughs [3180] (R) ▪ Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] (M) ▪ Alpine and Boreal heaths [4060] (M) ▪ Juniperus communis formations on heaths or calcareous grasslands [5130] (M) ▪ Calaminarian grasslands of the Violetalia calaminariae [6130] (R) ▪ Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] (R)	There is no direct or indirect connectivity (hydrological, ecological or landscape) between the Site and the SAC. The Site is beyond the CSZ of the QI Lesser Horseshoe Bat and the core territory range for QI otter (Leaflet 4), therefore, the SAC is assessed as outside of the ZoI of the Proposed Development.	n/a	N

Site Name	Distance (km) [17]	Qualifying Interests and Conservation Objective	Pathway	Receptor	Considered further in screening. Y/N
		▪ Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) [6510] (R) ▪ Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] (M) ▪ Petrifying springs with tufa formation (Cratoneurion) [7220] (M) ▪ Alkaline fens [7230] (M) ▪ Limestone pavements [8240] (R) ▪ Caves not open to the public [8310] (R) ▪ Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] (M) ▪ *Euphydryas aurinia* (Marsh Fritillary) [1065] (M) ▪ *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] (R) ▪ *Lutra lutra* (Otter) [1355] (M) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001926.pdf			
Ardrahan Grassland SAC (002244)	14.7	▪ Alpine and Boreal heaths [4060] (M) ▪ Juniperus communis formations on heaths or calcareous grasslands [5130] (R) ▪ Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] ▪ Limestone pavements [8240] (M) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002244.pdf	There is no direct or indirect connectivity (hydrological, ecological or landscape) between the Site and the SAC, coupled with none of the other QIs being mobile, therefore, the SAC is assessed as outside of the ZoI of the Proposed Development.	n/a	N
Ross Lake And Woods SAC (001312)	14.7	▪ Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140] (R) ▪ *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] (R) https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001312.pdf	There is no direct or indirect connectivity (hydrological, ecological or landscape) between the Site and the SAC, and the Site is beyond the CSZ of the QI Lesser Horseshoe Bat, therefore, the SAC is assessed	n/a	N

Site Name	Distance (km) [17]	Qualifying Interests and Conservation Objective	Pathway	Receptor	Considered further in screening. Y/N
			as outside of the ZoI of the Proposed Development.		

*(M) – Conservation Objective to maintain favourable conservation condition of the species or habitat.

**(R) – Conservation Objective to restore favourable conservation condition of the species or habitat.

4.2. Description of Natura 2000 Sites

The Natura 2000 sites identified as being within the potential zone of influence of the project are described below. The description of the sites has been prepared and summarised using the supporting information available on the NPWS website[18].

4.2.1. Inner Galway Bay SPA (004031)

The Inner Galway Bay SPA is a large site on the west of Ireland at Galway Bay. The inner bay is protected from exposure to Atlantic swells by the Aran Islands and Black Head. The long shoreline is noted for its diversity, and comprises complex mixtures of bedrock shore, shingle beach, sandy beach and fringing salt marshes. A number of small islands and rocky islets in the Bay are included within the site. Inner Galway Bay supports an excellent diversity of wintering wetland birds, with divers, grebes, cormorants, dabbling duck, sea duck and waders all well represented. This site contains internationally important wintering bird populations and nationally important wintering populations. The site also provides both feeding and roost sites for most of the species it's designated for.

4.2.2. Galway Bay Complex SAC (000268)

Galway Bay Complex SAC is situated on the west coast of Ireland and comprises the inner, shallow part of a large bay which is partially sheltered by the Aran Islands. The Burren karstic limestone fringes the southern sides and extends into the sublittoral. West of Galway city the bedrock geology is granite. A number of small islands composed of glacial deposits are located along the eastern side. A diverse range of marine, coastal and terrestrial habitats, including several listed on Annex I of the E.U. Habitats Directive, occur within the site, making the area one of high scientific importance. Four of the Annex I habitats the site is designated for have priority status.

4.2.3. Lough Corrib SPA (004042)

Lough Corrib SPA is situated on the largest lake in the country, with sections spanning from Co. Galway to Co. Mayo. The lake can be divided into two parts: a relatively shallow basin in the south, which is underlain by Carboniferous limestone, and a larger, deeper basin to the north, which is underlain by more acidic granite, schists, shales and sandstones. The main inflowing rivers are the Black, Clare, Dooghta, Cregg, Owenriff and the channel from Lough Mask. The main outflowing river is the Corrib, which reaches the sea at Galway City. Lough Corrib SPA is an internationally important site which supports in excess of 20,000 waterbirds. A further six species of wintering waterfowl have populations of national importance. Lough Corrib is a Ramsar Convention site and several species which regularly occur are listed on Annex I of the EU Birds Directive.

4.2.4. Lough Corrib SAC (000297)

Lough Corrib is the largest lake in the country and is situated to the north of Galway City. The surrounding lands to the south and east are mostly pastoral farmland, while bog and heath predominate to the west and north. A number of rivers are included within the SAC as they are important for Atlantic Salmon. In addition to the rivers and lake basin, adjoining areas of conservation interest, including raised bog, woodland, grassland and limestone pavement, have been incorporated into the site. Lough Corrib is one the best examples of a large lacustrine catchment system in Ireland, with a range of habitats and species still well represented. These include 15 habitats which are listed on Annex I of the

[18] https://www.npws.ie/protected-sites

E.U. Habitats Directive, six of which are priority habitats, and nine species which are listed on Annex II. The lake is also internationally important for birds.

4.3. Qualifying Interests and Conservation Objectives

The features of interest and conservation objectives for the Natura 2000 sites identified within the zone of influence of the project are listed within Table 1. This information was obtained from the resources available on the NPWS website.

4.4. Identification of Potential Impacts and Effects on Natura 2000 Sites

This section identifies all the potential impacts associated with the Proposed Development, examines whether there are any European sites within the ZoI of effects from the Proposed Development, and assesses whether there is potential for the Proposed Development to result in a significant effect on any European site, either alone or in combination with other plans or projects.

In assessing the likelihood of the Proposed Development resulting in a significant effect on any European sites, any measures intended to avoid or reduce the harmful effects of the project on European sites (i.e., mitigation measures) are not taken into account as part of the Stage One Screening appraisal.

Considering the baseline ecological environment and the extent and characteristics of the Proposed Development the following potential impacts have been identified:

- Habitat degradation / effects on QI / SCI species as a result of hydrological impacts;
- Habitat loss and fragmentation;
- Habitat degradation as a result of introducing / spreading non-native invasive species;
- Habitat degradation as a result of air quality impacts; and
- Disturbance and displacement impacts (noise, vibration).

The potential impacts of the project on the habitats and species listed as qualifying interests for the Inner Galway Bay SPA, Galway Bay Complex SAC, Lough Corrib SPA and the Lough Corrib SAC are discussed in this section.

DoEHLG (2010) guidance for planning authorities states "If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). Screening should be undertaken without the inclusion of mitigation, unless potential impacts clearly can be avoided through the modification or redesign of the plan or project, in which case the screening process is repeated on the altered plan. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no impact." This approach is adopted in this report to appraising likely significant effects of the Proposed Development.

A significant effect is defined in paragraph 49 of the Waddenzee Case C-127/0219 as follows "….. pursuant to the first sentence of Article 6(3) of the Habitats Directive, where a plan or project not directly connected with or necessary to the management of a site is likely to undermine the site's *conservation objectives, it must be considered likely to have a significant effect on that site. The assessment of that*

[19] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62002CJ0127

risk must be made in the light inter alia of the characteristics and specific environmental conditions of the site concerned by such a plan or project."

The likelihood of significant effects occurring as a result of the Proposed Development is established in light of the type and scale of the project, the location of the project with respect to Natura 2000 sites within the ZoI and the qualifying interests and conservation objectives of those Natura 2000 sites.

4.4.1. Potential Impacts and Effects

There is a risk of indirect habitat degradation and damage due to potential surface water impacts during both the construction and operational phases of the project. There is also a risk of habitat degradation and damage resulting from non-native invasive species impacts due to the proximity of the scheme to the affected Natura 2000 sites.

The following QIs / SCIs of the Inner Galway Bay SPA have been included in the assessment given the potential for them to be found within the ZoI:

- Black-throated Diver (*Gavia arctica*) [A002]
- Great Northern Diver (*Gavia immer*) [A003]
- Cormorant (*Phalacrocorax carbo*) [A017]
- Grey Heron (*Ardea cinerea*) [A028]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Red-breasted Merganser (*Mergus serrator*) [A069]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Lapwing (*Vanellus vanellus*) [A142]
- Dunlin (*Calidris alpina*) [A149]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Turnstone (*Arenaria interpres*) [A169]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Sandwich Tern (*Sterna sandvicensis*) [A191]
- Common Tern (*Sterna hirundo*) [A193]
- Wetland and Waterbirds [A999] (M)

The following QIs / SCIs of the Galway Bay Complex SAC have been included in the assessment given the potential for them to be found within the ZoI:

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Turloughs [3180]
- Juniperus communis formations on heaths or calcareous grasslands [5130]

- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]
- Alkaline fens [7230]
- Limestone pavements [8240]
- *Lutra lutra* (Otter) [1355]
- *Phoca vitulina* (Harbour Seal) [1365]

The following QIs / SCIs of the Lough Corrib SAC have been included in the assessment given the potential for them to be found within the zone of influence:

- *Petromyzon marinus* (Sea Lamprey) [1095] (R)
- *Lampetra planeri* (Brook Lamprey) [1096] (M)
- *Salmo salar* (Salmon) [1106] (M)
- *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] (R)
- *Lutra lutra* (Otter) [1355] (M)
- *Najas flexilis* (Slender Naiad) [1833] (R)

The following QIs / SCIs of the Lough Corrib SPA have been included in the assessment given the potential for them to be found within the zone of influence:

- Gadwall (*Anas strepera*) [A051]
- Shoveler (*Anas clypeata*) [A056]
- Pochard (*Aythya ferina*) [A059]
- Tufted Duck (*Aythya fuligula*) [A061]
- Common Scoter (*Melanitta nigra*) [A065]
- Hen Harrier (*Circus cyaneus*) [A082]
- Coot (*Fulica atra*) [A125]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Common Tern (*Sterna hirundo*) [A193]
- Arctic Tern (*Sterna paradisaea*) [A194]
- Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]
- Wetland [A999]

Habitat Degradation / Loss

Although there is permanent loss of habitat within the Proposed Development, no permanent loss of habitat is expected within the boundary of any designated site. The works will be along the existing road with limited land take on the fringes of the existing road.

Habitats on the Site are largely unsuitable for the QIs in the designated sites. For bird species in the SPAs, habitats on the existing road and the surrounding habitats where works will take place are unsuitable for these wetland bird species. The temporary construction compound consists of an existing sports pitch which is actively used by people and dog walkers, with flood lighting also present. There are numerous habitats preferred by the QI species in the surrounding landscape (refer to Birdwatch Ireland [20] for specific habitat types for individual species). It is, therefore, assumed the QIs are not reliant on the habitats within the Site as a feeding and/or breeding/wintering habitat. For mobile species such

[20] https://birdwatchireland.ie/ (last accessed 13/11/24)

as otter, there are no watercourses within the footprint of the Site. Again, there are also numerous habitats preferred by otter in the surrounding landscape (Reid *et al.,* 2013). There will be no changes to habitats likely to be used by this species. It is, therefore, assumed otter are not reliant on the habitats within the Site as feeding/ commuting habitat.

The NPWS Leaflet 4 on the 'Otter in Ireland' (NPWS) states the following:

> '*In lowland rivers and fish-rich lakes otters only need to maintain small territories (1- 2km), but on smaller rivers and in upland areas, where food tends to be less abundant, otter territories can stretch to 10 or 15 km*.'

Therefore, the population within Lough Atalia and the River Corrib are considered to be part of the Galway Bay Complex SAC otter population instead of the Lough Corrib SAC otter population. There is no potential for significant effects on the Lough Corrib SAC's otter population as this is located further upstream and outside of the ZoI. For the Galway Bay Complex SAC, potential impacts on otter in relation to habitat degradation / loss are discussed above.

While there are records of Lesser Horseshoe bat within 2 km of the site, this is not considered to be the Lough Corrib SAC population, as the roosts designated in this SAC are over c. 30 km from the Proposed Development. This is supported by the results of radio tracking surveys for the proposed N6 outer ring road project which have shown that this species did not forage in the urban area of Galway City to the south of the Quincentenary Bridge (Rush and Billington, 2015).

Bat surveys for the Proposed Development were undertaken in 2023 and 2024. This included a daytime potential roost assessment, and two activity surveys (one in June, one in July 2023), along with an inspection of two Brother's of Charity buildings in March 2024, which will be demolished to accommodate the Proposed Development and two activity surveys (one in July, one in August 2024). The activity surveys involved walking transects focussing on areas of the Proposed Development with moderate to high suitability for bats. This was focussed therefore on Merlin Park and adjacent to the existing road in this section. The inspection of the Brother's of Charity buildings showed that there is negligible potential for these buildings to be used by bats and no evidence was found that they were on site at the time of the survey. No records of Lesser horseshoe bats were returned from the surveys.

There is no potential for direct or indirect significant effects on the identified designated sites relating to habitat degradation / loss.

This is an important habitat according to the

Approximately 4 m widening of the road will be required in this area to facilitate the construction of the footpath (maximum 2 m width) and cycle track (maximum 2 m width). The field surveys identified this 'Meadow' habitat as Dry Meadows and Grassy Verges (GS2) and corresponds with the Annex I habitat type 'Lowland Hay Meadows', considered to be of national importance. There are two northern fields that have been classified as such: the western and eastern fields.

The only overlapping area of required land-take and Annex I habitat is a total area of approximately 1,540 m^2, at the southern edge of the eastern field along the length. This area of land take is a strip closest to the existing road. The total area of Annex I habitat in this easternmost field is c. 30,700 m^2. The area of Annex I habitat for the two fields combined is c. 54,500 m^2, with an expected land-take of approximately 1,540 m^2 in the eastern field, which is 2.8% of the total area of the fields within Merlin Park. With regards to extent of this habitat compared to that mapped for the whole of Ireland as stated in Article 17 (NPWS, 2019), the land being impacted (1,540 m^2), while not mapped as part of an area within an SAC (therefore, can exclude the possibility of likely significant effect on any SAC) , would

account for 0.24% of the total area mapped as Annex I Lowland Hay Meadows [6510]. It is acknowledged that the removal of habitat on the fringe of the eastern field may push the unofficial dog walking paths here further into the meadow itself, if the new pathway inside the proposed treeline is not used, and so habitat loss impacts may be higher than 2.8% but are still considered to be minor.

Habitat degradation may also occur due to surface water run-off into the Annex I affiliated grassland habitat adjacent to the Proposed Development. This may occur temporarily during the construction phase, or during the operational phase of the project. This could increase nutrient / sediment loads on the grassland adjacent to the proposed route. During the construction phase, suspended solids, silt or accidental spillages of harmful substances may run-off into this sensitive habitat type. Soil structure and nutrient levels could be adversely affected, and this may affect the characteristic flora species present in the Meadow fields. While this is understood, it is considered that at present, any maintenance or regular operation of the existing road along this stretch results in run-off that would enter the meadow fields and the existing Annex I habitat. Impacts relating to this are considered to be temporary and outside the boundary of any designated site. It is not considered that surface water run-off on this Annex I habitat are likely to be significant or could affect the ecological coherence of this habitat type.

Therefore, the habitat loss of Annex I Lowland Hay Meadows is considered to be minor, due to the buffer habitats present between the roads edge and the Meadows. The expected land-take of Annex I habitat is estimated to be less than 3% of the total area of Annex I habitat. This is not considered to be significant. The land-take required in the eastern field will mimic the road edges present along the other fields. Furthermore, as the land-take is along the fringes, where there is an existing road, no impacts in relation to habitat fragmentation are expected to arise. The possibility of likely significant effects on the Natura 2000 network or its ecological coherence by virtue of the degradation / loss of this Annex I habitat can be excluded. Furthermore, due to the extent of the habitat loss (less than 3%), and after consultation with NPWS (pre-planning meeting on 25th July 2024) there is no derogation requirement for the Annex I habitat.

Emissions

At the closest point the Site is c. 55 m from the nearest Natura 2000 site, the Inner Galway Bay SPA, with a woodland of immature trees providing a barrier for dust movement between the Proposed Development and the designated site The nearest wetland habitat is c. 100 m from the closest point of the Site, therefore, will have a low sensitivity to dust emissions. At the closest point the Galway Bay Complex SAC is c. 63 m from the Site with this woodland of immature trees providing a barrier for dust movement between the two. The nearest Annex I habitats to the Site, for which the SAC is designated, are:

- Coastal Lagoons [1150] (Lough Atalia) at c. 100 m
- Orchid Rich Calcareous Grassland [6210] at c. 150 m (outside the designated SAC)
- Limestone Pavement [8240] at c. 200 m (outside the designated SAC)
- Atlantic Salt Meadows [1330] at c. 300 m
- Tidal Mudflats and Sandflats [1140] at c. 300m

All Annex I habitats are located beyond 50m from the closest point of the Site, therefore, the likelihood of exposure is low.

However, for road transport sources of air emissions within 200 m of a designated habitat, individual ecological receptors along a transect at 10 m intervals are modelled (refer to Appendix B). Ecological receptors are modelled up to a maximum distance of 200 m regardless of whether the habitat extends beyond 200 m. It is considered that the greatest impacts will have occurred in proximity to the road. The TII guidance (TII, 2022a) notes that only sites that are sensitive to nitrogen and acid deposition need to

be included in the assessment, it is not necessary to include sites for example that have been designated as a geological feature or water course.

The designated habitat receptors within 200 m of affected roads modelled to assess the impact of road traffic emissions are shown below and shown in Table 19 of Appendix B.

- Galway Bay Complex SAC and pNHA (Site Code 000268) and Inner Galway Bay SPA (Site Code 004031) are located on the south-western boundary of the study area; and
- Annex I habitat type 'Lowland Hay Meadows' at Merlin Park located on the north-eastern boundary of the Proposed Development

The models show that annual mean NOx and ammonia concentrations, and nitrogen and acid deposition levels decrease at all modelled habitats due to the Construction Phase of the Proposed Development.

The models show that the acid deposition (as N) levels exceed the lowest critical loads for acid deposition (as N) at all modelled designated sites, in both the Do Minimum (DM) and the Do Something (DS) scenarios, in both the Opening and Design Years.

Although the construction activities will increase noise levels, this will not be significantly above the baseline of the current traffic noise, or existing roadworks taking place, on Old Dublin Road, therefore any QI species present within Lough Atalia and Galway Bay will already be acclimatised to the high noise levels and it is unlikely that the construction activity will disturb the QI species present. Furthermore, the woodland of immature trees again provides a screening for noise from the construction. There are further treelines and buildings providing noise screening for the 500m disturbance buffer. Impacts from noise during construction will be reversible once the works are completed and emissions cease.

The aquatic species in the Lough Corrib SAC migrate within Galway Bay and the River Corrib and are reliant on other aquatic species as a food source. However, the confluence of the River Corrib and Galway Bay is c. 1.8 km from the nearest point of the Site and therefore, beyond the potential impact zone of noise and vibration from the Proposed Development. No potential for indirect impacts on aquatic species in the Lough Corrib SAC which rely on other aquatic species as a prey resource.

All surface water will be directed to the existing drainage network within the R338 road infrastructure. The drainage outfalls for the exiting network associated with the Proposed Development are located at Lough Atalia, Ballyloughane Beach and north of Rabbit Island. The outfalls of Lough Atalia, Ballyloughane and north of Rabbit Island are stormwater only, have no WwTP or oil interceptors and therefore, have potential to act as a vector for surface water emissions to the Inner Galway Bay SPA and the Galway Bay Complex SAC.

The outfalls discharge directly into the Galway Bay Complex SAC Annex I habitats Atlantic Salt Meadows [1330] and/or Tidal Mudflats and Sandflats [1140], and the outfalls within Lough Atalia are directly on to the Annex I habitat Coastal Lagoons [1150], therefore, potential for significant effects on the Inner Galway Bay SPA and the Galway Bay Complex SAC cannot be ruled out.

The Lough Corrib SPA is c. 3.9 km northeast of the Site and the Lough Corrib SAC c. 1.5 km northeast of the Site. There is no downstream hydrological connectivity as this SAC and SPA are upstream of the confluence of the River Corrib and Galway Bay. Therefore, the Lough Corrib SAC and SPA are beyond the potential impact zone of the Proposed Development for dust and air emissions.

There is potential for significant effects on the Inner Galway Bay SPA and the Galway Bay Complex SAC relating to surface water emissions. Bird species that forage or roost in the vicinity are likely to be affected indirectly, including the wetland habitats that they utilise.

There is no potential for effects on the Lough Corrib SAC or SPA relating to emissions.

Spread of invasive species

There is a risk that machinery, vehicles and surface water could also act as vectors for dispersal of the invasive non-native flora species within and around the Site. Non-natives identified within the Site are known to colonise coastal and rocky locations (refer to Wildflowers of Ireland Accessed February 2023[21] for full list of habitat types for individual species). There is also potential for further spread of other invasives identified on the Site, such as Himalayan knotweed, which could reach the boundaries of the designated sites in Galway Bay. This could also affect the Annex I Lowland Hay Meadows habitat in Merlin Park adjacent to the scheme. Furthermore, there is a risk that surface water could also act as a vector for dispersal of invasive non-native flora species within and outside the Site.

The Lough Corrib SPA and Lough Corrib SAC are upstream of Galway and Galway Bay, therefore, no potential for non-native invasive flora species to reach the QI habitats of the SAC and SPA.

There is potential for significant effects on the Inner Galway Bay SPA and the Galway Bay Complex SAC relating to the spread of invasive species.

Cumulative Effects

For the Proposed Development, the construction phase has potential to contribute to surface water emissions to receiving waterbodies with connectivity to Natura 2000 sites. Through this same connectivity, potential operational phase impacts on surface water may also arise. If these stages were to occur in parallel or consecutively with other projects, cumulative impacts may occur on Lough Atalia and Galway Bay. This includes the Inner Galway Bay SPA, Galway Bay Complex SAC, Lough Corrib SAC and Lough Corrib SPA.

Due to the scale and nature of the Proposed Development, its connectivity to Lough Atalia and Galway Bay, only projects that are connected to the same existing drainage network as the Proposed Development, or projects for which the ZoI overlaps, have been considered for potential in-combination impacts.

All the consent applications within the ZoI are either retention applications, applications for one-off residential dwellings, extensions or conversions that have already been built, are in the process of being completed or have no potential for impacts on the existing drainage network. Developments that are currently permitted, under construction or planned within the ZoI that have potential for in-combination effects are assessed in Table 2.

[21] http://www.wildflowersofireland.net/

Table 2: Developments currently permitted, under construction or planned within the ZoI.

