

Ecological Impact Assessment

Proposed Strategic Housing Development, Bóthar na Chóiste, Castlegar, Co. Galway



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1 INTRODUCTION

1.1 Background

MKO has been commissioned to conduct an Ecological Impact Assessment (EcIA) relating to a proposed strategic housing development located at Bóthar na Chóiste, Castlegar, Co. Galway.

The EcIA includes an accurate description of all aspects of the proposed development during construction and operation. The development is permanent, and no decommissioning is proposed. It then provides a comprehensive description of the baseline ecological environment, which is based on an appropriate level of survey work that was carried out in accordance with the most appropriate guidelines and methodologies. The EcIA then completes a thorough assessment of the impacts of the proposed development on biodiversity. Where likely ecologically significant effects are identified, measures are prescribed to avoid or minimise or compensate for such effects.

1.2 Statement of Authority

A field assessment was undertaken by Julie O'Sullivan (B.Sc., M.Sc.) on the 5th of March 2021, with a follow up bird surveys on the 30th of March 2021, 24th of November 2021, 15th of March 2022 and the 29th of March 2022. This report has been prepared by Julie O'Sullivan (B.Sc., M.Sc.) and Colin Murphy (B.Sc., M.Sc.). Julie is an experienced ecologist with over five years professional experience in ecological consultancy. Colin is an experienced ecologist with over two years' experience. The report has been reviewed by Inga Reich (Honours degree Biology, Ph.D. Applied Ecology). Inga has over 5 years' postdoctoral experience in Ecology.

Bat surveys were undertaken by MKO ecologists Neil Campbell, Olivia O'Gorman, Aoife Joyce, Julie O'Sullivan and Cathal Bergin. All staff have relevant academic qualifications to complete the surveys and assessments that they were required to do.

1.3 Relevant Guidance

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

- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018) (amended 2019).
- > Draft Revised guidelines on the information to be contained in Environmental Impact Statements (EPA, 2017).
- Environmental Impact Assessment of National Road Schemes –A Practical Guide (NRA, 2009).
- Guidelines for assessment of Ecological Impacts of National Road Schemes, (NRA, 2009).
- > Environmental Assessment and Construction Guidelines (NRA, 2006).

The Development Applications Unit (DAU) of the Department of Department of Housing, Local Government and Heritage was consulted in April 2021. A letter in response was received on the 28th of May 2021. The consultation response received from the DAU is provided as Appendix 5. All comments raised by the DAU and NPWS have been considered in the preparation of this report.



DESCRIPTION OF PROPOSED DEVELOPMENT

2.1 Site Location

The proposed development site is located to the north of Bóthar Na Chóiste within the townland of Castlegar, Co. Galway, approximately 2.8km north-east of Galway City (Grid reference: M 31488 28212). The subject lands extend overall to 4.286 ha in size. This includes the Bóthar Na Chóiste road for which road improvements are included in the proposed scheme.

The N84 Galway-Headford Road is situated approximately 600 metres to the west of the proposed development site. The proposed N6 Galway City Ring Road development boundary is located immediately north of the subject lands.

The site location is shown in Figure 2.1.

Characteristics of Proposed Development

Planning permission is sought by Lock House Developments Limited (the applicant) for development on a site which extends to 4.626 ha on lands located to the north of Bóthar Na Chóiste, in the townland of Castlegar, Galway.

The development will consist of the following:

- 1) Demolition of an existing house (124.6 m^2), a ruined outbuilding (42.8 m^2), and a ruined dwelling (41.7 m^2)
- 2) Construction of 170 no. residential units comprising:
 - 84 no. two storey houses (34 no. two-beds, 42 no. three-beds, 8 no. four-beds),
 - 1 no. apartment block comprising 17 no. apartments (10 no. one-beds, 7 no. two-beds),
 - 1 no. apartment block comprising 21 no. apartments (12 no. one-beds, 9 no. two-beds),
 - 48 no. duplex units (11 no. one-beds, 24 no. two-beds, 13 no. three-beds).
- 3) Development of a two-storey creche facility with 46 no. child spaces (c. 300.36 sqm), associated outdoor play areas and parking.
- 4) Provision of all associated surface water and foul drainage services and connections including pumping station with all associated site works and ancillary services.
- 5) The upgrade of the existing Bothar Na Chóiste road from the proposed development to the junction at L5041 consisting of road improvements, road widening and junction re-alignment.
- 6) Pedestrian, cyclist, and vehicular links throughout the development and access with Bóthar Na Chóiste, and pedestrian and cyclist link to the adjacent Greenway route.
- 7) Provision of shared communal and private open space, site landscaping and public lighting, resident and visitor parking including electric vehicle charging points, bicycle parking spaces, and all associated site development works.

The proposed site layout is shown in Drawing no. 2001 included in Appendix 1 of this report.



Drainage

2.3.1 Foul water drainage

Details of the Foul Sewer are shown on Drawing No. 10750-2003 & 2004 of the Civil works report accompanying this application (Tobins, 2022). The foul water from the proposed development will discharge to the existing wastewater network.

It is proposed to discharge via gravity to a pumping station that will located in the southern area of the residential section of the site and then discharge via rising main to a proposed gravity sewer along Bóthar na Chóiste with header manholes starting 250m west of the proposed site entrance. The proposed gravity element of the network will tie in the existing 225mm diameter foul network located within the unnamed road to the south-west of the residential element of the site. This ultimately discharges to the Terryland and River Valley wastewater pumping station.

The pumping station will be designed in accordance with the requirements set out in the Irish Water specification for wastewater systems IW-CDS-5030-03. The pumping station will be 15m from the boundary of the nearest dwelling.

The pumping station will be designed to cater for 24 hr storage for the total number of properties in accordance with Irish Water requirements. The pumping station storage has been designed to cater for the 170 no. properties located within the proposed site and for an additional 100 no. units in the zoned residential area directly to the west of the proposed development should this area ever be developed in the future.

All sewers have been designed so that the velocities achieved fall within the limits of 0.75 and 3m/sec as set out in Irish Water Code of Practice for Wastewater Infrastructure and "Recommendations for Site Development Works" as published by the Department of Environment.

The drainage system has been designed in accordance with the Recommendations for Site Development Works as published by the Department of the Environment and Local Government and to Irish Water Code of Practice and Standard Details and also complies with Irish Water Wastewater Infrastructure – Code of Practice and Standard Details.

A pre-connection enquiry form was submitted to Irish Water outlining the proposed loadings from this development and the proposed tie-in location. Irish Water have confirmed that connection to Terryland River Waste water Treatment plant is feasible via a letter dated 10.12.2021 (Customer Ref No: CDS21007628). The confirmation feasibility letter is available in Appendix 2.

2.3.1.1 **Surface Water Drainage**

There is currently no existing storm drainage in the vicinity of the site which will be suitable for serving the proposed development. As a result, all surface water run-off from the site and the northern section of the upgrade road works will need to be discharged to ground water. There is an existing 400mm storm sewer on the L5041 local road. This existing storm sewer will cater for the catchment area of the southern section of the Bothar Na Choiste road upgrade works.

The storm water drainage design has been designed to cater for all surface water runoff from all hard surfaces in the proposed development including roadways, roofs etc. The proposed residential development and road upgrade works have been divided into 6 No. catchment areas. 5 of the catchment areas will discharge to soakaways and percolate to the ground. Each soakaway has been strategically located to cater best for the associated catchment area. Due to the topography of the site a 6th catchment area, catering for the southern section of the road upgrade works, will discharge via gravity to the existing storm sewer as noted.

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Precast concrete gullies including lockable cast iron grating and frame connected to a piped system will be provided to collect run-off from these areas. The proposed pipe diameter will range between 100 and a maximum of 300mm and will be laid at gradients varying between 1/35 and 1/300.

The storm drainage for the entire development has been designed using the Innovyze MicroDrainage Design Software in accordance with the Recommendations for Site Development Works for Housing Areas and also the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS).

2.3.1.1.1 Sustainable Urban Drainage Measures

The existing site primarily consist of greenfield with no existing drainage or SuDS measures in place. In order to maintain surface water runoff from the site to those of the current state, the surface water drainage for the proposed development will be designed in accordance with the principles of Sustainable Urban Drainage Systems (SuDS) as embodied in the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS). The GDSDS addresses the issue of sustainability by requiring designs to comply with a set of drainage criteria which aim to minimise the impact of urbanisation by replicating the runoff characteristics of the greenfield site. SUDs measures incorporated into the design of the project include, Petrol interceptors and soakaways.

Petrol interceptors

It is proposed to install a Class 1 Bypass Petrol Interceptor upstream of the connection into each of the proposed soakaways. The reasoning for this is that the storm water entering the system will include runoff from the roadways and parking areas throughout the site and therefore may have hydrocarbons within their flow. These hydrocarbon pollutants require removal and are not to be discharged back into the environment. The separator has been sized to cater for roads, footways and driveway areas of the site.

Soakaways

Roof run-off impermeable areas will discharge to 5 No soakaways on the site. The soakaways are designed to hold water for the largest storage required over a 48-hour storm period with rainfall depths taken for the 100-year return period + 20% for climate change for sliding durations obtained from Met Eireann. The stormwater discharges to groundwater. The stone soakaway is constructed on top of clean stone base which extends to formation level or existing site levels. These stone beds allow for more capacity and an extra factor of safety.

2.3.1.2 Water Supply

The water supply services have been designed to take account of the requirements of the Civil Engineering Specification for the Water Industry (CESWI), subject to the particular requirements applied to it by Irish Water, as outlined in the Irish Water Code of Practice for Water Infrastructure. Other design guidelines adhered to include the Department of Environment "Recommendations for Site Development Works for Housing Areas", 1998.

The water supply required for the proposed development shall be via a 150mm diameter watermain as per Irish Water requirements. It is proposed to connect to the existing 200mm diameter uPVC watermain located in the main junction south-west of the residential element of the development as shown on Drawing no. 10750-2002 of the civil works report accompanying this application (Tobins, 2022).

The watermain arrangement is shown on drawing No. 10750-2001 and 10750-2002. It is proposed to serve to site using a 150mm diameter 'spine' watermain down to the main junction in the proposed development. All other branch mains from the 150mm will be 100mm PE. In accordance with Local authority standards, a water meter and Logging Device (Larson Type) are proposed at the connection into the proposed site. A sluice valve, strainer and 1500mm Ø by-pass arrangement is

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also proposed to allow for possible disconnection of water meters by the Local Authority.

A pre-connection enquiry has been submitted to Irish Water on the feasibility of connecting to the water mains. Irish Water confirms feasibility via a letter dated 10.12.2021 *(Customer Ref No: CDS21007628)*. The confirmation feasibility letter is available in Appendix 2 of the Appropriate Assessment Screening Report.

2.3.2 Landscape plan

The landscape design for the proposed residential development at Bóthar an Chóiste provides a high quality and visually attractive landscape setting for the benefit of future residents. The existing site is currently pasture land devoid of trees and offers very limited ecological value—a core element of the landscape scheme is the introduction a wide diversity of tree and shrub species, hedgerows and grasslands, with a focus on the use of native and pollinator friendly species to promote biodiversity and ecological value. A hierarchy of street tree and native tree planting will provide both visual structure and ecological value.

Linear parkland/greenway

Galway City Development Plan identifies an objective to develop a greenway along the western side of the site. The proposed landscape scheme incorporates a pedestrian linkage through a naturalistic liner parkland that runs the length of the sites western boundary—effectively implementing the first stage of such a greenway. Planting will include large native tree species Oak, Alder and White willow which will be interplanted with medium native tree species including White beam, downy birch and goat willow. New sections of hedgerow will also be created along the eastern and southern sections of the site, increasing the ecological connectivity to thew wider landscape.

Communal garden space

This space will provide a high-quality sheltered garden space for residents to enjoy. The provision of hard surfaces circulation and intermittent seating areas facilitates social interaction. Native fruiting and pollinator friendly trees and shrubs will promote biodiversity and provide suitable feeding and nesting habitat for local species.

Treeline and hedgerow planting

Larger native or naturalised structure trees such as Oak, Beech and Alder will be selected where space allows such as parkland area and within native hedgerows to promote a bio-diverse setting into the future. These trees will add scale and structure to the landscape over a long period of time as well as important ecological benefit by creating nesting and foraging habitat.

The landscaping plan is available is appendix 3.

2.4 Construction Best Practice Measures

The following best pest practice mitigation and environmental control measures have been incorporated into the proposal:

Site Set-up

2.5m high hoarding will be erected around the boundaries of the development site. All works will be located within the confines of this fencing



- A site compound will be established within the site boundary. The exact location of the site compound will be established by the contractor.
- Access routes will be clearly marked / identified. Access during construction to any working areas will be restricted to land within the outlined works area.

Pollution Prevention

- Surface water generated from the works during construction will be routed towards settlement tanks prior to discharge to ground. There will be no direct discharge to surface waters.
- In the event of encountering groundwaters during excavation, the excavation will be dewatered using a pump equipped with a silt bag on the outlet if necessary, to capture any silty material prior to subsequent natural percolation to ground. Alternatively, this water will be tankered off site if required.
- All site plant will be inspected at the beginning of each day prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. All major repair and maintenance operations will take place off site.
- Vehicles will never be left unattended during refuelling. Only dedicated trained and competent personnel will carry out refuelling operations and plant refuelling procedures shall be detailed in the contractor's method statements.
- Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment.
- All fuels, lubricants and hydraulic fluids will be stored at the site compound. The storage area will contain a small bund lined with an impermeable membrane in order to prevent any contamination of the surrounding soils and vegetation.
- Potential impacts caused by spillages etc. during the construction phase will be reduced by keeping spill kits and other appropriate equipment on-site.

Measures to avoid the release of cement-based material during construction

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

Measures to avoid effects associated with the disposal of wastewater

- A self-contained port-a-loo with an integrated waste holding tank will be used at the site compounds, maintained by the providing contractor, and removed from site on completion of the construction works;
- No wastewater will be discharged on-site during either the construction or operational phase.

Waste Management

- All waste will be collected in skips and the site will be kept tidy and free of debris at all times.
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or recycling.
- All construction waste materials will be stored within the confines of the site, prior to removal from the site to a licenced waste facility.

Environmental Monitoring



The contractor will assign a member of the site staff as the environmental officer with the responsibility for ensuring the environmental measures prescribed in this document are adhered to. Any environmental incidents or non-compliance issues will immediately be reported to the project team.

Vegetation Clearance

Any scrub clearance will be undertaken in line with the Wildlife Act 1976-2019.

2.4.1 **Disturbance limitation**

- All plant and equipment for use will comply with Statutory Instrument No 359 of 1996
 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels)
 Regulations 1996".
- Plant machinery will be turned off when not in use.
- Operating machinery will be restricted to the proposed works site area.
- Construction works will be limited to daylight hours and artificial lighting to facilitate works will not be permitted.

2.4.2 **Invasive Species**

The introduction and/or spread of invasive species could result in the establishment of invasive alien species and this may have negative impacts on the surrounding environs. Appropriate spread prevention measures have been incorporated into the design of the project.

General Control measures for the management of Invasive Species

The following measures address potential impacts associated with the construction phase of the project:

- Good construction site hygiene will be employed to prevent the introduction and spread of
 problematic invasive alien plant species by thoroughly washing vehicles prior to entering and
 leaving the site.
- Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.





3 METHODOLOGY

The following sections describe the methodologies followed to establish the baseline ecological condition of the proposed development site and surrounding area. Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological Baseline conditions are those existing in the absence of proposed activities (CIEEM, 2018).

3.1 **Desk Study**

A comprehensive desk study was undertaken to inform this ecological impact assessment. This study includes a thorough review of available information that is relevant to the ecology of the site of the proposed development. This information provides valuable existing data and also helps in the assessing the requirement for additional ecological surveys.

The following list describes the sources of data consulted:

- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA)
- Review of NPWS records (data request)
- Review of the publicly available National Biodiversity Data Centre web-mapper
- Records from the NPWS web-mapper and review of specially requested records from the NPWS Rare and Protected Species Database for the hectads which overlap with the study area
- Galway City Transport Project maps and ecological survey reports (available at http://www.n6galwaycity.ie)

3.2 Field Surveys

Multi-disciplinary ecological walkover surveys

Multi-disciplinary ecological walkover surveys were undertaken in accordance with NRA Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes (NRA, 2009). This survey provided baseline data on the ecology of the study area and assessed whether further more detailed habitat or species specific ecological surveys were required. The multi-disciplinary ecological walkover survey comprehensively covered the entire study area.

Habitats were classified in accordance with the Heritage Council's 'Guide to Habitats in Ireland' (Fossitt, 2000). Habitat mapping was undertaken with regard to guidance set out in 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2011).

Plant nomenclature for vascular plants follows 'New Flora of the British Isles' (Stace, 2010), while mosses and liverworts nomenclature follows 'Mosses and Liverworts of Britain and Ireland - a field guide' (British Bryological Society, 2010).

The walkover surveys were designed to detect the presence, or suitable habitat for a range of protected faunal species that may occur in the vicinity of the proposed development.

During the multidisciplinary surveys, a search for Invasive Alien Species (IAS), with a focus on those listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2011), was also conducted.



The walkover survey was undertaken on the 5th of March 2021, with a follow up survey on the 30th of March 2021 and the 24th of November 2021. Although the survey timing does not fall within the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith et al., 2011), all habitats were readily identifiable at the time of the survey.

3.2.2 Bird Surveys

3.2.2.1 Wintering Bird Survey

Wintering bird surveys were carried out during the initial multidisciplinary walkover survey on the 5th of March 2021 with follow up dedicated bird surveys on the 30th of March 2021, 24th of November 2021, 15th of March 2022 and the 29th of March 2022

The winter bird surveys followed the Irish Wetland Bird Survey (I-WeBS) methodology; the simple 'look-see' method, whereby all birds present within a predefined area are counted (Gilbert et al., 2011; Birdwatch Ireland, 2018). The proposed development site was scanned from suitable vantage points that gave unobstructed views of potentially suitable habitat and roosting locations for wintering waterfowl and waders within the study area in advance of walkover surveys.

The surveys were carried out at suitable vantage points overlooking the proposed development site and Ballindooley Lough which lies 400m north-west (and down gradient) of the proposed development site boundary, and its surrounding wetland habitats. The wetland habitats surrounding the lake flood in winter and extent to 150m north of the site boundary. Walked transects were then undertaken within the site boundary.

All observations were recorded, and detailed point data was gathered for each species observation, with all bird species denoted using standard British Trust for Ornithology (BTO) codes and with the number of each species recorded next to each registration. The species recorded in the surveys were those covered by Irish Wetlands Bird Survey (I-WeBS) counts, i.e. all divers, grebes, cormorant, shag, herons, swans, geese, ducks, rails, crakes, waders, gulls and kingfisher. However, in addition to this, all other bird species, including all common and widespread passerines, were also recorded from within the proposed development site. Details of the surveys including survey dates and weather conditions are provided in Table 3.1.

Table 3-1 Bird survey details

Date	Weather conditions
05/03/2021	Wind speed: Light breeze
	Cloud cover: 66-100%
	Visibility: Good (> 2km)
	Rain: No
	Frost: None
	Snow: None
30/03/2021	Wind speed: Calm
	Cloud cover: 66-100%
	Visibility: Good (> 2km)
	Rain: None
	Frost: None
	Snow: None
24/11/2021	Wind speed: Light breeze
	Cloud cover: 100%
	Visibility: Good (> 2km)
	Rain: Yes
	Frost: None
	Snow: None
15/03/2022	Wind speed: Breezy



	Cloud cover: 50%
	Visibility: Good(>2km)
	Rain: Yes
	Frost: None
	Snow: none
29/03/2022	Wind speed: Breezy
	Cloud cover: 50%
	Visibility: Good(>2km)
	Rain: Yes
	Frost: None
	Snow: None

3.2.2.2 Barn Owl Survey

A dedicated barn owl survey was undertaken at the site on the evening of the 29th of July 2021, by Julie O'Sullivan. The survey followed the methodologies outlined in the TII guidelines, '*Barn Owl Surveying Standards for National Road Projects*' (December, 2017).

The buildings within the site were assessed during the initial walkover survey in March in order to determine suitability for breeding Barn Owls. The modern building in the south-western corner of the site was assessed as unsuitable, as it offered no suitable cavities and therefore no nesting opportunities for Barn Owls.

The interior and exterior of the derelict cottage located in the south-eastern corner of the proposed development site was inspected thoroughly during the initial March survey, checking for potential nesting opportunities. This building was assessed as potentially suitable, as the chimney of the building offered a suitable nesting space.

The barn owl survey carried out in July focused on the derelict cottage located in the south-eastern corner of the proposed development site. A nocturnal survey was carried out on the evening of the 29th of July 2021. The building was observed from a discrete vantage point, set back 20m from the building. The dusk survey was carried out during calm and dry conditions for two hours and commenced 30 minutes prior to sunset.

The nocturnal vantage point survey did not indicate evidence of breeding barn owls and the building was considered 'unoccupied'. An interior inspection of the building was carried out once it was established that the building was unoccupied, to look for evidence indicating barn owl occupancy, including pellets, white-wash and moulted feathers. Particular attention was paid to the area under suitable cavities, including the chimneys both inside and outside of the building.

3.2.2.3 **Swift Survey**

A dedicated swift survey was undertaken at the site on the evening of the 28th of July 2021, by Julie O'Sullivan. The survey visit was carried out during fine weather to increase chances of encountering swifts.

The survey was also carried out in the evening, following standard best practice, to maximise encountering peak swift activity. The survey followed the methodologies outlined in Swift Conservation Ireland 'Surveying the Common Swift Guidelines', (Huxley 2019) and guidance from Birdwatch Irelands, 'Saving Swifts' (2019).



3.2.3 Bat Survey

3.2.3.1 **Ecological Appraisal (Bats)**

A walkover survey of the Study Area was carried out during daylight hours on the 16th September 2020, 27th July, 10th and 24th August 2021. The landscape features on the site were visually assessed for potential use as bat roosting habitats and commuting/foraging habitats using a protocol set out in BCT *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn.) (Collins, 2016). Table 4.1 of the 2016 BCT Guidelines identifies a grading protocol for assessing structures, trees and commuting/foraging habitat for bats. The protocol is divided into four Suitability Categories: *High, Moderate, Low* and *Negligible*.