Planning Application Number	Development Description	Development Conditions and Appropriate Assessment Conclusions	Potential for in-combination effects
17283	Permission to construct 23 two storey Dwelling houses consisting of Detached, Semi-detached and terrace including access/egress off the old coast road to Oranmore with sewer connection to adjacent sewer pumping station adjacent the Dublin Road	Surface water run-off from the paved areas and down pipes associated with the development shall not be permitted to discharge onto the public road or footpath. Mitigation to prevent surface water run-off to the public roadways.	No
19299	Permission for development which will consist of a new STEM on the university campus, building incorporating the schools of science and computing and the school of engineering. The proposed building is 5550 sq. metres, located to the east of the campus	Surface water run-off associated with the development shall not be permitted to discharge onto the public road or footpath or river. AA Screening concluded that the proposed works, by themselves or in combination with other plans and projects, in light of best available scientific knowledge, do not, in view of the sites' qualifying interests and conservation objectives, have the potential to result in significant effects on any European Site.	No
19304	Permission for development which consists of the construction of 2no. 4 storey blocks of apartments, each containing 16no. units with the following breakdown of residential mix: 5no. 1beds and 11no. 2 beds, totalling 32no. units overall.	Surface water run-off associated with the development shall not be permitted to discharge onto the public road or footpath. Mitigation to prevent surface water run-off to the public roadways.	No

Planning Application Number	Development Description	Development Conditions and Appropriate Assessment Conclusions	Potential for in-combination effects
21419	EOD on 16/228: Permission for a new residential development. The development consists of 16 no. 2-storey, five-bedroom, detached houses, together with individual garages, as applicable, new vehicular site accesses and roads with all ancillary site works	Initial application 16228. Surface water run-off from associated with the development shall not be permitted to discharge onto the public road or footpath.	No
22101	Permission for development which will consist of (a) above-ground water storage tank (b) switch room (c) machinery/maintenance shed (d) services control room/container (e) palisade fencing and all associated site works.	Surface water run-off associated with the development shall not be permitted to discharge onto the public road or footpath. AA Screening, no pathway for effects between the development and Galway Bay Complex SAC and SPA. Concluded that the proposed development, individually or in-combination with other plans and projects would not adversely affect the qualifying interests and special conservation objectives of relevant European Sites.	No
HA61.314597	BusConnects Galway: Cross-City Link (university Road to Dublin Road	NIS concluded, on the basis of the best scientific knowledge available, and subject to the implementation of the mitigation measures, that the possibility of any adverse effects on the integrity of the European Sites considered in the NIS, or on the integrity of any other European Site (having regard to their conservation objectives), arising from the Proposed Development, either alone or in combination with other plans or projects, can be excluded beyond a reasonable scientific doubt.	No
Section 38 exception	Martin Roundabout Junction Upgrade	AA Screening concluded 1. The proposed Project is not directly connected with, or necessary to the conservation management of the European sites considered in this assessment.	No

Planning Application Number	Development Description	Development Conditions and Appropriate Assessment Conclusions	Potential for in-combination effects
		2. The proposed Project is unlikely to indirectly significantly affect the Qualifying interests or Conservation Objectives of the European sites considered in this assessment. 3. The proposed Project, alone or in combination with other projects, is not likely to have significant effects on the European sites considered in this assessment in view of their conservation objectives. 4. It is possible to conclude that there would be no significant effects, no potentially significant effects and no uncertain effects if the proposed Project were to proceed.	

None of the developments identified above in Table 2 would be likely to result in in-combination effects with the Proposed Development. There are no predicted in-combination effects given that the above developments, where appropriate, either have or are proposed to have connection to the existing public sewer network for the treatment of surface water and wastewater. Furthermore, as part of the conditions for approval, there are requirements that surface water run-off is not permitted to enter the public drainage network via the road or pathways external to the development sites. Appropriate Assessments and NIS's have been undertaken where appropriate and measures included to reduce the potential for integrity level effects on the Natura 2000 network.

4.5. Plans

4.5.1. 4th National Biodiversity Action Plan 2023-2030

Ireland's 4th National Biodiversity Action Plan sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity' and follows on from the work of the first and second National Biodiversity Action Plans.

A total of 159 targeted actions are contained in the Plan, underpinned by five strategic objectives. The objectives lay out a clear framework for Ireland's national approach to biodiversity, ensuring that efforts and achievements of the past are built upon, while looking ahead to what can be achieved over the next five years and beyond.

They include:

- Adopt a whole of government, whole of society approach to biodiversity;
- Meet urgent conservation and restoration needs;
- Secure nature's contribution to people;
- Enhance the evidence base for action on biodiversity; and
- Strengthen Ireland's contribution to international biodiversity initiatives.

4.5.2. Galway City Development Plan 2023-2029

The Galway City Development Plan in complying with the requirements of the Habitats Directive requires that all Projects and Plans that could affect Natura 2000 sites in the same zone of impact of the Project Site would undertake an Appropriate Assessment stage 1 screening and if required a Stage 2 AA/ NIS. This would reduce/ avoid potential in-combination impacts with other plans or projects.

There are no planned development strategies/ objectives within the plans that will contribute to cumulative impacts with the Proposed Development. Therefore, there is no potential for significant effects in-combination with the plans.

4.6. Conclusion of Screening Assessment

Following an examination, analysis and evaluation of all relevant information and in view of best scientific knowledge, and applying the precautionary principle, it can be concluded that there is the possibility for significant effects on the following European sites, in the absence of mitigation, either arising from the project alone or in combination with other plans and projects, as a result of hydrological connectivity and non-native invasive species impacts:

- Inner Galway Bay SPA (004031); and
- Galway Bay Complex SAC (000268).

Therefore, it is concluded in view of best scientific knowledge and in line with the recommendations of guidance and case law that the Proposed Development should progress to a Stage Two Appropriate Assessment in respect of the above-listed European sites and consequently, the preparation of a Natura Impact Statement (NIS).

5. NATURA IMPACT STATEMENT

This Natura Impact Statement (NIS) has been prepared by APEM., on behalf of the Galway City Council (GCC) in respect of the BusConnects Galway: Dublin Road Scheme (hereafter referred to as the Proposed Development). The Proposed Development aims to provide enhanced walking, cycling and bus infrastructure on this key access corridor in Galway city, which will enable and deliver efficient, safe, and integrated sustainable transport movement along the corridor.

This NIS has been prepared in accordance with the provisions of Part XAB of the Planning and Development Act, 2000 (as amended) ("the 2000 Act") and in accordance with the requirements of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive) as amended.

Before the project can proceed, the Competent Authority, in this case An Bord Pleanála, will be required to carry out an appropriate assessment to determine whether the Proposed Development would adversely affect the integrity of any Natura 2000 site. Following the Screening for AA, the Inner Galway Bay SPA and the Galway Bay Complex SAC have been identified as the only two Natura 2000 sites for which the likelihood of significant effects could not be ruled out. Therefore, these two sites have been brought forward for assessment in this NIS. The '*integrity of the site'* can be defined as '*the coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and / or populations of species for which the site is or will be classified'*[22].

The headings within the appropriate assessment report template provided in the European Commission guidance document '*Assessment of plans and projects significantly affecting Natura 2000 sites*[23]*'* have been used to provide a basis to examine the potential effects of the project.

5.1. Assessment of the effects of the project or plan on the integrity of Natura 2000 Sites

This section of the report sets out the potential effects of the project (either alone or in combination with other projects or plans) on the integrity of the Inner Galway Bay SPA or the Galway Bay Complex SAC with respect to the conservation objectives of the sites and to their structure and function. The focus is on demonstrating, with supporting evidence, that there will be no adverse effects on the integrity of Natura 2000 Sites. Where this cannot be demonstrated, adverse effects must be assumed.

5.1.1. Describe the elements of the project or plan (alone or in combination with other projects or plans) that are likely to give rise to significant effects on the environment.

The BusConnects Galway: Dublin Road project consists of the alteration of existing road layouts, including junction layouts, footpaths, signalling, pedestrian crossings, drainage and other associated works. The Proposed Development is located on the existing R338 Dublin Road, Galway, Co. Galway, between Sáilín to the west and the Martin Junction to the east. The Proposed Development has an overall length of approximately 3.9km.

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[22] http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/provision_of_art6_en.pdf
[23] http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf

The construction works will involve vegetation clearance, tree felling, resurfacing, excavations of limited depth (1 m), surfacing of new cycleway and bus lanes, upgrading of pedestrian facilities, creation of signalised crossings, carriageway widening, surface water drainage upgrades and the retention, protection or diversion of utilities where required.

The elements of the project identified as having potential to affect the Inner Galway Bay SPA and the Galway Bay Complex SAC are the construction works, as it relates to potential vectors for the spread of non-native and invasive species and surface water run-off from the works, as well as the operational phase of the scheme as it relates to the surface water drainage and air emissions from the road network.

Surface water

Surface water from the Site currently exits the area via the existing surface water drainage network through an outfall and also over the kerbs edge at present. Drainage gullies will be relocated to the new kerb edge and will connect back to existing drainage. Sustainable Urban Drainage Systems (SuDS) will be incorporated within hardscape areas to locally manage surface water run-off and reduce demand for piped surface water drainage infrastructure. While the drainage design will connect to existing outfalls where there is no treatment at present, petrol interceptors / bypass oil separators will be provided as part of the Proposed Development. The design is such that there will be no increase in existing run-off rates from newly paved areas, and includes filter drains, swales, rain gardens and bioretention areas, tree pits, oversized pipes, silt traps and attenuation feature where necessary to achieve this.

Air quality emissions

The Air Quality Regulations outline an annual critical level for NOX for the protection of vegetation and natural ecosystems in general. The CAFE Directive defines 'Critical Levels' as 'a level fixed on the basis of scientific knowledge, above which direct adverse effects may occur on some receptors, such as trees, other plants or natural ecosystems but not on humans.'

The TII guidance (TII, 2022a) outlines the assessment of significance of effects at sensitive designated habitats (Section 3.6.6.6 of the guidance), stating that if the nitrogen deposition and acid deposition (due to the Proposed Development) are more than 1% of the critical loads then the modelled results should be discussed further with the project ecologist.

A 'Critical Load' is defined by the United Nations Economic Commission for Europe (UNECE) as a 'a quantitative estimate of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge' (UNECE, 2003).

The range of critical loads for nitrogen deposition to which the nitrogen deposition at each modelled designated habitat can be compared is shown in Table 20 of Appendix B. The range of critical loads for acid deposition to which the nitrogen deposition at each modelled designated habitat can be compared is shown in Table 21 of Appendix B.

Spread of Invasive Species

There is a risk that machinery and surface water could also act as vectors for dispersal of the invasive non-native flora species within and around the Site. There is also a risk that surface water could also act as a vector for dispersal of invasive non-native flora species within and outside the Site.

5.1.2. Set out the conservation objective of the site(s)

The detailed conservation objectives for the Natura 2000 sites, where available, are summarised and set out below.

Inner Galway Bay SPA

The conservation objectives for the Inner Galway Bay SPA and the list of specific attributes and targets defining the conservation objectives for each qualifying interest (likely to be affected) is listed within the supporting information available on the NPWS website[24].

The conservation objectives for the Inner Galway Bay SPA can be summarised as 'To maintain the favourable conservation condition of the bird species in Inner Galway Bay SPA, which is defined by a list of specific attributes and targets' for the following bird species:

- Black-throated Diver (*Gavia arctica*) [A002]
- Great Northern Diver (*Gavia immer*) [A003] (M)
- Cormorant (*Phalacrocorax carbo*) [A017] (M)
- Grey Heron (*Ardea cinerea*) [A028] (M)
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] (M)
- Wigeon (*Anas penelope*) [A050] (M)
- Teal (*Anas crecca*) [A052] (M)
- Red-breasted Merganser (*Mergus serrator*) [A069] (M)
- Ringed Plover (*Charadrius hiaticula*) [A137] (M)
- Golden Plover (*Pluvialis apricaria*) [A140] (M)
- Lapwing (*Vanellus vanellus*) [A142] (M)
- Dunlin (*Calidris alpina*) [A149] (M)
- Bar-tailed Godwit (*Limosa lapponica*) [A157] (M)
- Curlew (*Numenius arquata*) [A160] (M)
- Redshank (*Tringa totanus*) [A162] (M)
- Turnstone (*Arenaria interpres*) [A169] (M)
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179] (M)
- Common Gull (*Larus canus*) [A182] (M)
- Sandwich Tern (*Sterna sandvicensis*) [A191] (M)
- Common Tern (*Sterna hirundo*) [A193] (M)

The conservation objectives for the Inner Galway Bay SPA can be summarised as *'To maintain the favourable conservation condition of wetland habitat in the Inner Galway Bay SPA as a resource for regularly occurring migratory waterbirds that utilise it.'* for the habitat:

- Wetland and Waterbirds [A999]

Galway Bay Complex SAC

The conservation objectives for the Galway Bay Complex SAC and the list of specific attributes and targets defining the conservation objectives for each qualifying interest (likely to be affected) is listed within the supporting information available on the NPWS website[25].

[24] ConservationObjectives.rdl (npws.ie) (last accessed 15/11/23)
[25] ConservationObjectives.rdl (npws.ie) (last accessed 15/11/23)

The conservation objectives for the Galway Bay Complex SAC can be summarised as *'To **maintain'** (M) the favourable conservation condition of the habitats within the Galway Bay Complex SAC, which is defined by a list of specific attributes and targets'* for the following habitats and species identified below by the letter "(M)" and to restore t*he favourable conservation condition of the habitats listed below which are followed by the letter "(R)"*

- Mudflats and sandflats not covered by seawater at low tide [1140] *(M)*
- Large shallow inlets and bays [1160] *(M)*
- Reefs [1170] *(M)*
- Perennial vegetation of stony banks [1220] *(M)*
- Salicornia and other annuals colonising mud and sand [1310] *(M)*
- Turloughs [3180] *(M)*
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites) [6210] *(M)*
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] *(M)*
- Alkaline fens [7230] *(M)*
- Harbour seal *Phoca vitulina* [1365] *(M)*
- Coastal Lagoons [1150] *(R)*
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] *(R)*
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410] *(R)*
- Juniperus communis formations on heaths or calcareous grasslands [5130] *(R)*
- Otter *Lutra lutra* [1355] *(R)*

5.1.3. Field surveys

Due to the proximity of the Proposed Development, ecological surveys were carried out to determine if QI's of the aforementioned Natura 2000 sites or wider sites were present outside their representative Natura 2000 boundary and within the works footprint of the Proposed Development.

Habitat Survey

Habitat surveys were conducted by Apem surveyors on 20th October 2022, along with the 13th June, 14th June, 30th June and 2nd July 2023. Habitats within the study area were classified after 'A Guide to Habitats in Ireland' (Fossitt, 2000). The dominant plant species present in each habitat type were recorded during the field surveys and this is considered sufficient to allow accurate classification of the habitats present. A habitat map was then prepared using QGIS software. Particular attention was given to the potential for habitat with affiliation to Annex I Lowland Hay Meadows [6510] habitat types expected to be within the study area.

The habitat types recorded within the study area are below. Full detail for each habitat is provided in Appendix B, only those with relevance to Natura 2000 sites are shown here.

- (Mixed) broadleaved woodland (WD1)
- Scattered trees and parkland (WD5)
- Oak-ash-hazel woodland (WN2)
- Scrub (WS1)
- Hedgerows (WL1)
- Treelines (WL2)
- Improved agricultural grassland (GA1)
- Amenity grassland (GA2)
- Dry meadows and grassy verges (GS2)
- Recolonising bare ground (ED3)
- Stone walls and other stonework (BL1)

- Buildings and artificial surfaces (BL3)

In some sections of the dry meadows and grassy verges (GS2) habitat type, characteristic species of Annex I habitat types were recorded, and this has potential affiliations with Annex I Lowland Hay Meadows [6510]. It is noted the habitat is outside the boundaries of any designated or candidate SAC.

Dry meadows and grassy verges – GS2

This habitat was represented by two (western and eastern of the three fields located to the south of Merlin Park Hospital. These fields are known locally as 'The Meadows' and are mown once-twice annually. No grazing occurs by livestock, which is a characteristic of Dry Calcareous Grassland GS1. Species diversity was found to be high with characteristics species yellow rattle (*Rhinathus minor*), knappweed (*Knautia arvensis*), birds foot trefoil (*Lotus corniculatus*), ox-eye daisy (*Leucanthemum vulgare*) and grasses red fescue (*Festuca rubra*), cock's foot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), timothy grass (*Phleum pratense*), quaking grass (*Briza media*) and created dog's tail (*Cynosurus cristatus*). Other species recorded include red clover (*Trifolium pratense*), white clover (*Trifolium repens*), ribwort plantain, eyebright (*Euphrasia officinalis*), sorrel (*Rumex acetosa*), common spotted orchid (*Dactylorhiza fuchsia*), O'Kelly's spotted orchid (*Dactylorhiza fuchsia var. okellyi*) and St John's wort (*Hypericum perforatum*). The grassland is noted to be orchid rich but with common spotted orchid dominant.

Characteristic species for Annex I lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) [6510] were absent from the study area however, due to the dominant yellow rattle and red fescue, this would be classified as community 3e *Festuca rubra – Rhinanthus minor* under the Irish Semi-natural grasslands survey and thus corresponds to the Annex I Lowland Hay Meadows habitat type [6510] (O'Neill et al., (2013).

The remaining middle field is dominated by grassland species cock's foot, Yorkshire fog, timothy grass, quaking grass, red fescue and created dog's tail and comprises fewer vascular species. Although present, yellow rattle and red fescue are not dominant. This field is not characteristic of community 3e *Festuca rubra – Rhinanthus minor* under the Irish Semi-natural grasslands survey and thus do not correspond to the Annex I lowland hay meadows habitat type [6510].

Approximately 4 m widening of the road will be required in this area to facilitate the construction of the footpath (maximum 2 m width) and cycle track (maximum 2 m width). The western field is protected by a buffer zone of fencing, scrub and treeline separating the grassland from the existing road edge. The boundary of the Annex I habitat type Lowland Hay Meadows in this field does not overlap with the predicted land-take required as part of the Proposed Development.

On the eastern meadow field, again there is no treeline buffer but there are some sparse trees and scrub present of up to 5 m in places, and a minimum of 2 m from the roads edge. The eastern field is considered to be Annex I habitat.

The only overlapping area of required land-take and Annex I habitat is a total area of approximately 1,540 m^2, at the southern edge of the field along the length. This area of land take is a strip closest to the existing road. The total area of Annex I habitat in this easternmost field is c. 30,700 m^2. The area of Annex I habitat for the two fields combined is c. 54,500 m^2, with an expected land-take of approximately 1,540 m^2 in the eastern field, which is 2.8% of the total area within Merlin Park (representing 0.24% of the total area mapped as Annex I Lowland Hay Meadows [6510], if it were present within an SAC/ cSAC). Therefore, the loss of habitat with affiliation to Annex I Lowland Hay Meadows is considered to be minor, due to the buffer habitats present between the roads edge and the Meadows. Furthermore,

due to the extent of the habitat loss (less than 3%), and after consultation with NPWS (pre-planning meeting on 25th July 2024) there is no derogation requirement for the Annex I habitat.

Bat Survey

Bat surveys were conducted by Apem surveyors on 13th June and 2nd July 2023, along with the 27th March, 30th July and 20th August 2024. Trees/ structures (buildings) within the study area were visually inspected from the ground level for Potential Roost Features (PRF) where it was considered likely that they may be suitable for use by roosting bats. These includes features such as knotholes, cracks / splits in limbs, dense ivy, loose or lifting bark, or hollows / cavities. Potential roosts / roost features and bat foraging habitat were evaluated using the criteria set out in the Bat Conservation Trust (BCT) guidelines (Collins, 2016), subsequently updated in 2023.

An appropriate transect route focussing on areas with moderate to high habitat suitability for bats was identified during the habitat surveys. This transect was walked for the duration of the survey, which commenced from 30 minutes before dusk to 2 hours after dusk. Two ecologists were present for the duration and maintained a steady walking pace to ensure the sampling area is the same per unit time as per the guidelines. Information collected include species recorded, number of bats, flight direction and behaviour (e.g., commuting or foraging). Equipment used for the duration of the surveys included the Titley Scientific Anabat Scout bat detector, an InfraRed torch, and the Canon XA60 InfraRed camera.

Refer to Appendix B for full methodology and results of the bat surveys. Only surveys with results of relevance to QI's of Natura 2000 sites are shown here.

Building and Structures

There are buildings in the vicinity that comprise suitable roosting potential for bat species. These areas are outside the study area and the footprint of the Proposed Development, which is confined to areas along the existing road infrastructure. Within the study area, the Proposed Development requires the demolition of two single storey buildings within the grounds of the Brothers of Charity to the eastern extent of the Proposed Development. These buildings are located immediately adjacent to the road and behind a stone wall. An external inspection was undertaken of these affected buildings on the 27th of March 2024. The buildings are single storey and have a flat felt roof. The buildings were found to be in generally good condition, well-sealed and no suitable potential entry / exit points were noted in the structures that could be used by bats. No droppings or other evidence of bat usage was found during the inspection. The buildings were assessed as having negligible potential for bat roosting and therefore were not required to be subject to further surveys.

Trees

There are multiple mature trees within the study area that have potential to be used by roosting bats. In general, the majority of these mature trees are located on the fringes of woodland habitat in Merlin Park south of the hospital. While there are some conifer species which are unsuitable, species such as oak, beech and some common ash covered in dense ivy were identified as having moderate potential for bats. Potential Roost Features (PRFs) identified include ivy, lifting bark, knotholes, and broken limbs. Much of these are located to the north of the middle and eastern Merlin Meadows fields. It is noted however that these trees are affected by some light spill from the existing R338, due to the lack of treeline along the boundary providing no barrier to light spill. Some trees along the R338 on the western field that will require felling to facilitate the proposed development were found to have low potential for bat roosting, but many of these trees are also in good condition and have a lack of PRFs. Existing artificial lighting does reduce the suitability of some mature trees along the road which were identified

as having PRFs suitable for usage by bats. Some trees bounding the road along Rosshill Park Woods, located south of the existing road, were found to have some potential for bats. A small number of sycamores, common ash and horse chestnut trees were noted to have PRFs in the form of dense ivy, which may conceal further PRFs. However, due to their location along the busy R338 road and the presence of street lighting, these trees are considered unlikely to be used and are noted to have a low suitability for bats. Two Sycamore trees to the eastern boundary of the temporary construction compound were noted to have low potential for bats due to PRFs noted. Flood lighting is also present here as the area is currently used and maintained as a sports pitch, and this reduces the likelihood of these trees being used by bats.

Activity Survey

The first activity survey on 13th June revealed that three species of bat use the study area for foraging and commuting. Transects were walked along the Meadows, fringes of Merlin Park woodland and along the eastern section of the existing R338. These areas were identified during the daytime walkover as having moderate to high potential habitat for bats and so the transects were focussed on these areas. Species recorded include common pipistrelle, soprano pipistrelle and Leisler's bat. No lesser horseshoe bats (LHS) were identified present during the survey.

The second activity survey on 2nd July revealed similar results to the initial survey in June. The transects walked were similar as those during the June surveys; along the Meadows, fringes of Merlin Park Woodland and the eastern section of the R338. Species recorded include common pipistrelle, soprano pipistrelle and Leisler's bat. No LHS were identified present during the survey, however, LHS have previously been recorded north of Merlin Park Woodland (refer to Appendix B). As a precautionary approach, a derogation has been applied for and approved for roost disturbance for all bat species. (License – Derogation number DER-BAT-2025-33)

Mammal Survey (Including Marine Mammals)

Incidental sightings or evidence of mammals, in this case Otter, common and grey seal, were noted during the habitat survey and bird vantage point surveys at Lough Atalia and the habitats within the study area were evaluated for their potential to support protected species. Surveys were conducted by Apem surveyors on 13th June, 14th June, 30th June and 2nd July 2023 and 27th March 2024.

No sightings, nor evidence of Annex VI mammal species were noted during the surveys, however, species have previously been recorded within Lough Atalia (refer to Appendix B).