3.2.3.2 Roost Assessment

A search for roosts was undertaken within the boundary of the proposed development. The aim was to determine the presence of roosting bats and the need for further survey work or mitigation. The site was visited on multiple occasions in September 2020 and July/August 2021. A walkover was carried out and all structures and trees were assessed for their potential to support roosting bats. Any potential roost sites were subject to a roost assessment. This comprised a detailed inspection of the exterior and interior (if accessible) to look for evidence of bat use, including live and dead specimens, droppings, feeding remains, urine splashes, fur oil staining and noises (Collins, 2016).

Three structures; a residential bungalow, a derelict cottage and adjacent stone shed (IG Ref: E150213 N227553), were identified within the site and were subject to a roost assessment. The exteriors of the buildings were inspected first from ground level, with the aid of binoculars. The search included the ground, accessible windowsills, walls, eaves, roof slates, gutters and the roof ridge. A systematic search of all accessible interiors was also undertaken by two licensed bat ecologists. Searches were carried out with the aid of binoculars, torches, an endoscope and a ladder and focused on walls, floors, the attic roof beams, windowsills, lintels, etc.

Any potential tree roosts were examined for the presence of rot holes, hazard beams, cracks and splits, partially detached bark, knot holes, gaps between overlapping branches and any other potential roost features (i.e. PRFs) identified by Andrews (2018).

3.2.4 **Emergence/Re-entry Surveys**

A dusk emergence and dawn re-entrance survey was carried out on the evening of the 9th September and morning of 10th September 2020, and focused on the derelict structure and adjacent shed located to the southeast of the site. Subsequent dusk and dawn surveys were carried out on the structures on 27th July and 10th August 2021. A dusk emergence survey was carried out on the occupied dwelling to the southwest of the site on 24th August 2021.

During the emergence/re-entry surveys, two surveyors were equipped with active full spectrum bat detectors, Batlogger M (Elekon AG, Lucerne, Switzerland). The surveyors took up positions at opposite ends of the buildings to provide coverage of potential roost features. Where possible, species identification was made in the field and any other relevant information was also noted, e.g. numbers, behaviour, features used, etc. All bat echolocation was recorded for subsequent analysis to confirm species identifications.

Conditions were suitable for bat surveys on all survey nights. Emergence surveys commenced 30 minutes before sunset, concluded 1 hour after sunset and were followed by walked transect surveys. Reentry surveys commenced 1.5 hours before sunrise and concluded at sunrise. The purpose was to identify any bat species, numbers, access points and roosting locations within the structures.



Dusk and Dawn Activity Surveys

A dusk and dawn activity survey were carried out in September 2020. This was followed by two dusk and one dawn surveys in July and August 2021 (Table 3-1). The aim of the surveys was to identify if there were bats present at the proposed development site, what bat species were present and to gather any information on bat foraging and commuting behaviour. The dusk activity surveys included walked transects across the extent of the proposed development site. The dawn survey consisted of a re-entry survey, focusing on buildings within the site.

Two surveyors were equipped with active full spectrum bat detectors, a Batlogger M (Elekon, Lucerne, Switzerland). Where possible, species identification was made in the field and any other relevant information was also noted, e.g. numbers, behaviour, features used, etc. All bat echolocation was recorded for subsequent analysis to confirm species identifications.

The dusk surveys commenced 30 minutes before sunset and were completed for up to 3 hours after sunset. The dawn surveys commenced approximately two hours before sunrise and were completed at sunrise. Conditions were suitable for bat activity on all surveys. Survey effort for 2020 and 2021 is described in Table 3-2.

Table 3-2 Bat Activity Survey Effort 2021

Date	Surveyor	Туре	Sunrise/Sunset	Weather
16 th September 2020	Neil Campbell and Olivia O'Gorman	Dusk	19:48	21°C; dry; light air/gentle breeze; cloud cover approx. 90-100%
17 th September 2020	Neil Campbell and Olivia O'Gorman	Dawn	07:14	15°C; dry to light mist; light breeze; cloud cover ~95%.
27 th July 2021	Aoife Joyce and Julie O'Sullivan	Dusk	21:37	15°C; dry; light air; cloud cover approx. 50-70%.
10 th August 2021	Aoife Joyce and Cathal Bergin	Dawn	6:08	16°C; dry; light air; cloud cover approx. 5-10%.

Static Detector Surveys

2020 Static Detectors

A full spectrum bat detector, Song Meter SM4BAT (Wildlife Acoustics, Maynard, MA, USA), was deployed during static surveys to record bat activity at one fixed location in 2020 over a 9-day period. Settings used were those recommended by the manufacturer for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. The detector was set to record from 30 minutes before sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method when provided with GPS coordinates.

The survey was designed to utilise a static detector to monitor bat activity in 2020. The Song Meter SM4BAT detector was deployed on 16th of September 2020. The static detector was collected on the 25th of September 2020.

2021 Static Detectors

Two full spectrum bat detectors, Song Meter Minis (Wildlife Acoustics, Maynard, MA, USA), were deployed during static surveys to record bat activity at four fixed locations over a 4-week period in 2020. The locations of the static detectors were selected to represent the range of habitats present within the site, including favourable bat habitats. Settings used were those recommended by the manufacturer for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. Detectors were set to record from 30 minutes before sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method



when provided with GPS coordinates. The Song Meter SM4, dual-channel acoustic recorder is capable of the long-term acoustic monitoring of bats.

Two Song Meter SM4BAT detectors were deployed on site on 27^{th} of July 2021. After approximately two weeks, the static detectors were relocated to two separate new locations within the site. The static detectors deployed in 2021 were collected on the 24^{th} of August 2021.

Full details of the bat survey effort and results can be found in the bat report located in Appendix 4.

Methodology for Assessment of Impacts and Effects

3.4.1 Determining Importance of Ecological Receptors

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

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

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

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

3.4.2 Characterisation of Impacts and Effects

The proposed development will result in a number of impacts. The ecological effects of these impacts are characterised as per the CIEEM 'Guidelines for Ecological Impact Assessment in the UK and Ireland (2018). The headings under which the impacts are characterised follow those listed in the guidance document and are applied where relevant. A summary of the impact characteristics considered in the assessment is provided below:



- **Positive or Negative.** Assessment of whether the proposed development result in a positive or negative effect on the ecological receptor.
- Extent. Description of the spatial area over which the effect has the potential to occur.
- Magnitude to size, amount, intensity and volume. It should be quantified if possible and
 expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to
 habitat area, percentage decline in a species population.
- Duration is defined in relation to ecological characteristics (such as the lifecycle of a species) as
 well as human timeframes. For example, five years, which might seem short-term in the human
 context or that of other long-lived species, would span at least five generations of some
 invertebrate species.
- **Frequency and Timing.** This relates to the number of times that an impact occurs and its frequency. A small-scale impact can have a significant effect if it is repeated on numerous occasions over a long period.
- Reversibility. This is a consideration of whether an effect is reversible within a 'reasonable' timescale. What is considered to be a reasonable timescale can vary between receptors and is justified where appropriate in the impact assessment section of this report.

3.4.3 **Determining the Significance of Effects**

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

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

When determining significance, consideration is given to whether:

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

The EPA draft guidelines on information to be included in Environmental Impact Statements (EPA, 2017) and the *Guidelines for assessment of Ecological Impacts of National Road Schemes*, (NRA, 2009) were also considered when determining significance and the assessment is in accordance with those guidelines.

The terminology used in the determination of significance follows the suggested language set out in the Draft EPA Guidelines (2017) as shown in Table 3-3 below.

Table 3-3 Criteria for determining significance of effect, based on (EPA, 2017) guidelines

Effect Magnitude	Definition
	No discernible change in the ecology of the affected feature.
No change	
	An effect capable of measurement but without noticeable consequences.
Imperceptible effect	
	An effect which causes noticeable changes in the character of the environment but
Not Significant	without significant consequences.



Effect Magnitude	Definition
	An effect which causes noticeable changes in the character of the environment
Slight effect	without affecting its sensitivities.
	An effect that alters the character of the environment that is consistent with
Moderate effect	existing and emerging trends.
	An effect which, by its character, its magnitude, duration or intensity alters a
Significant effect	sensitive aspect of the environment.
	An effect which, by its character, magnitude, duration or intensity significantly
Very Significant	alters most of a sensitive aspect of the environment.
	An effect which obliterates sensitive characteristics.
Profound effect	

As per TII (NRA, 2009) and CIEEM (2019) best practice guidelines the following key elements should also be examined when determining the significance of effects:

- 1. The likely effects on 'integrity' should be used as a measure to determine whether an impact on a site is likely to be significant (NRA, 2009)
- 2. A 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives (CIEEM, 2019)

Integrity

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

Conservation status

An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status. According to CIEEM (2019) guidelines the definition for conservation status in relation to habitats and species are as follows:

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

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

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

The conservation of a species is favourable when:

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



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

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



4 DESK STUDY

Designated Sites

The potential for the proposed development to impact on sites that are designated for nature conservation was considered in this Ecological Impact Assessment.

Special Areas of Conservation (SACs) and Special Protection Areas for Birds (SPAs) are designated under EU Habitats Directive and are collectively known as 'European Sites'. The potential for effects on European Sites is fully considered in the AA Screening Report/ Natura Impact Statement that accompanies this application and discussed also in this EcIA. The European Sites that are within the Zone of Likely Impact are listed in the AASR/NIS and are not repeated in this document.

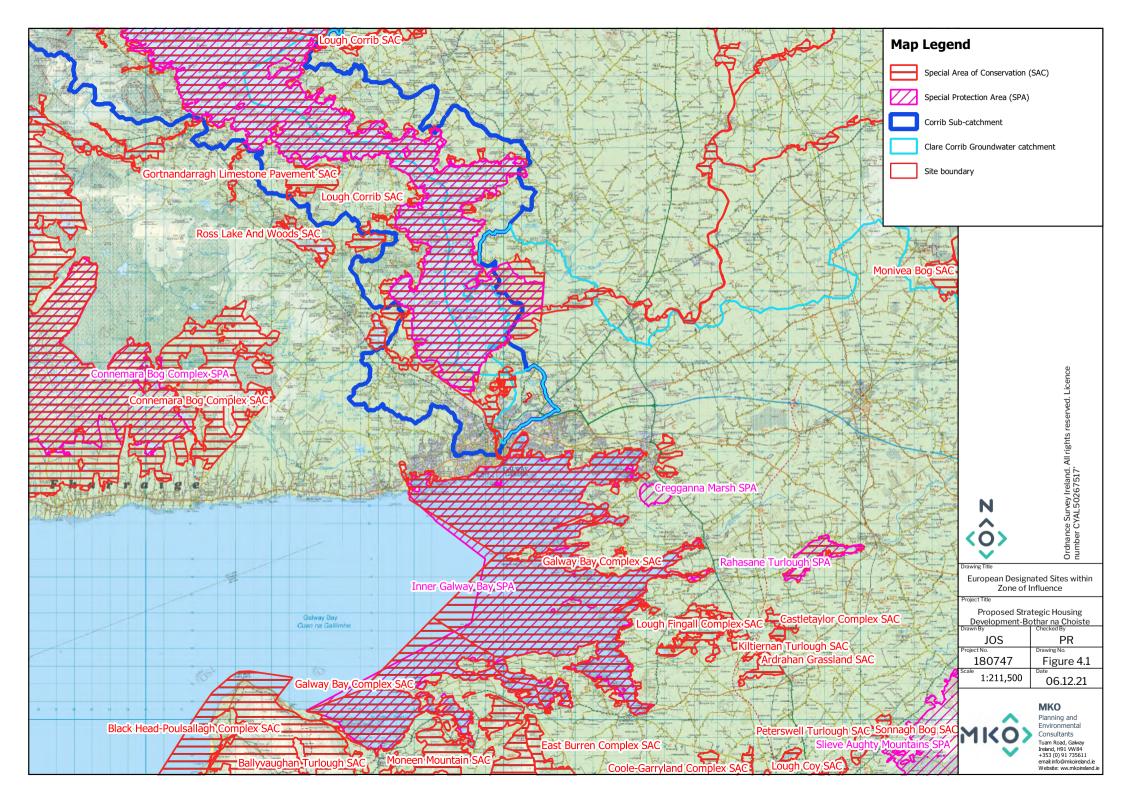
Natural Heritage Areas (NHAs) are designated under the Wildlife (Amendment) Act 2000 and their management and protection is provided for by this legislation and planning policy. The potential for effects on these designated sites is fully considered in this EcIA.

Proposed Natural Heritage Areas (pNHAs) were designated on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. However, the potential for effects on these designated sites is fully considered in this EcIA. The European Sites with the potential for likely significant effects resulting from the development have been identified in the AA Screening Document and NIS and are listed below for consideration in this EcIA.

- Galway Bay Complex SAC
- Lough Corrib SAC
- Inner Galway Bay SPA
- Lough Corrib SPA

The following methodology was used to establish which nationally designated sites have the potential to be impacted by the proposed development:

- Initially the most up to date GIS spatial datasets for all nationally designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) on the 27/11/2021. The datasets were utilized to identify Designated Sites which could feasibly be affected by the proposed development.
- All nationally designated Sites within a distance of 15km surrounding the development site were identified. In addition, the potential for connectivity with nationally designated Sites at distances of greater than 15km from the proposed development was also considered in this initial assessment. In this case, no potential connectivity with sites located at a distance of over 15km from the proposed development was identified.
- A map of all the EU designated sites and nationally designated Sites within 15km is provided in Figure 4.1 and 4.2 respectively.
- The site synopses for these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report. Figure 4.1 shows the location of the proposed development in relation to all European sites within 15km of the proposed development.
- > Catchment mapping was used to establish or discount potential hydrological connectivity between the site of the proposed development and any nationally designated Sites. The hydrological catchments are also shown in Figures 4.1. & 4.2.
- Table 4.1, provides details of all relevant nationally designated Sites as identified in the preceding steps and assesses which are within the likely Zone of Impact.
- Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Impact and further assessment is required.



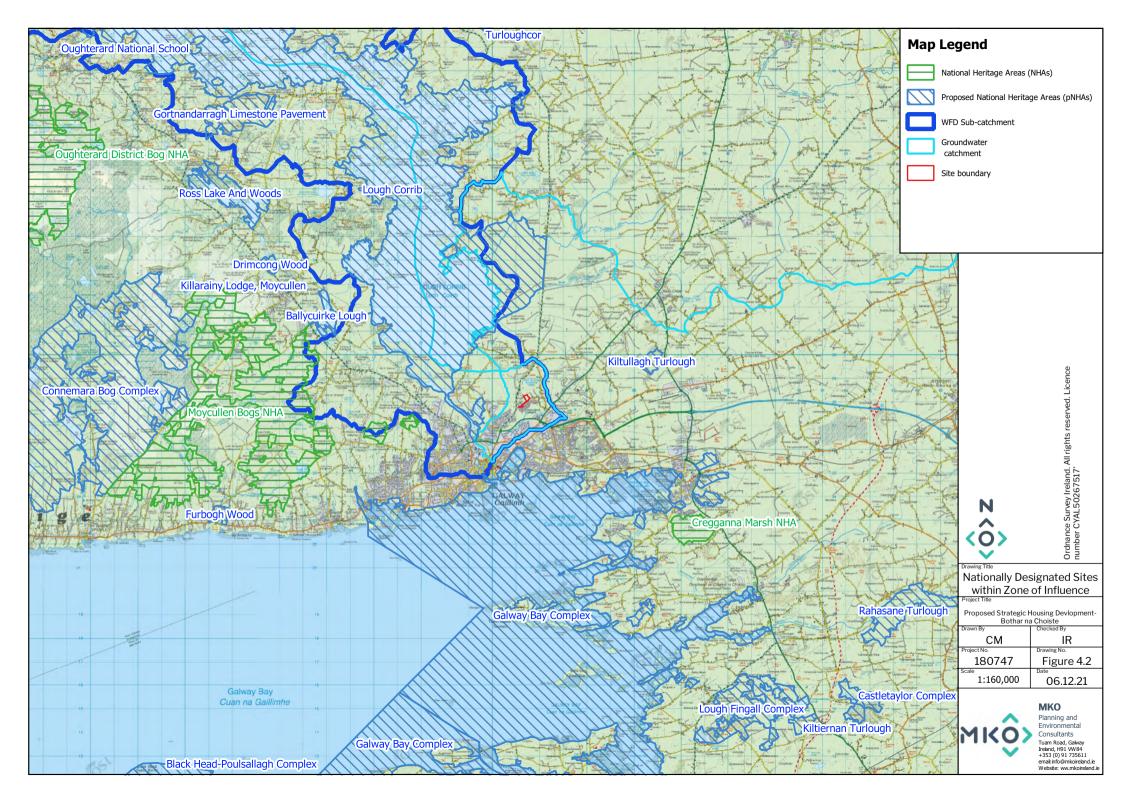




Table 4-1 Identification of Nationally Designated sites within the Likely Zone of Impact

Table 4-1 Identification of Nationally Designated sites within the Likely Zone of Impact		
Designated Sites and distance from proposed development	Likely Zone of Impact Determination	
Proposed Natural Heritage Area (pNHA)		
Lough Corrib pNHA (1.4km)	Although no watercourses were identified on-site, the construction and operational phase of the proposed works may result in pollution to groundwaters, via the percolation of polluting materials through the limestone bedrock underlying the site. This pNHA is within the likely zone of impact, due to the potential for pollutants to be transmitted to it indirectly via ground water.	
Galway Bay Complex pNHA (1.7km)	Although no watercourses were identified on-site, the construction and operational phase of the proposed works may result in pollution to groundwaters, via the percolation of polluting materials through the limestone bedrock underlying the site. This pNHA is within the likely zone of impact, due to the potential for pollutants to be transmitted to it indirectly via ground water.	
Kiltullagh Turlough pNHA (4.9km)	This pNHA is designated for a groundwater dependent terrestrial habitat and is located in a separate groundwater catchment. Impacts on this pNHA can be ruled out due to the distance and lack of connectivity between the proposed development site and this pNHA. There is no complete source-pathway-receptor chain for impact. This site is not in the zone of likely impact, no further assessment is required.	
Ballycuirke Lough pNHA (8.3km)	This pNHA is located in a separate hydrological sub-catchment. Impacts on this pNHA can be ruled out due to the distance and lack of connectivity between the proposed development site and this pNHA. There is no complete source-pathway-receptor chain for impact. This site is not in the zone of likely impact, no further assessment is required.	
Killarainy Lodge Moycullen pNHA (10.8km)	Impacts on this pNHA can be ruled out due to the distance between the proposed development site and this pNHA. No source-pathway-receptor chain for impact was identified between this pNHA and the proposed development area. This site is not in the zone of likely impact, no further assessment is required.	
Drimcong Wood pNHA (11.7km)	Impacts on this pNHA can be ruled out due to the distance between the proposed development site and this pNHA. No source-pathway-receptor chain for impact was identified between this pNHA and the proposed development area. This site is not in the zone of likely impact, no further assessment is required.	
Furbogh Wood pNHA (13km)	Impacts on this pNHA can be ruled out due to the distance between the proposed development site and this pNHA. No source-pathway-receptor chain for impact was identified between this pNHA and the proposed development area. This site is not in the zone of likely impact, no further assessment is required.	



Designated Sites and distance from proposed development	Likely Zone of Impact Determination
Ross Lake And Woods pNHA (13.4km)	This pNHA is located in a separate hydrological sub-catchment. Impacts on this pNHA can be ruled out due to the distance and lack of connectivity between the proposed development site and this pNHA. There is no complete source-pathway-receptor chain for impact. This site is not in the zone of likely impact, no further assessment is required.
Connemara Bog Complex pNHA (13.9km)	This pNHA is located in a separate hydrological sub-catchment. Impacts on this pNHA can be ruled out due to the distance and lack of connectivity between the proposed development site and this pNHA. There is no complete source-pathway-receptor chain for impact. This site is not in the zone of likely impact, no further assessment is required.
Lough Fingall Complex pNHA (14.6km)	This pNHA is located in a separate hydrological sub-catchment and groundwater catchment. Impacts on this pNHA can be ruled out due to the distance and lack of connectivity between the proposed development site and this pNHA. There is no complete source-pathway-receptor chain for impact. This site is not in the zone of likely impact, no further assessment is required.
Natural Heritage Area (NHA)	
Moycullen Bogs NHA (4.2km)	Impacts on this NHA can be ruled out due to the distance and lack of connectivity between the proposed development site and this NHA. There is no complete source-pathway-receptor chain for impact. This site is not in the zone of likely impact, no further assessment is required.
Creganna Marsh NHA (7.9m)	Impacts on this NHA can be ruled out due to the lack of connectivity between the proposed development site and this NHA. There is no complete source-pathway-receptor chain for impact. This site is not in the zone of likely impact, no further assessment is required.



4.2 New Flora Atlas

A search was made in the New Atlas of the British & Irish Flora (Preston et al., 2002) to investigate whether any rare or unusual plant species listed as Annex II of the Habitats Directive which are listed as rare on the Red Data List (Curtis and McGough 1988) or protected under the Flora (Protection) Order, 1999 had been recorded in the relevant 10km squares in which the study site is situated M32 during the 1987-1999 atlas survey.

Table 42 Records of species listed under the Flora Protection Order 2015 or the Irish Red Data Book for Vascular Plants

Fable 4-2 Records of species listed under the Flora Protection Order 2015 or the Irish Red Data Book for Vascular Plants		
Common Name	Scientific Name	Status
shepherd's-needle	Scandix pecten-veneris	Regionally Extinct (RE)
common wormwood	Artemisia absinthium	Vulnerable (VU)
small-white orchid	Pseudorchis albida	Vulnerable (VU); FPO
slender-flower thistle,	Carduus tenuiflorus	Near Threatened (NT)
wildflower knapweed	Centaurea scabiosa	Near Threatened (NT)
sea kale	Crambe maritima	Near Threatened (NT)
dwarf spurge	Euphorbia exigua	Near Threatened (NT)
spring gentian	Gentiana verna	Near Threatened (NT)
autumn gentian	Gentianella amarella	Near Threatened (NT)
yellow horned-poppy	Glaucium flavum	Near Threatened (NT)
black henbane	Hyoscyamus niger	Near Threatened (NT)
dwarf mallow	Malva neglecta	Near Threatened (NT)
brackish water-crowfoot	Ranunculus baudotii	Near Threatened (NT)
least bur-reed	Sparganium natans	Near Threatened (NT)
autumn lady's-tresses	Spiranthes spiralis	Near Threatened (NT)
marsh fern	Thelypteris palustris	Near Threatened (NT)
knotted hedge parsley	Torilis nodosa	Near Threatened (NT)
common verbena	Verbena officinalis	Near Threatened (NT)
green field-speedwell	Veronica agrestis	Near Threatened (NT)

4.3 NPWS Records

NPWS online records were searched on 14/04/2021 for records of any rare or protected species of flora or fauna within in the 10 kilometre grid square, M32, in which the study area lies. A data request was



also sent to the NPWS and data received in relation to the grid square on the 14/04/2021. Table 4.3 lists the rare and protected species records obtained from the NPWS during this study.

Table 4-3 Records for rare and protected species in M32, NPWS.

Table 10 Records for fare and pre-	otected species in M32, NPWS.	
Common Name	Scientific Name	Status
Confla	Contone	District Line Park F. Cont.
Cornflower	Centaurea cyanus	Plant red data list - Extinct
Blue Fleabane	Erigeron acer	Plant red data list - Vulnerable
Henbane	Hyoscyamus niger	Plant red data list - Rare
Small-white Orchid	Pseudorchis albida	Flora protection order; Plant red data list - Vulnerable
Reindeer moss	Cladonia portentosia	Annex V
West European Hedgehog	Erinaceus europaeus	WA
Irish Hare	Lepus timidus subsp. hibernicus	Annex V; WA
Badger	Meles meles	WA
Irish Stoat	Mustela erminea subsp. hibernica	WA
Common Frog	Rana temporaria	Annex V; WA
Common seal	Phoca vitulina	Annex V
Lesser Horseshoe Bat	Rhinolophus hipposideros	Annex II & IV; WA
Badger	Meles meles	WA
Reindeer moss	Cladonia portentosa	Annex V
Bottle nosed dolphin	Tursiops truncatus	Annex III, IV
Barn owl	Tyto alba	Red list

Annex II, Annex IV, Annex V – Of EU Habitats Directive, WA – Irish Wildlife Acts (1976-2017), Red Data List (Curtis and McGough 1988), BoCCI Red List – Birds of Conservation Concern in Ireland (Population for which the species is red listed in brackets), AEWA -Agreement on the Conservation of African-Eurasian Migratory Waterbirds [1999].

4.4 Article 17 Habitats

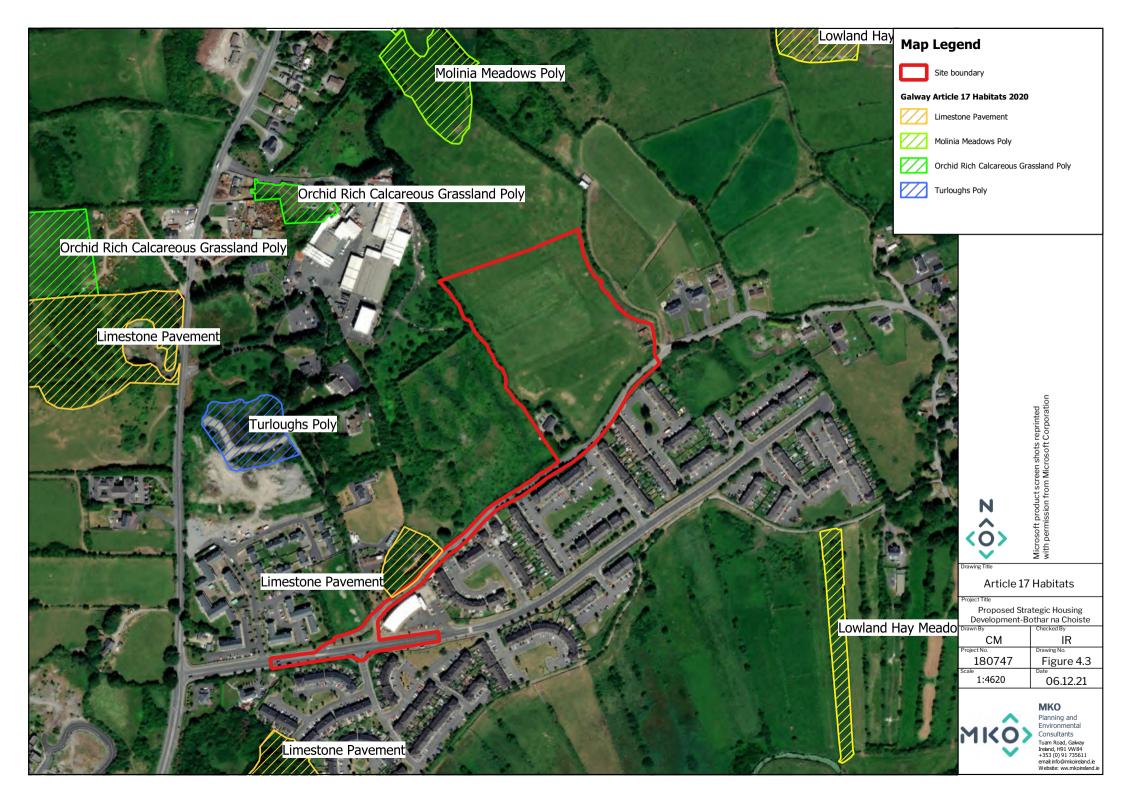
The most recent National Parks and Wildlife Service (NPWS, 2019) data on the recorded distribution of EU Habitats Directive Annex I listed habitats was reviewed in relation to the proposed development site. This data is available in the form of the NPWS (2019) Article 17 reporting, and associated data, on 'The Status of EU Protected Habitats and Species in Ireland' (NPWS, 2019). There were no records for any EU Annex I habitats recorded within the proposed development site.

Several Annex I habitats have been mapped in the wider area of the proposed development site, including Annex I 6510 Lowland Hay Meadow, Annex I 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites), Annex I 8240 limestone pavement, Annex I 3180 Turloughs and Annex I 6410 *Molinia* meadows (Figure 4.3). This habitat mapping was originally carried out as part of the Galway City transport Project (Galway County



Council, 2017). A small area of Limestone pavement occurs adjacent to the local road L5041, which forms part of the red line boundary for this development.

The wetland surrounding Ballindooley Lough has been mapped as Annex I *Molinia* meadows [6410] habitat and lies approximately 150m north (and down gradient) of the proposed development site boundary. Annex I habitat Alkaline Fen [7230] lies on the north-western shoreline of Ballindooley Lough. Ballindooley Lough has been identified as the Annex I habitat Hard water lakes [3180] in ecological surveys carried out as part of the N6 Galway City ring road.





Biodiversity Ireland Database

The National Biodiversity Data centre database was accessed on 31/05/2021 and the following information was obtained.

Table 4-4 lists the protected faunal species (excluding birds and marine species) recorded within the hectad which pertains to the current study area. The database was also searched for records of Third Schedule non-native invasive species within the hectad. Table 4-5 lists the non-native invasive species recorded within the hectad.

Table 4-6 lists all the protected bird species recorded within the hectad which pertains to the current study area.

Table 4-4 NBDC records for protected fauna records (excl. birds) in hectad M32

Table 4-4 NBDC records for protected fauna records (excl. birds) in hectad M32		
Common Name	Scientific Name	Status
Marsh Fritillary	Euphydryas aurinia	HD
Common frog	Rana temporaria	HD, WA
Smooth newt	Lissotriton vulgaris	WA
Common Lizard	Zootoca vivipara	WA
Brown Long-eared Bat	Plecotus auritus	HD, WA
Lesser Horseshoe Bat	Rhinolophus hipposideros	HD, WA
Leisler's bat	Nyctalus leisleri	HD, WA
Soprano pipistrelle	Pipistrellus pygmaeus	HD, WA
Pipistrelle spp.	Pipistrellus pipistrellus sensu lato	HD, WA
Pine marten	Martes martes	HD, WA
Red squirrel	Sciurus vulgaris	WA
Otter	Lutra lutra	HD, WA
Pygmy shrew	Sorex minutus	WA
Badger	Meles meles	WA
Hedgehog	Erinaceus europaeus	WA
Saltmarsh Thread-moss	Bryum salinum	FPO

Annex II, Annex IV, Annex V - Of EU Habitats Directive, WA - Irish Wildlife Acts (1976-2017).



Table 4-5 NBDC records for Invasive species in hectad M32

Common Name	Scientific Name
Wireweed	Sargassum muticum
Canada Goose	Branta canadensis
Himalayan Knotweed	Persicaria wallichii
Japanese Knotweed	Fallopia japonica
Rhododendron	Rhododendron ponticum
Giant Hogweed	Heracleum mantegazzianum
Three-cornered Garlic	Allium triquetrum
American mink	Mustela vison
Brown rat	Rattus norvegicus

Table 4-6 NBDC Records for Birds in hectad M32

Scientific Name	Status
SOLOITAILO I (AII)	Protected EU Birds Directive
Sterna naradisaea	Annex I species
Sterna paracisaca	•
Gavia arctica	
Alcedo atthis	
Sterna hirundo	
~	
Gavia immer	
A H. C C. t. t.	
Anser albitrons liaviostris	
Circus cyaneus	
Circus Giarcas	
Egretta garzetta	
<i>3</i>	
Larus minutus	
Sternula albifrons	
Larus melanocephalus	
Falco columbarius	
E.1	
raico peregrinus	
Gavia stellata	
Ca. It stollett	
Sterna sandvicensis	
	Alcedo atthis Sterna hirundo Gavia immer Anser albifrons flaviostris Circus cyaneus Egretta garzetta Larus minutus Sternula albifrons Larus melanocephalus Falco columbarius Falco peregrinus Gavia stellata



Common Name	Scientific Name	Status
Whooper Swan	Cygnus cygnus	
Corn Crake	Crex crex	Protected EU Birds Directive Annex I Bird Species & Birds of Conservation Concern in
Dunlin	Calidris alpina	Conservation Concern in Britain and Ireland - Red List
European Golden Plover	Pluvialis apricaria	
Bar-Tailed Godwit	Limosa lapponica	P. L. Communication
Razorbill	Alca Torda	Birds of Conservation Concern in Britain and Ireland - Red List
Curlew Sandpiper	Calidris Ferruginea	
Stock Dove	Columba Oenas	
Grey Wagtail	Motacilla Cinerea	
Redwing	Turdus Iliacus	
Yellowhammer	Emberiza citronella	
Barn Owl	Tyto alba	
Common Redshank	Tringa totanus	
Common Scoter	Melanitta nigra	
Eurasian Curlew	Numenius arquata	
Grey Partridge	Perdix perdix	
Northern Lapwing	Vanellus vanellus	
Black-Legged Kittiwake	Rissa tridactyla	
Black-Tailed Godwit	Limosa limosa	
Northern Shoveler	Anas clypeata	
Red Grouse	Lagopus lagopus	
Red Knot	Calidris canutus	
Twite	Carduelis flavirostris	
Eurasian Woodcock	Scolopax rusticola	
Meadow Pipit	Anthus pratensis	
Common Goldeneye	Bucephala clangula	



Common Name	Scientific Name	Status
Common Kestrel	Falco tinnunculus	
Common Snipe	Gallinago gallinago	
Common Swift	Apus apus	
Eurasian Oystercatcher	Haematopus ostralegus	
Greater Scaup	Aythya marila	
Grey Plover	Pluvialis squatarola	
Slavonian Grebe	Podiceps auritus	
Long-Tailed Duck	Clangula hyemalis	

Annex I – Of EU Birds Directive, Red List – Birds of Conservation Concern in Ireland



4.6 Water Quality

The EPA web-mapper (https://gis.epa.ie/EPAMaps/) was consulted on the 14th of April 2021 regarding the water quality and status of waterbodies that are located downstream of the site of the proposed development. Figure 4.1 and Figure 4.2 illustrate the proposed development site in relation to the hydrological catchment and designated sites.

There are no drainage ditches or mapped EPA watercourses within or near the proposed development site. The site is located within the Corrib sub-catchment. The EPA web-mapper (https://gis.epa.ie/EPAMaps/) was consulted regarding the water quality and status of the nearby Lough Corrib (Corrib Lower IE_WE_30_666a). Lough Corrib was assigned 'good' status in the Water Framework Directive monitoring program for the period 2013-2018. Lough Corrib was assessed as 'not at risk' and therefore meets its Water Framework Directive objectives.

The site is located in the Clare Corrib groundwater catchment. The Water Framework Directive (WFD) Groundwater Monitoring Programme (2013-2018) assigned this groundwater catchments as having 'good' status.

Ballindooley Lough lies 400m north-west of the proposed development site. This lake is contained within the Lower Corrib catchment and within hydrometric area 30.

Ballindooley Lough was surveyed as part of the fisheries assessment surveys carried out for the N6 Galway City ring road (Triturus Ecology, 2018). This lough was identified as a valley fen lake and is alkaline in nature, reflected by the macrophyte plant communities present that included common club rush (*Schoenoplectus lacustris*), *Chara* species and alkaline fen vegetation surrounding the lough. the survey noted that Ballindooley lough has expansive beds of *Chara* spp. and *Utricularia* sp. vegetation. The survey noted that Ballindooley Lough is an isolated valley basin lake and not connected to a major river system.

4.7 Fisheries Surveys

Ballindooley Lough was surveyed in September 2015 as part of the fisheries assessment surveys carried out for the N6 Galway City ring road (Triturus Ecology, 2018). A total of four fish species were recorded from Ballindooley Lough during this survey. These included benthivorous tench (*Tinca tinca*), pelagic rudd (*Scardinius erythropthalmus*) and piscivorous perch (*Perca fluviatilis*) and pike (*Esox Lucius*). No salmonids were recorded during the survey. The evaluation noted that good numbers of tench, pike, rudd and perch were recorded indicating the lake is an excellent coarse fishery but is not of importance as a salmonid fishery. The survey found that the lake had very clean water with low levels of human impact.

In 2014 Upper Lough Corrib had a draft fish ecological status 'good' and a species richness of eight with recorded species including bream, brown trout, brown trout (ferox), European eel, perch, pike, roach, roach x bream hybrid, salmon and three-spined stickleback.

In 2011 Lower Lough Corrib had a draft fish ecological status 'moderate' and a species richness of eight with recorded species including bream, brown trout, European eel, perch, pike, roach; roach x bream hybrid, salmon and sea lamprey.

In 2014 Lower Lough Corrib had a draft fish ecological status 'moderate' and a species richness of ten with recorded species including brown trout, European eel, nine-spined stickleback, perch, pike, roach, roach x bream hybrid, rudd, salmon, stone loach and three-spined stickleback.



FIELD STUDY

Habitats Present on the Site and Surrounding Area

A dedicated habitat survey of the proposed development site was undertaken on the 5th of March 2021, with a follow up survey on the 30th of March and the 24th of November 2021. All habitats within the works area were readily identifiable during the site visit. Habitats recorded within the development site are listed in Table 5.1. The habitat classifications and codes correspond to those described in 'A Guide to Habitats in Ireland' (Fossitt, 2000). The habitats recorded during the site visit are described below and a habitat map is provided in Figure 5.1. A habitat map overlayed wit the site layout is available in Figure 5.2.

Table 5-1 Habitats recorded on the proposed development

Habitat	Code
Buildings and Artificial Surfaces	BL3
Amenity Grassland	GA2
Improved Agricultural Grassland	GA1
Ornamental flower beds and borders	BC4
Spoil and bare ground	ED2
Stonewalls and other stonework	BL1
Recolonising bare ground	ED3
Hedgerows	WL1
Treeline	WL2

Improved Agricultural Grassland (GA1) is the dominant habitat within the development site (Plate 5-1). This habitat had a low species diversity and a low sward height, and during the survey was being grazed by cattle. Species recorded in this habitat included abundant perennial rye-grass (Lolium perenne), cock's-foot (Dactylis glomerata), frequent Yorkshire fog (Holcus lanatus), annual meadow grass (Poa annua), creeping buttercup (Ranunculus repens), nettle (Urtica dioica), clovers (Trifolium spp.), dandelion (Taraxacum officinale agg.), broad-leaved dock (Rumex obtusifolius), mouse-ear chickweed (Cerastium fontanum), germander speedwell (Veronica chamaedrys) and ribwort plantain (Plantago lanceolata).

A derelict cottage lies in the south-eastern corner of the proposed development site, surrounded by gravel and classified as *Buildings and Artificial Surfaces (BL3)* (Plate 5-2). The building is constructed from 0.5m thick mortared rubble walls, with a slate roof which is partially collapsed. This building is clad in dense ivy. Two farm outbuildings occur to the rear of the cottage, used for agricultural purposes, and surrounded by *Spoil and bare ground (ED2)*, associated with livestock poaching (Plate 5-3 & 5-4). The outbuildings are constructed from mortared rubble with corrugated metal roofs.

A poached farm track occurs from the access gate in the south-east corner and runs along the eastern boundary of the proposed development. This track is also heavily poached in places and is classified as *spoil and bare ground (ED2)/Recolonising bare ground (ED3)* mosaic (Plate 5-5). Recolonising weeds recorded in this habitat included greater plantain (*Plantago major*), pineappleweed (*Matricaria discoidea*), chickweed (*Cerastium fontanum*), annual meadow grass (*Poa annua*) and bittercress (*Cardamine spp.*).

The western and southern site boundaries are delineated by stonewalls classified as **stonewalls and other stonework (BL1)** and are fringed by **Hedgerows (WL1)**. The eastern site boundary is demarcated by wire and post fence. A hedgerow also occurs outside the eastern site boundary, set back 5m. Species recorded in the hedgerows included bramble (*Rubus fructicosus*), blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), willows (*Salix* spp.), holly (*Ilex aquilifolium*), ivy (*Hedera helix*), ash (*Fraxinus excelsior*) and flowering currant (*Ribes Sanguineum*). Species recorded in



the field margins and hedgerow understory included Yorkshire fog (Holcus lanatus), common bent (Agrostis capillaris), pointed spear-moss (Calliergonella cuspidata), common sorrel (Rumex acetosa), meadow buttercup (Ranunculus acris), strawberry (Fragaria vesca), ribwort plantain (Plantago lanceolata), red fescue (Festuca rubra), dandelion (Taraxacum officinale agg.), primrose (Primula vulgaris), vetch (Vicia spp.), herb Robert (Geranium robertianum), lesser celandine (Ficaria verna), lords and ladies (Arum maculatum), creeping cinquefoil (Potentilla reptans) and harts tongue fern (Asplenium scolopendrium).

The site contains a residential dwelling house within the south-western section of the site, that will be demolished as part of the proposed development and is classified as *Buildings and Artificial Surfaces* (*BL3*). *Amenity Grassland (GA2*), *Ornamental flower beds and borders (BC4*), *Buildings and Artificial Surfaces (BL3*) and a non-native conifer *Treeline (WL2*) habitat surrounds the dwelling house.

The site boundary extends to include the local road to the south, leading to Castlegar Village and is classified as *Buildings and Artificial Surfaces (BL3)* (Plate 5-6). The road is fringed with *Scrub habitat (WS1)* and metal fencing classified as *Buildings and Artificial Surfaces (BL3)* (Plate 5-7). The scrub habitat recorded along the road was primarily dominated by bramble (*Rubus fructicosus*) and bracken (*Pteridium aquilinum*) with individual Hazel (*Corylus Avellana*), blackthorn (*Prunus spinosa*) and hawthorn (*Crataegus monogyna*) also present. Areas of *Amenity Grassland (GA2)* and *Ornamental flower beds and borders (BC4)* occurs along the road margin and in the south-west extent of the site boundary of the site near the village. Species recorded in the amenity grassland included Yorkshire fog (*Holcus lanatus*), annual meadow-grass (*Poa annua*), ribwort plantain (*Plantago lanceolata*), perennial rye-grass (*Lolium perenne*) and daisy (*Bellis perennis*). Species recorded in the flower bed included *Hebe spp.*, gorse (*Ulex europaeus*), ash (*Fraxinus excelsior*), daffodil (*Narcissus* spp.), bramble (*Rubus fructicosus*) and lesser celandine (*Ficaria verna*).

No drainage ditches or watercourses occur within or immediately adjacent to the proposed site. Ballindooley Lough lies 400m north-west (and down gradient) of the proposed development site boundary. The wetland habitats surrounding the lake flood in winter and extend to 150m north of the site boundary (Plate 5-8). The wetland habitat to the south/south-west of the proposed development site have been identified in the Article 17 dataset as Annex I Molinia Meadows and this habitat was flooded during the initial site walkover survey on March 5th, but flood waters had receded by the survey on the 30th of March.

No botanical species protected under the Flora (protection) Order (1999, as amended 2015), listed in the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded on the site and no suitable habitat occurs within the site. All species recorded are common in the Irish landscape.

5.2 Invasive Species

No invasive species were observed within the proposed development site boundary. However, two stands of Japanese knotweed were recorded outside the western boundary of the site (Figure 5.3). Japanese knotweed has an extensive network of rhizomes these may extend to a depth of 3m and laterally up to 7m, therefore the roots of this species may extend to the site boundary.





Plate 5-1 Improved Agricultural Grassland (GA1) within the southern section of the development site, view looking north.



Plate 5-2 A derelict cottage lies in the south-eastern corner of the proposed development site, surrounded by gravel and classified as buildings and artificial surfaces.





Plate 5-3 Sheds occur to the north of the cottage, used for agricultural purposes, and surrounded by Spoil and bare ground (ED2), associated with livestock poaching.



 ${\it Plate~5-4~Spoil~and~bare~ground~(ED2),~associated~with~livestock~poaching,~with~Improved~Agricultural~Grassland~(GA1)~in~the~background.~View~looking~south-west.}$





Plate 5-5 A farm track runs along/partly outside the eastern site boundary of the proposed development, classified as spoil and bare ground (ED2)/Recolonising bare ground (ED3). Hedgerows (WL2) occur set back 5m from the eastern site boundary.



Plate 5-6 The site boundary extends to include the local road to the south classified as Buildings and Artificial Surfaces (BL3).





Plate 5-7. Scrub habitat occurring along the local road



Plate 5-8 Ballindooley Lough lies 400m north-west, and downgradient, of the proposed development site boundary. The surrounding flooded wetland habitat, identified as Annex I Molinia Meadow, lies approximately 150m north of the site boundary.



Annex I habitat Assessment

A review of the NPWS Article 17 Annex I habitat revealed that a very small portion (0.018ha) of the site along the Castlegar road is mapped as Annex I Limestone pavement.