Bird Survey

Bird surveys were conducted by Apem surveyors on 14th June and 30th June 2023, along with the 27th March 2024 for breeding birds and 21st December 2022, along with 16th January, 21st February and 21st March 2023 for wintering birds. These surveys were conducted via a walkover / walking transect following outline methodology in the Countryside Bird Survey Manual prepared by BirdWatch Ireland and the National Parks and Wildlife Service (BWI and NPWS, 2012) as relevant. Vantage Point (VP) surveys were also undertaken at one location at Lough Atalia at Lat Long co-ordinates 53.28075128, -9.0323594.

Refer to Appendix B for full methodology and results of the bat surveys. Only surveys with results of relevance to QI's of Natura 2000 sites are shown here.

Breeding Birds

The breeding bird survey revealed that the majority of birds using the study area are small passerine species (refer to Appendix B). Transects cover the fields south of Merlin Park and north of the R338. Activity was focussed along the woodland edges to the north of the Meadows fields towards Merlin Park, as well as on treelines separating these fields. Very little activity was noted towards the R338 side of the Meadows fields, which is to be expected due to the lack of treeline south of the middle and eastern fields. It's likely that the passerine species recorded to the north of the Meadows are nesting in the treeline and woodland habitats present. Annex species recorded shown in Table 3. The full list of species recorded are shown in Appendix B.

Table 3: Annex bird species recorded during breeding bird surveys

Species	Conservation Concern (2020-2026)	Annex List
Wood pigeon *(Columba palumbus)*	Green listed	Annex II, Annex III
Magpie *(Pica pica)*	Green listed	Annex II
Blackbird *(Turdus merula)*	Green listed	Annex II
Song thrush *(Turdus philomelos)*	Green listed	Annex II
Lesser black-backed gull *(Larus fuscus)*	Amber-listed	Annex II
Common gull *(Larus canus)*	Amber-listed	Annex II

Breeding Vantage Point Surveys

Results from the breeding surveys in June 2023 are presented in Table 4

Table 4: Annex bird records from Lough Atalia during breeding surveys

Species	Conservation Concern (2020-2026)	Annex List
Sandwich Tern (*Sterna sandvicensis*)	Amber-listed	Annex I
Little Egret (*Egretta garzetta*)	Green listed	Annex I
Wood pigeon *(Columba palumbus)*	Green listed	Annex II, Annex III

Species	Conservation Concern (2020-2026)	Annex List
Great black-backed gull (*Larus marinus*)	Green listed	Annex II
Starling (*Sturnus vulgaris*)	Amber-listed	Annex II
Redshank (*Tringa totanus*)	Red listed	Annex II
Mallard (*Anas platyrhynchos*)	Amber-listed	Annex II

Winter Birds

The wintering bird surveys included a walked transect through the Meadow fields in Merlin Park, as well as a watch near Lough Atalia to the west of the Proposed Development. Species recorded during these surveys are included in Table 5 below. Activity along the Meadow fields included common passerine and corvid species, engaging in a range of behaviours including calling, foraging, flying and perching.

Table 5: Annex bird species recorded during wintering bird surveys

Species	Conservation Concern (2020-2026)	Annex List
Blackbird *(Turdus merula)*	Green listed	Annex II
Northern Lapwing (*Vanellus vanellus*)	Red listed	Annex II
Little Egret (*Egretta garzetta*)	Green listed	Annex I
Mistle thrush (*Turdus viscivorus*)	Green listed	Annex II
Redwing (*Turdus iliacus*)	Red listed	Annex II
Song thrush *(Turdus philomelos)*	Green listed	Annex II
Wood pigeon *(Columba palumbus)*	Green listed	Annex II, Annex III

Winter Vantage Point Surveys

Species recorded during the watches at Lough Atalia during the winter surveys were as expected for the area, comprising gulls, ducks, and a variety of waders. Lough Atalia is a popular foraging site for these birds, with roosting behaviour also noted. The most notable species during the course of surveys were kingfisher, snipe and little egret, which were all recorded at Lough Atalia during VP surveys. Species recorded during these surveys are included in Table 5 below.

Table 6: Annex bird species recorded at Lough Atalia during wintering bird surveys

Species	Conservation Concern (2020-2026)	Annex List
Gadwall (*Anas strepera*)	Amber-listed	Annex I
Great black-backed gull (*Larus marinus*)	Green listed	Annex II
Greenshank (*Tringa nebularia*)	Green listed	Annex II
Mallard (*Anas platyrhynchos*)	Amber-listed	Annex II
Mute Swan (*Cygnus olor*)	Amber-listed	Annex II
Common Redshank (*Tringa totanus*)	Red listed	Annex II
Eurasian Teal (*Anas crecca*)	Amber-listed	Annex I
Eurasian Wigeon (*Anas penelope*)	Red listed	Annex I
Kingfisher (*Alcedo atthis*)	Amber-listed	Annex I
Northern Lapwing (*Vanellus vanellus*)	Red listed	Annex II
Little Egret (*Egretta garzetta*)	Green listed	Annex I
Oystercatcher (*Haematopus ostralegus*)	Red listed	Annex II
Common Snipe (*Gallinago gallinago*)	Red listed	Annex III
Curlew (*Numenius arquata*)	Red listed	Annex II
Lesser black-backed gull *(Larus fuscus)*	Amber-listed	Annex II

While Annex I species were recorded during the bird surveys, none were recorded breeding or roosting within the redline boundary of the Proposed Development.

While kingfisher is recognised as being a shy and very sedentary species, they were identified at Lough Atalia. The species is recognised to move to lakes and coasts during extended spells of poor weather (Birdwatch Ireland, accessed November 2024).

It should be noted that there are species not considered a QI for any of the SPA's identified within the initial 15 km search radius, however, they are listed as Annex I species and therefore brought forward for assessment.

Due to the continued road and construction work around Lough Atalia that has been taking place for the last c. 5 years, speciesthat were recorded within the 500m ZoI for birds (refer to Section 4.1) are assumed to be acclimated to the ongoing development within the area.

5.1.4. Describe how the project or plan will affect key species and key habitats. Acknowledge uncertainties and gaps in information

The key qualifying interests of the Inner Galway Bay SPA considered likely to be affected by the potential impacts and associated effects as a result of the project are:

- Black-throated Diver (*Gavia arctica*) [A002]
- Great Northern Diver (*Gavia immer*) [A003]
- Cormorant (*Phalacrocorax carbo*) [A017]
- Grey Heron (*Ardea cinerea*) [A028]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Red-breasted Merganser (*Mergus serrator*) [A069]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Lapwing (*Vanellus vanellus*) [A142]
- Dunlin (*Calidris alpina*) [A149]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Turnstone (*Arenaria interpres*) [A169]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Sandwich Tern (*Sterna sandvicensis*) [A191]
- Common Tern (*Sterna hirundo*) [A193]
- Wetland and Waterbirds [A999] (M)

The key qualifying interests of the Galway Bay Complex SAC considered likely to be affected by the potential impacts and associated effects as a result of the project are:

- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- Salicornia and other annuals colonising mud and sand [1310]

- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Turloughs [3180]
- Juniperus communis formations on heaths or calcareous grasslands [5130]
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]
- Alkaline fens [7230]
- Limestone pavements [8240]
- *Lutra lutra* (Otter) [1355]
- *Phoca vitulina* (Harbour Seal) [1365]

The Proposed Development has potential to result in emissions to air and surface water during both the construction and operational phases. During the construction phase, works along the existing R338 Dublin Road, particularly those near the western extent near Lough Atalia, could give rise to run-off surface water emissions which could enter Lough Atalia in the absence of mitigation measures. This would also give rise to potential indirect impacts to the non-QI bird species identified at Lough Atalia. The temporary construction compound will be located c. 450m from Lough Atalia on the opposite side of the road, and thus no surface water emissions from this compound is expected to reach Lough Atalia. Works to the existing surface water outfall at Lough Atalia could give rise to run-off, where the interceptor and oil / water separator will be installed. Sediments and contaminated surface water could cause a deterioration in water quality at the point where it enters Lough Atalia. Spills of coolant, hydraulic fluids and fuels, lubricating and cutting oils, paints and cements are potential sources of pollution that can contain polychlorinated biphenyl compounds (PBCs) that have been noted as having an adverse effect on otter (Mason 1997). During the operational phase, run-off from the road will be connected to the existing surface water drainage present, along with upgrades to treatment. This could also give rise to negative impacts on water quality, due to road run-off including sediment and potential contaminants such as hydrocarbons or other spillages.

The construction phase at the western extent of the scheme could give rise to the spread or potential introduction of invasive species. While the road is in existence, machines and equipment used for works in this area have potential to act as vectors for the spread and / or introduction of invasive species into Lough Atalia and surrounding areas, potentially affecting habitats and indirectly, the species that utilise them. The temporary construction compound, which will have vehicles and machinery movement throughout the construction period, may also be a hotspot for spread of invasives.

Due to the connections between the Site and the designated sites affected, the risk of significant effects cannot be entirely excluded.

5.1.5. Describe how the integrity of the Natura 2000 site(s) is likely to be affected by the project or plan. Acknowledge also uncertainties and any gaps in information.

Emissions – Deterioration in Water Quality

Surface water emissions during the construction and operational phases of the Proposed Development could potentially result in a deterioration of water quality. This would affect the wetland and coastal habitats of the Inner Galway Bay SPA and the Galway Bay Complex SAC, as well as the bird (including non-QI species), aquatic and mammal species that utilise these habitats.

The conservation objectives and conditions of designated habitats and species in the SAC are defined by attributes related to water quality, including salinity regimes, dissolved inorganic nitrogen (DIN),

molybdate reactive phosphorus (MRP), community structure, physical structure and sediment supply, plant species and negative indicator species, which all would be negatively impacted by a deterioration in water quality. This would then pose a risk of the designated site not meeting their conservation objectives and thus affecting the overall integrity of the site.

The conservation objectives and conditions of designated species and habitats in the SPA are defined by attributes also related to water quality, including availability of prey biomass, distribution of populations and habitat area. These attributes could be negatively affected by surface water emissions by reducing prey survival in the habitat types, thus reducing prey availability, reducing habitat quality and thus displacing populations as well as reducing suitable habitat area. It is of note that the design of surface water drainage on the Site for the Proposed Development will be an improvement on existing conditions and such SUDS are in compliance with the Galway County Development Plan 2022-2028. At present, there is an outfall of untreated run-off from the existing R338 road to Lough Atalia. The drainage design includes no increase in existing run-off rates from newly paved areas, and filter drains, swales, rain gardens and bioretention areas, tree pits, oversized pipes, silt traps and attenuation feature where necessary to achieve this.

Due to the nature of the Proposed Development and materials to be used, the distance between the Site works and the outfall locations and the high mixing capacity of Galway Bay (McCullagh *et al.,* 2020), all surface emissions are likely to be dispersed and diluted within the Bay, before having potential for significant impacts on the QIs of the designated sites or indirect impacts to non-QI bird species. However, , the risk does exist, and mitigation measures as proposed in Section 5.1.6 will be employed and as a result there will be no residual adverse impact on the integrity of the designated sites..

Air Quality Emissions

Dust emissions during the construction and operational phases of the Proposed Development could result in a deterioration of sensitive designated habitats.

The annual mean NO_X concentrations (including background) are below the critical level of 30 µg/m^3 at all modelled habitats, in both the DM and the DS scenarios, in both the Opening and Design Years.

The annual mean NH_3 concentrations (including background) exceed the critical level for higher plants of 3 µg/m^3 at the Annex I habitat type 'Lowland Hay Meadows' at Merlin Park in both the DM and the DS scenarios. However, the Proposed Development results in a decrease in the annual mean NH_3 concentration in the DS scenario in both the Opening Year and Design Year.

Nitrogen deposition levels (including background) are above the lowest critical loads for nitrogen deposition (Table 20 of Appendix B) at the Galway Bay Complex SAC and the Annex I habitat type 'Lowland Hay Meadows' at Merlin Park, in both the DM and the DS scenarios, in both the Opening and Design Years. Nitrogen deposition levels are also above the lowest critical loads at the Inner Galway Bay SPA in both the DM and the DS Design Year scenarios.

The acid deposition (as N) levels exceed the lowest critical loads for acid deposition (as N) (Table 20 of Appendix B) at all modelled designated sites, in both the DM and the DS scenarios, in both the Opening and Design Years.

The conservation objectives and conditions of the designated habitats and species in the SAC are defined by attributes including habitat distribution, habitat area, vegetation composition, vegetation structure, physical structure and extent of habitat, which could all be negatively impacted by the emissions to air. This would then pose a risk of the designated site not meeting their conservation objectives and thus affecting the overall integrity of the site.

While the models were conducted using a worst-case scenario for both the construction and operational phases, due to the implementation of the Proposed Development, there is potential for the predicted emissions to be much lower, than the worst case and existing levels, with potential for an increased modal shift to public transport and bike usage, further decreasing car usage and thus the associated emissions. Furthermore, as outlined in Section 4.1, there are no sensitive ecological receptors (habitats within a Natura 2000 site) within 100m of the source (ZoI for dust emissions on sensitive receptors), therefore the potential effects from dust are low without mitigation.

Spread of Invasive Species

The proximity of the Proposed Development to the Inner Galway Bay SPA and the Galway Bay Complex SAC results in a risk of spread of invasive species during the construction and operational phases. Invasive species could be spread or introduced terrestrially, or via surface water run-off from the works. This could affect the wetland and coastal habitats of the SPA and SAC, as well as indirectly affect the species that utilise these habitats, by reducing habitat quality and suitability.

The conservation objectives and conditions of the designated habitats and species in the SAC are defined by attributes including habitat distribution, habitat area, vegetation composition, vegetation structure, physical structure, extent of habitat, barriers to connectivity and access to suitable habitat. The introduction or spreading of invasive species would then pose a risk of the designated site not complying or meeting their conservation objectives and thus affecting integrity of the site.

The conservation objectives and conditions of designated species and habitats in the SPA are defined by attributes including habitat area and distribution of bird populations. The introduction or spreading of invasive species would then pose a risk of the designated site not complying or meeting its conservation objectives and thus adversely affecting the integrity of the site.

The risk of not complying or meeting the conservation objectives are, however, considered to be low without mitigation. This is due to the size of the Site; the urban nature of the construction works areas, and the extent of non-native invasive species recorded at the site. The only high-risk invasive species found at the Site is Himalayan balsam, which was found near the entrance to Merlin Park, some c. 2 km from the works near Lough Atalia. Other species recorded such as winter heliotrope and snowberry were also recorded near the Merlin Park area of the scheme and are considered to be a medium risk of spread (APEM, 2024). Montbretia and butterfly-bush were recorded on the fringes of the sports pitch which will be used as the temporary construction compound. These species are also considered to be medium risk of spread (APEM, 2024). However, the risk does exist, and mitigation measures as proposed in Section 5.1.6 will be employed and as a result there will be no residual adverse impact on the integrity of the designated sites.. There is potential for impacts on the Annex I Lowland Hay Meadows habitat in Merlin Park relating to the spread of invasive species and mitigation measures are required.

In-Combination Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a Proposed Development results in individually insignificant impacts that, when considered in-combination with impacts of other proposed or permitted plans and projects, can result in significant effects (CIEEM, 2018).

The Proposed Development has potential to give rise to surface water emissions and non-native invasive species impacts due to receiving waterbodies having connectivity to Natura 2000 sites. If the construction works, were to occur at the same time as other projects, cumulative impacts may occur,

affecting the QIs of Inner Galway Bay SPA and Galway Bay Complex SAC. The operational phase may also result in cumulative impacts if connected to the same drainage network or discharging to the same area in the Inner Galway Bay SPA and Galway Bay Complex SAC. Therefore, other projects that are connected to the same existing drainage network as the Proposed Development, or within the potential ZoI, have been considered for potential in-combination effects.

All the consent applications within the ZoI are either retention applications, applications for one-off residential dwellings, extensions or conversions that have already been built, are in the process of being completed or have no potential for impacts on the existing drainage network. Developments that are currently permitted, under construction or planned within the ZoI that have potential for in-combination effects are assessed in Table 2. These were accessed from the Galway City Planning Portal[6].

The following plans were reviewed for strategies and objectives that may act in-combination with the proposed works:

- National Biodiversity Action Plan 2023-2027
- Galway City Development Plan 2023-2029

There are no actions in the National Biodiversity Action Plan that would be considered as having a potential for negative in-combination effects with the Proposed Development. In general, these actions are ones that would have a positive effect on biodiversity, with communication and enhancement at the forefront of these actions.

The Galway City Development Plan in complying with the requirements of the Habitats Directive requires that all Projects and Plans that could affect Natura 2000 sites in the same zone of impact of the Project Site would undertake an Appropriate Assessment stage 1 screening and if required a Stage 2 AA/ NIS. This would reduce/ avoid potential in-combination impacts with other plans or projects.

There are no planned developments, plans or strategies/ objectives within the plans that will contribute to cumulative impacts with the Proposed Development. This is due to the limited scale of planned developments, and / or the outcomes of Appropriate Assessment Stage 1 Screenings or Natura Impact Statements, with mitigation prescribed as appropriate in the latter. Therefore, there is no potential for significant cumulative effects.

5.1.6. Describe what mitigation measures are to be introduced to avoid, reduce or remedy the adverse effects on the integrity of the site(s). Acknowledge uncertainties and any gaps in information.

Deterioration in water quality and the introduction and / or spread of invasive species has the potential to adversely affect qualifying interests of the Inner Galway Bay SPA and the Galway Bay Complex SAC and non-QI bird species. The mitigation measures proposed in this NIS focus therefore on the protection of water quality, air quality and prevention of introduction and spread of invasive species to the designated sites during the construction and operational phase of the Proposed Development.

All of the mitigation measures will be implemented in full and are effective and verified control measures to protect the receiving environment will be in place. Mitigation measures and associated Management Plans are included within the Construction Environmental Management Plan (CEMP), all of which shall, at a minimum, be implemented during the Construction Phase of the Proposed Development.

General Protection Measures and Good Working Practices

Good working practices such as those set out in, but not limited to, the below will be employed at all times on Site during the construction phase of the project.

- IFI (2010) 'Biosecurity Protocol for Field Survey Work'
- TII (2020) 'The Management of Invasive Alien Plant Species on National Roads - Technical Guidance'
- CIRIA (2006) 'Control of Water Pollution from Linear Construction Projects – Site Guide'
- CIRIA (2015) 'Environmental Good Practice on Site Guide'
- CIRIA (2023) 'Environmental Good Practice on Site Guide (Fifth Edition)'
- CIRIA (2017) 'Guidance on the construction of SuDS'

Protection of Water Quality

During Construction

A Surface Water Management Plan (SWMP) has been prepared as is in included in the CEMP contained in Appendix 5.1 in Volume 4 of the EIAR. Guidance listed in this SWMP will be followed as relevant. An Environmental Emergency Response Plan will be prepared and communicated to staff prior to commencement of works.

The existing surface water drainage system of the R338 Dublin Road, including drains, pipes and outfalls, will be inspected and confirmed to be in a suitable working order prior to any Proposed Development works taking place on Site.

All fuels, oils and construction fluids will be stored in the designated construction compound. The designated construction compound will be located on lands adjacent to the existing Connacht Hotel. Within the compound, they will be stored in bunds of 110% storage capacity and located in a secure area away from any drains or watercourses. Refuelling of machinery, where required, will only be undertaken within the construction compound.

All equipment and machinery will be checked for leaks and other potential sources of contaminants before arriving on Site and on a daily basis prior to usage. Any equipment or machinery likely to introduce contaminants will not be brought on Site or will be removed from Site immediately if any leak is discovered. Spill kits will be available to machine operators, and they will be trained in their use.

Any cement mixing where required will be undertaken away from surface water drainage systems, whether temporary during construction, or permanent. Any washout from vehicles, machinery or tools will be stored securely in the construction compound and appropriately removed from Site.

There will be no direct discharge to any watercourse at any time during the construction phase.

Sediment barriers, such as silt fencing, will be used for works within 15 m of watercourses, such as any upgrades of the surface water drainage near outfalls or to install petrol or oil interceptors. When sediment barriers are used, they will be checked daily to assess effectiveness and appropriate installation.

Vegetation clearance will be done in a controlled manner, and waste disposed of appropriately away from any watercourse or surface water drainage system.

Construction should take cognisance of predicted weather conditions during Site clearance or excavation works to reduce the potential for run-off. Surface water run-off can be accelerated during

periods of unsettled weather and heavy rain. The duration that any subsoil layers are exposed for should be kept to a minimum to reduce the time soils are exposed to weather conditions.

Waste will be managed appropriately on Site in particular during any works close to Lough Atalia and the boundaries of the Inner Galway Bay SPA and Galway Bay Complex SAC. Wastewater from temporary welfare facilities will be collected and disposed of to a suitably licensed facility.

During Operation

During vegetation maintenance or management in the operational phase, any herbicide / weed killer used will be an ecologically safe product, including safe for pollinators and the aquatic environment. Waste from landscaping will also be appropriately dealt with away from any watercourse.

The surface water drainage system, including petrol / oil separator will be regularly checked and maintained to ensure it is working appropriately and effectively.

Air Quality

During Construction

While it is shown there are no sensitive habitats or species within 100m (emissions to air ZoI) of the Proposed Development, and therefore no direct or indirect effects from dust, a precautionary approach has been taken and mitigation measures prescribed for the construction phase of the Proposed Development.

The measures are:

Fully enclose structures with screens during demolition to minimise dust dispersion;
Public roads outside the Proposed Development will be regularly inspected for cleanliness and cleaned as necessary;
Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays (or similar dust suppression methods) will be used as required if particularly dusty activities associated with the construction contract are necessary during dry or windy periods;
During movement of dust-generating or potentially hazardous materials both on and off-site, trucks will be covered with tarpaulin and before entrance onto public roads, trucks will be checked to ensure the tarpaulins are properly in place; and
The appointed contractor will provide a site hoarding of 2.4m height along boundaries where works are taking place adjacent to ecological sensitive receptors and at the main construction compound which will assist in minimising the potential for dust impacts off- site.

The appointed Contractor will keep the effectiveness of the mitigation measures under review and revise them as necessary. In the event of dust nuisance occurring outside the works boundary associated with the Proposed Development, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem.

During Operation

There are no significant effects to air quality predicted during the operational phase as all ambient air pollutants will remain in compliance with the ambient air quality standards and the scheme will have a generally neutral impact on air quality, therefore, no specific operation phase mitigation or monitoring measures are required.

Invasive Species

During Construction

Prior to the commencement of works, a pre-construction survey for invasive species should be carried out along the length of the Proposed Development. Due to the likely elapsed time between the surveys and the start of the Proposed Development construction, there is potential for further spread of invasive species along the route, or introduction of species not currently present. This should be undertaken to determine the extent of any invasive species present in the study area.

Guidance listed in the Invasive Species Management Plan (ISMP) will be followed as relevant, including the TII (2020) guidance. Measures outlined in the ISMP will be implemented by a suitability qualified specialist prior to the commencement of construction to ensure non-native invasive species are controlled. The high-risk invasive species Himalayan knotweed should be appropriately removed to prevent further spread. While this is at a distance from the Natura 2000 network, this will be removed as best practice. When construction does commence, monitoring of these areas will be undertaken to ensure there is no regrowth or introduction of additional species via machinery and personnel once mobilised on Site.

All equipment working on Site will be steam cleaned prior to and after use on Site and wastewater will be appropriately dealt with as in the recommended CIRIA guidelines above. During works on Site, vehicles and machinery will be regularly inspected for plant material, such as roots or seeds, and if found, will be removed and safely disposed of in the construction compound. The medium risk species that are not listed on the Third Schedule that are located within the temporary construction compound will be fenced off to avoid any contact with the construction activities.

During Operation

During the operational phase, invasive species could be inadvertently brought into Site during the management of the road itself.