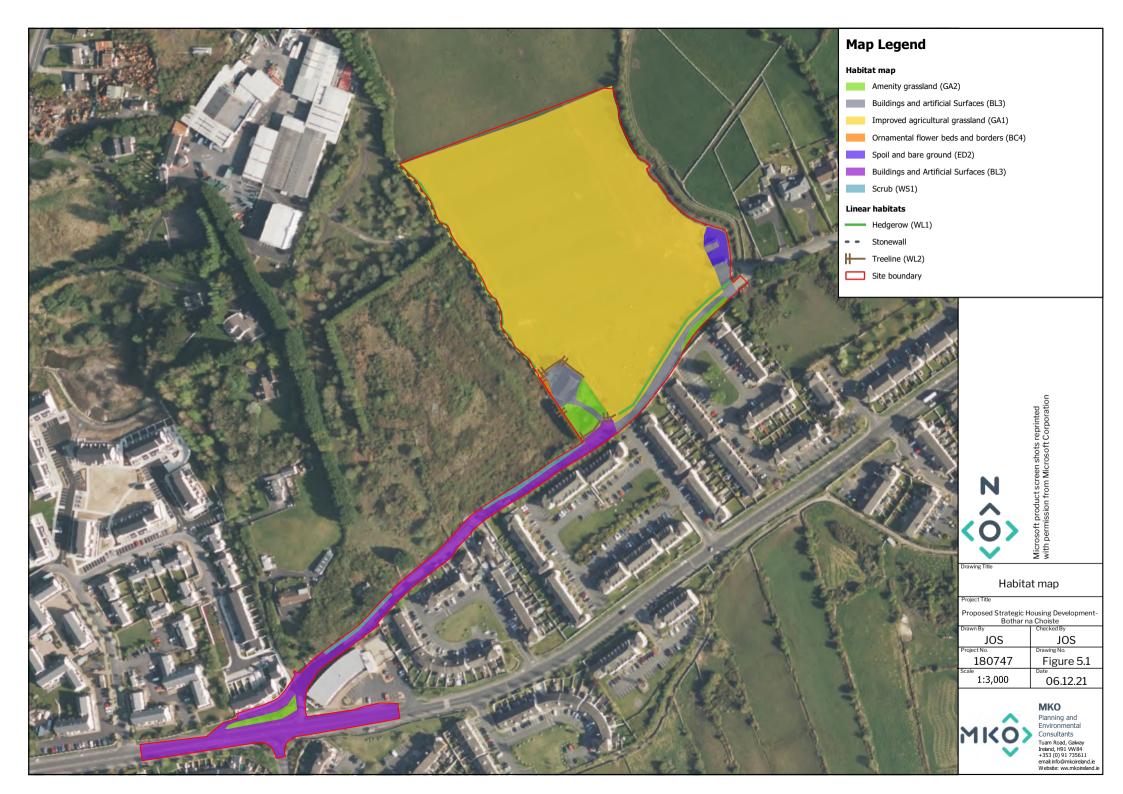
An additional site visit was undertaken on the 19.07.2022 to assess the current condition of this habitat and to investigate if the area conforms to Annex I Limestone pavement. The survey was carried out in line with the guideline set out in Wilson, S. & Fernández, F. (2013) *National survey of limestone pavement and associated habitats in Ireland.*

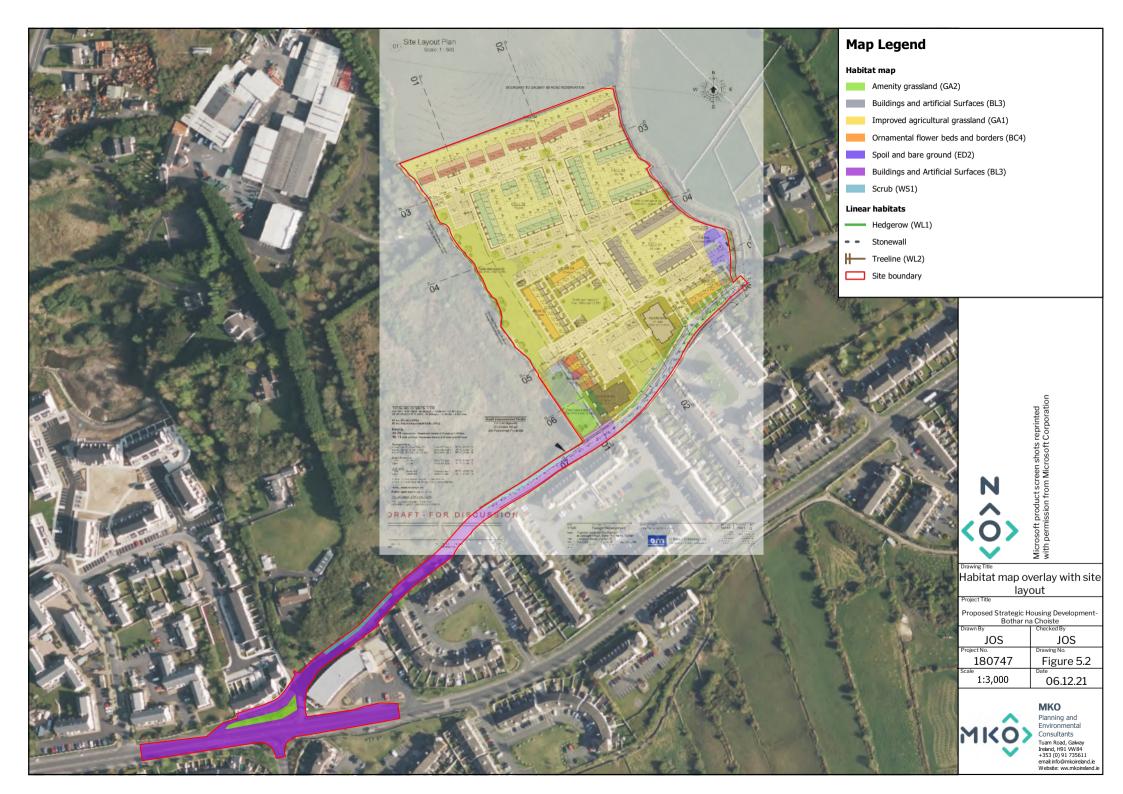
Following the site specifi9c survey, it can be concluded the section of mapped Limestone pavement that occurs within the site boundary does not correspond to Annex I Limestone pavement. The habitat recorded in is dominated by bramble (*Rubus fructicosus*) and bracken (*Pteridium aquilinum*) with individual Hazel (*Corylus Avellana*) and corresponds to **Scrub (WS1)** habitat (See Plate 5-9). No exposed limestone boulders or large rocks were present. The ground flora was low in species diversity and was dominated by Common ivy (*Hedera helix*).

The habitats on site are of low ecological importance. There are no Annex I habitats listed under the EU Habitats Directive present within the site boundary. There will be no impact to Annex I habitats areas within or outside of Lough Corrib SAC and Galway Bay Complex SAC.



Plate 5-9. Location of Scrub habitat along the Castlegar road previously recorded as Annex I Limestone pavement









5.3 Fauna

The walkover survey was designed to detect the presence, or likely presence, of a range of protected species, including birds, bats, otter and badger. Potential suitable habitats were investigated for signs of animal presence. The following subsections provide a breakdown of the species recorded within the proposed development boundary during the site visit and assessment.

5.3.1 **Birds**

5.3.1.1 Wintering Bird Survey

The majority of the bird species recorded within the site boundaries during the site visit were an assemblage of common birds that are typical of the grassland habitats on site and the urban habitats in the wider area. A total of twenty bird species were recorded within or flying over the site during the site visits (Table 5-2). The species recorded on Ballindooley Lough and the surrounding flooded wetland habitats are listed in Table 5-3.

Only three SCI species of Lough Corrib SPA and Inner Galway Bay SPA were recorded utilising the habitats within the development site during the field survey; five Common Gulls (*Larus canus*) and one Black-headed Gull (*Chroicocephalus ridibundus*) were recorded feeding on improved agricultural grassland within the site. A single curlew (*Numenius arquata*) was also recorded feeding within the site during a March 2022 survey.

Cormorant, a listed SCI species of Inner Galway Bay SPA, was recorded on one occasion flying over the proposed development site.

Three SCI species of Inner Galway Bay SPA, teal, grey heron and wigeon and three SCI of Inner Lough Corrib SPA, tufted duck, shoveler and coot, were recorded on Ballindooley Lough and the surrounding flooded wetland habitats during the bird surveys.

Table 5-2 Bird species observed within the proposed development site during the field visit, and current conservation status.

Common Name	Latin Name	Date	Notes	Conservation Status
Robin	Erithacus rubecula	05/03/2021	Heard calling	Green
Starling	Sturnus vulgaris	05/03/2021	Flock recorded feeding on	Green
		29/03/2022	Improved agricultural grassland habitats and flying over	
Hooded Crow	Corvus cornix	05/03/2021	Flying over	Green
		30/03/2021		
Rook	Corvus frugilegus	05/03/2021	Flying over	Green
Magpie	Pica pica	05/03/2021	Flying over	Green
		30/03/2021		
Jackdaw	Corvus	05/03/2021	Flying over	Green
	monedula	30/03/2021		



Common Name	Latin Name	Date	Notes	Conservation Status	
Collared Dove	Streptopelia decaocto	30/03/2021	Heard calling	Green	
Mistle Thrush	Mistle Thrush Turdus		Flock recorded	Green	
	viscivorus	24/11/2021	feeding/roosing on Improved agricultural grassland habitats		
Pied Wagtail	Motacilla alba yarrellii	05/03/2021	Recorded on Improved Agricultural grassland	Green	
	,	24/11/2021	habitat		
Great Tit	Parus major	30/03/2021	Heard calling from hedgerow habitat	Green	
Song Thrush	Turdus philomelos	30/03/2021	Heard singing from hedgerow habitat	Green	
Goldcrest	Regulus regulus	30/03/2021	Heard calling from hedgerow habitat	Amber listed (breeding)	
Chaffinch	Fringilla coelebs	05/03/2021	Heard calling from	Green	
		30/03/2021	hedgerow habitat		
Woodpigeon	Woodpigeon Columba		Recorded on improved	Green	
	palumbus	24/11/2021	agricultural grassland habitat and seem flying		
		15/03/2022	over site.		
		29/03/2022			
Chiffchaff	Phylloscopus collybita	30/03/2021	Heard calling from hedgerow habitat	Green	
Blackbird	Turdus merula	15/03/2022	Seen in hedgerow and	Green	
		29/03/2022	improved grassland habitat		
Wren	Troglodytes	05/03/2021	Heard calling from	Green	
	troglodytes	30/03/2021	hedgerow habitat		
		24/11/2021			
Cormorant	Phalacrocorax carbo	05/03/2021	Flying over, does not land in site.	Amber listed (breeding and wintering). Listed SCI species of Inner Galway Bay SPA.	
Herring Gull	Larus argentatus	05/03/2021	1 Flying over, 1 individual feeding on agricultural grassland	Amber listed (breeding and wintering)	



Common Name	Latin Name	Date	Notes	Conservation Status
		30/03/2021	1 individual roosting on derelict cottage on the site. 2 individuals flying over site	
Common Gull	Larus canus	05/03/2021	5 individuals feeding on improved agricultural grassland within the site.	Amber listed (breeding and wintering). Listed SCI species of Lough Corrib SPA and Inner Galway Bay SPA.
Black-headed Gull	Chroicocephalus ridibundus	24/11/2021	1 individual feeding on improved agricultural grassland within the site.	Red listed (breeding and wintering). Listed SCI species of Lough Corrib SPA and Inner Galway Bay SPA.
Mallard	Anas platyrhynchos	30/03/2021	Flying over the site. does not land in habitats on site.	Amber listed (breeding and wintering)
Curlew	Numenius arquata	29/03/2022	Feeding on improved agricultural grassland within the site.	Red Listed (Breeding and wintering species). Listed as SCI species of Inner Galway Bay SPA.



Table 5-3 Species recorded on Ballindooley Lough and surrounding wetland habitats

Common Name	Latin Name	Date	Notes	Conservation Status	
Mallard	Anas platyrhynchos	05/03/2021	4 individuals feeding on lake	Amber listed (breeding and	
		30/03/2021	1 individual roosting on lake	wintering)	
Shelduck	Tadorna tadorna	05/03/2021	4 individuals feeding on lough	Amber listed (breeding and wintering)	
Teal	Anas crecca	05/03/2021	32 individuals feeding/roosting on lake	Amber listed (breeding and wintering). Listed SCI species of Inner Galway Bay SPA.	
Wigeon	Anas penelope	05/03/2021	2 individuals feeding on lake	Amber listed (breeding and wintering). Listed SCI species of Inner Galway Bay SPA.	
Coot	Fulica atra	05/03/2021	1 individual feeding on lake	Green listed. Listed SCI species of	
		30/03/2021	l individual on middle lake	Lough Corrib SPA.	
		24/11/2021	1 individual feeding on lake		
		15/03/2022	1 individual feeding on lake		
		29/03/2020	3 individuals feeding on lake		
Grey Heron	Ardea cinerea	05/03/2021	1 individual feeding on lake	Green listed. Listed SCI species of Inner Galway Bay SPA.	
Tufted Duck	Aythya fuligula	30/03/2021	10 individuals feeding on lake	Amber listed (breeding and wintering). Listed SCI species of Lough Corrib SPA and Inner Galway Bay SPA.	
Herring Gull	Larus argentatus	30/03/2021	2 individuals roosting on lake	Amber listed (breeding and wintering)	
Great Crested Grebe	Podiceps cristatus	30/03/2021	1 individual roosting on lake	Amber listed (breeding and wintering)	



Common Name	Latin Name	Date	Notes	Conservation Status
Shoveler	Anas clypeata	24/11/2021	7 individuals on middle lake	Red listed (breeding and wintering).
		15/03/2022	3 individuals on middle lake	Listed SCI species of Lough Corrib SPA.
		29/03/2022	5 individuals on middle lake	

5.3.1.2 **Swift Survey**

Swift were not recorded within the proposed development site. No screaming swift parties were recorded within the site or the wider area during the survey.

5.3.1.3 Barn Owl Survey

The nocturnal vantage point survey did not indicate evidence of breeding barn owls and the building was considered 'unoccupied'. An interior inspection of the building was carried out once it was established that the building was unoccupied, to look for evidence indicating barn owl occupancy, Particular attention was paid to the area under suitable cavities, including the chimneys both inside and outside of the building.

No evidence of barn owl occupancy including pellets, white-wash or moulted feathers, was recorded in this building.



5.3.2 **Bats**

5.3.3 **Bat habitat appraisal**

With regard to roosting bats, mature trees were assessed for their suitability to support roosting bats. Trees present on site comprise a mixture of mature and immature hawthorn, blackthorn, elder, willow and ash, all of which had *Negligible* potential roost features. The non-native conifer treeline to southwest of the site was also considered to have *Negligible* potential. Overall trees within the site provide suboptimal habitat for roosting bats and were assessed as having *Negligible* roosting potential i.e. Negligible habitat features on site likely to be used by roosting bats (Collins, 2016). The habitat mosaic of scrub and wet grassland, including the small outcrops of hawthorn trees within the boundary of the site are considered to be of *Negligible* for roosting bats.

Due to the presence of a small number of potential roost features identified in each of the structures, the derelict cottage, two farm outbuildings and occupied dwelling were assessed as having *Moderate* roosting potential i.e. A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (Collins, 2016). However, the derelict cottage and farm outbuildings were in a state of disrepair.

5.3.4 Roost Surveys

5.3.4.1 Derelict cottages and farm buildings

A dedicated roost inspection survey of the derelict cottage and farm outbuilding was undertaken during daylight hours on the 9th September 2020 and 27th July 2021.

The derelict brick cottage had a partially collapsed slate roof and no interior attic space. Multiple potential access points were identified during the survey, including gaps in brickwork, chimney, roof tiles, fascias, open doors and windows, and dense ivy cover. The structure was therefore assessed as having Moderate suitability for roosting bats.

The outbuilding consisted of a stone wall with a partially collapsed galvanised/corrugated roof. There was no lining or soft insulation inside the roof space. The roof space did not provide any suitable roosting features and no evidence of bats or bat use was found during the inspection. There were some potential roost features in the form of gaps and crevices in the stonework. The structure was thus assessed as having Moderate suitability for roosting bats. No evidence of roosting bats was identified in any of the structures during the inspection surveys.

5.3.4.2 Occupied dwelling

A dedicated exterior and interior roost inspection survey was undertaken during daylight hours on 24th August 2021. The occupied dwelling was a single storey bungalow that consisted of block walls with a slate roof. Suitable access points are available through gaps between the slates, soffit, fascia and chimney flashing. The structure was assessed as having "Moderate Suitability" for roosting bats.

No evidence of bat use including droppings, fur oil staining, signs of feeding remain etc. were identified within or surrounding the building. In addition, no bats were observed exiting or entering the building during the dusk activity survey.



5.3.5 **Emergence/Re-entry Surveys**

Emergence and re-entry surveys were carried out in September 2020 and July/August 2021, in accordance with Collins (2016). Two surveyors were equipped with Bat Logger M bat detectors (Elekon AG, Lucerne, Switzerland) for each survey.

Table 5-4. Emergence/Re-entry survey

Date	Survey Type	Structure	Results
16 th September	Dusk	Derelict cottage and	No bats observed emerging from structures. Bats
2020		farm shed	observed commuting and foraging in vicinity.
17 th September	Dawn	Derelict cottage and	No bats observed re-entering the structures.
2020		farm shed	·
27 th July 2021	Dusk	Derelict cottage and	No bats observed emerging from structures. Bats
		farm shed	observed commuting and foraging in vicinity.
10 th August 2021	Dawn	Derelict cottage and	No bats observed re-entering the structures.
		farm shed	
24 th August 2021	Dusk	Occupied dwelling	No bats observed emerging from structure. Bats
			observed commuting and foraging in vicinity.

5.3.6 **Dusk and Dawn Activity Surveys**

5.3.6.1 **2020 Results**

Dusk Survey

In total, 83 bat passes were recorded during the dusk survey. Overall, the level of bat activity was low. The following species were recorded foraging and commuting within the site with activity concentrated along the site boundary:

- Common pipistrelle (n=40)
- > Soprano pipistrelle (n=36)
- Lesser horseshoe bat (n=3)
- Leisler's bat (n=2)
- > Brown long-eared bat (n=2)

Dawn Survey

Overall, the level of bat activity recorded during the dawn survey was low with a total of 7 bat passes recorded. The following species were recorded foraging and commuting within the site:

Soprano pipistrelle (n=7)

Plate 5-8 shows total bat species composition. The survey results are shown on Figure 4-1 in the bat report, found in appendix 4.



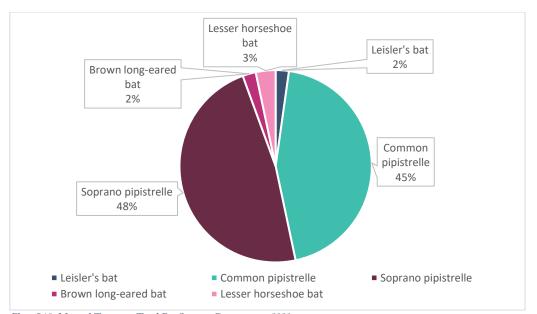


Plate 5-10. Manual Transect: Total Bat Species Composition 2020

5.3.6.2 **2021 Results**

Numerous foraging and commuting bats were recorded during the dusk and dawn bat activity surveys. In total, 307 bat passes were recorded. Activity was dominated by Soprano pipistrelle (Pipistrellus pygmaeus) n=278. This species is common and widespread across Ireland. In addition, very small numbers of lesser horseshoe bat (*Rhinolophus hipposideros*) n=16, brown long-eared bat (*Plecotus auritus*) n=7, common pipistrelle (*Pipistrellus pipistrellus*) n=5 and Myotis sp. n=1 were also recorded. Activity levels were concentrated along the field boundaries and treeline edge habitats bordering the site (Figures 4-2 – 4-4 in the bat report). Plate 5-9 shows total bat species composition and Table 5-5 presents the results per survey. A small number of soprano pipistrelle bats were observed foraging continually within the site which contributed to the higher levels of activity on the final dusk survey. Plate 5-9 shows total bat passes per night.

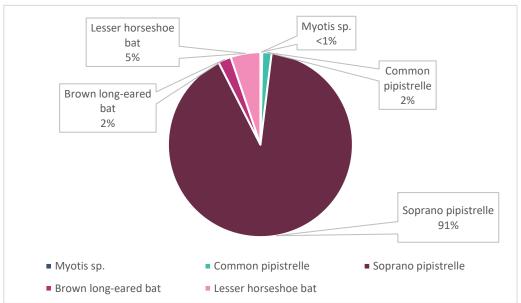


Plate 5-11. Manual Transect: Total Bat Species Composition 2021.



<i>Table 5-5.</i>	Manual'	Transact	Rat Pacc	Roculto	Par Sur	TOTE 2021

Species	Dusk 27 th July	Dawn 10 th August	Dusk 24 th August	Total
Myotis sp.	1	-	-	1
Common pipistrelle	-	-	5	5
Soprano pipistrelle	3	6	269	278
Brown long-eared bat	-	6	1	7
Lesser horseshoe bat	•	-	16	16
Grand Total	4	12	291	307

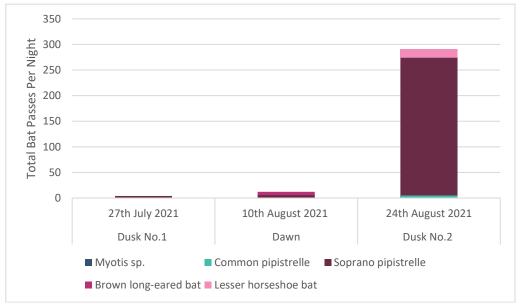


Plate 5-12. Total Bat Passes Per Night 2021

5.3.7 Static Detector Survey Results

5.3.7.1 **2020 Results**

A static detector was placed on site to record bat activity for a total of 9 nights. This detector allowed a specified look into species composition, commuting and foraging activities within the site.

All recordings were later analysed using bat call analysis software Kaleidoscope Pro v.5.1.9 (Wildlife Acoustics, MA, USA). Bat species were identified using established call parameters, to create site-specific custom classifiers. All identified calls were also manually verified. In total 709 bat passes were recorded.

Analysis of the detector recordings positively identified six bats to species level with *Myotis* genus also present. Bat species included: Soprano pipistrelle (*Pipistrellus pygmaeus*) (n=382), lesser horseshoe bat (*Rhinolophus hipposideros*) (n=148) and common pipistrelle (*Pipistrellus pipistrellus*) (n=101). *Myotis* sp. (n=25), Leisler's bat (*Nyctalus leisleri*) (n=23) and Brown long-eared bat (*Plecotus auritus*) (n=22) were less frequent. Nathusius' pipistrelle (*Pipistrellus nathusii*) (n=8) were rarely encountered, with 1% of total bats recorded (Plate 5-11).



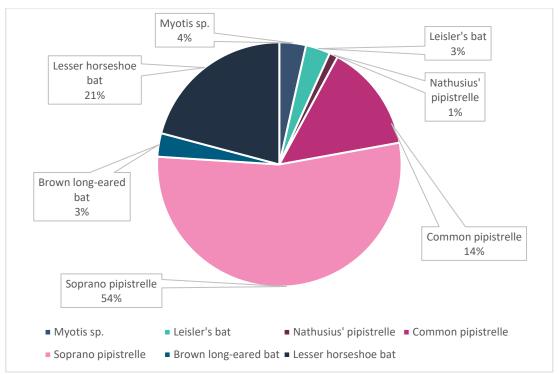


Plate 5-13. Bat Species Composition – 2020.

Analysis of the detector recordings also highlighted the total bat passes per night. Activity varied across each night. The graph demonstrates that soprano pipistrelle bats were most commonly recorded during the survey periods followed by lesser horseshoe bat and common pipistrelle. Plate 5-12 shows species composition per night.

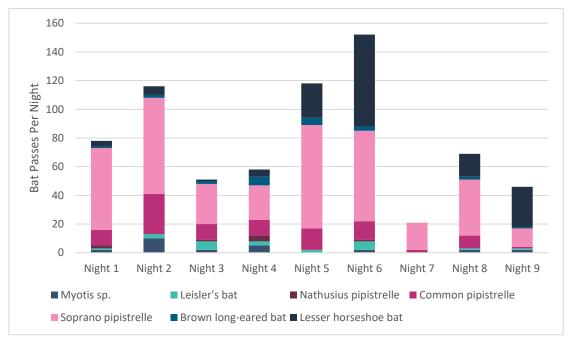


Plate 5-14. Total Bat Passes Per Night



5.3.7.2 **2021 Results**

Two static detectors, were deployed on the site at four different locations (Figure 3-4 in the bat report), based on likely areas of bat activity, for a total of 28 nights. The locations of the statics were changed after the first two weeks to give a more comprehensive assessment of how bats are using the site and where most of the bat activity is occurring. These detectors allowed a specified look into species composition, commuting and foraging activities within the site.

All recordings were later analysed using bat call analysis software Kaleidoscope Pro v.5.4.2 (Wildlife Acoustics, MA, USA). Bat species were identified using established call parameters, to create site-specific custom classifiers. All identified calls were also manually verified. In total 4,704 bat passes were recorded.

Analysis of the detector recordings positively identified six bats to species level with Myotis genus also present. Bat species included: Soprano pipistrelle (*Pipistrellus pygmaeus*) (n=2,960), common pipistrelle (*Pipistrellus pipistrellus*) (n=1,281) and Leisler's bat (*Nyctalus leisleri*) (n=349). Myotis sp. (n=65), brown long-eared bat (*Plecotus auritus*) (n=20), lesser horseshoe bat (*Rhinolophus hipposideros*) (n=15) and Nathusius' pipistrelle (*Pipistrellus nathusii*) (n=14) were rarely encountered, with 1% or less of total bats recorded (Plate-5-13).

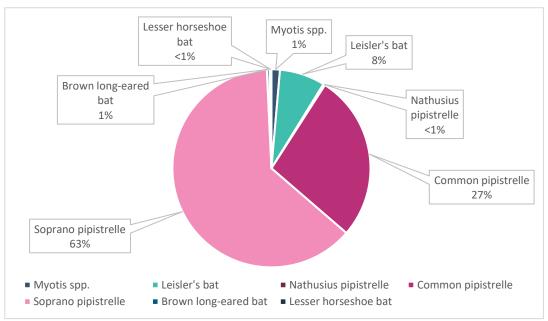


Plate 5-15. Static Detector Bat Species Composition 2021.

Plate 5-14 shows total bat passes per detector. Detector D01 was located along the western site boundary adjacent to a mature hedgerow/treeline. Detector D02 was located beside the farm outbuilding to the east of the site. Detector D03 was located along the southern boundary of the site near an area of scrub and stone wall, next to the main road. Detector D04 was located near the northeastern boundary of the site.



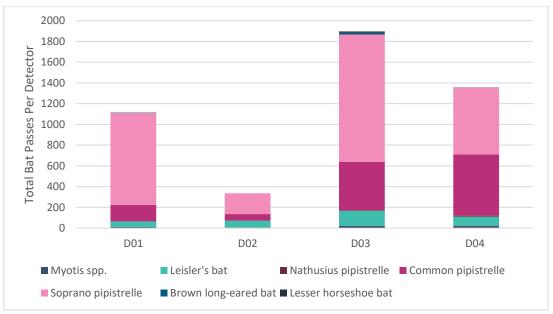


Plate 5-16. Total Bat Passes Per Detector 2021

Analysis of the detector recordings also highlighted the total bat passes per night. Species composition per night is shown in Plate 5-15. Nights 1-14 are associated with the first deployment locations D01 and D02. Nights 15-28 include bat passes from the second deployment location D03 and D04. Activity varied across each deployment and each night. The graph demonstrates that soprano pipistrelle bats were most commonly recorded during the survey periods followed by common pipistrelle and Leisler's bat. These species are common and widespread across Ireland.

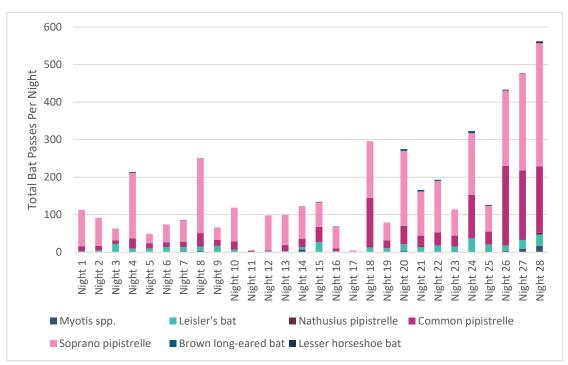


Plate 5-17. Total Bat Passes per Night 2021



5.3.8 Other Fauna

The site was searched for signs of badger (*Meles meles*) during the walk over survey. The badger survey was carried out in line with the TII/NRA (2009) guidelines (*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*). This involved a search for all potential badger signs as per NRA (2009) (latrines, badger paths and setts). No evidence of badger was recorded, including latrines, snuffle holes or prints and no badger setts were recorded within the development site boundary.

There are no watercourses or drainage diches within the proposed development site, therefore the site does not offer suitable supporting habitat for Otter.

The desk study indicates that Marsh fritillary (*Euphydryas aurinia*) has previously been recorded in the hectad in which the site is located. Devils bit scabious (*Succisa pratensis*), the food plant of the marsh fritillary, was not recorded within the site during the field survey, and there is no suitable habitat for this species within the site.

No evidence of other species such as Irish hare, pygmy shrew and Irish stoat protected species under the Irish Wildlife Act 1976-2018, were recorded during the site visit but these species are likely to occur in the wider area, at least on occasion. A fox was recorded in improved agricultural grassland habitat o the north of the site during the field survey in March. However, these species have widespread and favourable ranges in Ireland and suitable habitats are widespread in the area. No suitable habitat for other taxa protected under the EU Habitats Directive, or other invertebrate species of conservation concern was identified within the boundaries of the proposed development site.

5.3.1 Importance of Ecological Receptors

Table 5.1. lists all identified receptors and assigns them an ecological importance in accordance with the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009). This table also provides the rationale for this determination and identifies the habitats that are Key Ecological Receptors.

Table 5.1. Importance of Ecological Receptors

Ecological Receptors and Geographic Importance	KER	Rationale
	Y/N	
Habitats		
Local Importance (higher value) habitats: Hedgerow (WL1) Treeline (WL2) Scrub (WS1)	Yes	These habitats are classified as of Local Importance (higher value) as they provide cover and commuting corridors for a variety of local flora and fauna. These habitats are considered a KER.
 Local Importance (Lower value) habitats: Buildings and Artificial Surfaces BL3 Amenity Grassland GA2 Improved Agricultural Grassland GA1 Ornamental flower beds and borders BC4 Spoil and bare ground ED2 	No	These habitats are classified as of Local Importance (Lower value) as they have low biodiversity value and are common and widespread in the region and are highly modified, managed habitats with a low biodiversity value. These habitats are not considered a KER.



Ecological Receptors and Geographic Importance	KER Y/N	Rationale
Stonewalls and other stonework	1/11	
(BL1) Recolonising Bare Ground ED3		
Faunal Species		
Local Importance (Higher value) Bats	Yes	Based on the information identified within the desk study, the assessment of the habitats and features on site during the site visit, and the results of the bat survey, bat species have been identified as of <i>Local Importance (Higher value)</i> . The treelines and hedgerows habitats within and adjacent to the proposed development may be used by commuting and foraging bats as they provide connectivity with the wider landscape. Roosting bats have also been identified in close proximity to the proposed development site. It is likely that these bats utilise the site for commuting
		and foraging. Bats of <i>Local importance (Higher value)</i> are included as a KER.
Local Importance (Higher value) Birds	Yes	The site was utilised by a bird population of <i>Local importance (higher value)</i> . The species assemblage was typical of the grassland and hedgerow habitats on site. SCI species are not dependent on the site for foraging, breeding or roosting. The winter bird survey results 2021/2022 indicate
		that there will be no potential for loss of supporting habitat or displacement for SCI species for which the Inner Galway Bay SPA and Lough Corrib SPA are designated for.
		Birds of Local importance (Higher value) are included as a KER.
Local Importance (Higher value) Invasive species	Yes	Two stands of Japanese knotweed were recorded outside the western boundary of the site. Although the stands were recorded outside the site boundary, Japanese knotweed has an extensive network of rhizomes these may extend to a depth of 3m and laterally up to 7m, therefore, taking an extremely cautious approach, the roots of the stands may extend to the site boundary.
		In the absence of best practice/mitigation this species may spread into the wider environment and is considered a KER.



Ecological Receptors and Geographic Importance	KER	Rationale
Designated Sites	Y/N	
International Importance	Yes	The proposed development site is 1.7km from the SAC.
Galway Bay Complex SAC		Taking a precautionary approach, a potential pathway for indirect effects on Galway Bay Complex SAC was identified in the form of deterioration of water quality resulting from pollution, associated with the construction and operational phases of the development.
		As such, Galway Bay Complex SAC is included as a KER.
International Importance	Yes	The proposed development site is 1.7km from the SAC.
Inner Galway Bay SPA		Taking a precautionary approach, a potential pathway for indirect effects on the marine/surface water dependent SCIs, including supporting wetland habitat [A999] for SCI bird species, was identified in the form of deterioration of water quality resulting from pollution associated with the construction and operational phases of the development. The construction and operational phase of the of the proposed development may also result in disturbance related effects on the SCI species listed of Inner Galway Bay SPA in the absence of mitigation.
		As such, Inner Galway Bay SPA is included as KER.
International Importance	Yes	The proposed development site is 703 meters from the SAC.
Lough Corrib SAC		Taking a precautionary approach, a potential pathway for indirect effects on Lough Corrib SAC was identified in the form of deterioration of water quality resulting from pollution, associated with the construction and operational phases of the development.
		As such, Lough Corrib SAC is included as a KER.
International Importance Lough Corrib SPA	Yes	The proposed development site is 93 meters from the SAC.
		Taking a precautionary approach, a potential pathway for indirect effects on the marine/surface water dependent SCIs, including supporting wetland habitat [A999] for SCI bird species, was identified in the form of deterioration of water quality resulting from pollution associated with the construction and operational phases of the development. The construction and operational phase of the of the



Ecological Receptors and Geographic Importance	KER Y/N	Rationale
		proposed development may also result in disturbance related effects on the SCI species listed of Lough Corrib SPA in the absence of mitigation. As such, Lough Corrib SPA is included as KER.



ECOLOGICAL IMPACT ASSESSMENT

Do Nothing Impact

If the proposed development were not to go ahead, it is likely that the development site would remain as it is in its current form, with the improved agricultural grassland continuing to be managed for agricultural purposed and grazed by livestock and the existing residential dwelling house continuing to be occupied. The development site may be subject to other development proposals.

6.2 Impacts During Construction Phase

6.2.1 Habitat loss

Habitats of Local Importance (Lower value)

Habitats of Local Importance (Lower value) that will be permanently lost to the footprint of the development include 3.6ha of Improved Agricultural Grassland (GA1) and 0.04ha of Spoil and bare ground (ED2)/Recolonising bare ground (ED3).

Loss of these habitats to the footprint of the proposal is not considered to be significant at any geographic scale. These habitats are common and widespread in the locality and have a low biodiversity value. The loss of these habitats is considered not significant and therefore no mitigation is required.

There will be no net loss of Amenity Grassland (GA2) and Ornamental flower beds and borders (BC4), as these habitats have been incorporated into the landscape management plan and will be incorporated into the final development.

Habitats of Local Importance (Higher value)

The proposed development has been designed to retain and protect as much native hedgerow as possible within the site. However, approx.130m of species poor Hedgerow (WL1) along the southern site boundary will be lost within the footprint of the development. This hedgerow is very gappy in nature and dominated by bramble. The permanent loss of 130m of hedgerow is a moderate effect in its own right as it comprises only 41% of the native hedgerow habitat within the site. This is not significant at a county, national or international scale as it will not affect the conservation status of this habitat, which is widespread and common in the wider area outside the site.

The widening of the Castlegar road will result in the loss of approx. 0.053ha of Scrub (WS1). This habitat is dominated by bracken and bramble with low species diversity. The loss of 0.053ha of scrub represent only an 8% loss of the 0.38ha of scrub habitat present in this area. The loss of this scrub would constitute imperceptible effect.

In addition, there will be a loss of 129m of non-native conifer Treeline (WL2) habitat, that fringes the existing dwelling house in the south-west corner of the proposed development site. This non-native treeline is comprised of *Leylandii cypruss* species and has a low biodiversity value.

The loss of 129m of non-native conifer Treeline (WL2) habitat would constitute an imperceptible effect. The loss of this habitat is not significant at a county, national or international scale as it will not affect the conservation status of this habitat, which is widespread and common in the wider area outside the site. Whilst this treeline has a low intrinsic biodiversity value, it nevertheless provides some value as cover and commuting corridors for a variety of local flora and fauna.



Mitigation/Best Practice

A landscaping plan has been prepared for the proposed development and a drawing of the plan is included in Appendix 3 of this report.

The existing native hawthom hedgerow along the western site boundary, and within 5m of the eastern site boundary will be retained and protected during the construction works by protective fencing (barriers) as indicated on the landscaping report accompanying this application. No excavation, plant or vehicle movement, materials handling or soil storage is to be permitted within the fenced tree protection areas indicated on plan.

The hedgerow along the western site boundary will be retained and enhanced with native hedgerow along the western site boundary. An amenity area will be created along this western site boundary and will include large native tree species such as Oak, Alder and White willow which will be interplanted with medium native tree species including White beam, downy birch and goat willow. New sections of hedgerow will also be created along the eastern and southern sections of the site, increasing the ecological connectivity to the wider landscape.

This amenity area will include intermittent mown grass areas set within wildflower meadow grass using pollinator friendly species as recommended by the All-Ireland Pollinator Plan. This wildflower meadow area will be subject to a low frequency mowing regime.

Native trees will be planted throughout the amenity area as well as pollinator wildflower meadow species.

A pollinator friendly native orchard garden will be created in the western section of the site, providing feeding and nesting habitat for local pollinator species.

Species used for landscaping within the development have been chosen for their value as pollinators, which will enhance the biodiversity value of the completed development. The planting scheme will incorporate native wildflower pollinator-friendly plants as recommended by the 'All-Ireland Pollinator Plan' (2015 - 2020).

The planting of native species will benefit local wildlife by providing additional feeding and breeding habitat. Species such as oak, rowan and native fruit trees will provide berries/fruit that will support a wide variety of wintering birds and small mammals. The use of native species and pollinators within the landscape plan will enhance the overall biodiversity value of the completed development.

The loss of scrub habitat along the Castlegar road to facilitate the road widening represent only a small fraction (8%) of the total scrub habitat present in this area.

Prior to the commencement of any clearance works, a defined works area will be outlined. This will ensure the clearance works do not extend beyond the required 2.8m and the scrub habitat located behind this area is protected. Following the clearance works, linear scrub habitat will remain along the Cstlegar road and habitat connectivity will be retained.

Any vegetation clearance will be conducted in accordance with the provisions of the Wildlife Act 1976-2017.

The planting and hedgerow enhancement scheme outlined in the landscape management plan will mitigate for the loss of 130m native hedgerow and 0.053ha of scrub within the site and will enhance the overall tree and hedgerow cover of the proposed development site.



Residual Effect

No significant effect

6.2.2 Fauna – Disturbance/habitat loss

6.2.2.1 Non-volant Mammals

The construction phase of the proposal has the potential for some localised disturbance to local faunal species. However, no significant faunal species or signs of significant mammal activity were recorded within or immediately adjacent to the proposal during the site visit.

The proposed development site is located in close proximity to the busy roads, existing residential housing developments and an industrial estate. Local faunal species are therefore likely to be habituated to anthropogenic activity in the wider area. Impacts on fauna as a result of disturbance during the construction phase are not considered to be significant at any geographic scale.

Best practice measures

- All works will be completed during daylight hours and there will be no requirement for artificial lighting at any stage of the proposed construction works. This will avoid any potential impacts on crepuscular or nocturnal species, including bat species.
- Hoarding will be placed around the construction site. This will screen the site and minimise any disturbance impacts on fauna in the wider surroundings.

Residual Effect

No significant effect

6.2.2.2 Bat species – habitat loss

6.2.2.2.1 Loss of Roosting Habitat

Although no evidence of roosting bats was identified in the structures surveyed within the site, the structures were assessed as having *Moderate suitability* for roosting bats due to the presence of potential roost features.

Following the precautionary principle, the demolition of the derelict cottage, adjacent farm outbuilding and occupied dwelling have the potential to result in direct loss of potential roosting habitat and the potential for bat mortality.

No evidence of roosting bats was identified in trees within the site, and no trees were identified as having roosting potential for bats. No loss of roosting habitat or bat mortality is anticipated as a result of tree felling.

The construction of the proposed development has the potential to result in a Long-Term Slight Negative effect on the local bat populations in the form of habitat loss, disturbance or direct mortality.

Structures proposed for demolition



No evidence of bats was identified within the derelict cottage, farm outbuilding or occupied dwelling and no bats were observed emerging or re-entering the structures on any of the surveys. On a precautionary basis, prior to demolition, the buildings must be re-examined by a licensed ecologist, for the presence of bats.

- A pre-construction bat survey will be undertaken by a licensed ecologist prior to any works, to ensure roosting bats have not occupied the structures. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the survey in 2020 and 2021.
- > Should bats be identified within the structures, a bat derogation licence must be obtained from the NPWS prior to any demolition works.
- Alternative roost sites will be provided for potential roosting bats. Bat boxes will be erected on mature trees within the survey area following best practice guidelines (Kelleher & Marnell 2006, NRA 2006). A minimum of two bat boxes are recommended for installation prior to any works commencing. Schwegler 1FF woodcrete bat boxes are recommended. Bat boxes will have a southerly orientation and be positioned at least 2m from the ground, away from artificial lighting. They will be placed adjacent to vegetation features such as treelines and hedgerows to ensure they are close to existing flight paths and can avoid wide open spaces (Collins, 2016). Final bat box locations will be decided by a licenced ecologist on completion of the pre-commencement survey

Residual effect

With the implementation of the prescribed best practice measures, no significant effects are predicted.

6.2.2.2.2 Loss of Foraging and Commuting Habitat

The proposed development has been designed to avoid the majority of the mature trees and treelines/hedgerows on site and maintain landscape connectivity. There will be no loss of mature linear treeline or hedgerow, however the proposed development will result in the loss of a small number of individual trees and scrub habitat along the southern site boundary which are occasionally used by commuting and foraging bats. The proposed development will also result in the loss of a small amount of scrub along the Castlegar road to facilitate road widening works. However, this only represent a small fraction of the total scrub present and linear habitat along this road will be retained. Additional tree and hedgerow planting is also proposed throughout the main development site.

The impact of the proposed development is considered slight as the majority of linear features will be retained or replanted/enhanced, providing continued habitat connectivity.

The loss of linear habitat features would constitute a medium-term slight effect on commuting and foraging bats. While the trees individually are of limited biodiversity value, collectively they contribute to ecological and habitat connectivity throughout the site and with the wider area. The magnitude of this impact is Slight at the local scale given the small number affected.

This is a slight effect on a receptor of *Local Importance (Higher Value)*. The loss of a small number of trees within the site is not significant at a county, national or international scale.

Mitigation

- A landscape plan has been prepared for the proposed development which allows for the retention of the majority of trees within the site and which provides for additional planting.
- The hedgerow along the western site boundary will be retained and enhanced with native hedgerow along the western site boundary. An amenity area will be created along this western site boundary and will include large native tree species such as Oak, Alder and White willow which



- will be interplanted with medium native tree species including White beam, downy birch and goat willow. New sections of hedgerow will also be created along the eastern and southern sections of the site, increasing the ecological connectivity to the wider landscape.
- A formal green open space is proposed near the centre of the site which will include feature tree and ornamental shrub planting.
- A communal garden space is proposed for the eastern boundary of the proposed development site and will consist of fruit trees and pollinator friendly tree species.

Habitat connectivity around the site is retained and there will be no net loss of linear landscape features for commuting and foraging bats.

Residual effect

With the implementation of the prescribed mitigation measures, no significant effects are predicted.

6.2.2.3 **Birds**

6.2.2.3.1 Disturbance/displacement

Ballindooley Lough and its surrounding wetland habitats may support some wintering bird species listed as Special Conservation Interests (SCIs) of Inner Galway Bay SPA and Lough Corrib SPA (which may be linked to the SPA populations).