TII (2020) guidance also includes measures for the maintenance of National Roads, and this should be followed as appropriate. During operation and vegetation management, checks should be made for invasive species and, where found, appropriate signage and measures introduced to ensure there is no further spread. This will include the temporary construction compound currently used as a sports pitch. Hedge cutting and strimming pose a significant risk of facilitating the spread of invasive species. Once presence is confirmed, plans should be put in place for management and eradication of the invasive species recorded.

5.1.7. Role and Responsibilities

The main contractor for the project will be required to designate a member of staff, or engage a specific person, with demonstrable experience of environmental management and monitoring on construction sites. The appointed individual will assume responsibility for overseeing the implementation of all environmental protective measures. The appointed contractor will be responsible for ensuring that all mitigation measures set out in this document, CEMP and any site-specific method statement are fully and correctly implemented. The appointed contractor will be responsible for employing good working practice during the project. The appointed contractor will be responsible for providing a briefing on environmental protection measures and ecological sensitivities of the Site to all Site personnel in advance of commencement of works.

On completion of the construction phase, Galway City Council will be responsible for managing and operation the development in line with the requirements of the planning conditions which includes operational phase mitigation measures listed in this report.

5.1.8. Efficacy of Mitigation Measures

The environmental mitigation measures set out above are proven to work and provide certainty that the integrity of Inner Galway Bay SPA and Galway Bay Complex SAC will not be affected by the construction and operation of the Proposed Development. These measures will ensure that suspended solids and other pollutants will not be discharged to surface waters during construction and operation nor via emissions to air, and that there will be no significant effect on water quality in the SAC or SPA or indirect effects to non-QI bird species. Appropriate invasive removal and biosecurity measures will be implemented on Site to ensure there is no spread and / or introduction of invasive species which could affect the SAC or SPA.

Table 7 Summary of Effects, mitigation measures and impact on integrity of Natura 2000 sites

Effect before mitigation	Mitigation Measures	Responsibility for Implementation	Efficacy of Mitigation	Adverse integrity of Natura 2000 sites
Deterioration of Water quality	Surface Water Management Plan (SWMP)	Contractor	Established and proven construction measures using recommended guidance	No
	Surface water management during construction	Contractor	Established and proven construction measures	No
	Surface water management during operation	Local Authority	Established and proven measures for management	No
Deterioration of Sensitive Designated Habitats	Screening / Hoarding	Contractor	Established and proven measures for management	No
	Material handling systems and site stockpiling of materials	Contractor	Established and proven measures for management	No
	Movement of dust-generating or potentially hazardous materials	Contractor	Established and proven measures for management	No
Spread of invasive species	Invasive Species Management Plan (ISMP)	Contractor	Established and proven construction measures using recommended guidance	No
	Invasive species control and biosecurity measures during construction	Contractor	Established and proven construction measures	No
	Biosecurity measures and invasive species control during operation	Local Authority	Established and proven measures for management	No

5.2. NIS Conclusion

This NIS has examined and analysed, in light of the best scientific knowledge, with respect to those European sites within the ZoI of the Proposed Development, the potential impact sources and pathways, the manner in which these could potentially impact on the European sites' QI habitats and species and SCI species and whether the predicted impacts would adversely affect the integrity of the Inner Galway Bay SPA and the Galway Bay Complex SAC. There are no other European sites at risk of effects from the Proposed Development.

Avoidance, design requirements and mitigation measures are set out within this NIS and the effective implementation of these mitigation measures will ensure that any adverse effects on Qualifying Interests or the integrity of the Natura 2000 sites identified will be avoided during the Construction and Operational Phases of the Proposed Development.

It has been objectively concluded on the basis of the best scientific knowledge available and following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted impacts from the Proposed Development and the effective implementation of the mitigation measures proposed, that the Proposed Development will not adversely affect the integrity of any European site, either alone or in combination with other plans or projects.

A final determination will be made by the competent authority in this regard.

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Appendix A: Figures

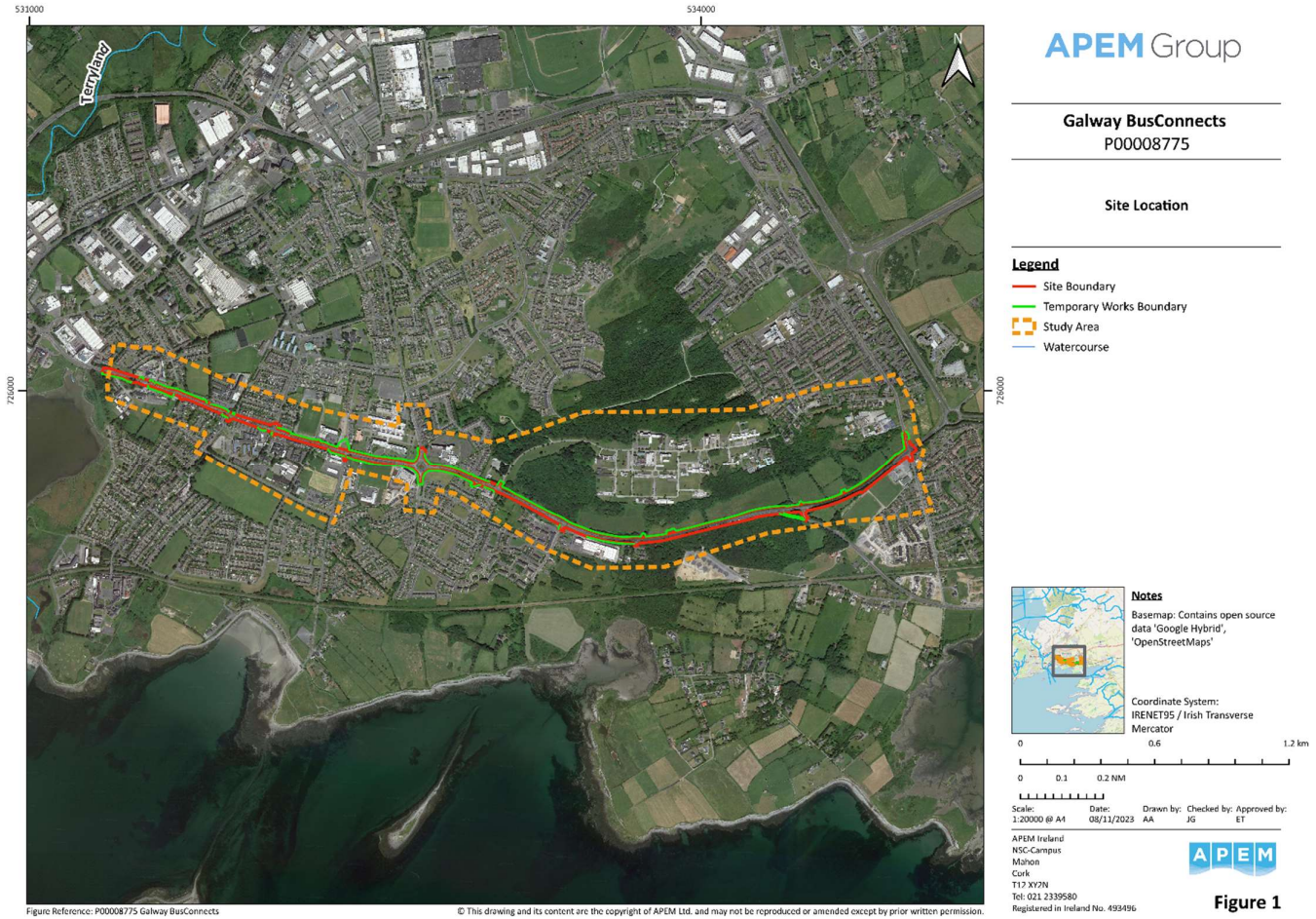

Figure 1. Site Location

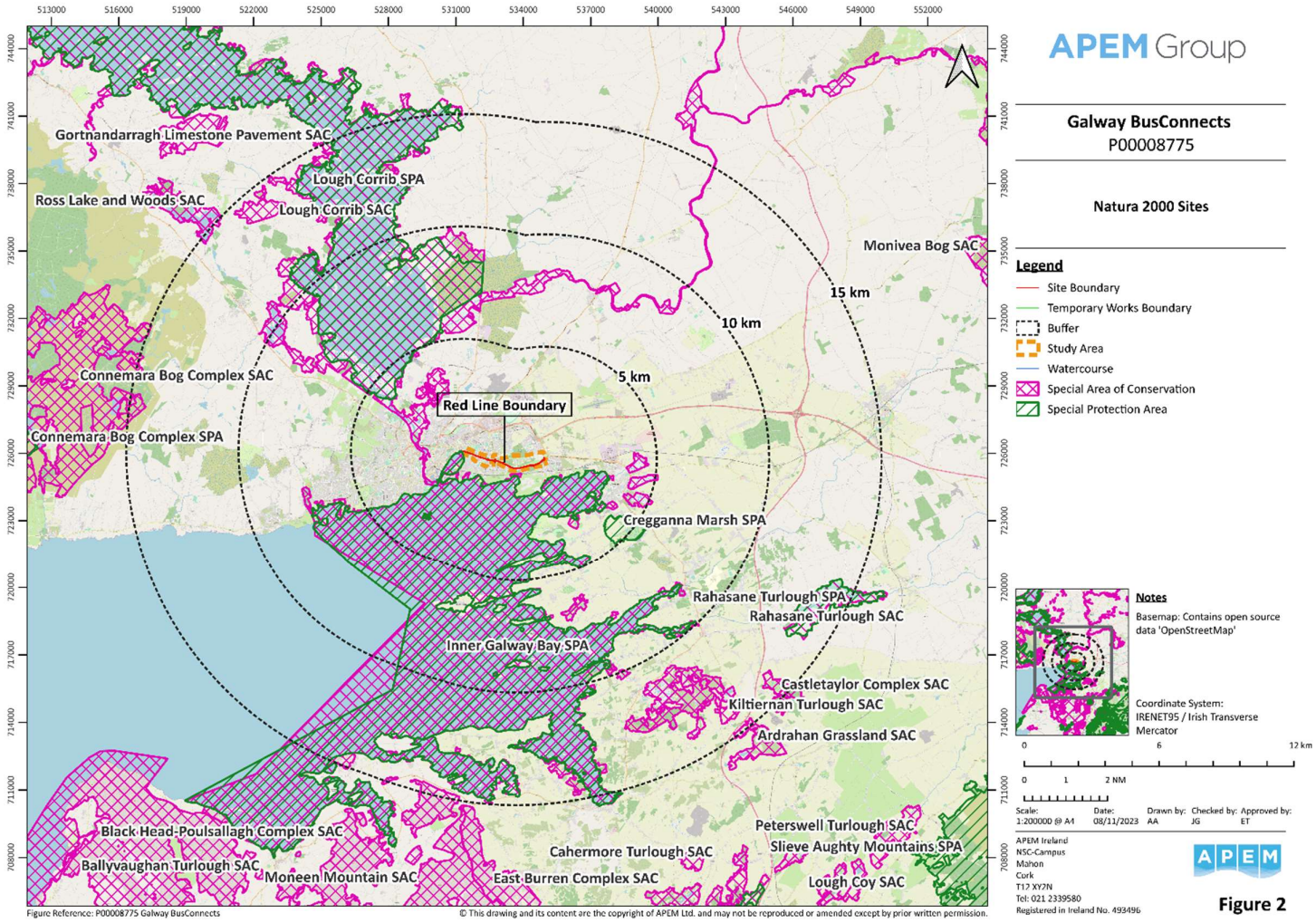

Figure 2. Natura 2000 Sites

Appendix B: Relevant Legislation

European Nature Directives (Habitats and Birds)

The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) forms the basis for the designation of Special Areas of Conservation. Similarly, Special Protection Areas are classified under the Birds Directive (Council Directive 2009/147/EEC on the Conservation of Wild Birds). Collectively, Special Areas of Conservation (SAC) and Special Protection Areas (SPA) are referred to as the Natura 2000 network. In general terms, they are considered to be of exceptional importance for rare, endangered or vulnerable habitats and species within the European Community.

Under Article 6(3) of the Habitats Directive an appropriate assessment must be undertaken for any plan or project that is likely to have a significant effect on the conservation objectives of a Natura 2000 site. An appropriate assessment is an evaluation of the potential impacts of a plan or project on the conservation objectives of a Natura 2000 site[26], and the development, where necessary, of mitigation or avoidance measures to preclude negative effects.

Article 6, paragraph 3 of the EC Habitats Directive 92/43/EEC ("the Habitats Directive") states that:

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

The Habitats Directive is transposed into Irish law by the EC (Birds and Natural Habitats) Regulations 2011, as amended. Part XAB of the Planning and Development Acts 2000 to 2020 transposes Article 6(3) and 6(4) of the Habitats Directive in respect of land use plans and proposed projects requiring development consent.

European Commission (Birds and Natural Habitats) Regulations 2011 to 2021 – Part 5

Part 5 of the European Commission (Birds and Natural Habitats) Regulations 2011, as amended, sets out the circumstances under which an 'appropriate assessment' is required. Section 42(1) requires that '*a screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site.*'

[26] Also referred to as European Sites in the Planning and Development Acts 2000 – 2020.

Section 42(2) expands on this, stipulating that a public authority must carry out a screening for Appropriate Assessment before consent for a plan or project is given, or a decision to undertake or adopt a plan or project is taken. To assist a public authority to discharge its duty in this respect, Section 42(3)(a) gives them the authority to direct a third party to provide a Natura Impact Statement and Section 42(3)(b) allows them to request any additional information that is considered necessary for the purposes of undertaking a screening assessment.

Section 42(6) requires that '*the public authority shall determine that an Appropriate Assessment of a plan or project is required where the plan or project is not directly connected with or necessary to the management of the site as a European Site and if it cannot be excluded, on the basis of objective scientific information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site*'.

Planning and Development Acts 2000 to 2021[27] - PART XAB

The relevant sections of Part XAB of the Planning and Development Acts 2000, as amended, are set out below.

Screening for appropriate assessment

Section 177U requires that**—** (1) A screening for appropriate assessment of a draft Land use plan or application for consent for proposed project shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed project, individually or in combination with another plan or project is likely to have a significant effect on the European site.

(2) A competent authority shall carry out a screening for appropriate assessment under subsection (1) before—

(a) a Land use plan is made including, where appropriate, before a decision on appeal in relation to a draft strategic development zone is made, or

(b) consent for a proposed project is given.

(3) In carrying out screening for appropriate assessment of a proposed project a competent authority may request such information from the applicant as it may consider necessary to enable it to carry out that screening, and may consult with such persons as it considers appropriate and where the applicant does not provide the information within the period specified, or any further period as may be specified by the authority, the application for consent for the proposed project shall be deemed to be withdrawn.

(4) The competent authority shall determine that an appropriate assessment of a draft Land use plan or a proposed project, as the case may be, is required if it cannot be excluded, on the basis of objective information, that the draft Land use plan or proposed project, individually or in combination with other plans or projects, will have a significant effect on a European site.

(5) The competent authority shall determine that an appropriate assessment of a draft Land use plan or a proposed project, as the case may be, is not required if it can be excluded, on the basis of objective

[27] http://revisedacts.lawreform.ie/eli/2000/act/30/revised/en/html (Updated to 10 March 2023)

information, that the draft Land use plan or proposed project, individually or in combination with other plans or projects, will have a significant effect on a European site.

(6) (a) Where, in relation to a proposed project, a competent authority makes a determination that an appropriate assessment is required, the competent authority shall give notice of the determination, including reasons for the determination of the competent authority, to the following—

(i) the applicant,

(ii) if appropriate, any person who made submissions or observations in relation to the application to the competent authority, or

(iii) if appropriate, any party to an appeal or referral.

(b) Where a competent authority has determined that an appropriate assessment is required in respect of a proposed project it may direct in the notice issued under paragraph (a) that a Natura impact statement is required.

(c) Paragraph (a) shall not apply in a case where the application for consent for the proposed project was accompanied by a Natura impact statement.

(7) A competent authority shall, as soon as may be after making the Land use plan or making a decision in relation to the application for consent for proposed project, make available for inspection by members of the public during office hours at the offices of the authority, and may also publish on the internet —

(a) any determination that it makes in relation to a draft Land use plan under subsection (4) or (5) as the case may be, and reasons for that determination, and

(b) any notice that it issues under subsection (6) in relation to a proposed project. (8) In this section ‘consent for proposed project’ means, as appropriate —

(a) a grant of permission,

(b) a decision of the Board to grant permission on a planning application or an appeal,

(c) consent for development under Part IX,

(d) approval for development that may be carried out by a local authority under Part X or Part XAB or development that may be carried out under Part XI,

(e) approval for development on the foreshore under Part XV,

(f) approval for development under section 43 of the Act of 2001,

(g) approval for development under section 51 of the Roads Act 1993, or

(h) a substitute consent under Part XA.

(9) In deciding upon a declaration or a referral under section 5 of this Act a planning authority or the Board, as the case may be, shall where appropriate, conduct a screening for appropriate assessment in accordance with the provisions of this section.

(10) In deciding upon an application under section 176A or a determination review or an application referral under section 176C, a planning authority or the Board, as the case may be, shall, where appropriate, conduct a screening for appropriate assessment in accordance with the provisions of this section.

Natura impact report and natura impact statement

Section 177T states that— (1) (a) A Natura impact report means a statement for the purposes of Article 6 of the Habitats Directive, of the implications of a Land use plan, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites.

(b) A Natura impact statement means a statement, for the purposes of Article 6 of the Habitats Directive of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than on European site, in view of the conservation objectives of the site or sites.

(2) Without prejudice to the generality of subsection (1), a Natura impact report or a Natura impact statement, as the case may be, shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for one or more than one European site in view of the conservation objectives of the site or sites.

(3) As respects a draft National Planning Framework, the Government shall prepare a Natura impact report in relation to a draft Land use plan and the following bodies shall also prepare a Natura impact report in relation to a draft Land use plan—

(a) as respects a draft regional spatial and economic strategy, the regional assembly for whose area the draft strategy is made,

(aa) as respects a draft National Planning Framework, the Minister

(b) as respects a draft planning scheme in respect of all or any part of a strategic development zone, the planning authority (which term shall be construed in accordance with section 168(5)) for whose area the draft scheme is made,

(c) as respects a draft development plan or draft variation of a development plan, the planning authority for whose area the draft plan or draft variation is made, and

(d) as respects a draft local area plan, the planning authority in whose area the local area concerned is situate.

(4) The applicant for consent for Proposed Development may, or if directed in accordance with subsection (5) by a competent authority, shall furnish a Natura impact statement to the competent authority in relation to the Proposed Development.

(5) At any time following an application for consent for Proposed Development a competent authority may give a notice in writing to the applicant concerned, directing him or her to furnish a Natura impact statement

(6) Where an applicant for consent for Proposed Development who, having been directed in accordance with subsection (5), fails to furnish a Natura impact statement within the period specified in the notice, or any further period as may be specified by the competent authority, the application for consent for the Proposed Development shall be deemed to be withdrawn.

(7) (a) Without prejudice to subsection (1)a Natura impact report or a Natura impact statement shall include all information prescribed by regulations under section 177AD.

(b) Where appropriate, a Natura impact report or a Natura impact statement shall include such other information or data as the competent authority considers necessary to enable it to ascertain if the draft Land use plan or Proposed Development will not affect the integrity of the site.

Appendix C: Ecological Surveys

Habitat Surveys

Habitat surveys were conducted by Apem surveyors on 20th October 2022, along with the 13th June, 14th June, 30th June and 2nd July 2023. Habitats within the study area were classified after '*A Guide to Habitats in Ireland'* (Fossitt, 2000). The dominant plant species present in each habitat type were recorded during the field surveys and this is considered sufficient to allow accurate classification of the habitats present. A habitat map was then prepared using QGIS software. Particular attention was given to the potential for habitat with affiliation to Annex I Lowland Hay Meadows [6510] habitat types expected to be within the study area. The habitat types recorded within the study area, as discussed in this section and shown in ***Figure 1***, ***Figure 2***, ***Figure 3*** and ***Figure 4***, are as follows:

- (Mixed) broadleaved woodland (WD1)
- Scattered trees and parkland (WD5)
- Oak-ash-hazel woodland (WN2)
- Scrub (WS1)
- Hedgerows (WL1)
- Treelines (WL2)
- Improved agricultural grassland (GA1)
- Amenity grassland (GA2)
- Dry meadows and grassy verges (GS2)
- Recolonising bare ground (ED3)
- Stone walls and other stonework (BL1)
- Buildings and artificial surfaces (BL3)

In some sections of the dry meadows and grassy verges (GS2) habitat type, characteristic species of Annex I habitat types were recorded, and this has potential affiliations with Annex I Lowland Hay Meadows [6510]. It is noted the habitat is outside the boundaries of any designated or candidate SAC.

(Mixed) broadleaved woodland – WD1

This habitat was mainly represented to the south of the R388 near the middle section of the Proposed Development, as well as in the area of Merlin Park to the north. Species recorded include beech (*Fagus sylvatica*), common ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*) and non-native pine (*Pinus* sp.). Fossitt (2000) note that this habitat type is present when the majority (>75%) of trees observed are broadleaved species, including native/non-native varieties and a canopy greater than 5 m in height. Due to the protection status for woodland within the County Development Plan 2019-2025 (CDP), and the Galway City Development Plan 2023-2029, the woodlands within the Site would be considered as ecological corridors in the context of Article 10 of the Habitats Directive.

Scattered trees and parkland – WD5

This habitat was represented in the study area on school grounds and where amenity grassland grade into scattered trees. Fossitt (2000) characterises this habitat type by a lack of canopy cover (<30%) but also the prominence of individual trees in the area. Species observed were ash, sycamore, and oak (*Quercus* sp.).

Oak-ash-hazel woodland – WN2

This habitat type is present in the study area in Merlin Park, primarily to the north of the Merlin Park Hospital. The canopy is dominated by ash and with a hazel (*Corylus avellana*) scrub layer. No oak

species were recorded, however. Ground flora recorded include Ivy (*Hedera helix*), bramble (*Rubus fruticosus* agg), violet (*Viola* sp.), lords and ladies (*Arum maculatum*), bluebells (*Hyacinthoides non-scripta*), primrose (*Primula vulgaris*) and ferns: hart's tongue fern (*Asplenium scolopendrium*), deer fern (*Blechnum spicant*) and royal fern *(Osmunda regalis*). Due to the protection status for green spaces such as Merlin Park within the CDP, as well as linkages and connectivity between the green spaces, the woodlands within the Site would be considered as ecological corridors in the context of Article 10 of the Habitats Directive.

Scrub – WS1

This habitat was primarily represented on the fringes of woodland, grassland as well as in areas left unmanaged. Fossitt (2000) characterises this habitat type as shrubs, brambles and stunted trees, covering more than 50% of the observed area. Common species recorded in the study area include Hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), bramble, cleavers (*Galium aparine*) and nettle (*Urtica dioica*).

Hedgerows – WL1

This habitat was represented by linear features of shrub and occasional trees within the survey area, present as field and property boundaries. The shrubs/trees were observed on raised banks and less than 4m wide. The hedges consisted of a mixture of flora, such as Hawthorn, honeysuckle (*Lonicera periclymenum*), bramble, bindweed (*Calystegia sepium*), blackthorn, spindle, common ash, nettle, and cleavers. Due to the importance of enhancing linkages and connectivity within the green network in the CDP, the hedgerows within the Site would be considered as ecological corridors in the context of Article 10 of the Habitats Directive.