Only three SCI species of Inner Galway Bay SPA (Five Common Gull, one Black-headed gull and one Curlew) were recorded utilise the agricultural grassland habitat within the site throughout the 2021 and 2022 surveys. Agricultural grassland habitat is widespread and abundant in the areas surrounding the site of the proposed development and only five Common Gull, one Black-headed gull and one Curlew were recorded feeding here. Therefore, these species are not in anyway dependant on the site and the loss of this habitat within the development site would not significantly effect the conservation objects of Common gull, Black-headed gull or Curlew, listed as an Special Conservation Interests of Inner Galway Bay SPA. Furthermore, the SPA is located over 1.9km from the development site extensively buffered from the development site by grasslands and residential dwellings

The proposed development site is set back 400m from Ballindooley Lough (and 150m from the flooded surroundings) and is buffered from the shoreline by agricultural land. The northern section of the proposed development site is visible from the western section of the wetlands surrounding Ballindooley Lough, which may be utilised by wintering birds. The potential for disturbance due to an increase in anthropogenic activity in the wider area was also considered. Ballindooley Lough is located adjacent to the N84, therefore any SCI species utilising Ballindooley Lough are likely to be habituated to some degree of general visual and/or noise stimuli in the area. There will be no works or works access undertaken within 150m of the intertidal habitat. All works will be confined to the footprint of the proposed development and there will be no access to the lake shore or the surrounding wetland habitats.

Based on the results of the wintering birds survey carried out over 2021 and 2022, it can be concluded that there will be no significant effect on the conservation objectives of the SCIs of Lough Corrib SPA and Inner Galway Bay SPA as a result of the proposed development. Given the low number of species recorded and the lack of significant bird assemblages recorded within or adjacent to the site, significant impacts as a result of disturbance or displacement are not anticipated on bird species at any geographic scale.

Best practice



The following best practice disturbance limitation measures will be adhered to during the construction phase:

- All plant and equipment for use will comply with Statutory Instrument No 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996".
- > Plant machinery will be turned off when not in use.
- Operating machinery will be restricted to the proposed development site area.
- Construction works will be limited to daylight hours and artificial lighting to facilitate works will not be permitted.
- All works will be confined will be confined to the site footprint and there will be no access to Ballindooley Lough

Vegetation clearance will be undertaken outside of the nesting bird season. The protection of bird breeding habitats during the breeding season (1st March to 31st August, inclusive), is set out in the Wildlife Acts (As Amended), 1976-2017. If there is a requirement to clear vegetation during the nesting bird season, standard best practice measures will be followed, with a nesting bird survey undertaken by a suitably qualified ecologist.

The loss of potential bird nesting habitat will be mitigated with additional tree planting as outlined in section 6.2.1. Existing hedgerows within the site will be interplanted and enhanced with native tree species. The landscaping planting scheme includes the planting of individual native trees in the amenity green space throughout the site. The interplanting with native tree species will significantly enhance hedgerows and provide additional nesting habitat for birds.

Residual Effect

No significant effect.

6.2.3 Spread of Invasive Species

Significant effect

Two stands of Japanese knotweed were recorded outside the western boundary of the site. Although the stands were recorded outside the site boundary, Japanese knotweed has an extensive network of rhizomes and these may extend to a depth of 3m and laterally up to 7m, therefore the roots of this species may extend to the site boundary.

In the absence of best practice/mitigation this species may spread into the wider environment during construction works as a result of soil exaction.

Mitigation

In order to prevent the spread of Japanese knotweed, the following biosecurity measures will be adhered to during the construction of the primary outfall pipe:

- Prior to the commencement of works, a pre-construction invasive species survey should be carried out to identify if any Japanese knotweed has encroached into the site
- Any section of the proposed development site within seven metres of the identified infestation of Japanese knotweed will be fenced off and identified as a biosecure area.
- All works within this area will be subject to strict biosecurity protocols
- Any machinery, personnel and equipment that enter the biosecure area will be brushed down prior to them exiting the area to ensure that no contaminated material is spread to areas outside the biosecure area.



Any excavation of soil required within the biosecure area will need to be supervised by a suitably qualified professional to ensure the soil is not contaminated with fragments of Japanese knotweed.

6.2.4 Impacts on Water Quality

The construction phase of the development will involve earth moving and levelling operations which create the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the refuelling of excavation machinery.

Although no watercourses were identified on-site, the construction phase of the proposed development may result in pollution to groundwaters via the percolation of polluting materials through the limestone bedrock underlying the site. Taking a precautionary approach, the works have potential, in the absence of mitigation, to impact on groundwater quality through pollutants including hydrocarbons, fuel, cement and sedimentation.

Mitigation

Standard best practice environmental control measures have been incorporated in the design of the development and the pathway that would allow potential impacts to occur was considered in the design of the project. Section 2.4 of this report sets out the environmental management framework to be adhered to during the proposed construction phase of the development and it incorporates the mitigating principles to ensure no adverse impact on water quality.

Section 2.3 includes comprehensive detail regarding site set up, pollution prevention, hydrocarbon management, construction monitoring and biosecurity. No adverse residual impacts on water quality during construction are anticipated following the implementation of the measures and best practice described in the section 2.3 and 2.4 of this report.

Residual Effect

No significant effect.



Impacts During the Operational Phase

6.3.1 Change of habitat use

There will be no additional habitat loss associated with the operational phase of the proposed development. No direct or indirect impacts on adjacent habitats are considered likely as a result of the operational phase of the proposed development. The proposal therefore will not have a significant impact at any geographic scale.

6.3.2 Disturbance to faunal species

Given the absence of significant faunal species occurring within the proposal footprint, no significant direct or indirect impacts on faunal species are considered likely as a result of the operational phase of the proposed development. The proposal therefore will not have a significant impact at any geographic scale.

Local faunal species are likely to be habituated to anthropogenic activity in the area, given the developments close proximity to busy roads, residential housing developments and an industrial estate nearby. Impacts on fauna as a result of disturbance during the operational phase are not considered to be significant at any geographic scale.

6.3.2.1 **Bats**

Operation of the proposed development will result in increased human activity, noise and lighting within the proposed development site. Therefore, the potential for disturbance to bats requires consideration.

However, the proposed development is bordered by existing residential and commercial developments to the south and northwest as well as busy local roads. It is likely that bat species in the area are accustomed to some levels of disturbance.

In the absence of appropriate design, the proposed development has the potential to disturb bats by illumination of commuting and foraging areas. This is assessed as a long-term slight effect on a receptor of Local Importance (Higher Value).

Mitigation

Where lighting is unavoidable during construction, low-intensity lighting and motion sensors will be used to limit illumination.

The lighting plan for the operational phase of the proposed development, has been designed with consideration of the following guidelines: Bat Conservation Ireland (Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers, BCI, 2010) and the Bat Conservation Trust (Guidance Note 08/18 Bats and Artificial Lighting in the UK (BCT, 2018), Dark Sky Ireland, to minimise light spillage, thus reducing any potential disturbance to bats.



The proposed light fitting/scheme has been designed to help mitigate the effect of the artificial lighting on the local bat populations by incorporating:

- Warm White LED (2700K) light source less attractive to insects, and a good light source to enable directional luminaires.
- Internal Louvres to reduce light spill and eliminate upward light.
- Lowest possible design illuminance levels considering the nature of the site and 6m mounting height.
- Lamps have also been specified with 0 Degree tilt (where possible) to ensure limited unwanted light spill. The fittings will be angled no greater than 5 degrees to further reduce light spill.
- > The public lighting has been designed for pathways and roads to a Lighting class of P2 and P3 as per IS EN 13201/BS5489. A lighting control regime is proposed to reduce illuminance during hours of lower human activity (i.e. 12:00am 6:00am) Public Lighting Profile 2A. This can be switched to Public Lighting Profile 4D, where necessary, to further reduce lux levels during periods of peak bat activity (i.e. 30mins after sunset and 40 minutes before sunrise).

Residual effect

With the implementation of the prescribed mitigation measures, no significant effects are predicted.

6.3.2.2 **Birds**

Only three SCI species of Inner Galway Bay SPA (Five Common Gull, one Black-headed gull and one Curlew) were recorded utilise the agricultural grassland habitat within the site throughout the 2021 and 2022 surveys. The development site is extensively buffered from Inner Galway Bay SPA and Lough Corrib SPA by residential development, regional and national roads and agricultural grasslands. The proposed development will not provide any additional connectivity to either SPAs. The NIS submitted as part of the planning application fully assesses the potential for disturbance and displacement of SCI bird species associated with Inner Galway Bay SPA. No potential for disturbance effects on the SCI bird species for Inner Galway Bay SPA and Lough Corrib SPA during the operational stage of the development was identified.

6.3.3 Impacts on water quality during the operational phase

The operational phase of the proposed project will result in the production of foul sewage and surface water runoff. Although no watercourses were identified on-site, the operational phase of the proposed development may result in pollution to groundwaters via the percolation of polluting materials through the limestone bedrock underlying the site. Taking a precautionary approach, the works have potential, in the absence of mitigation, to impact on groundwater quality.

Mitigation

Standard best practice environmental control measures have been incorporated in the design of the development and are outlined in section 2.3 of this report. All identified potential pathways for impact



on water quality are robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within section 2.3 of this report.

Residual effect

Indirect effects during the operational stage of the development are not anticipated. The proposed development will connect to the existing public surface water network and foul sewer.

6.3.4 Impacts on Designated Sites

6.3.4.1 Impacts on European Sites

Although no watercourses were identified on-site, the construction and operational phase of the proposed development may result in pollution to groundwaters via the percolation of polluting materials through the limestone bedrock underlying the site. Groundwater flows are generally to the west and southwest in the area. Pollution of groundwater may result in adverse impacts the downstream aquatic or groundwater influenced QI/SCI habitats and species of Galway Bay Complex SAC, Inner Galway Bay SPA, Lough Corrib SAC and Lough Corrib SPA in the absence of mitigation.

Mitigation

The potential for the proposed works to result in indirect effects on these designated sites as a result of deterioration in groundwater or surface water quality during the construction and operational phase of the development was considered.

Mitigation

Standard best practice environmental control measures have been incorporated in the design of the development and are outlined in section 2.3 and 2.4 of this report. All identified potential pathways for impact on water quality are robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within section 2.3 and 2.4 of this report.

Potential indirect impacts on European Designated sites (SACs and SPAs) are assessed within a separate Natura Impact Statement. This Natura Impact Statement objectively concluded that the proposal will not have any adverse effects on the Conservation Objectives or ecological integrity of any European site.

The NIS report concludes that:

"Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction, operation of the proposed development does not adversely affect the integrity of European sites.

Therefore, it can be objectively concluded that the proposed development, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site".

Residual Effect

No significant effect.



6.3.5 Impacts on Nationally Designated Sites

Impacts on nationally designated sites including NHAs and pNHAs and Ramsar sites are considered in this section of the report. No NHAs were identified as being in the likely zone of impact in the desk study. The nationally designated site Galway Bay pNHA was also identified as being vulnerable to pollution as a result of the proposed development.

A potential pathway for indirect effect was identified in the form of pollution of groundwater via the percolation of polluting materials through the limestone bedrock underlying the site, associated with the construction and operational phases of the development.

Mitigation

The potential pathway for effect during the construction phase is blocked via the mitigation outlined in section 2.3 above and during the operational phase in section 6.3.3 above.

Residual Effect

No significant effect.

6.4 Impacts of the decommissioning Phase

The proposal is considered to be permanent and thus there will be no decommissioning works associated with the proposal.

6.5 **Cumulative Impacts**

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination impacts on European Sites was conducted. This included a review of online Planning Registers and served to identify past and future plans and projects, their activities and their predicted environmental effects.

6.5.1 **Plans**

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

- Galway City Development Plan 2017-2023
- Galway County Heritage and Biodiversity Plan 2017-2022
- **Salway BAP 2014 2020**
- Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032
- > Galway City Transport Project 2015

The review focused on policies and objectives that relate to biodiversity and natural heritage. Policies and objectives relating to sustainable land use were also reviewed. No potential for cumulative impacts when considered in conjunction with the current proposed conservation works were identified.



Table 6.1: Review of plans

Plans	Key Policies/Issues/Objectives Directly Related to European Sites, Biodiversity and Sustainable Development in The Zone of Influence	Assessment of Conservation Works Compliance with Policy
Galway City Council Development Plan 2017-2023	 Policy 4.1 Green Network Support sustainable use and management of areas of ecological importance, parks and recreation amenity areas and facilities through an integrated green network policy approach in line with Galway City Recreation and Amenity Needs Study, where it can be demonstrated that there will be no adverse impacts on the integrity of European Sites. Support the actions of the City Council's Heritage Plan 2016-2021 and Biodiversity Action Plan 2014-2024 relating to the promotion of ecological awareness and biodiversity. Ensure that all passive and active recreational proposals are considered in the context of potential impact on the environment, sites of ecological and biodiversity importance and general amenity Policy 4.2 Protected Spaces: Sites of European, National and Local Ecological Importance Protect European sites that form part of the Natura 2000 network (including Special Protection Areas and Special Areas of Conservation) in accordance with the requirements in the EU Habitats Directive (92/43/EEC), EU Birds Directive (2009/147/EC) and associated national legislation. Protect, conserve and promote the nationally designated sites of ecological importance, including existing and proposed Natural Heritage Areas (NHAs and pNHAs) in the city. Protect, conserve and support the development of an ecological network throughout the city which will improve the ecological coherence of the Natura 2000 network in accordance with Article 10 of the Habitats Directive. Protect Local Biodiversity Areas, wildlife corridors and stepping stones identified in the Galway City Habitat Inventory 2005 and Galway Biodiversity Action Plan 2014-2024 in supporting the biodiversity of the city and in the Council's role/responsibilities, works and operations, where appropriate. Protect and conserve rare and threatened flora and fauna and their key habitats, (wherever they occur) listed on Anne	The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to biodiversity. No potential for cumulative impacts when considered in conjunction with the current proposal were identified. There will be no impact on designated sites or biodiversity as a result of the development. Best practice preventative measures will be implemented to avoid effects on biodiversity as outlined in section 2.3 of this report.



	 Conserve and protect natural conservation areas within the coastal area and along waterways and ensure that the range and quality of associated habitats and the range and populations of species are maintained. Ensure the protection of the River Corrib as a Salmonid River, where appropriate. Protect and maintain, where feasible, undeveloped riparian zones and natural floodplains along the River Corrib and its tributaries. Ensure that development does not have a significant adverse impact, incapable of satisfactory mitigation, on protected species. 		
National Biodiversity Action Plan 2017-2021	Target 6.2 - Sufficiency, coherence, connectivity, and resilience of the protected areas network substantially enhanced by 2020.	The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to biodiversity. No potential for cumulative impacts when considered in conjunction with the current proposal were identified. There will be no impact on designated sites or biodiversity as a result of the development. Best practice preventative measures will be implemented to avoid effects on biodiversity as outlined in section 2.3 of this report.	
Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032	Regional Policy Objective 5.5 – Ensure efficient and sustainable use of all our natural resources, including inland waterways, peatlands, and forests in a manner which ensures a healthy society a clean environment and there is no net contribution to biodiversity loss arising from development supported in this strategy. Conserve and protect designated areas and natural heritage area. Conserve and protect European sites and their integrity. Regional Policy Objective 5.7 - Ensure that all plans, projects and activities requiring consent arising from the RSES are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate	The strategy was reviewed, with particular reference to Policies and Objectives that relate to biodiversity. No potential for cumulative impacts when considered in conjunction with the current proposal were identified. There will be no impact on designated sites or biodiversity as a result of the development. Best practice preventative measures will be implemented to avoid effects on biodiversity as outlined in section 2.3 of this report.	



6.5.2 Other projects considered in the wider area

The proposed development was considered in-combination with other plans and projects in the area that could result in cumulative impacts on designated Sites. The online planning system for Galway County Council as well as the An Bord Pleanála Website (planning searches), was consulted on the 15/04/2021 for the relevant area surrounding the site. Additional projects identified in the area include;

- Planning reference 18292: Second E.O.D. on Pl. Ref. 08/532. (First E.O.D Pl Ref 14/9) Permission for the construction of 84 No. residential units (14 No. 1 bed apartments, 44 No. 2 bed townhouses and 26 No. 3 bed townhouses) in 8 No. two and three storey blocks, 118 No. car parking spaces (comprising 26 No. new basement spaces and 92 NO. new surface spaces) construction of flood mitigation measures and landscaping to pond area to north of site, provision of 3 No. bin storage/meter rooms and 1 No. substation and all associated site development works. In addition to the proposed 118 No. new spaces, this proposal involves the use of 36 No. existing basement car parking spaces (approved under Pl. Ref. 592/03) to accommodate the proposed residential development.
- Planning reference 1942: Permission to amend Phase II of planning approval reference 0658, with; (i) the omission of all underground parking; (ii) the omission of 13 no. 4-bedroom Type G3 and G4 houses; (iii) the omission of 15 no. 3-bedroom Type G1 and 4 no. 1-bedroom Type J apartments; (iv) the re-alignment of the internal secondary access road; (v) the re-design of the previously approved 32 no. 2 bedroom and 8 no. 1-bedroom apartments to 26 no. 2 bedroom and 14 no. 1 bed-room enhanced apartments with in-house Care Support facilities; (vi) the provision of 70 no. surface car parking spaces; 9 no. 3 bedroom houses; 18 no. 3-bedroom upper duplex apartments; 16 no. 2-bedroom ground floor apartments; a childrens crèche; a central amenity play area; and all associated site works.
- Planning reference 17342: Permission for a) the construction of an ASD Classroom & General classroom with ancillary rooms single storey rear extension, b) New parking drop off area to rear of school accessed from a new shared access road granted permission under Pl. Ref: 15/366, c) revised boundary treatments including minor revisions to those granted under adjacent permission Pl. Ref: 15/366 and all associated external works.
- Planning reference 20261: Permission for development which will consist of 1. a mixed-use scheme with an overall gross floor area (GFA) of approximately 97,936 sqm. on a site of circa 6.81 hectares. The development is arranged across 13 no. development blocks (A-M) ranging in height from 2 to 8 storeys with associated ground level and basement level car parking. 2. Demolition of an existing security kiosk, and demolition and relocation of an existing substation. 3. Construction of 4 no. blocks of commercial offices ranging in height from 4 to 5 storeys over ground floor level (GFA c. 25,527 sqm). 4. A hotel development (8 floors over ground floor level) comprising 150 no. hotel bedrooms, 72 no. apart hotel units, conference facilities and restaurant/bar areas (GFA c. 12,375 sqm.) A leisure centre and spa with indoor swimming pool and gym, changing rooms, treatment rooms, studios, ancillary spaces (GFA c. 2,479 sqm.). 5. 9 no. blocks of residential units ranging in height from 2 to 8 storeys over ground floor level totalling 309 no. apartments including 118 no. 1-bed apartments, 143 no. 2bed apartments, 42 no. 3-bed apartments, 3 no. 4-bed apartments and 3 no. studio apartments. Provision of residential amenity facilities with Blocks B, G, H, J, K, L, M such as laundry rooms, gym, co-working space, bookable spaces and workshop/bike repair areas (GFA c. 28,960 sqm). 6. Provision of a creche facility (c. 429sqm including an outdoor secure play area (c. 275.1 sqm). 7. Provision of a cultural centre including community use facilities such as a community café, multi-functional ground floor exhibition space, workshop rooms, party rooms, meeting spaces, residents lounge area, a concierge and parcel collection point, and ancillary kitchen and toilet facilities (GFA c. 1,195 sqm.) 8. Provision of ground floor retail units (GRA c. 1,080 sqm.) 9. Provision of café and restaurant uses (GFA c. 1,234 sqm.) 10. Provision of 788 no. car parking spaces, 63 no. motorcycle spaces, and 1,116 no. bicycle



- parking spaces. 11. Upgrade to the existing N83 access junction to the site. 12. Provision of a footpath connectivity link to the south west of the site along the N83. 13. Provision of a temporary access for existing businesses into Galway City North Business Park during the construction phase. Please refer to file for full development description.
- Planning reference 20148: Permission for development which will consist of (a) the construction of a new entrance and access road along with all associated site services, and improvements to existing private road. (b) the construction of 2 no. new two-storey dwelling houses with separate domestic wastewater treatment systems, 2 no. new external store/garages, and all associated site development and external works.
- N6 Galway City Transport Project

The proposed development has been assessed, taking full consideration of the cumulative and incombination effects acting together with effects from past, present or reasonably foreseeable projects. The proposed development will not result in any significant residual effects on any ecological receptors or Designated Sites. Therefore, there is no potential for the proposal to contribute to any potential for cumulative impacts in this regard when considered in-combination with other plans and projects. Similarly, the proposed development will not result in significant effects in relation to water quality, given the design and layout of the proposal and the best practice construction measures outlined in section 2 of this report.

In the review of the projects that was undertaken, no connection between the site, that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the proposed development. Taking into consideration the reported residual effects from other plans and projects in the area and the predicted effects with the current proposal, no residual cumulative effects have been identified.



7 CONCLUSION

Taking the above information into consideration and having regard to the precautionary principle, it is considered that the proposed development will not result in the loss of habitats or species of high ecological significance and will not have any significant effects on the ecology of the wider area.

The potential residual impacts on ecological receptors will not be significant and no potential for the proposed development to contribute to any cumulative impacts on biodiversity when considered in-combination with other plans and projects was identified.

Provided that the development is constructed in accordance with the design and best practice that is described within this application, significant effects on biodiversity are not anticipated at any geographic scale.



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APPENDIX 1

SITE LAYOUT DRAWINGS







APPENDIX 2

LETTER FROM IRISH WATER



Richard Daly Fairgreen House Fairgreen Road Co. Galway H91AXK8

10 December 2021

Uisce Éireann Bosca OP 448 Oifig Sheachadta na Cathrach Theas Cathair Chorcaí

Irish Water PO Box 448, South City Delivery Office, Cork City.

www.water.ie

Re: CDS21007628 pre-connection enquiry - Subject to contract | Contract denied Connection for Multi/Mixed Use Development of 180 unit(s) at Castlegar, Galway, Co Galway

Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Castlegar, Galway, Co Galway (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	OUTCOME OF PRE-CONNECTION ENQUIRY THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.		
Water Connection	Feasible Subject to upgrades		
Wastewater Connection	Feasible Subject to upgrades		
	SITE SPECIFIC COMMENTS		
	There is sufficient capacity in the existing Water Treatment Plant to facilitate the proposed development. The Developer has proposed the installation of a 450m (approx.) long water		
Water Connection	network extension to the south west towards the junction between Bothar an Choiste and the main road. Irish Water have no objection to this proposal.		
	Please note while flows in excess of your required demand may be achieved in the Irish Water network and could be utilised, Irish Water cannot guarantee a flow rate to meet your requirement. To guarantee a flow to meet your requirements, you should provide adequate storage capacity within your development.		
Wastewater Connection	There is sufficient capacity in the existing Terryland River Wastewater Treatment Plant to facilitate the proposed development.		