Treelines – WL2

This habitat was represented by linear trees present as field and property boundaries. Fossitt (2000) states that the canopy of these trees is to be greater than 5m in height and the width of the line no greater than 4m. Treelines were mostly present along the R388 and to the western and eastern extents as field boundaries. The trees consisted of a mixture of hawthorn, sycamore, horse chestnut (*Aesculus hippocastanum*), cypress (*Cupressus* sp.), hazel and common ash. Due to the importance of enhancing linkages and connectivity within the green network in the CDP, the treelines within the Site would be considered as ecological corridors in the context of Article 10 of the Habitats Directive.

Improved agricultural grassland – GA1

This habitat is present in the study area mostly to the eastern extent of the Proposed Development with some small land parcels used for agriculture. Dominant species recorded included rye grasses (*Lolium* spp.), thistle (*Cirsium* spp.), curly leaved, narrow leaved and broad-leaved docks (*Rumex* spp.), ribwort plantain (*Plantago lanceolata)* and nettles.

Amenity grassland – GA2

This habitat was represented in the study area by primarily residential gardens, and on the grounds of hotels and the Merlin Park Hospital. The temporary construction compound also comprises this habitat type and is currently used as a sports pitch. Swards are kept short and well managed with low species diversity. Species present are clovers (*Trifolium* spp.), daisies (*Bellis perennis*) and plantains (*Plantago* spp.).

Dry meadows and grassy verges – GS2

This habitat was represented by two (western and eastern of the three fields located to the south of Merlin Park Hospital. These fields are known locally as 'The Meadows' and are mown once-twice annually. No grazing occurs by livestock, which is a characteristic of Dry Calcareous Grassland GS1. Species diversity was found to be high with characteristics species yellow rattle (*Rhinathus minor*), knappweed (*Knautia arvensis*), birds foot trefoil (*Lotus corniculatus*), ox-eye daisy (*Leucanthemum vulgare*) and grasses red fescue *(Festuca rubra*), cock's foot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), timothy grass (*Phleum pratense*), quaking grass (*Briza media*) and created dog's tail (*Cynosurus cristatus*). Other species recorded include red clover (*Trifolium pratense*), white clover (*Trifolium repens*), ribwort plantain, eyebright (*Euphrasia officinalis*), sorrel (*Rumex acetosa*), common spotted orchid (*Dactylorhiza fuchsia*), O'Kelly's spotted orchid (*Dactylorhiza fuchsia var. okellyi*) and St John's wort (*Hypericum perforatum*). The grassland is noted to be orchid rich but with common spotted orchid dominant.

Characteristic species for Annex I lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) [6510] were absent from the study area however, due to the dominant yellow rattle and red fescue, this would be classified as community 3e *Festuca rubra – Rhinanthus minor* under the Irish Semi-natural grasslands survey and thus corresponds to the Annex I Lowland Hay Meadows habitat type [6510] (O'Neill *et al*., (2013).

The remaining middle field is dominated by grassland species cock's foot, Yorkshire fog, timothy grass, quaking grass, red fescue and created dog's tail and comprises fewer vascular species. Although present, yellow rattle and red fescue are not dominant. This field is not characteristic of community 3e *Festuca rubra – Rhinanthus minor* under the Irish Semi-natural grasslands survey and thus do not correspond to the Annex I lowland hay meadows habitat type [6510].

Recolonising bare ground – ED3

This habitat was represented in the study area with artificial surfaces, such as tarmac and concrete, which have been recolonised with over 50% vegetation cover (Fossitt, 2000), This is present in small, fragmented sections primarily to the east of the study area. Species recorded include nettles, willowherbs (*Epilobium* spp.), ribwort plantain and dandelion (*Taraxacum* sp.).

Stone walls and other stonework – BL1

This habitat was represented by stonewalls in the study area, primarily to the north of the R388 and south of Merlin Park. The main feature was that of dry stone and mortar that occur as field/property boundaries. Species observed included ivy (*Hedera helix*), spleenwort (*Asplenium trichomanes*) and Ivy-leaved toadflax (*Cymbalaria muralis*). Due to the protection status for stone walls within the CDP, the stone walls within the Site would be considered as ecological corridors in the context of Article 10 of the Habitats Directive.

Buildings and artificial surfaces – BL3

This habitat type is dominant in the urban study area. This is best represented by residential housing, roads, derelict structures, commercial properties, car parks, and pavements. The gardens present within the western section of the Proposed Development comprise ornamental flora species and flower beds.

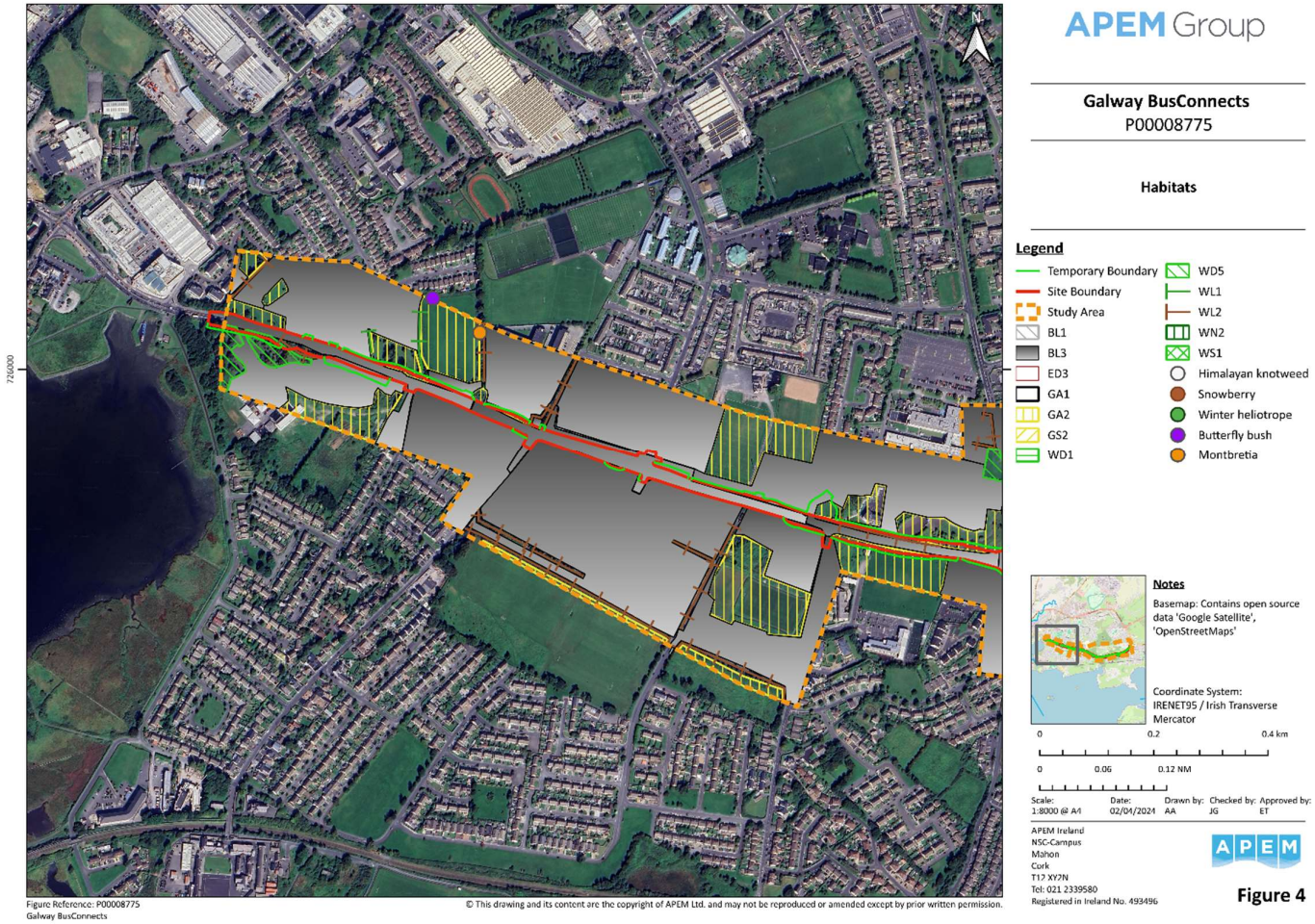

Figure 1: Habitat map – showing western section

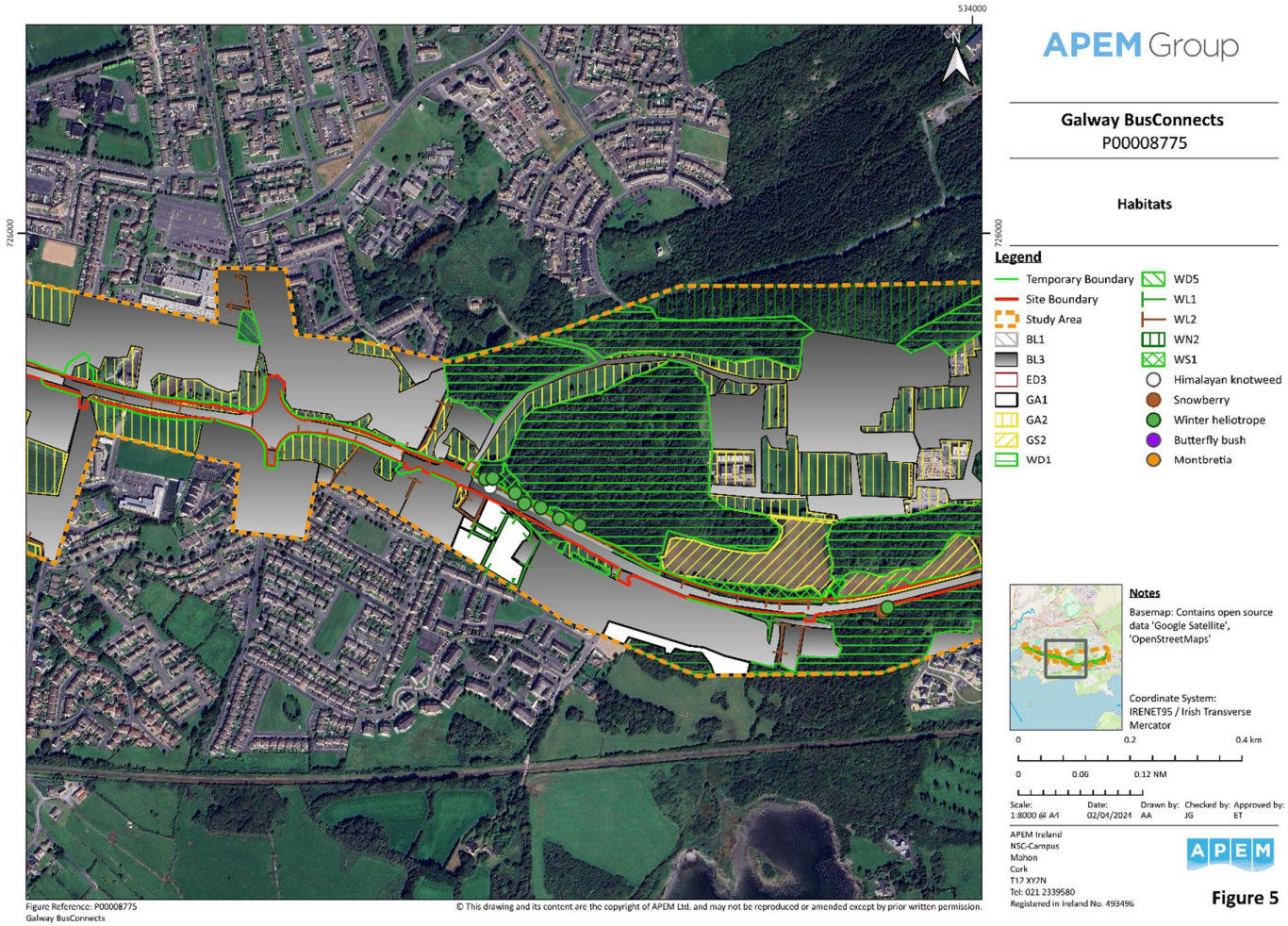

Figure 2: Habitat map - showing central section

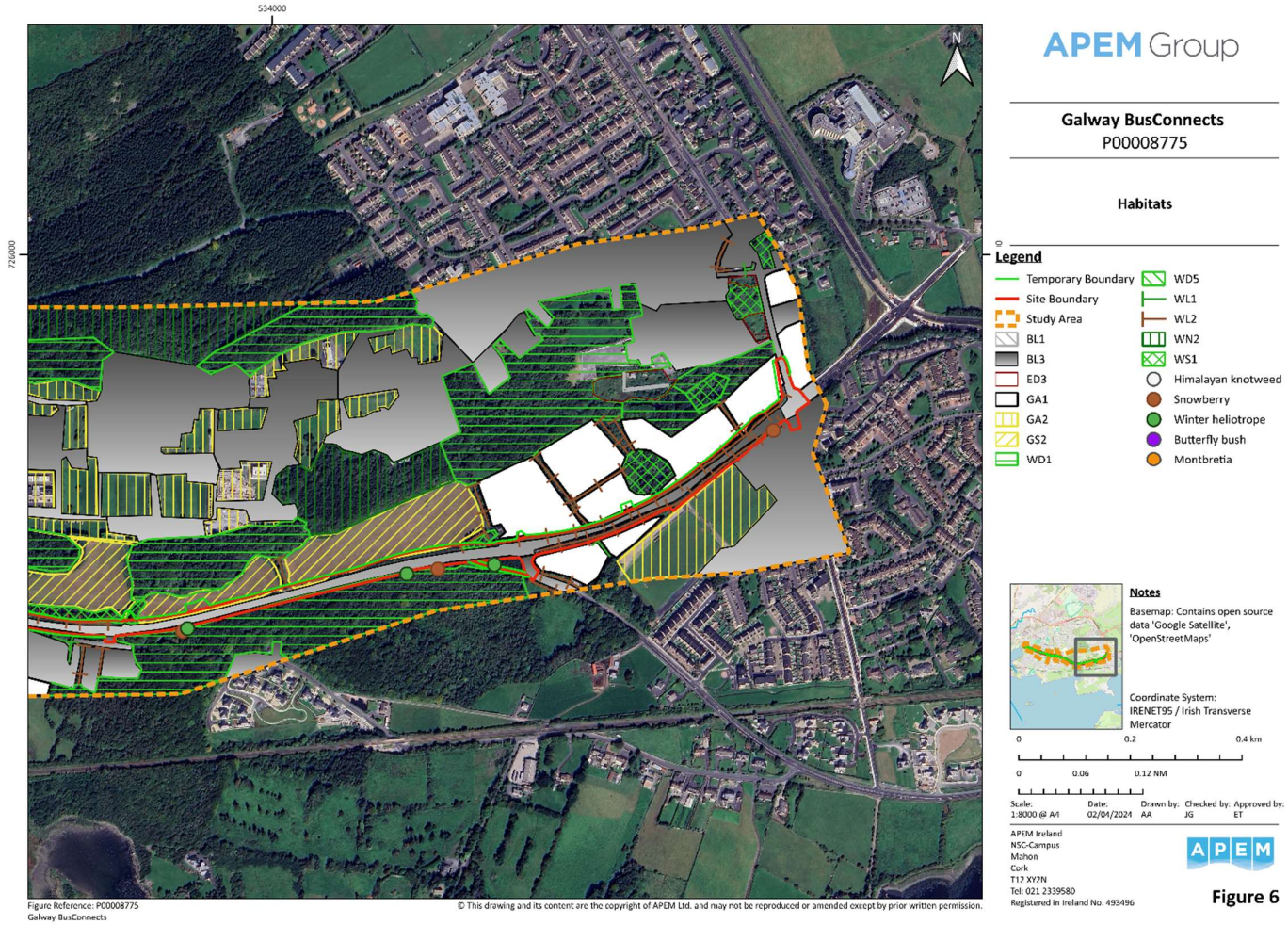

Figure 3: Habitat map – showing eastern section

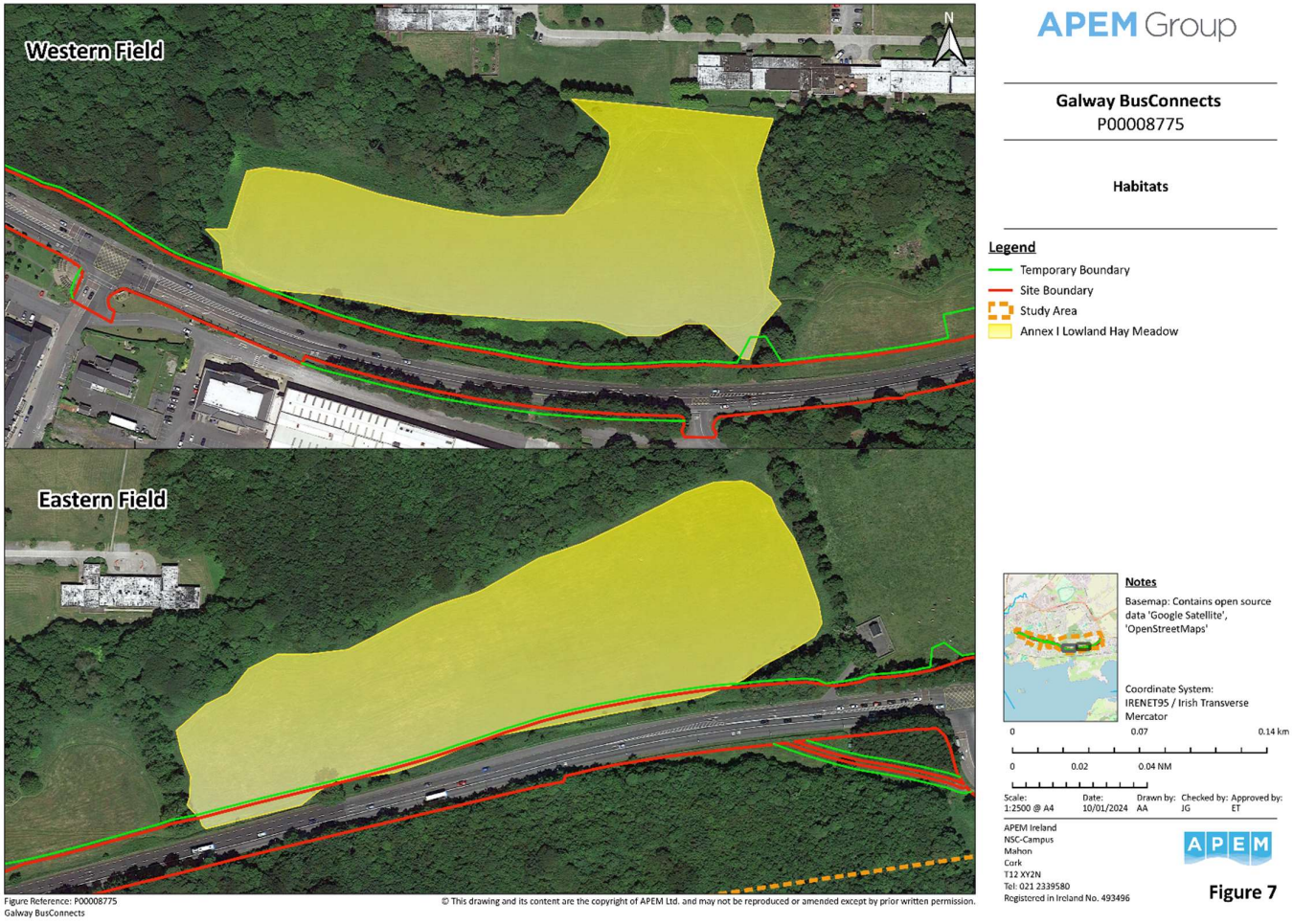

Figure 4: Habitat map – Annex I Lowland Hay Meadow

Non-Native Invasive Flora Species

Desk Study

Desk study results revealed that 17 non-native invasive flora species have been recorded within the 10 km grid square M32 (NBDC, 2023). These species are listed as both high and moderate impact non-native invasive species as identified by Biodiversity Ireland and Kelly *et al* (2013); refer to Table 8 below for the species and their level of impact.

Table 8: Invasive flora species recorded within 10 km grid square M32 (NBDC, 2023)

Name	Date of Last Record	Impact Level	Designation
Butterfly-bush (*Buddleja davidii*)	24/01/2023	Medium	No
Cherry Laurel (*Prunus laurocerasus*)	18/05/2017	High	No
Common Broomrape (*Orobanche minor*)	14/06/2020	Medium	No
Bohemian Knotweed (*Fallopia japonica x sachalinensis = F. x bohemica)*	23/08/2022	High	Invasive Species under Regulation S.I. 477 of 2011 (Ireland). 'Third Schedule' species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011 as amended (Under Vectors Part 3 – Soil or spoil from infested areas)
Giant Hogweed (*Heracleum mantegazzianum*)	31/07/2013	High	Invasive Species under Regulation S.I. 477 of 2011 (Ireland). 'Third Schedule' species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations –2011 as amended
Himalayan Honeysuckle (*Leycesteria formosa*)	14/07/2019	Medium	No
Himalayan Knotweed (*Persicaria wallichii*)	13/07/2016	Medium	Invasive Species under Regulation S.I. 477 of 2011 (Ireland). 'Third Schedule' species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011 as amended

Name	Date of Last Record	Impact Level	Designation
Japanese Knotweed (*Fallopia japonica*)	18/05/2017	High	Invasive Species under Regulation S.I. 477 of 2011 (Ireland). 'Third Schedule' species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations –2011 as amended
Japanese Rose (*Rosa rugosa*)	01/05/2017	Medium	No
Narrow-leaved Ragwort (*Senecio inaequidens*)	16/08/2019	Medium	No
Pampas-grass (*Cortaderia selloana*)	04/11/2021	Medium	No
Rhododendron *Rhododendron ponticum*	29/08/2015	High	Invasive Species under Regulation S.I. 477 of 2011 (Ireland). 'Third Schedule' species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011 as amended
Sycamore (*Acer pseudoplatanus*)	29/09/2015	Medium	No
Three-cornered Leek (*Allium triquetrum*)	23/03/2022	Medium	Invasive Species under Regulation S.I. 477 of 2011 (Ireland). 'Third Schedule' species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011 as amended
Traveller's-joy (*Clematis vitalba*)	25/08/2020	Medium	No
Wall Cotoneaster (*Cotoneaster horizontalis*)	23/04/2020	Medium	No
Wild Parsnip (*Pastinaca sativa*)	16/08/2019	Medium	No

Field surveys identified Himalayan knotweed in one location within the study area. This was located behind a stone wall in an area of scrub to the north of the R338 at Merlin Park, as shown in ***Figure 1***, ***Figure 2*** and ***Figure 3***. Winter heliotrope (*Petasites pyrenaicus*) was also recorded in multiple locations

within this area and is common along the fringes of woodland throughout the study area. Snowberry (*Symphoricarpos albus*) was also recorded in multiple locations but was most commonly recorded to the south of the R338 scattered within treelines, hedgerows and the edges of woodland habitat. RPS (2020) did note the presence of Japanese knotweed near the entrance to Merlin Park during ecological surveys. No evidence of this was found during the current surveys, but the Himalayan knotweed was observed not far from here. Within the temporary construction compound, butterfly-bush (*Buddleja davidii)* and montbretia *(Crocosmia x crocosmiiflora)* were recorded on the edges of the sports pitch.

Bat Surveys

Desk study

Bat records for the study area are outlined in Table 9 below. There were three records of Lesser Horseshoe Bat *Rhinolophus hipposideros* returned from the desk study grid square M32 (NBDC, 2023).

Table 9: Bat Species recorded within 10 km grid square M32 (NBDC, 2023)

Bat Name	Legal Protection	Year of Last Record	Record count	Conservation Status (Marnell et al. 2019)
Lesser Horseshoe Bat (*Rhinolophus hipposideros*)	EU Habitats Directive: Annex II, Annex IV. Wildlife Act 1976.	2015	3	Least Concern
Brown Long-eared Bat (*Plecotus auritus*)	EU Habitats Directive: Annex IV. Wildlife Act 1976.	2008	1	Least Concern
Lesser Noctule (Nyctalus leisleri)	EU Habitats Directive: Annex IV. Wildlife Act 1976.	1999	1	Least Concern
Pipistrelle (*Pipistrellus pipistrellus* sensu lato)	EU Habitats Directive: Annex IV. Wildlife Act 1976.	2009	2	Least Concern
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	EU Habitats Directive: Annex IV. Wildlife Act 1976.	2009	3	Least Concern

Bat Landscape Suitability

The landscape suitability index, as generated by Lundy *et al* (2011) for bat species within the Site, is detailed in ***Figure 5*** and ***Figure 6***. The model suggests that the study area is of high landscape suitability for bat species on an average basis in the western section of the Proposed Development and moderate landscape suitability for bat species on an average basis in the eastern section of the Proposed Development.

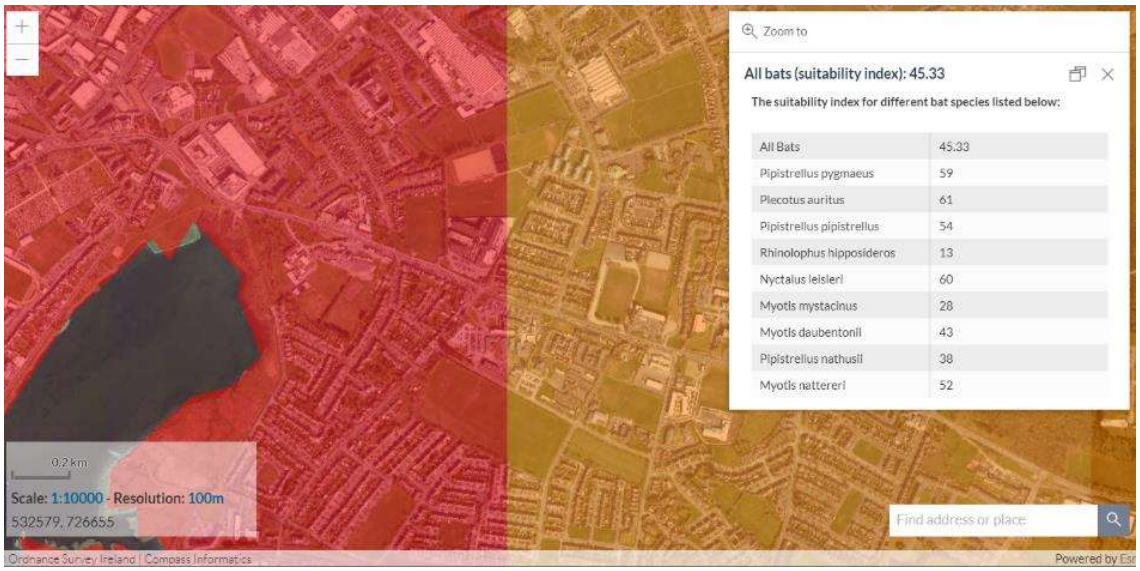

Figure 5: Western section identifying High Landscape Suitability Index (NBDC, 2023)

Figure 6: Eastern section identifying moderate Landscape Suitability Index (NBDC, 2023)

Field Surveys

Bat surveys were conducted by Apem surveyors on 13th June and 2nd July 2023, along with the 27th March, 30th July and 20th August 2024. Trees and/or structures suitable for roosting bats and potential suitable bat foraging were noted where they occurred within the study area. Buildings affected by the Proposed Development (i.e. demolition) were inspected externally. Trees/ structures within the study area were visually inspected from the ground level for Potential Roost Features (PRF) where it was considered likely that they may be suitable for use by roosting bats. These includes features such as knotholes, cracks / splits in limbs, dense ivy, loose or lifting bark, or hollows / cavities. Potential roosts / roost features and bat foraging habitat were evaluated using the criteria set out in the Bat Conservation Trust (BCT) guidelines (Collins, 2016), subsequently updated in 2023.

Walked bat activity surveys (transects) were undertaken on two occasions in 2023 and two occasions in 2024. The survey on the night of 13th June 2023 was undertaken following a day with some thundery showers, followed by a warm dry night. The survey on 2nd July 2023 was undertaken following a warm, dry day followed by a warm dry night. The survey 30th July 2024 were warm, followed by a dry day. The survey on 20th August was undertaken following a period of unsettled wet and windy weather, but the night was dry with a light breeze.

An appropriate transect route focussing on areas with moderate to high habitat suitability for bats was identified during the habitat surveys undertaken earlier in the daytime. This transect was walked for the duration of the survey, which commenced from 30 minutes before dusk to 2 hours after dusk. Two ecologists were present for the duration and maintained a steady walking pace to ensure the sampling area is the same per unit time as per the guidelines. Information collected include species recorded, number of bats, flight direction and behaviour (e.g., commuting or foraging). Equipment used for the duration of the survey included the Titley Scientific Anabat Scout bat detector, an InfraRed torch, and the Canon XA60 InfraRed camera.

Buildings and Structures

There are buildings in the vicinity that comprise suitable roosting potential for bat species. These areas are outside the study area and the footprint of the Proposed Development, which is confined to areas along the existing road infrastructure. Therefore, these buildings were removed from further assessment. Within the study area, the Proposed Development requires the demolition of two single storey buildings within the grounds of the Brothers of Charity to the eastern extent of the Proposed Development. These buildings are located immediately adjacent to the road and behind a stone wall. An external inspection was undertaken of these affected buildings on the 27th of March 2024. The buildings are single storey and have a flat felt roof. The buildings were found to be in generally good condition, well-sealed and no suitable potential entry / exit points were noted in the structures that could be used by bats. No droppings or other evidence of bat usage was found during the inspection. The buildings were assessed as having negligible potential for bat roosting and therefore were not required to be subject to further surveys.

Trees

There are multiple mature trees within the study area that have potential to be used by roosting bats. In general, the majority of these mature trees are located on the fringes of woodland habitat in Merlin Park south of the hospital. While there are some conifer species which are unsuitable, species such as oak, beech and some common ash covered in dense ivy were identified as having moderate potential for bats. Potential Roost Features (PRFs) identified include ivy, lifting bark, knotholes, and broken limbs. Much of these are located to the north of the middle and eastern Merlin Meadows fields. It is noted however that these trees are affected by some light spill from the existing R338, due to the lack of treeline along the boundary providing no barrier to light spill. Some trees along the R338 on the western field that will require felling to facilitate the Proposed Development were found to have low potential for bat roosting, but many of these trees are also in good condition and have a lack of PRFs. Existing artificial lighting does reduce the suitability of some mature trees along the road which were identified as having PRFs suitable for usage by bats. Some trees bounding the road along Rosshill Park Woods, located south of the existing road, were found to have some potential for bats. A small number of sycamore, common ash and horse chestnut trees were noted to have PRFs in the form of dense ivy, which may conceal further PRFs. However, due to their location along the busy R338 road and the presence of street lighting, these trees are considered unlikely to be used and are noted to have a low suitability for bats. Two Sycamore trees to the eastern boundary of the temporary construction compound were noted to have low potential for bats due to PRFs noted. Flood lighting is also present

here as the area is currently used and maintained as a sports pitch, and this reduces the likelihood of these trees being used by bats.

Activity Surveys

2023

The first activity survey on 13th June revealed that three species of bat use the study area for foraging and commuting. Transects were walked along the Meadows, fringes of Merlin Park woodland and along the eastern section of the existing R338. These areas were identified during the daytime walkover as having moderate to high potential habitat for bats and so the transects were focussed on these areas. Areas covered by the transects are illustrated in ***Figure 7*** and ***Figure 8***. Species recorded include common pipistrelle, soprano pipistrelle and Leisler's bat. Leisler's bat were the first species recorded, which is typical of this species, being an early emerger. Leisler's bat were the most commonly recorded species foraging throughout the Meadows fields. Leisler's bats frequently roost in trees and so there is potential for a roost to be located within the area of Merlin Park due to the early recordings. Soprano pipistrelles were commonly recorded along the woodland edges north of the Meadows, as well as near streetlights on the eastern Meadows field southern treeline. Common pipistrelles were recorded mostly along the northern boundaries of the Meadow fields near the woodland. The most significant foraging corridor is along the woodland edges north of the Meadows fields. Activity was noted to be low-moderate within the first hour of the survey, with activity levels dropping significantly after this point. Very little activity was recorded along the eastern end of the R338 road. Light spill was noted to be significant from the road, affecting commuting and foraging corridors in the vicinity. The western Meadows field is the least affected, due to the dense mature treeline to the southern boundary providing a barrier to light spill. Lights are noted to be bright white LED streetlights.

The second activity survey on 2nd July revealed similar results to the initial survey in June. The transects walked were similar as those during the June surveys; along the Meadows, fringes of Merlin Park woodland and the eastern section of the R338. Species recorded include common pipistrelle, soprano pipistrelle and Leisler's bat. However, Soprano pipistrelles were noted to be more commonly recorded during the July survey when compared to the June survey. Activity levels were noted to be higher, in particular with regard to soprano pipistrelle, which may be due to the change of weather conditions. The July survey was conducted following a warm dry day, whereas the June survey was conducted following some thundery showers during the day. Activity was concentrated on the northern boundary of the meadows on the fringes of woodland. Similar to June's results, very little activity was recorded along the road, the eastern end of the R338. Activity also dropped significantly after the first hour of the survey. Light spill was noted to be the same as the June survey.

2024

The first activity survey in 2024 was undertaken on the 30th of July and results were considered to be similar to those in 2023. The transects walked were the same as those previously, along the Meadows, fringes of Merlin Park woodland and the eastern section of the R338. Species recorded include common pipistrelle, soprano pipistrelle and Leisler's bat. Weather conditions were warm, followed by a dry day. Activity levels were noted to be similar to those in the 2023 surveys, if slightly lower than previous, with activity focussed either on the northern boundary of the meadows on the fringes of woodland, or ad hoc commuting to the south of these fields. Again, very little activity was recorded along the road itself. No changes were noted with regards to the lighting regime. It is noted that the Meadows fields had been cut earlier that day, which could have resulted in lower abundances of prey items.

The second activity survey in 2024 was undertaken on the 20th of August. Transects walked were the same as those undertaken previously, along the Meadows, fringes of Merlin Park woodland and the

eastern section of the R338. Species recorded include common pipistrelle and soprano pipistrelle, with no Leisler's bat recorded as before. This survey was undertaken following a period of unsettled wet and windy weather, but the night was dry with a light breeze. Activity during this survey was considered to be notably lower than previous surveys in 2023 and 2024, with only a few common or soprano pipistrelles recorded for the duration of the survey. This is considered likely to be due to weather conditions being unsettled, but also may be due to the lower prey abundance due to an earlier cut of the meadow fields than previous years. This may have resulted in some displacement. However, bats recorded were found to use the same areas of habitat as previous, with the main foraging / commuting corridor being towards the north of the meadow fields along the fringes of woodland, and very little activity recorded along the R338 road itself.

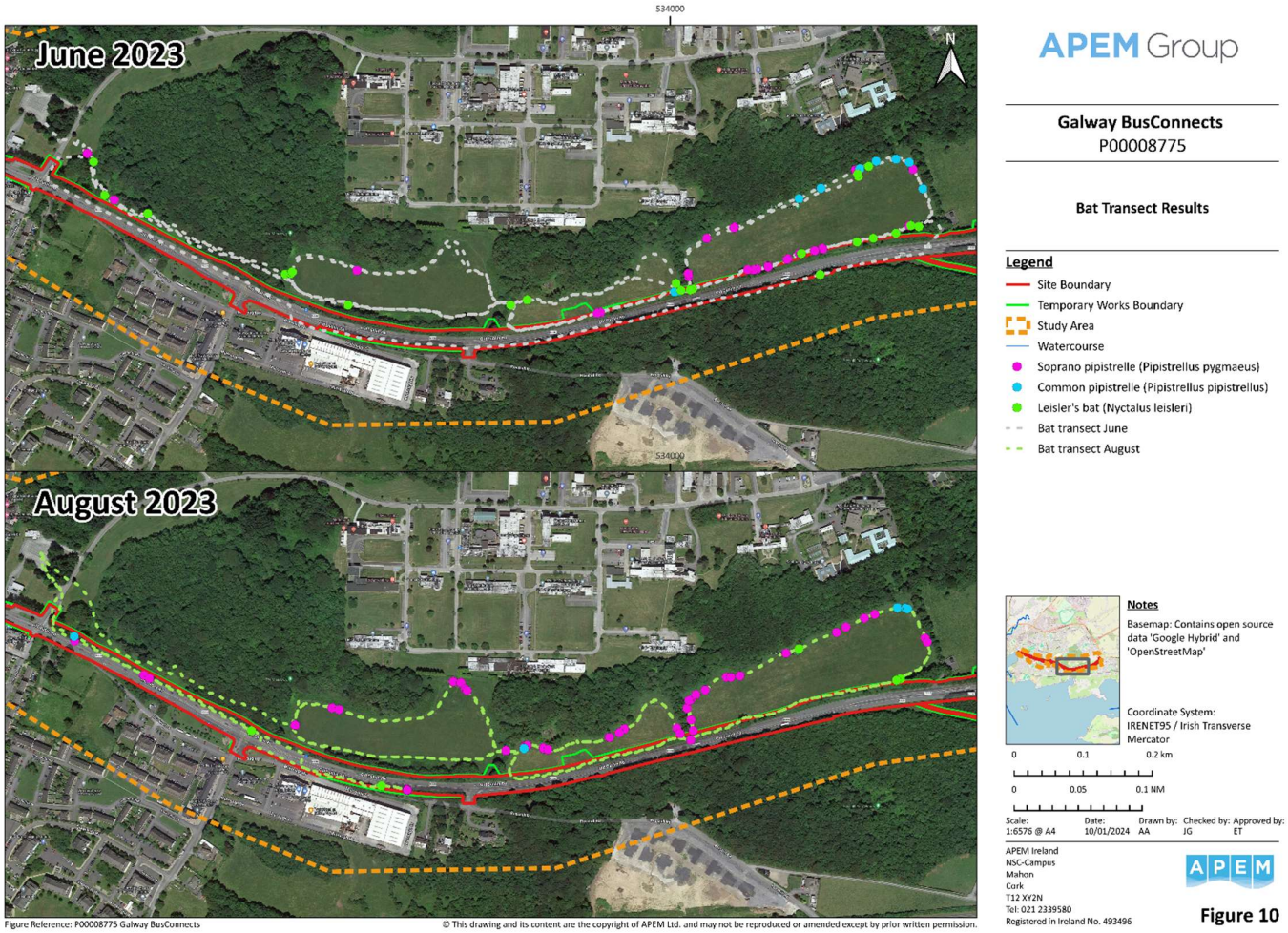

Figure 7: Bat Transect 2023

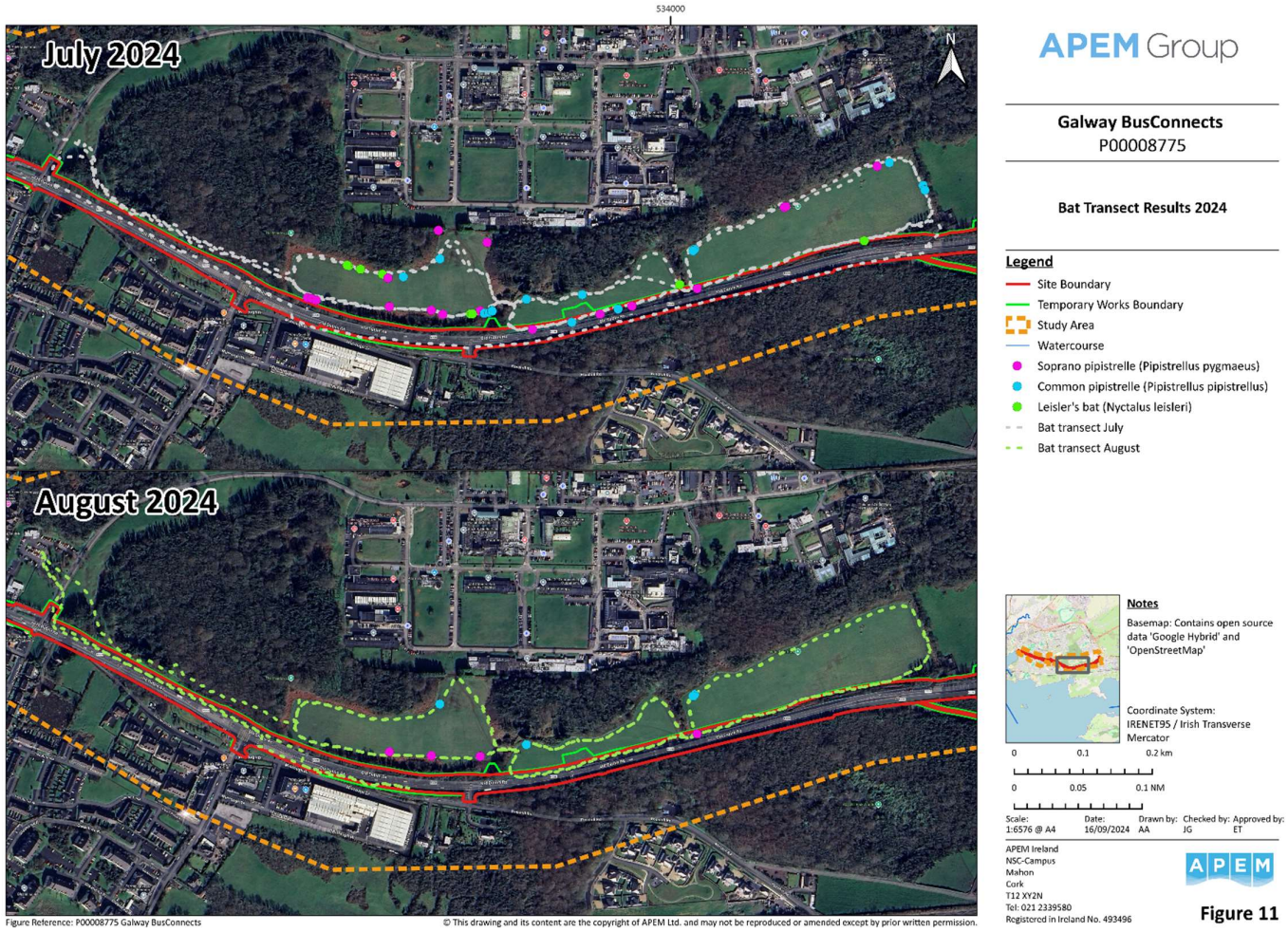

Figure 8: Bat Transect 2024

Mammals (including Marine) Surveys

Desk Study

Six marine mammal species were reported as present in the desk study grid square M32 records (NBDC 2023) (Table 10). This area covers Galway Bay adjacent to the Proposed Development. Both Seal species (*Phoca vitulina* and *Halichoerus grypus*) are listed as Least Concern (Marnell et al. 2019). Other species listed were not assigned a conservation status. All marine mammal species recorded are listed as protected under the EU Habitats Directive and Wildlife Act.

Table 10: Marine Mammal Species recorded within 10 km grid square M32 (NBDC, 2023)

Marine Mammal Name	Year of last record	Record count	EU HD*	WA**	Conservation Status
Bottle-nosed Dolphin (*Tursiops arinaa*)	2020	158	II, IV	ü	
Common Dolphin (*Delphinus delphis*)	2019	5	IV	ü	
Common Porpoise (*Phocoena arinaa*)	2017	6	II, IV	ü	Threatened Species: OSPAR Convention
Common Seal (*Phoca vitulina*)	2020	775	II, V	ü	LC (Marnell et al. 2019)
Grey Seal (*Halichoerus grypus*)	2019	10	II, V	ü	LC (Marnell et al. 2019)
Striped Dolphin (*Stenella coeruleoalba*)	2014	3	IV	ü	
Otter (*Lutra lutra*)	2021	15	II IV	ü	Least Concern

Field Surveys

Incidental sightings or evidence of mammals, in this case Otter, common and grey seal, were noted during the habitat survey and bird vantage point surveys at Lough Atalia and the habitats within the study area were evaluated for their potential to support protected species. Surveys were conducted by Apem surveyors on 13th June, 14th June, 30th June and 2nd July 2023 and 27th March 2024.

No sightings, or evidence of Annex mammal species were noted during the field surveys.

Bird Surveys

Desk Study

A total of 44 currently Red and Amber listed Avifauna species as per Gilbert et al. (2021) have been recorded within the 10km grid square M32 (NBDC, 2023). These species and those protected under the EU Habitats Directive are detailed in Table 11.

Table 11: Avifauna Species recorded within 10 km grid square M32 (NBDC, 2023) identifying Red and Amber listed BoCCI species and species listed on an Annex of the Bird Directive

Name	Year of last record	BoCCI status	Annex List		Common name	Year of last record	BoCCI status	Annex List
Arctic Tern (*Sterna paradisaea*)	2016	Amber	No		Eurasian Teal (*Anas crecca*)	2023	Amber	Annex II, Annex III
Balearic Shearwater (*Puffinus mauretanicus*)	2018	Red	No		Eurasian Wigeon (*Anas penelope*)	2022	Red	Annex II, Annex III
Barn Owl (*Tyto alba*)	2019	Red	No		Eurasian Woodcock (*Scolopax rusticola*)	2001	Red	No
Barn Swallow (*Hirundo rustica*)	2017	Amber	No		European Golden Plover (*Pluvialis apricaria*)	2020	Red	Annex I, Annex II, Annex III
Barnacle Goose (*Branta leucopsis*)	2020	Amber	No		European Shag (*Phalacrocorax aristotelis*)	2017	Amber	No
Bar-tailed Godwit (*Limosa lapponica*)	2020	Red	No		Gadwall (*Anas strepera*)	2022	Amber	Annex II
Black-headed Gull (*Larus ridibundus*)	2023	Amber	No		Great Cormorant (*Phalacrocorax carbo*)	2023	Amber	No
Black-tailed Godwit (*Limosa limosa*)	2020	Red	No		Great Crested Grebe (*Podiceps cristatus*)	2020	Amber	No
Brent Goose (Branta bernicla)	2020	Amber	No		Herring Gull (*Larus argentatus*)	1991	Amber	No
Common Goldeneye (*Bucephala clangula*)	2011	Red	Annex II		House Martin (*Delichon urbicum*)	2011	Amber	No

Name	Year of last record	BoCCI status	Annex List		Common name	Year of last record	BoCCI status	Annex List
Common Kestrel (*Falco tinnunculus*)	2022	Red	No		House Sparrow (*Passer domesticus*)	2011	Amber	No
Common Kingfisher (*Alcedo atthis*)	2023	Amber	Yes		Mallard (*Anas platyrhynchos*)	2018	Amber	No
Common Linnet (*Carduelis cannabina*)	2023	Amber	No		Mew Gull (*Larus canus*)	2011	Amber	No
Common Pheasant (*Phasianus colchicus*)	2022		Annex II, Annex III		Mute Swan (*Cygnus olor*)	2018	Amber	No
Common Pochard (*Aythya arina*)	2020	Red	Annex II, Annex III		Northern Lapwing (*Vanellus vanellus*)	2011	Red	No
Common Redshank (*Tringa totanus*)	2023	Red	No		Northern Shoveler (Anas clypeata)	2022	Red	Annex II, Annex III
Common Shelduck (*Tadorna tadorna*)	2023	Amber	No		Northern Wheatear (*Oenanthe oenanthe*)	2021	Amber	No
Common Snipe (*Gallinago gallinago*)	2023	Red	Annex II, Annex III		Peregrine Falcon (*Falco peregrinus*)	2022		Annex I
Common Starling (*Sturnus vulgaris*)	2023	Amber	No		Red-breasted Merganser (*Mergus serrator*)	2020		Annex II
Common Swift (*Apus apus*)	2022	Amber	No		Rock Pigeon (*Columba livia*)	2022		Annex II
Common Tern (*Sterna hirundo*)	2020	Amber	Annex I		Sandwich Tern (*Sterna sandvicensis*)	2019	Amber	Annex I
Common Wood Pigeon (*Columba palumbus*)	2023		Annex II, Annex III		Sky Lark (*Alauda arvensis*)	2021	Amber	No

Name	Year of last record	BoCCI status	Annex List		Common name	Year of last record	BoCCI status	Annex List
Corn Crake (*Crex crex*)	2014	Red	Annex I		Whooper Swan (*Cygnus cygnus*)	2021	Amber	Annex I
Dunlin (*Calidris alpina*)	2020	Red	Annex I		Yellowhammer (*Emberiza citrinella*)	2021	Red	No
Eurasian Curlew (*Numenius arquata*)	2023	Red	Annex II					

Field Surveys

Wintering Birds

The wintering bird surveys included a walked transect through the Meadow fields in Merlin Park, as well as a watch near Lough Atalia to the west of the Proposed Development. Species recorded during these surveys are included in Table 11 and Table 12below. Activity along the Meadow fields included common passerine and corvid species, engaging in a range of behaviours including calling, foraging, flying and perching. Species recorded during the watches at Lough Atalia were as expected for the area, comprising gulls, ducks, and a variety of waders. All VP watches were undertaken from a VP location at Lat Long co-ordinates 53.28075128, -9.0323594. Lough Atalia is a popular foraging site for these birds, with roosting behaviour also noted. The most notable species during the course of surveys were kingfisher, snipe and little egret, which were all recorded at Lough Atalia during VP surveys. It should be noted all observations were obtained while road and construction works were taking place in the surrounding landscape.