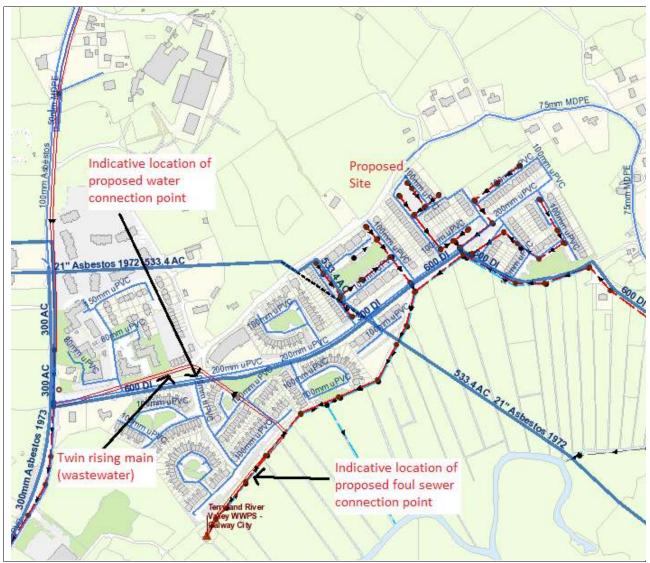
The Developer has proposed the installation of a foul sewer network extension consisting of 230m of a pumped sewer and 215m of Gravity Sewer to the southwest towards the junction between Bothar an Choiste and the main road. Irish water records indicate that this proposed connection point is in fact a privately own sewer main and has not yet been taken in charge by Irish Water. This is 3rd party owned infrastructure is connected to the Irish Water network. The Irish Water Regional contractor can facilitate a connection. It will be the customer's responsibility to ensure that permission is in place from the private owner to allow the physical connection works to be undertaken. The customer will also be responsible to assess and confirm that the private infrastructure has capacity and is structurally adequate to cater for their development demands.

The private infrastructure will remain classified as private infrastructure and is not assumed by any party to be adopted/taken in charge by Irish Water following the new connection being made.

If the above option is not acceptable by the private infrastructure owner, the nearest viable connection point is to the existing 450mm dia. concrete pipe located approx. 625m from the proposed site, to the south west, on the Baile an Choiste Rd, near the Terryland River Valley WWPS.

The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.

The map included below outlines the current Irish Water infrastructure adjacent to your site:



Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

General Notes:

- 1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. The availability of capacity may change at any date after this assessment.
- 2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.

- 3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date
- 4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
- 5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
- 6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
- 7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
- 8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
- 9) To access Irish Water Maps email datarequests@water.ie
- 10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Barry Butler from the design team by email barry.butler@water.ie For further information, visit www.water.ie/connections.

Yours sincerely,

Gronne Haceis

Yvonne Harris

Head of Customer Operations





APPENDIX 3

LANDSCAPING PLAN







Bat Report

Proposed Strategic Housing Development, Bóthar Na Chóiste, Castlegar, Co. Galway







Client: Lock House Developments Limited

Project Title: Proposed Strategic Housing Development,

Bóthar Na Chóiste, Castlegar, Co. Galway

Project Number: **180747**

Document Title: Bat Survey Report

Document File Name: **BR F - 180747 - 2022.07.25**

Prepared By: MKO

Tuam Road Galway Ireland H91 VW84



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1.

INTRODUCTION

MKO was commissioned to undertake a bat survey for a proposed Strategic Housing Development located at Bóthar Na Chóiste, Castlegar, Co. Galway. (Grid Ref: M 31515 28169).

MKO have conducted a comprehensive suite of surveys at the site between 2020 and 2021. The main objective of the surveys was to gather information on roosting, commuting, and foraging bats using the site and to identify any important features for bats. One full spectrum bat detector, Song Meter SM4BAT (Wildlife Acoustics, Maynard, MA, USA), was deployed for the duration of the 2020 survey period (9 days) to record bat activity at a fixed location within the site. Two full spectrum bat detectors, Song Meter Mini (Wildlife Acoustics, Maynard, MA, USA), were deployed for the duration of the 2021 survey period (over 4 weeks) to record bat activity at four fixed locations.

The bat survey and assessment were informed by a desk study and with reference to the following guidelines:

- Bat Surveys for Professional Ecologists Good Practice Guidelines (3rd edn.) (Collins, 2016)
- > Bat Roosts in Trees (Andrews, 2018)
- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (NRA, 2006a)
- Guidelines for the Treatment of Bats during the Construction of National Road Schemes (NRA, 2006b)
- British Bat Calls: A Guide to Species Identification (Russ, 2012)
- Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. (Kelleher & Marnell, 2006)
- Bat Mitigation Guidelines for Ireland V2. Irish Wildlife Manuals, No. 134. (Marnell, Kelleher & Mullen 2022)
- Guidance Note 08/18: Bats and Artificial Lighting in the UK (ILP, 2018)
- Dark Sky Ireland guidance: Best practice in public lighting
- Bat Conservation Ireland: Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers, BCI, 2010

1.1 Policy and Legislation

All Irish bats are protected under European legislation, namely the Habitats Directive (92/43/EEC). All Irish species are listed under Annex IV of the Directive, requiring strict protection for individuals, their breeding sites and resting places. The Lesser horseshoe bat (*Rhinolophus hipposideros*) is further listed under Annex II of the Directive, requiring the designation of conservation areas for the species. Under this Directive, Ireland is obliged to maintain the favourable conservation status of Annex-listed species. This Directive has been transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011.

In addition, Irish species are further protected by national legislation (Wildlife Acts 1976-2021). Under this legislation, it is an offence to intentionally disturb, injure or kill a bat or disturb its roost. Any work at a roost site must be carried out with the agreement of the National Parks and Wildlife Service (NPWS) and a derogation licence must be granted before works commence.

1.2 **Statement of Authority**

The bat surveys were undertaken by MKO ecologists Aoife Joyce (BSc., MSc.), Julie O'Sullivan (B.Sc., M.Sc.), Neil Campbell (BSc.) and Olivia O Gorman (BSc). They were assisted by Ellen Tuck. Ellen is a student ecologist conducting work placement with MKO. All staff have relevant academic qualifications to complete the surveys and assessments that they were required to do. This report was prepared by Laura McEntegart and was reviewed by Aoife Joyce who has over 3 years' experience in bat impacts and mitigation and ecological assessment.



2. CHARACTERISTICS OF PROPOSED DEVELOPMENT

The proposed development site is located to the north of Bóthar Na Chóiste within the townland of Castlegar, Co. Galway, approximately 2.8km north-east of Galway City (Grid reference: M 31515 28169). This includes the Bóthar Na Chóiste road for which road improvements are included in the proposed scheme. A site location map is presented in Figure 2-1.

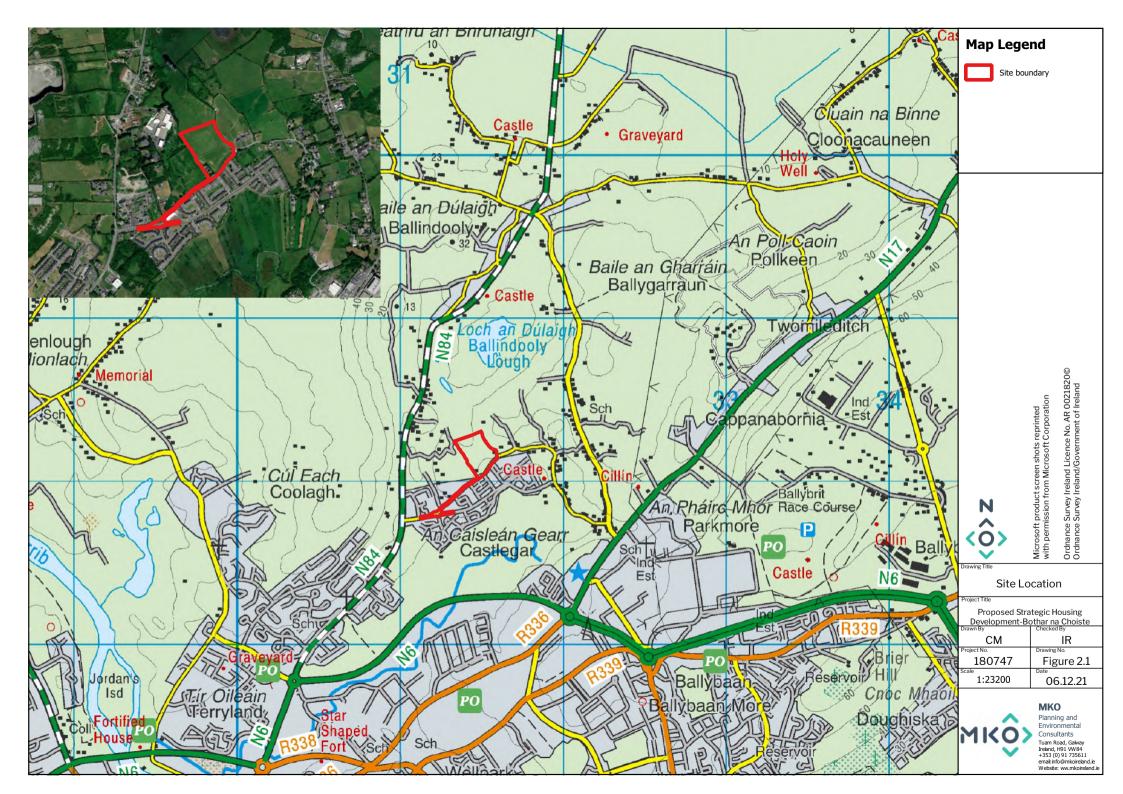
The N84 Galway-Headford Road is situated approximately 600 metres to the west of the proposed development site. The proposed N6 Galway City Ring Road development boundary is located immediately north of the subject lands.

Planning permission is sought by Lock House Developments Limited (the applicant) for development on a site which extends to 4.626ha on lands located to the north of Bóthar Na Chóiste, in the townland of Castlegar, Galway.

The proposed development will consist of the following:

- 1. Demolition of an existing house (124.6 m²), a ruined outbuilding (42.8 m²), and a ruined dwelling (41.7 m²).
- Construction of 170 no. residential units comprising:
 - o 84 no. two storey houses (34 no. two-beds, 42 no. three-beds, 8 no. four-beds),
 - I no. apartment block comprising 17 no. apartments (10 no. one-beds, 7 no. two-beds),
 - o 1 no. apartment block comprising 21 no. apartments (12 no. one-beds, 9 no. two-beds),
 - o 48 no. duplex units (11 no. one-beds, 24 no. two-beds, 13 no. three-beds).
- 3. Development of a two-storey creche facility with 46 no. child spaces (c. 300.36 sqm), associated outdoor play areas and parking.
- Provision of all associated surface water and foul drainage services and connections including pumping station with all associated site works and ancillary services.
- 5. The upgrade of the existing Bothar Na Chóiste road from the proposed development to the junction at L5041 consisting of road improvements, road widening and junction re-alignment.
- Pedestrian, cyclist, and vehicular links throughout the development and access with Bóthar Na Chóiste, and pedestrian and cyclist link to the adjacent Greenway route.
- 7. Provision of shared communal and private open space, site landscaping and public lighting, resident and visitor parking including electric vehicle charging points, bicycle parking spaces, and all associated site development works.
- 8. The application is accompanied by a Natura Impact Statement (NIS).

The existing derelict building and bungalow within the site will be demolished as part of the proposed development. The proposed site layout including demolition is shown in Drawing no. 18151 – 3070 – Demolition of the application pack.





METHODS

3.1 Consultation

A Scoping Document, providing details of the application site and the proposed development, was prepared by MKO and circulated to the Development Application Unit in April 2021. The response was received in May 2021.

Details of consultation response are provided in Section 4.1 below.

3.2 **Desktop Study**

A desktop review of published material was undertaken to inform all subsequent field studies and assessments. The aim of the desktop review was to identify the presence of species of interest within the proposed site and surrounding region.

The following list describes the sources of data consulted:

- Review of online web-mappers: National Parks and Wildlife Service (NPWS) mapping.
- Review of N6 Galway City Transport Project; Ecological information presented in the Route Selection Report: Chapter 4: http://www.n6galwaycity.ie.
- Review of N6 Galway City Ring Road Environmental Impact Assessment Report (2018)
- Review of NPWS Article 17 Report.
- Review of the publicly available National Biodiversity Data Centre web-mapper.
- Review of specially requested records from the NPWS Rare and Protected Species Database for the hectads which overlap with the study area.

3.2.1 National Bat Database of Ireland

The National Biodiversity Data Centre holds records of bat observations received and maintained by Bat Conservation Ireland. These records include results of national monitoring schemes, roost records as well as ad-hoc observations. The database was searched for bat presence and roost records within a 10km radius of the proposed development site.

In addition, information on species' range and distribution, available in the 2019 Article 17 Reports (NPWS, 2019), was reviewed in relation to the location of the Proposed Development. The NPWS monitors the conservation status of European protected habitats and species and reports their findings to the European Commission every 6 years in the form of an Article 17 Report. The most recent report for the Republic of Ireland was submitted in 2019.

3.2.2 National Parks and Wildlife Service Records

The National Parks and Wildlife Service (NPWS) map viewer and website provides information on rare and protected species, sites designated for nature conservation and their conservation objectives. A search was undertaken, on 26^{th} September 2021, of sites designated for the conservation of bats within a 10 km radius of the development (BCI 2012, Hundt, 2012, SNH 2019). This included European designated sites, i.e. SACs, and nationally designated sites, i.e. NHAs and pNHAs.

The NPWS maintains all lesser horseshoe bat roost monitoring datasets and roost locations. As the proposed development is within the known distribution range of lesser horseshoe bat, the NPWS were consulted to provide any records of lesser horseshoe roosts within 10km of the proposed development. An information request was sent to the NPWS scientific data unit requesting records from the Rare and Protected Species Database on the 14th of April 2021. A response was received on the 26th May 2021.



3.2.3 **Designated Sites**

The potential for the proposed development to impact on sites that are designated for bats was considered in the Ecological Impact Assessment (EcIA) accompanying this report.

Special Areas of Conservation (SACs) are designated under EU Habitats Directive. The potential for effects on European Sites is fully considered in the AA Screening Report that accompanies this report. The European Sites that are within the Zone of Likely Impact, with bats identified as Qualifying Interests, are listed in the AASR and are not repeated in this document.

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

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

3.2.4 Galway City Transport Project (2015) and Galway City Ring Road EIAR (2018)

The "Route Selection Report: Chapter 4" of the N6 Galway City Transport Project Environmental Impact Statement, the N6 Galway City Ring Road Environmental Impact Assessment Report (2018) were consulted as part of the desk study for the purposes of the bat assessment. Details of consultation, specifically related to bats, are provided in Section 4.2 below.

3.3 **Ecological Appraisal (Bats)**

A walkover survey of the Study Area was carried out during daylight hours on the 16th September 2020, 27th July, 10th and 24th August 2021. The landscape features on the site were visually assessed for potential use as bat roosting habitats and commuting/foraging habitats using a protocol set out in BCT *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn.) (Collins, 2016). Table 4.1 of the 2016 BCT Guidelines identifies a grading protocol for assessing structures, trees and commuting/foraging habitat for bats. The protocol is divided into four Suitability Categories: *High, Moderate, Low* and *Negligible*.

3.4 Roost Surveys

3.4.1 Roost Assessment

A search for roosts was undertaken within the boundary of the proposed development. The aim was to determine the presence of roosting bats and the need for further survey work or mitigation. The site was visited on multiple occasions in September 2020 and July/August 2021. A walkover was carried out and all structures and trees were assessed for their potential to support roosting bats. Any potential roost sites were subject to a roost assessment. This comprised a detailed inspection of the exterior and interior (if accessible) to look for evidence of bat use, including live and dead specimens, droppings, feeding remains, urine splashes, fur oil staining and noises (Collins, 2016).

Three structures; a residential bungalow, a derelict cottage and adjacent stone shed, were identified within the site and were subject to a roost assessment. The exteriors of the buildings were inspected first from ground level, with the aid of binoculars. The search included the ground, accessible windowsills, walls, eaves, roof slates, gutters and the roof ridge. A systematic search of all accessible interiors was



also undertaken by two licensed bat ecologists. Searches were carried out with the aid of binoculars, torches, an endoscope and a ladder and focused on walls, floors, the attic roof beams, windowsills, lintels, etc.

Any potential tree roosts were examined for the presence of rot holes, hazard beams, cracks and splits, partially detached bark, knot holes, gaps between overlapping branches and any other potential roost features (i.e. PRFs) identified by Andrews (2018).

3.4.2 **Emergence/Re-entry Surveys**

A dusk emergence and dawn re-entrance survey was carried out on the evening of the 9^{th} September and morning of 10^{th} September 2020, and focused on the derelict structure and adjacent shed located to the southeast of the site. Subsequent dusk and dawn surveys were carried out on the structures on 27^{th} July and 10^{th} August 2021. A dusk emergence survey was carried out on the occupied dwelling to the southwest of the site on 24^{th} August 2021.

During the emergence/re-entry surveys, two surveyors were equipped with active full spectrum bat detectors, Batlogger M (Elekon AG, Lucerne, Switzerland). The surveyors took up positions at opposite ends of the buildings to provide coverage of potential roost features. Where possible, species identification was made in the field and any other relevant information was also noted, e.g. numbers, behaviour, features used, etc. All bat echolocation was recorded for subsequent analysis to confirm species identifications.

Conditions were suitable for bat surveys on all survey nights. Emergence surveys commenced 30 minutes before sunset, concluded 1 hour after sunset and were followed by walked transect surveys. Reentry surveys commenced 1.5 hours before sunrise and concluded at sunrise. The purpose was to identify any bat species, numbers, access points and roosting locations within the structures.

3.5 **Dusk and Dawn Activity Surveys**

A dusk and dawn activity survey were carried out in September 2020. This was followed by two dusk and one dawn surveys in July and August 2021 (Table 3-1). The aim of the surveys was to identify if there were bats present at the proposed development site, what bat species were present and to gather any information on bat foraging and commuting behaviour. The dusk activity surveys included walked transects across the extent of the proposed development site. The dawn survey consisted of a re-entry survey, focusing on buildings within the site.

Two surveyors were equipped with active full spectrum bat detectors, a Batlogger M (Elekon, Lucerne, Switzerland). Where possible, species identification was made in the field and any other relevant information was also noted, e.g. numbers, behaviour, features used, etc. All bat echolocation was recorded for subsequent analysis to confirm species identifications.

The dusk surveys commenced 30 minutes before sunset and were completed for up to 3 hours after sunset. The dawn surveys commenced approximately two hours before sunrise and were completed at sunrise. Conditions were suitable for bat activity on all surveys. Survey effort for 2020 and 2021 is described in Table 3-1.



Table 3-1 Bat Activity Survey Effort 2020 and 2021

Date	Surveyor	Туре	Sunrise/	Weather
			Sunset	
16 th September	Neil Campbell and	Dusk	19:48	21°C; dry; light air/gentle breeze;
2020	Olivia O'Gorman	Dusk		cloud cover approx. 90-100%
17 th September	Neil Campbell and	Dawn	07:14	15°C; dry to light mist; light breeze;
2020	Olivia O'Gorman	Dawii	07.14	cloud cover ~95%.
27 th July 2021	Aoife Joyce and Julie	Dusk	21:37	15°C; dry; light air; cloud cover
27 July 2021	O'Sullivan	Sullivan Dusk 21:57		approx. 50-70%.
10 th August	Aoife Joyce and	Dawn	06:08	16°C; dry; light air; cloud cover
2021	Cathal Bergin	Dawii	00:00	approx. 5-10%.
24 th August	Aoife Joyce and Ellen	Dusk	20:43	19°C; dry; light air to light breeze;
2021	Tuck	Dusk	20:43	cloud cover was approx. 5-10%.









3.6 Static Detector Surveys

3.6.1 2020 Static Detector

A full spectrum bat detector, Song Meter SM4BAT (Wildlife Acoustics, Maynard, MA, USA), was deployed during static surveys to record bat activity at one fixed location in 2020 over a 9-day period. Settings used were those recommended by the manufacturer for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. The detector was set to record from 30 minutes before sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method when provided with GPS coordinates.

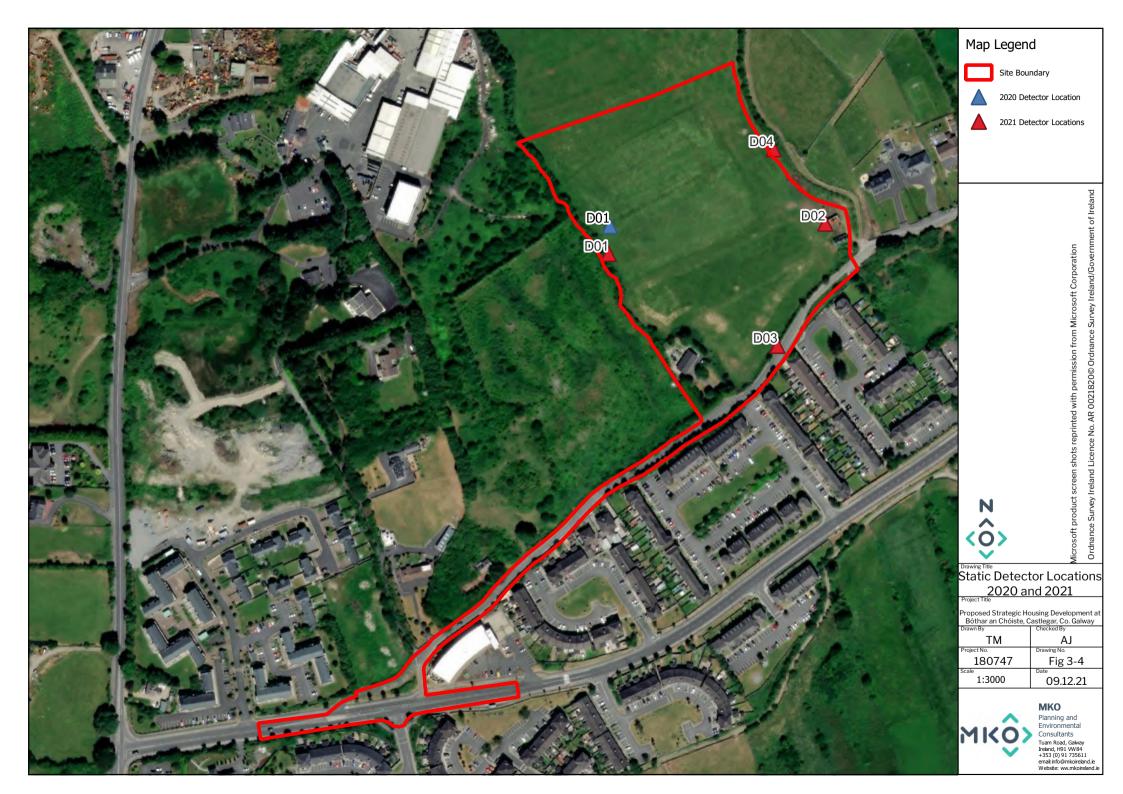
The survey was designed to utilise a static detector to monitor bat activity in 2020. The Song Meter SM4BAT detector was deployed on 16th of September 2020. The static detector was collected on the 25th of September 2020.