Table 12: Bird species recorded during wintering bird surveys (Dec-Mar 2022/23)

Species	**Conservation Concern (2020-2026)**	**Annex List**
Blackbird *(Turdus merula)*	Green listed	Annex II
Black-headed Gull *(Chroicocephalus ridibundus)*	Amber-listed	No
Blue tit *(Cyanistes caeruleus)*	Green listed	No
Chaffinch *(Fringilla coelebs)*	Green listed	No
Coal tit *(Periparus ater)*	Green listed	No

Species	Conservation Concern (2020-2026)	Annex List
Herring gull *(Larus argentatus)*	Amber-listed	No
Hooded crow *(Corvus cornix)*	Green listed	No
Northern Lapwing (*Vanellus vanellus*)	Red listed	Annex II
Little Egret (*Egretta garzetta*)	Green listed	Annex I
Magpie *(Pica pica)*	Green listed	No
Mistle thrush (*Turdus viscivorus*)	Green listed	Annex II
Redwing (*Turdus iliacus*)	Red listed	Annex II
Robin *(Erithacus rubecula)*	Green listed	No
Song thrush *(Turdus philomelos)*	Green listed	Annex II
Wood pigeon *(Columba palumbus)*	Green listed	Annex II, Annex III
Goldcrest (*Regulus regulus*)	Amber-listed	No
Great tit *(Parus major)*	Green listed	No
Long-tailed tit (*Aegithalus caudatus*)	Green listed	No
Treecreeper (*Certhia familiaris*)	Green listed	No
Pied wagtail (*Motacilla alba yarrellii*)	Green listed	No
Wren (*Troglodytes troglodytes*)	Green listed	No

Table 13: Bird species recorded at Lough Atalia during wintering bird surveys (Dec-Mar 2022/23)

Species	Conservation Concern (2020-2026)	Annex List
Black-headed Gull *(Chroicocephalus ridibundus)*	Amber-listed	No

Species	Conservation Concern (2020-2026)	Annex List
Common gull *(Larus canus)*	Amber-listed	No
Gadwall (*Anas strepera*)	Amber-listed	Annex I
Great black-backed gull (*Larus marinus*)	Green listed	Annex II
Greenshank (*Tringa nebularia*)	Green listed	Annex II
Grey heron (*Ardea cinerea*)	Green listed	No
Herring gull *(Larus argentatus)*	Amber-listed	No
Mallard (*Anas platyrhynchos*)	Amber-listed	Annex II
Mute Swan (*Cygnus olor*)	Amber-listed	Annex II
Common Redshank (*Tringa totanus*)	Red listed	Annex II
Rock pipit (*Anthus petrosus*)	Green listed	No
Common Shelduck (*Tadorna tadorna*)	Amber-listed	No
Eurasian Teal (*Anas crecca*)	Amber-listed	Annex I
Eurasian Wigeon (*Anas penelope*)	Red listed	Annex I
Cormorant (*Phalacrocorax carbo*)	Amber-listed	No
Kingfisher (*Alcedo atthis*)	Amber-listed	Annex I
Northern Lapwing (*Vanellus vanellus*)	Red listed	Annex II
Little Egret (*Egretta garzetta*)	Green listed	Annex I
Little grebe (*Tachybaptus ruficollis*)	Green listed	No
Oystercatcher (*Haematopus ostralegus*)	Red listed	Annex II
Common Snipe (*Gallinago gallinago*)	Red listed	Annex III
Stonechat (*Saxicola rubicola*)	Green listed	No
Turnstone (*Arenaria interpres*)	Amber-listed	No

Species	Conservation Concern (2020-2026)	Annex List
Common sandpiper (*Actitus hypoleucos*)	Amber-listed	No
Curlew (*Numenius arquata*)	Red listed	Annex II
Lesser black-backed gull *(Larus fuscus)*	Amber-listed	Annex II

The breeding bird survey revealed that the majority of birds using the study area are small passerine species. Transects cover the fields south of Merlin Park and north of the R338. Activity was focussed along the woodland edges to the north of the Meadows fields towards Merlin Park, as well as on treelines separating these fields. Very little activity was noted towards the R338 side of the Meadows fields, which is to be expected due to the lack of treeline south of the middle and eastern fields. It's likely that the passerine species recorded to the north of the Meadows are nesting in the treeline and woodland habitats present. Species recorded are included in Table 14 and Table 15 below.

Also noted during the baseline surveys in June was a buzzard soaring overhead which flew in the direction of Merlin Park. During the bat survey, a grey heron was recorded flying south over the Meadow fields at Dusk. A long-eared owl was also recorded in the western Meadow field and was observed catching prey and flying over the R338 in the direction of Rosshill Park Woods.

Table 14: Bird species recorded during breeding bird surveys (June 2023)

Species	Conservation Concern (2020-2026)	Annex List
Wood pigeon *(Columba palumbus)*	Green listed	Annex II, Annex III
Wren *(Troglodytes troglodytes)*	Green listed	No
Blackcap *(Sylvia atricapilla)*	Green listed	No
Rook *(Corvus frugilegus)*	Green listed	No
Goldcrest *(Regulus regulus)*	Green listed	No
Hooded crow *(Corvus cornix)*	Green listed	No
Herring gull *(Larus argentatus)*	Amber-listed	No
Magpie *(Pica pica)*	Green listed	Annex II
Black-headed Gull *(Chroicocephalus ridibundus)*	Amber-listed	No
Bullfinch *(Pyrrhula pyrrhula)*	Green listed	No

Species	Conservation Concern (2020-2026)	Annex List
Blackbird *(Turdus merula)*	Green listed	Annex II
Dunnock *(Prunella modularis)*	Green listed	No
Chaffinch *(Fringilla coelebs)*	Green listed	No
Swallow *(Hirundo rustica)*	Amber-listed	No
Robin *(Erithacus rubecula)*	Green listed	No
Raven *(Corvus corax)*	Green listed	No
Song thrush *(Turdus philomelos)*	Green listed	Annex II
Great tit *(Parus major)*	Green listed	No
Blue tit *(Cyanistes caeruleus)*	Green listed	No
Goldfinch *(Carduelis carduelis)*	Green listed	No
Lesser black-backed gull *(Larus fuscus)*	Amber-listed	Annex II
Common gull *(Larus canus)*	Amber-listed	Annex II
Coal tit *(Periparus ater)*	Green listed	No

Table 15: Bird species recorded during breeding bird surveys (March 2024)

Species	Conservation Concern (2020-2026)	Annex List
Great tit *(Parus major)*	Green listed	No
Robin *(Erithacus rubecula)*	Green listed	No
Magpie *(Pica pica)*	Green listed	Annex II
Hooded crow *(Corvus cornix)*	Green listed	No
Wood pigeon *(Columba palumbus)*	Green listed	Annex II, Annex III
Lesser black-backed gull *(Larus fuscus)*	Amber-listed	Annex II

Species	Conservation Concern (2020-2026)	Annex List
Goldcrest *(Regulus regulus)*	Green listed	No
Blackbird *(Turdus merula)*	Green listed	Annex II
Wren *(Troglodytes troglodytes)*	Green listed	No
Mistle thrush (*Turdus viscivorus)*	Green listed	No
Coal tit *(Periparus ater)*	Green listed	No
Redwing (*Turdus iliacus)*	Red-listed	No
Song thrush *(Turdus philomelos)*	Green listed	Annex II
Goldfinch *(Carduelis carduelis)*	Green listed	No
Blue tit *(Cyanistes caeruleus)*	Green listed	No

Vantage point surveys were also undertaken at two locations at Lough Atalia over the wintering and breeding surveys. Results from the breeding surveys in June 2023 are presented in Table 16 below.

Table 16: Bird records from Lough Atalia during breeding surveys (June 2023)

Species	Conservation Concern (2020-2026)	Annex List
Pied wagtail (*Motacilla alba yarrellii*)	Green listed	No
Wren *(Troglodytes troglodytes)*	Green listed	No
House sparrow (*Passer domesticus*)	Amber-listed	No
Cormorant (*Phalacrocorax carbo*)	Amber-listed	No
Black-headed Gull *(Chroicocephalus ridibundus)*	Amber-listed	No
Herring gull *(Larus argentatus)*	Amber-listed	No
Rook *(Corvus frugilegus)*	Green listed	No
Sandwich Tern (*Sterna sandvicensis*)	Amber-listed	Annex I

Species	Conservation Concern (2020-2026)	Annex List
Little Egret (*Egretta garzetta*)	Green listed	Annex I
Grey heron (*Ardea cinerea*)	Green listed	No
Song thrush *(Hirundo rustica)*	Green listed	No
Wood pigeon *(Columba palumbus)*	Green listed	Annex II, Annex III
Hooded crow *(Corvus cornix)*	Green listed	No
Goldfinch *(Parus major)*	Green listed	No
Great black-backed gull (*Larus marinus*)	Green listed	Annex II
Starling (*Sturnus vulgaris*)	Amber-listed	Annex II
Redshank (*Tringa totanus*)	Red listed	Annex II
Mallard (*Anas platyrhynchos*)	Amber-listed	Annex II

During the walkover surveys in June and July 2023 and March 2024, habitats in the study area were assessed for Barn Owl. The study area was assessed for Potential Nest Sites (PNS) and Active Nest Sites (ANS) to determine the need for further surveys. No PNS or ANS were recorded in the study area. No trees or structures in the study area were deemed suitable for barn owl nesting and no evidence of nesting activity was noted.

However, the meadow fields and surrounding habitats are suitable for foraging for owls. Similarly, some mature trees to the south of the western field do have suitable perch spots that may be used by owls. A long-eared Owl was recorded during one of the bat surveys and was observed catching prey in one of the meadow fields. These fields are suitable for small mammal species which would be suitable prey for Owls in the study area. There are confirmed breeding records for Barn owl to the north of Merlin Park Hospital, but this is outside the study area for the field surveys.

Air Quality

For the Construction Phase dust assessment, the focus is on air quality sensitive receptors adjacent to the proposed works (e.g. demolition of existing structures such as retaining walls, utility diversions, road widening works, road excavation works (where required), road reconfiguration and resurfacing works) that are susceptible to air quality impacts but also those receptors along construction traffic access routes or routes along which traffic is redistributed within the study area. The extent of the overall study area is typically up to a maximum of 350m from a specific area of construction work, as per the Institute of Air Quality Management (IAQM) *Guidance on the Assessment of Dust from Demolition and Construction* (hereafter referred to as the IAQM Guidance) (IAQM, 2023), depending on the air emission sources in question and the local area under consideration. For the Operational Phase, assessment of the dust impacts from maintenance of the Proposed Development has been scoped out on the basis

that these activities have low potential for dust release and are likely to have a negligible impact on air quality sensitive receptors.

For the Construction Phase and Operational Phase traffic assessment, the focus is on air quality sensitive receptors within an overall study area of 200 m from the Proposed Development or diverted routes within the key impacted study area, as per the Transport Infrastructure Ireland (TII) guidance document *Air Quality Assessment of Proposed National Roads – Standard (PE-ENV-01107)* (hereafter referred to as the TII guidance) (TII, 2022a). The range of air quality sensitive receptors are discussed in Section below. The locations of sensitive receptors are provided in Figures 7.

Sensitive Receptors

Construction Dust Assessment

In line with the IAQM guidance (IAQM, 2024)[28], prior to assessing the impact of dust from the Proposed Development the sensitivity of the area must first be assessed. The sensitivity of the area is determined by taking into account the type of individual receptor and its sensitivity, the number of individual receptors, their proximity to proposed works areas and the background particulate matter (PM_{10} i.e. airborne particles of dust which are less than 10 microns in size) concentration.

Individual receptor sensitivity to ecological effects are defined in Section 7.3 of the IAQM guidance and can be categorised as high, medium or low sensitivity and are reproduced in *Table 17*.

Table 17: Examples of Sensitive Receptors as per IAQM Guidance (IAQM, 2024)

Sensitivities of Ecology	
High	Locations with an international or national designation and the designated features may be affected by dust soiling
	Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings
Medium	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknow
	Indicative example is a National Heritage Area (NHA) with dust sensitive features
Low	Locations with a local designation where the features may be affected by dust deposition

[28] Institute of Air Quality Management (IAQM) (2020) A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites

	Indicative example is a local Nature Reserve with dust sensitive features

Dust deposition impacts on ecology can occur due to chemical or physical effects. This includes reduction in photosynthesis due to smothering from dust on the plants and chemical changes such as acidity to soils. Often impacts will be reversible once the works are completed, and dust deposition ceases. Designated sites within 50 m of the construction site boundary or within 50 m of the roads used by construction vehicles on public highways up to a distance of 500 m from a construction site entrance can be affected according to the IAQM Guidance. The sensitivity of the area to ecological impacts are considered using the sensitivity criteria outlined in Table 18.

Sensitive designated habitats within 50 m of the Proposed Development are:

- Galway Bay Complex SAC and pNHA (Site Code 000268) at 55m
- Inner Galway Bay SPA (Site Code 004031) at 63m
- Annex I habitat type 'Lowland Hay Meadows' at Merlin Park located on the north-eastern boundary of the study area

These are high sensitivity receptors, and therefore the sensitivity of the area to ecological impacts is high, as per Table 18.

Table 18: Sensitivity of the Area to Ecological Impacts

Individual Receptor Sensitivity	**Annual Mean PM_{10} Concentration**	**Number of Receptors**	**Distance from Source (m)**			
			<20	**<50**	**<100**	**<250**
High	< 24µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	< 24µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	< 24µg/m^3	>1	Low	Low	Low	Low

The TII guidance (Section 3.5.2 of PE-ENV-01107) [29] considers ecologically designated sites (Irish and European designations) as highly sensitive air quality receptors, and states that European sensitive designated sites within 2 km of the route and all sensitive designated habitats within 200 m of the route should be identified.

Appraisal Method for the Assessment of Impacts on Ecology

The impacts of dust to ecological receptors during the construction phase is determined using the IAQM Guidance methodology. There is potential for impacts from pollutant deposition at ecologically sensitive sites due to the operation of the Proposed Development.

For routes which passes within 2 km of a European designated area of conservation or within 200 m of an area of either Irish or European designation, the TII guidance (TII, 2022) requires the air quality specialist to consult with the project ecologist. Sites identified within these parameters are considered Key Ecological Receptors. The TII guidance (TII, 2022) and the *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (DEHLG, 2010) [30] provide details regarding the legal protection of designated conservation areas.

Further guidance can also be found in the IAQM document *A Guide to The Assessment of Air Quality Impacts on Designated Nature Conservation Sites* (IAQM 2020) and in the TII guidance (TII, 2022), both of which describe NO_X and ammonia emissions, nitrogen deposition and acid deposition as the most likely source of significant impacts from road traffic. Pollutants such as CO_2, CO, SO_2 and volatile organic compounds are not considered in this guidance and have been scoped out of detailed assessment.

The following assessment criteria, in accordance with TII guidance, is used to determine whether an assessment for nitrogen and acid deposition should be conducted:

- There is a designated area of conservation within 200 m of the Proposed Development; and
- There is a significant change in AADT flows.

For road transport sources within 200 m of a designated habitat, individual ecological receptors along a transect at 10 m intervals are modelled. Ecological receptors are modelled up to a maximum distance of 200 m regardless of whether the habitat extends beyond 200 m. It is considered that the greatest impacts will have occurred in proximity to the road. The TII guidance (TII, 2022) notes that only sites that are sensitive to nitrogen and acid deposition need to be included in the assessment, it is not necessary to include sites for example that have been designated as a geological feature or water course.

Sensitive Designated Habitats

Sensitive designated habitats within 200 m of the Proposed Development are:

- Galway Bay Complex SAC and pNHA (Site Code 000268) and Inner Galway Bay SPA (Site Code 004031) are located on the south-western boundary of the study area

[29] Transport Infrastructure Ireland (2022) Air Quality Assessment of Proposed National Roads - Standard PE-ENV-01107
[30] DEHLG (2010) Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities

- Annex I habitat type 'Lowland Hay Meadows' at Merlin Park located on the north-eastern boundary of the Proposed Development

European sensitive designated sites within 2 km of the Proposed Development are:

- Lough Corrib SAC (Site Code 000297)
- Lough Corrib SPA (Site Code 004042)

The designated habitat receptors within 200 m of affected roads modelled to assess the impact of road traffic emissions are shown in Table 19.

Table 19: Modelled Designated Habitat Receptors

Receptor	X Co-Ordinate (ITM)	Y Co-Ordinate (ITM)	Location	Distance to Road Edge (m)
Galway Bay Complex pNHA	531216	726113	R338 Dublin Road	0
	531212	726104	R338 Dublin Road	10
	531207	726095	R338 Dublin Road	20
	531203	726086	R338 Dublin Road	30
	531198	726077	R338 Dublin Road	40
	531194	726068	R338 Dublin Road	50
	531189	726059	R338 Dublin Road	60
	531185	726051	R338 Dublin Road	70
	531180	726042	R338 Dublin Road	80
	531176	726033	R338 Dublin Road	90
	531171	726024	R338 Dublin Road	100
	531167	726015	R338 Dublin Road	110
	531162	726006	R338 Dublin Road	120
	531158	725997	R338 Dublin Road	130
	531153	725988	R338 Dublin Road	140

Receptor	X Co-Ordinate (ITM)	Y Co-Ordinate (ITM)	Location	Distance to Road Edge (m)
	531149	725979	R338 Dublin Road	150
	531144	725970	R338 Dublin Road	160
	531140	725961	R338 Dublin Road	170
	531135	725952	R338 Dublin Road	180
	531131	725943	R338 Dublin Road	190
	531126	725935	R338 Dublin Road	200
Galway Bay Complex SAC	531233	726101	R338 Dublin Road	6
	531231	726096	R338 Dublin Road	10
	531226	726087	R338 Dublin Road	20
	531222	726078	R338 Dublin Road	30
	531217	726069	R338 Dublin Road	40
	531213	726060	R338 Dublin Road	50
	531208	726051	R338 Dublin Road	60
	531204	726042	R338 Dublin Road	70
	531199	726033	R338 Dublin Road	80
	531194	726024	R338 Dublin Road	90
	531190	726016	R338 Dublin Road	100
	531185	726007	R338 Dublin Road	110
	531181	725998	R338 Dublin Road	120
	531176	725989	R338 Dublin Road	130
	531172	725980	R338 Dublin Road	140

Receptor	X Co-Ordinate (ITM)	Y Co-Ordinate (ITM)	Location	Distance to Road Edge (m)
	531167	725971	R338 Dublin Road	150
	531163	725962	R338 Dublin Road	160
	531158	725953	R338 Dublin Road	170
	531154	725944	R338 Dublin Road	180
	531149	725935	R338 Dublin Road	190
	531145	725926	R338 Dublin Road	200
Inner Galway Bay SPA	531223	726099	R338 Dublin Road	0
	531218	726090	R338 Dublin Road	10
	531214	726081	R338 Dublin Road	20
	531209	726072	R338 Dublin Road	30
	531205	726063	R338 Dublin Road	40
	531200	726055	R338 Dublin Road	50
	531196	726046	R338 Dublin Road	60
	531191	726037	R338 Dublin Road	70
	531186	726028	R338 Dublin Road	80
	531182	726019	R338 Dublin Road	90
	531177	726010	R338 Dublin Road	100
	531173	726001	R338 Dublin Road	110
	531168	725992	R338 Dublin Road	120
	531164	725983	R338 Dublin Road	130
	531159	725974	R338 Dublin Road	140

Receptor	X Co-Ordinate (ITM)	Y Co-Ordinate (ITM)	Location	Distance to Road Edge (m)
	531155	725965	R338 Dublin Road	150
	531150	725956	R338 Dublin Road	160
	531146	725947	R338 Dublin Road	170
	531141	725939	R338 Dublin Road	180
	531137	725930	R338 Dublin Road	190
	531132	725921	R338 Dublin Road	200
Annex I habitat type 'Lowland Hay Meadows' at Merlin Park	533989	725387	R338 Dublin Road	0
	533986	725397	R338 Dublin Road	10
	533984	725407	R338 Dublin Road	20
	533982	725417	R338 Dublin Road	30
	533979	725426	R338 Dublin Road	40
	533977	725436	R338 Dublin Road	50
	533975	725446	R338 Dublin Road	60
	533973	725456	R338 Dublin Road	70
	533970	725465	R338 Dublin Road	80
	533968	725475	R338 Dublin Road	90
	533966	725485	R338 Dublin Road	100
	533963	725494	R338 Dublin Road	110
	533961	725504	R338 Dublin Road	120
	533959	725514	R338 Dublin Road	130
	533957	725524	R338 Dublin Road	140

Receptor	X Co-Ordinate (ITM)	Y Co-Ordinate (ITM)	Location	Distance to Road Edge (m)
	533954	725533	R338 Dublin Road	150
	533952	725543	R338 Dublin Road	160
	533950	725553	R338 Dublin Road	170
	533947	725563	R338 Dublin Road	180
	533945	725572	R338 Dublin Road	190
	533943	725582	R338 Dublin Road	200

Consultation with the project ecologist has been undertaken. Habitats of particular ecological importance at these sites include the following:

- Mudflats and sandflats
- Coastal lagoons
- Reefs
- Large shallow inlets and bays
- Perennial vegetation of stony bank
- Salicornia and other annuals colonising mud and sand
- Semi-natural dry grasslands and scrublands

Calcareous and alkaline fens

- Juniperus communis formations on heaths or calcareous grasslands
- Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
- Mediterranean salt meadows (Juncetalia maritimi)
- Turloughs
- Oligotrophic and standing waters
- Limestone pavements

Species of particular ecological importance include the following:

- Otter
- Harbour seal
- Freshwater Pearl Mussel
- Crayfish, Lamprey, Salmon
- Breeding and wintering birds

Ecology Significance Criteria

The Air Quality Regulations outline an annual critical level for NO_X for the protection of vegetation and natural ecosystems in general. The CAFE Directive[31] defines 'Critical Levels' as *'a level fixed on the basis of scientific knowledge, above which direct adverse effects may occur on some receptors, such as trees, other plants or natural ecosystems but not on humans.*'

The TII guidance (TII, 2022) outlines the assessment of significance of effects at sensitive designated habitats (Section 3.6.6.6 of the guidance), stating that if the nitrogen deposition and acid deposition (due to the Proposed Development) are more than 1% of the critical loads then the modelled results should be discussed further with the project ecologist.

A 'Critical Load' is defined by the United Nations Economic Commission for Europe (UNECE) as a *'a quantitative estimate of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge'* (UNECE, 2003) [32].

To determine if the air quality impacts at a sensitive designated habitat are significant, the project ecologist shall consider:

- Factors such as the nature of site management;
- Other factors such as regular flooding in maintaining a suitable habitat;
- The degree of sensitivity of fauna to relatively subtle changes in botanical composition;
- Whether nitrogen or phosphorus is the key limiting nutrient; and
- The extent of the sensitive designated site that is negatively affected shall be taken into consideration.

If significant effects are determined, site survey information is required to determine if the sensitive habitat of relevance is actually present in the affected area and to inform potential mitigation measures that may be required.

Critical loads for nitrogen deposition and acid deposition were derived from the APIS website (APIS, 2023) [33], as per the TII guidance (TII, 2022). These are only available for internationally designated habitats (SPA and SAC). Critical loads for the nationally designated habitats or proposed designated habitats can be derived by searching APIS for the habitat type, rather than a specific site.

The range of critical loads for nitrogen deposition to which the nitrogen deposition at each modelled designated habitat can be compared is shown in Table 20.

[31] Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC), transposed into Irish legislation by the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011).
[32] UNECE (2003) Critical Loads for Nitrogen Expert Workshop 2002
[33] Air Pollution Information System (2023) GIS map tool https://www.apis.ac.uk/app

Table 20: Nitrogen Deposition Critical Loads (APIS, 2023)

Designated Habitat Site	Worst-case Habitat	Is this feature sensitive to N?	Nitrogen Critical Load Class	Minimum critical loads for N (kg/ha/yr)	Maximum critical loads for N (kg/ha/yr)	Is this species sensitive due to nutrient nitrogen impacts on broad habitat?	Reason
Inner Galway Bay SPA	*Gavia arctica* (Western Siberia/Europe)	Yes	Permanent oligotrophic waters: Softwater lakes	3	10	No	No expected negative impact on species due to impacts on the species' broad habitat.
Galway Bay Complex SAC	*Juniperus communis* formations on heaths or calcareous grasslands	Yes	Dry heaths	5	10	n/a	n/a
	Limestone pavements	Yes	Alpine and subalpine grasslands	5	10	n/a	n/a
Galway Bay Complex pNHA	Habitat information not available - assumed same as Galway Bay Complex SAC	Yes	Alpine and subalpine grasslands	5	10	n/a	n/a
Annex I habitat type 'Lowland Hay Meadows' at Merlin Park	Lowland hay meadow	Yes	Alpine and subalpine grasslands (assumed from APIS)	5	10	n/a	n/a

The range of critical loads for acid deposition to which the nitrogen deposition at each modelled designated habitat can be compared is shown in Table 21.

Table 21: Acid Deposition (as N) Critical Loads (APIS, 2023)

Designated Habitat Site	Worst-case Habitat	Critical Load Class	Is this feature sensitive to acid deposition (as N)?	Minimum Critical Load Range	Maximum Critical Load Range	Is this species sensitive due to nutrient nitrogen impacts on broad habitat?	Reason
Inner Galway Bay SPA	*Gavia arctica* (Western Siberia/Europe) *Phalacrocorax carbo* (North-western Europe) *Sterna hirundo* (Northern/Eastern Europe - breeding)	Freshwater	Yes	0.143 – 0.485	0.714 – 6.258	Yes	Potential negative impact on species due to impacts on the species' broad habitat.
	Sterna hirundo (Northern/Eastern Europe - breeding)	Acid grassland Calcareous grassland (using base cation)	Yes	0.143 – 0.485	0.714 – 6.258	Yes	Potential negative impact on species due to impacts on the species' broad habitat.
Galway Bay Complex SAC	Juniperus communis formations on heaths or calcareous grasslands	Calcareous grassland (using base cation)	Yes	0.143 – 0.485	0.714 – 6.258	n/a	n/a

Designated Habitat Site	Worst-case Habitat	Critical Load Class	Is this feature sensitive to acid deposition (as N)?	Minimum Critical Load Range	Maximum Critical Load Range	Is this species sensitive due to nutrient nitrogen impacts on broad habitat?	Reason
		Dwarf shrub heath					
	Limestone pavements Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	Calcareous grassland (using base cation)	Yes	0.143 – 0.485	0.714 – 6.258	n/a	n/a
	Perennial vegetation of stony banks	Acid grassland	Yes	0.143 – 0.485	0.714 – 6.258	n/a	n/a
	Lutra lutra	Calcareous grassland (using base cation) Dwarf shrub heath	Yes	0.143 – 0.485	0.714 – 6.258	n/a	n/a

Designated Habitat Site	Worst-case Habitat	Critical Load Class	Is this feature sensitive to acid deposition (as N)?	Minimum Critical Load Range	Maximum Critical Load Range	Is this species sensitive due to nutrient nitrogen impacts on broad habitat?	Reason
		Acid grassland Freshwater					
Galway Bay Complex pNHA	Habitat information not available - assumed same as Galway Bay Complex SAC	Calcareous grassland (using base cation) Dwarf shrub heath	Yes	0.143 – 0.485	0.714 – 6.258	n/a	n/a
Annex I habitat type 'Lowland Hay Meadows' at Merlin Park	Lowland hay meadow	Calcareous grassland (using base cation) (assumed equivalent from APIS)	Yes	0.143 – 0.485	0.714 – 6.258	n/a	n/a

Nitrogen and Acid Deposition Calculation

The TII guidance (TII, 2022) outlines a methodology to derive the road contribution to dry deposition and thereafter to compare with the published critical loads for the appropriate habitat.

In order to calculate the nitrogen deposition, the NO_X / NO_2 concentration determined through modelling including the background concentration must be converted firstly into a dry deposition flux using the equation below which is taken from UK Environment Agency publication 'AGTAG06 – Technical Guidance on Detailed Modelling Approach for An Appropriate Assessment for Emissions To Air' (EA, 2014):

Dry deposition flux (µg/m^2/s) = ground-level concentration (µg/m^3) x deposition velocity (m/s)

Deposition velocities are provided in both the TII (TII, 2022) and AQTAG06 (EA, 2014) [34] guidance for NO_2 and NH_3 in grassland and forestry.

Once the dry deposition flux (µg/m^2/s) is calculated it must then be converted to nitrogen deposition and nitrogen equivalent acidification flux (keq/ha/year, where keq is a unit of equivalents (a measure of how acidifying the chemical species can be) for comparison with critical loads.

In order to convert the dry deposition flux from units of µg/m^2/s to units of nitrogen deposition (kg/ha/year) the dry deposition flux is multiplied by the conversion factors shown in Table 22, and provided in AQTAG06 (EA, 2014). For NO_2 this factor is 95.9 and for NH_3 the factor is 260.

Nitrogen (N) deposition (kg/ha/yr) = Dry deposition flux (µg/m^2/s) x N deposition conversion factor

In order to convert the dry deposition flux from units of µg/m^2/s to units of acid deposition (keq/ha/year) the dry deposition flux is multiplied by the conversion factors shown in Table 22 and provided AQTAG06 (EA, 2014). For NO_2 this factor is 6.84 and for NH_3 the factor is 18.5.

Acid (N) deposition (keq/ha/yr) = Dry deposition flux (µg/m^2/s) x Acid deposition conversion factor

Nitrogen deposition and acid deposition is calculated in this manner for both NO_2 and NH_3, and these are then summed for total nitrogen deposition and acid deposition at each sensitive designated habitat.

[34] EA (2014). AQTAG06 – Technical Guidance On Detailed Modelling Approach For An Appropriate Assessment For Emissions To Air. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://ukwin.org.uk/files/ea-disclosures/AQTAG06_Mar2014%20.pdf

Table 22: Dry Deposition, Nitrogen and Acid Deposition Fluxes for NO2 and NH3

Chemical Species	Habitat Type	Recommended Deposition Velocity (m/s)	Dry Deposition Flux (µg/m2/s) Conversion Factor to N Deposition Flux (kg/ha/yr)	Nitrogen Deposition to Acid Deposition Conversion factor kg/ha/yr to keq/ha/yr
NO2 (as N)	Grassland	<0.0115	95.9	0.0714
NH_3 (as N)	Grassland	0.02	260	

Background concentrations for NO_X, ammonia and nitrogen deposition at the closest point to the modelled road within each modelled designated habitat were derived from the 1 km grid square concentrations provided on the Air Pollution Information System (APIS) website (APIS, 2023), in line with UKEA (2014) [35] and UK Defra (2022) [36] guidance, and are shown in Table 22. The background concentrations are added directly to the modelled NO_X and nitrogen deposition process contributions to give a total predicted environmental concentration.

Construction phase impacts

Annual mean NOx and ammonia concentrations, as well as nitrogen and acid deposition levels have been compared to the relevant critical levels and loads in Table 23 for the Opening Year 2028 and for the Design Year 2043 for the worst-case ecologically sensitive receptors. The ground level concentrations, nitrogen deposition flux and acid deposition flux are presented for the closest locations within the ecological sites to the nearest road.

Table 23: Construction Year 2026 Maximum Predicted NO_X and NH_3 Concentrations, and Nitrogen and Acid Deposition Rates at Closest Point within Ecological Sites to Road

Scenario	Predicted Ground Level NO_X Concentration (excluding background) µg/m³	Predicted Ground Level NH_3 Concentration (excluding background) µg/m³	Predicted Ground Level NO_X Concentration (including background µg/m³	Predicted Ground Level NH_3 Concentration (including background µg/m³	Total Nitrogen Deposition Flux (kg/ha/yr)	Total Acid Deposition Flux (keq/ha/yr)
Galway Bay Complex pNHA						
Do-Minimum	21.02	1.24	24.42	2.44	12.98	0.93
Do-Something	20.49	1.22	23.89	2.42	12.83	0.92

[35] UK Environment Agency (UKEA) (2014) AGTAG06 – Technical Guidance On Detailed Modelling Approach For An Appropriate Assessment For Emissions To Air
[36]

Scenario	Predicted Ground Level NO_X Concentration (excluding background) µg/m³	Predicted Ground Level NH_3 Concentration (excluding background) µg/m³	Predicted Ground Level NO_X Concentration (including background µg/m³	Predicted Ground Level NH_3 Concentration (including background µg/m³	Total Nitrogen Deposition Flux (kg/ha/yr)	Total Acid Deposition Flux (keq/ha/yr)
Difference between Do-Something and Do-Minimum	-0.53	-0.02	-0.53	-0.02	-0.15	-0.01
Change relative to lower critical load (%)	n/a	n/a	n/a	n/a	-3.1%	-7.6%
Change relative to upper critical load (%)	n/a	n/a	n/a	n/a	-1.5%	-0.2%
Galway Bay Complex SAC						
Do-Minimum	13.83	0.82	17.23	2.02	5.34	0.38
Do-Something	13.29	0.80	16.69	2.00	5.20	0.37
Difference between Do-Something and Do-Minimum	-0.54	-0.02	-0.54	-0.02	-0.14	-0.01
Change relative to lower critical load (%)	n/a	n/a	n/a	n/a	-2.8%	-6.9%
Change relative to upper critical load (%)	n/a	n/a	n/a	n/a	-1.4%	-0.2%
Inner Galway Bay SPA						
Do-Minimum	7.29	0.43	10.69	1.63	2.83	0.20

Scenario	Predicted Ground Level NO_X Concentration (excluding background) $\mu g/m^3$	Predicted Ground Level NH_3 Concentration (excluding background) $\mu g/m^3$	Predicted Ground Level NO_X Concentration (including background $\mu g/m^3$	Predicted Ground Level NH_3 Concentration (including background $\mu g/m^3$	Total Nitrogen Deposition Flux (kg/ha/yr)	Total Acid Deposition Flux (keq/ha/yr)
Do-Something	7.00	0.42	10.40	1.62	2.76	0.20
Difference between Do-Something and Do-Minimum	-0.29	-0.01	-0.29	-0.01	-0.07	-0.01
Change relative to lower critical load (%)	n/a	n/a	n/a	n/a	-2.4%	-3.6%
Change relative to upper critical load (%)	n/a	n/a	n/a	n/a	-0.7%	-0.1%
Annex I habitat type 'Lowland Hay Meadows' at Merlin Park						
Do-Minimum	21.66	2.07	24.86	3.37	12.44	0.89
Do-Something	16.25	1.25	19.45	2.55	7.77	0.55
Difference between Do-Something and Do-Minimum	-5.41	-0.82	-5.41	-0.82	-4.67	-0.33
Change relative to lower critical load (%)	n/a	n/a	n/a	n/a	-93.4%	-233.3%
Change relative to upper critical load (%)	n/a	n/a	n/a	n/a	-9.3%	-5.3%

The annual mean NO_X concentrations (including background) are below the critical level of 30 µg/m^3 at all modelled habitats, in both the DM and the DS scenarios.

The annual mean NH_3 concentrations (including background) exceed the critical level for higher plants of 3 µg/m^3 at the Annex I habitat type 'Lowland Hay Meadows' at Merlin Park in the DM scenario. The Proposed Development results in a decrease in the annual mean NH_3 concentration in the DS scenario, reducing the annual mean concentration below the critical level.

Nitrogen deposition levels (including background) are above the lowest critical loads for nitrogen deposition (see Table 20) at the Galway Bay Complex pNHA, Galway Bay Complex SAC and the Annex I habitat type 'Lowland Hay Meadows' at Merlin Park, in both the DM and the DS scenarios.

The acid deposition (as N) levels exceed the lowest critical loads for acid deposition (as N) (see Table 20) at all modelled designated sites, in both the DM and the DS scenarios.

Annual mean NOx and ammonia concentrations, and nitrogen and acid deposition levels decrease at all modelled habitats due to the Construction Phase of the Proposed Development.

Operational phase impacts

Annual mean NOx and ammonia concentrations, as well as nitrogen and acid deposition levels have been compared to the relevant critical levels and loads in Table 24 for the Opening Year 2028 and Table 25 for the Design Year 2043 for the worst-case ecologically sensitive receptors. The ground level concentrations, nitrogen deposition flux and acid deposition flux are presented for the closest locations within the ecological sites to the nearest road.

Table 24: Opening Year 2028 Maximum Predicted NOX and NH3 Concentrations, and Nitrogen and Acid Deposition Rates at Closest Point within Ecological Sites to Road

	Predicted Ground Level NO_X Concentration (excluding background) µg/m^3	**Predicted Ground Level NH_3 Concentration (excluding background) µg/m^3**	**Predicted Ground Level NO_X Concentration (including background Note 1) µg/m^3**	**Predicted Ground Level NH_3 Concentration (including background Note 2) µg/m^3**	**Total Nitrogen Deposition Flux (kg/ha/yr)**	**Total Acid Deposition Flux (keq/ha/yr)**
Galway Bay Complex pNHA						
Do-Minimum	15.29	1.28	18.69	2.48	12.75	0.91
Do-Something	15.55	1.30	18.95	2.50	12.87	0.92
Difference between Do-Something and Do-Minimum	0.25	0.02	0.25	0.02	0.12	0.01

	Predicted Ground Level NO_X Concentration (excluding background) µg/m³	**Predicted Ground Level NH_3 Concentration (excluding background) µg/m³**	**Predicted Ground Level NO_X Concentration (including background Note 1) µg/m³**	**Predicted Ground Level NH_3 Concentration (including background Note 2) µg/m³**	**Total Nitrogen Deposition Flux (kg/ha/yr)**	**Total Acid Deposition Flux (keq/ha/yr)**
Change relative to lower critical load (%)	n/a	n/a	n/a	n/a	2.4%	5.9%
Change relative to upper critical load (%)	n/a	n/a	n/a	n/a	1.2%	0.1%
Galway Bay Complex SAC						
Do-Minimum	9.84	0.83	13.24	2.03	5.07	0.36
Do-Something	10.04	0.84	13.44	2.04	5.16	0.37
Difference between Do-Something and Do-Minimum	0.19	0.01	0.19	0.01	0.09	0.01
Change relative to lower critical load (%)	n/a	n/a	n/a	n/a	1.8%	4.5%
Change relative to upper critical load (%)	n/a	n/a	n/a	n/a	0.9%	0.1%
Inner Galway Bay SPA						
Do-Minimum	5.24	0.44	8.64	1.64	2.71	0.19
Do-Something	5.35	0.45	8.75	1.65	2.75	0.20
Difference between Do-Something and Do-Minimum	0.10	0.01	0.10	0.01	0.04	0.00

	Predicted Ground Level NO_X Concentration (excluding background) $\mu g/m^3$	Predicted Ground Level NH_3 Concentration (excluding background) $\mu g/m^3$	Predicted Ground Level NO_X Concentration (including background Note 1) $\mu g/m^3$	Predicted Ground Level NH_3 Concentration (including background Note 2) $\mu g/m^3$	Total Nitrogen Deposition Flux (kg/ha/yr)	Total Acid Deposition Flux (keq/ha/yr)
Change relative to lower critical load (%)	n/a	n/a	n/a	n/a	1.4%	2.2%
Change relative to upper critical load (%)	n/a	n/a	n/a	n/a	0.4%	0.0%
Annex I habitat type 'Lowland Hay Meadows' at Merlin Park						
Do-Minimum	15.61	2.14	18.81	3.44	12.36	0.88
Do-Something	15.34	2.03	18.54	3.33	11.76	0.84
Difference between Do-Something and Do-Minimum	-0.27	-0.11	-0.27	-0.11	-0.60	-0.04
Change relative to lower critical load (%)	n/a	n/a	n/a	n/a	-12.0%	-30.1%
Change relative to upper critical load (%)	n/a	n/a	n/a	n/a	-1.2%	-0.7%

Table 25: Design Year 2043 Maximum Predicted NOX and NH3 Concentrations, and Nitrogen and Acid Deposition Rates at Closest Point within Ecological Sites to Road

	Predicted Ground Level NO_X Concentration (excluding background) $\mu g/m^3$	Predicted Ground Level NH_3 Concentration (excluding background) $\mu g/m^3$	Predicted Ground Level NO_X Concentration (including background Note 1) $\mu g/m^3$	Predicted Ground Level NH_3 Concentration (including background Note 2) $\mu g/m^3$	Total Nitrogen Deposition Flux (kg/ha/yr)	Total Acid Deposition Flux (keq/ha/yr)
Galway Bay Complex pNHA						

	Predicted Ground Level NO_X Concentration (excluding background) $\mu g/m^3$	Predicted Ground Level NH_3 Concentration (excluding background) $\mu g/m^3$	Predicted Ground Level NO_X Concentration (including background Note 1) $\mu g/m^3$	Predicted Ground Level NH_3 Concentration (including background Note 2) $\mu g/m^3$	Total Nitrogen Deposition Flux (kg/ha/yr)	Total Acid Deposition Flux (keq/ha/yr)
Do-Minimum	17.81	1.51	21.21	2.71	14.12	1.01
Do-Something	18.43	1.56	21.83	2.76	14.43	1.03
Difference between Do-Something and Do-Minimum	0.62	0.05	0.62	0.05	0.31	0.02
Change relative to lower critical load (%)	n/a	n/a	n/a	n/a	6.2%	15.5%
Change relative to upper critical load (%)	n/a	n/a	n/a	n/a	3.1%	0.4%
Galway Bay Complex SAC						
Do-Minimum	11.44	0.97	14.84	2.17	5.94	0.42
Do-Something	11.96	1.01	15.36	2.21	6.20	0.44
Difference between Do-Something and Do-Minimum	0.51	0.04	0.51	0.04	0.26	0.02
Change relative to lower critical load (%)	n/a	n/a	n/a	n/a	5.2%	12.9%
Change relative to upper critical load (%)	n/a	n/a	n/a	n/a	2.6%	0.3%
Inner Galway Bay SPA						
Do-Minimum	6.11	0.52	9.51	1.72	3.17	0.23

	Predicted Ground Level NO_X Concentration (excluding background) $\mu g/m^3$	Predicted Ground Level NH_3 Concentration (excluding background) $\mu g/m^3$	Predicted Ground Level NO_X Concentration (including background Note 1) $\mu g/m^3$	Predicted Ground Level NH_3 Concentration (including background Note 2) $\mu g/m^3$	Total Nitrogen Deposition Flux (kg/ha/yr)	Total Acid Deposition Flux (keq/ha/yr)
Do-Something	6.38	0.54	9.78	1.74	3.31	0.24
Difference between Do-Something and Do-Minimum	0.27	0.02	0.27	0.02	0.14	0.01
Change relative to lower critical load (%)	n/a	n/a	n/a	n/a	4.6%	6.9%
Change relative to upper critical load (%)	n/a	n/a	n/a	n/a	1.4%	0.2%
Annex I habitat type 'Lowland Hay Meadows' at Merlin Park						
Do-Minimum	16.39	2.31	19.59	3.61	13.31	0.95
Do-Something	16.89	2.29	20.09	3.59	13.21	0.94
Difference between Do-Something and Do-Minimum	0.50	-0.03	0.50	-0.03	-0.10	-0.01
Change relative to lower critical load (%)	n/a	n/a	n/a	n/a	-1.9%	-4.8%
Change relative to upper critical load (%)	n/a	n/a	n/a	n/a	-0.2%	-0.1%

The annual mean NO_X concentrations (including background) are below the critical level of 30 $\mu g/m^3$ at all modelled habitats, in both the DM and the DS scenarios, in both the Opening and Design Years.

The annual mean NH_3 concentrations (including background) exceed the critical level for higher plants of 3 µg/m^3 at the Annex I habitat type 'Lowland Hay Meadows' at Merlin Park in both the DM and the DS scenarios. However, the Proposed Development results in a decrease in the annual mean NH_3 concentration in the DS scenario in both the Opening Year and Design Year.

Nitrogen deposition levels (including background) are above the lowest critical loads for nitrogen deposition (Table 20) at the Galway Bay Complex pNHA, Galway Bay Complex SAC and the Annex I habitat type 'Lowland Hay Meadows' at Merlin Park, in both the DM and the DS scenarios, in both the Opening and Design Years. Nitrogen deposition levels are also above the lowest critical loads at the Inner Galway Bay SPA in both the DM and the DS Design Year scenarios.

The acid deposition (as N) levels exceed the lowest critical loads for acid deposition (as N) (Table 20) at all modelled designated sites, in both the DM and the DS scenarios, in both the Opening and Design Years.

While the models were conducted using a worst-case scenario, due to the implementation of the Proposed Development, there is potential for the predicted emissions to be much lower with potential for an increased modal shift to public transport and bike usage, further decreasing car usage and thus the associated emissions.

NTA

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