3.6.2 **2021 Static Detectors**

Two full spectrum bat detectors, Song Meter Minis (Wildlife Acoustics, Maynard, MA, USA), were deployed during static surveys to record bat activity at four fixed locations over a 4-week period in 2020. The locations of the static detectors were selected to represent the range of habitats present within the site, including favourable bat habitats. Settings used were those recommended by the manufacturer for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. Detectors were set to record from 30 minutes before sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method when provided with GPS coordinates. The Song Meter SM4, dual-channel acoustic recorder is capable of the long-term acoustic monitoring of bats.

Two Song Meter SM4BAT detectors were deployed on site on 27^{th} of July 2021. After approximately two weeks, the static detectors were relocated to two separate new locations within the site. The static detectors deployed in 2021 were collected on the 24^{th} of August 2021.

Static detector locations for 2020 and 2021 can be found in Figure 3-4.





3.6.3 Analysis of Static Detector Results

Echolocation signal characteristics (including signal shape, peak frequency of maximum energy, signal slope, pulse duration, start frequency, end frequency, pulse bandwidth, inter-pulse interval and power spectra) were compared to published signal characteristics for local bat species (Russ, 1999). Myotis species (potentially Daubenton's bat (*M. daubentonii*), Whiskered bat (*M. mystacinus*), Natterer's bat (*M. nattereri*) were considered as a single group, due to the difficulty in distinguishing them based on echolocation parameters alone (Russ, 1999). The echolocation of soprano pipistrelle (*P. pygmaeus*) and common pipistrelle (*P. pipistrellus*) are distinguished by having distinct (peak frequency of maximum energy in search flight) of ~55 kHz and ~46 kHz respectively (Jones & van Parijs, 1993).

Plate 3-1 below shows a typical sonogram of echolocation pulses for common pipistrelle recorded with a SM4BAT bioacoustic static bat recording device. The recorded file is illustrated using Wildlife Acoustics Kaleidoscope software.

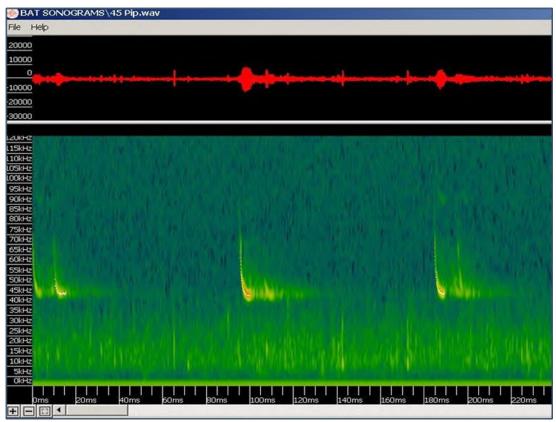


Plate 3-1 Sonogram of Echolocation Pulses of Common pipistrelle (Peak Frequency 45kHz)

Individual bats of the same species cannot be distinguished by their echolocation alone. Thus, 'bat passes' was used as a measure of activity (Collins, 2016). For the purposes of this survey, a bat pass was defined as a recording of an individual species/species group's echolocation containing at least two echolocation pulses and of maximum 15 seconds length.

3.7 **Survey Limitations**

Survey design and effort was created in accordance with the most current best practice guidelines for surveying bats (Collins, 2016). July - September are within the optimal survey period for bat activity surveys (Collins, 2016). In addition, there were no limitations associated with weather conditions or access. Therefore, a full and comprehensive survey was achieved.



4. RESULTS

4.1 Consultation

A response from the Department of Tourism, Culture, Arts, Gaeltacht, Sports and Media provided recommendations regarding nature conservation, including bats. The relevant excerpts, specifically relating to bats, are summarised below. The response was received on the 26/05/2021 and the full response is located in Appendix 4 of the accompanying EcIA.

Likely significant effects on European sites

The site is located 1 km south east from Lough Corrib Special Area of Conservation (SAC 000297), 3.2 km from Lough Corrib Special Protection Area (SPA 004042) and 2 km from Inner Galway Bay SPA (004031) and Galway Bay Complex SAC (SAC 000268).

The key concerns in relation to likely significant effects of the project alone and in combination with other plans and projects, on these European sites, in view of their conservation objectives, include the following:

- Disturbance of potential resting / roosting sites for Annex II species (e.g. Lesser Horseshoe Bat).
- Increased disturbance and displacement of species, and progressive habitat loss, fragmentation and deterioration surrounding European sites arising the development, increased local populations and urban encroachment, and the pressures outlined above.

Likely significant effects on the environment

Recent habitat mapping is available for the much of Galway city and should be sourced. Substantial data on species, particularly the more mobile species such as bats, are also available for parts of the city and the environmental assessment documentation associated with the proposed N6 Galway City Ring Road should be consulted.

The procedures outlined in 'Guidance Note 08/18 Bats and Artificial Lighting in the UK' and Eurobats 'Guidelines for Consideration of Bats in Lighting Projects' should be consulted with respect to the overall lighting design. This should also take into consideration Dark Sky Ireland guidance "Best practice in public lighting", notably that "warm" colour temperatures should be used at 2700K or less. Final sign off and testing of lighting scheme should be carried out at night to ensure that the lighting is directional and targeted and should not spill over onto treelines and hedgerows which can have adverse impacts on bats and biodiversity in general. Bat species are strictly protected under Annex IV of the Habitats Directive.

Ecological Surveys Required

It is expected by this Department, that in any survey methodology used, best practice will be adhered to and if necessary non-Irish methodology adapted for the Irish situation. Specific attention should be given to assessment of:

 Bats, including building inspections, roost presence/absence activity surveys, walked transects and automated static detectors.

All recommendations made by the Department were fully considered in the design of bat surveys and the preparation of this report.



4.2 **Desktop Study**

4.2.1 National Bat Database of Ireland

A review of the National Bat Database of Ireland on the 16th September 2021 yielded results of bats within a 10km radius of the proposed development. The search yielded 5 bat species within 10km. Table 4-1 lists the bat species recorded within the hectad which pertains to the current study area (M32).

Table 4-1 NBDC Bat Records

Hectad	Species	Database	Status
M32	Brown Long-eared Bat Plecotus auritus	National Bat Database of Ireland	HD Annex IV, WA
M32	Common pipistrelle Pipistrelle pipistrellus	National Bat Database of Ireland	HD Annex IV, WA
M32	Soprano pipistrelle Pipistrellus pygmaeus	National Bat Database of Ireland	HD Annex IV, WA
M32	Lesser Horseshoe Bat Rhinolophus hipposideros	National Bat Database of Ireland	HD Annex IV, WA
M32	Leisler's bat Nyctalus leisleri	National Bat Database of Ireland	HD Annex IV, WA

4.2.2 National Parks and Wildlife Service Records

The results of the information request received from the NPWS scientific data unit of Rare and Protected Species is detailed in Table 4-2. The results list Lesser horseshoe roost records within a 10km radius of the proposed development site (Grid Ref: M 31515 28169).

The Proposed Development site is not located within 2.5km of any Lesser horseshoe designated SAC, however, there are Lesser horseshoe bats recorded in the wider area (Table 4-4). Additionally, no suitable roosting habitat for this species was recorded on the site of proposed development.

Table 4-2 NPWS Lesser horseshoe bat records within 10km of the Proposed Development.

Most Recent Count	Species	Location	Designation
2015	Lesser horseshoe bat Rhinolophus hipposideros	Coopers Cave, Galway	HD Annex II, Annex IV, WA

4.2.3 **Designated Sites**

Within Ireland, the Lesser horseshoe bat is the only bat species requiring the designation of Special Areas of Conservation (SACs) and the site is situated within the known range of this species.

A search of all SACs within a 15km radius of the site found three sites designated for the conservation of bats. A brief description of these designated sites is provided in Table 4-3. The Lesser horseshoe bat roosts for which the SACs have been designated, are significantly outside the core foraging range (2.5km) of Lesser Horseshoe bat (NPWS, 2013). There is therefore no potential for significant effect on the Lesser horseshoe bat population for which the SACs have been designated. Further details on sites designated for bats can be found in the accompanying AASR.



Table 4-3 Sites Designated for Conservation of Bats within 15km

Designated Site	Bat Species of	Description	Distance
	Interest		
Lough Corrib SAC	Lesser	Summer roost along the northern shoreline of	0.73km
(000297)	horseshoe bat	Lough Corrib (approx. 33km northwest of the	
		Proposed Development site).	
Ross Lake and	Lesser	Summer roost.	13.4km
Woods SAC (001312)	horseshoe bat		
, ,			
Lough Fingall	Lesser	Summer and winter roost.	14.6km
Complex SAC	horseshoe bat		
(000606)			

The following Designated Sites have been identified as having bats as a Qualifying Interest within 15km of the proposed development.

Table 4-4 Designated Sites within 15km (NHA and pNHA)

Designated Site	Description	Distance
Killarainy Lodge	Impacts on this pNHA can be ruled out due to the distance between	10.8km
Moycullen pNHA	the proposed development site and this pNHA. No source-pathway-	
, 1	receptor chain for impact was identified between the site of the	
	proposed works area and the species for which this site has been	
	designated. This site is not in the zone of likely impact, no further	
	assessment is required.	

4.2.4 Galway City Transport Project (2015) and Galway City Ring Road EIAR (2018)

Galway City Transport Project (2015)

A review of publicly available information, on studies undertaken as part of the Galway City Transport Project (GCTP), was carried out. As part of this project, detailed bat surveys were undertaken in the area surrounding Galway City and this publicly available information was consulted.

Extensive bat survey work carried out as part of the GCTP included walked and car transect surveys in Castlegar and surrounding areas. Chapter 4 of the Route Selection Report identifies bats and bat roosts throughout Galway city (Table 4-5).

Table 4-5 Roosts identified within 2.5km of proposed development (2015).

Species	Approx. Distance from Site	
Common pipistrelle (Pipistrellus pipistrellus)	1.2km north	
Leisler's bat (Nyctalus leisleri)	<500m west	
Natterer's bat (Myotis nattereri)	1km north	
Natterer's bat (Myotis nattereri)	1.2km north	
Unidentified pipistrelle	1.8km east	
Brown long-eared bat (Plecotus auratus)	<500m southeast	
Lesser horseshoe bat (Rhinolophus hipposideros)	<500m	
Brown long-eared bat (Plecotus auratus)	1.2km north	



Galway City Ring Road EIAR (2018)

The N6 Environmental Impact Assessment Report for the Galway City Ring Road (GCRR) was consulted (Table 4-6).

Table 4-6 Roosts identified within 2.5km of proposed development (2018).

Roost ID	Species	Approx. Distance from Site	Details
PBR128	Lesser horseshoe bat Rhinolophus hipposideros	<500m southwest	N/A
PBR54	Lesser horseshoe bat Rhinolophus hipposideros	<500m southeast	Building. Day/night roost for small numbers of Lesser Horseshoe bats. This roost is linked to the Menlo Castle roost and Cooper's Cave.
PBR153	Lesser horseshoe bat Rhinolophus hipposideros	<500m southeast	Shed/stable building. Lesser horseshoe bat day/night roost.
PBR134	Leisler's bat Nyctalus leisleri	<500m west	N/A
PBR196	Brown long-eared bat Plecotus auratus Soprano pipistrelle Pipistrellus pygmaeus	<500m north	Building. Roost for small numbers of Soprano pipistrelle and Brown long-eared bats (likely to be a transition/occasional roost)
PBR145	Brown long-eared bat Plecotus auratus	<500m east	A bungalow in Castlegar. Possible maternity roost for Brown long-eared bats, small roost.
PBR183	Brown long-eared bat Plecotus auratus	<500m east	Building. Roost for small numbers of Brown long-eared bats (likely to be a transition/occasional roost)
PBR182	Common pipistrelle Pipistrellus pipistrellus	<500m northwest	Building. Roost for small numbers of unidentified Pipistrelle bats (likely to be a transition/occasional roost).
PBR204	Lesser horseshoe bat Rhinolophus hipposideros Brown long-eared bat Plecotus auratus	~500m northwest	Building. Lesser horseshoe bat and Brown long-eared bat day/night roost for small numbers of bats.
PBR154	Lesser horseshoe bat Rhinolophus hipposideros	>500m northwest	Building. Lesser horseshoe bat night roost and occasional day roost.
PBR192	Brown long-eared bat Plecotus auratus	>500m east	Building. Roost for small numbers of Brown long-eared bats (likely to be a transition/occasional roost)
PBR112	Lesser horseshoe bat Rhinolophus hipposideros	680m south	Cooper's Cave. Day/night roost for small numbers of Lesser Horseshoe bats. Mating, summer and hibernacula. This roost is linked to Menlo Castle.
PBR111	Brown long-eared bat Plecotus auratus	1km north	Abandoned three outbuildings near Ballindooley Lough.
PBR25	Lesser horseshoe bat Rhinolophus hipposideros Brown long-eared bat Plecotus auratus	1.1km north	Disused bungalow adjacent to Ballindooley Lough.
PBR07	Common pipistrelle Pipistrellus pipistrellus	1.3km north	One bat in outbuilding in the Ballindooley Area.
PBR17	Brown long-eared bat Plecotus auratus Natterer's bat Myotis nattereri	1.2km north	Abandoned three outbuildings near Ballindooley Lough.
PBR228	Common pipistrelle Pipistrellus pipistrellus	1.3km east	A large shed adjacent to the N83 Tuam Road in Cappanabornia. Roost for small numbers of Common pipistrelle bats (likely to be a transition/occasional roost)
PBR129	Lesser horseshoe bat Rhinolophus hipposideros	1.7km west	Building. Lesser horseshoe bat night roost.



Roost ID	Species	Approx. Distance from Site	Details
PBR85	Lesser horseshoe bat Rhinolophus hipposideros	1.7km west	Building. Lesser horseshoe bat night roost.
PBR242	Unidentified pipistrelle	1.8km east	Bungalow within the grounds of Galway Racecourse in Ballybrit. Roost for small numbers of unidentified Pipistrelle bats (likely to be a transition/occasional roost)
PBR218	Lesser horseshoe bat Rhinolophus hipposideros	2km southwest	One bat utilised a previously unknown roost in a boulder field located in an abandoned quarry just south of Coolagh Lakes.
PBR20	Natterer's bat <i>Myotis</i> nattereri	2km north	Building.
PBR205	Common pipistrelle Pipistrellus pipistrellus Soprano pipistrelle Pipistrellus pygmaeus	2.3km east	Unoccupied farm building. Roost for small numbers of Common and Soprano pipistrelle bats (likely to be a transition/occasional roost)
PBR133	Daubenton's bat Myotis daubentonii	2.4km southwest	Stonewall structure on the eastern bank of the River Corrib. 25 Daubenton's bats to be roosting in the wall.
PBR158	Lesser horseshoe bat Rhinolophus hipposideros	2.5km west	N/A

4.2.5 Conclusion of Desktop Study

The desktop study has provided information about the existing bat activity in grid square M32, within which the proposed development is located. The GCTP and GCRR have provided information about the existing bat activity and roost locations within Galway city.

Bat records within 2.5km and 10km of the proposed development revealed that the wider area has been studied for bats and that a number of bat roost for a variety of species have been recorded. This suggests that the area offers potential for foraging and commuting bat species.

4.3 **Bat Habitat Appraisal**

A walkover survey, assessing bat habitat suitability, was conducted on the 20th September 2020 and 27th July 2021. Further details on habitats within the site can be found in the accompanying EcIA.

Table 4-7 Habitats recorded within and adjacent to the proposed development.

Habitat	Fossitt (2000) Code
Improved Agricultural Grassland	GA1
Buildings and Artificial Surfaces	BL3
Spoil and Bare Ground	ED2
Recolonising Bare Ground	ED3
Hedgerow	WL1
Treelines	WL2
Stone walls and other Stonework	BL1
Amenity Grassland	GA2
Ornamental flower beds and borders	BC4

The proposed development site is dominated by *Improved Agricultural Grassland (GA1)*. A derelict cottage lies in the south-eastern corner of the proposed development site, surrounded by gravel and classified as *Buildings and Artificial Surfaces (BL3)*. A farm outbuilding occurs to the rear of the cottage, are constructed from mortared rubble with corrugated metal roofs. The outbuildings are used for agricultural purposes and are surrounded by *Spoil and bare ground (ED2)* as a result of livestock



poaching. This area which is as classified as *Stone Walls and Other Stonework (BL1)* lies adjacent to the north of the buildings (Plates 4-1 and 4-2).

A farm track also occurs from the access gate in the south-east corner and runs along the eastern boundary of the proposed development. This track is also heavily poached in places and is classified as *spoil and bare ground (ED2)/Recolonising bare ground (ED3)* mosaic (Plate 4-3).

The site contains a residential dwelling house within the south-western section of the site, that will be demolished as part of the proposed development and is classified as *Buildings and Artificial Surfaces (BL3)*. *Amenity Grassland (GA2)*, *Ornamental flower beds and borders (BC4)*, *Buildings and Artificial Surfaces (BL3)* and a non-native conifer *Treeline (WL2)* habitat surrounds the dwelling house (Plate 4-4).

The western and southern site boundaries are delineated by stonewalls classified as **Stonewalls and other stonework (BL1)** and are fringed by **Hedgerows (WL1)**. The eastern site boundary is demarcated by wire and post fence. Species recorded in the hedgerows included bramble (*Rubus fructicosus*), blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), willows (*Salix* spp.), holly (*Ilex aquilifolium*), ivy (*Hedera helix*), ash (*Fraxinus excelsior*) and flowering currant (*Ribes Sanguineum*).

Other species recorded adjacent to the residential bungalow included Leylandii (Cupressus × leylandii), Lime (*Tilia x europaea*), Cherry Blossom (*Prunus spp.*), Hawthorn (*Crataegus monogyna*), Crab Apple (*Malus sylvestris*), Fuscia (*Fuchsia magellanica*), Maple (*Acer campestre*) scattered throughout.

With regard to foraging and commuting bats, exposed areas of spoil and bare ground, recolonising bare ground, agricultural grassland and amenity grassland were considered *Negligible-Low* suitability, i.e. habitat that could be used by no or small numbers of commuting or foraging bats (Collins, 2016). Treelines, hedgerows, buildings and stone wall habitats provide some connectivity to the surrounding landscape. As such, they were assessed as having *Moderate* suitability for commuting and foraging bats i.e. Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens (Collins, 2016).

With regard to roosting bats, mature trees were assessed for their suitability to support roosting bats. Trees present on site comprise a mixture of mature and immature hawthorn, blackthorn, elder, willow and ash, all of which had *Negligible* potential roost features. The non-native conifer treeline to southwest of the site was also considered to have *Negligible* potential. Overall trees within the site provide suboptimal habitat for roosting bats and were assessed as having *Negligible* roosting potential i.e. Negligible habitat features on site likely to be used by roosting bats (Collins, 2016). The habitat mosaic of scrub and wet grassland, including the small outcrops of hawthorn trees within the boundary of the site are considered to be of *Negligible* for roosting bats.

Due to the presence of a small number of potential roost features identified in each of the structures, the derelict cottage, two farm outbuildings and occupied dwelling were assessed as having *Moderate* roosting potential i.e. A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of



high conservation status (Collins, 2016). However, the derelict cottage and farm outbuildings were in a state of disrepair.

Further details on the buildings within the site, can be found in section 4.5 below.

All other habitats present were assigned a Negligible value.



Plate 4-1 Agricultural grassland habitat with stone walls and treeline in the background



Plate 4-2 Farm track along the eastern boundary with short treeline and hedgerow outside the site boundary



Plate 4-3 Spoil and bare ground and recolonising bare ground adjacent to the derelict cottage to the southeast



Plate 4-4 Driveway and amenity grassland, ornamental shrubs and trees associated with the occupied dwelling to the southwest



4.4 Roost Survey

4.4.1 **Derelict Cottage and Farm Outbuildings**

A dedicated roost inspection survey of the derelict cottage and farm outbuilding was undertaken during daylight hours on the 9^{th} September 2020 and 27^{th} July 2021.

The derelict brick cottage had a partially collapsed slate roof and no interior attic space (Plate 4-5-4-7). Multiple potential access points were identified during the survey, including gaps in brickwork, chimney, roof tiles, fascias, open doors and windows, and dense ivy cover. The structure was therefore assessed as having *Moderate* suitability for roosting bats.

The outbuilding consisted of a stone wall with a partially collapsed galvanised/corrugated roof. There was no lining or soft insulation inside the roof space. The roof space did not provide any suitable roosting features and no evidence of bats or bat use was found during the inspection. There were some potential roost features in the form of gaps and crevices in the stonework. The structure was thus assessed as having *Moderate* suitability for roosting bats. No evidence of roosting bats was identified in any of the structures during the inspection surveys.



Plate 4-5 South facing elevation of derelict cottage with dense ivy cover, open doors, and windows.



Plate 4-6 North facing elevation of derelict cottage with partially collapsed roof.





Plate 4-7 South facing farm outbuilding/shed with partially collapsed roof, adjacent to derelict cottage.

4.4.2 Occupied Dwelling

A dedicated exterior and interior roost inspection survey was undertaken during daylight hours on $24^{\rm th}$ August 2021. The occupied dwelling was a single storey bungalow that consisted of block walls with a slate roof. Suitable access points are available through gaps between the slates, soffit, fascia and chimney flashing. The structure was assessed as having "Moderate Suitability" for roosting bats (Plate 4-8 – 4-9).

No evidence of bat use including droppings, fur oil staining, signs of feeding remain etc. were identified within or surrounding the building. In addition, no bats were observed exiting or entering the building during the dusk activity survey.



Plate 4-8 South facing elevation of occupied dwelling.





Plate 4-9 North facing elevation of occupied dwelling

4.5 Emergence/Re-entry Surveys

Emergence and re-entry surveys were carried out in September 2020 and July/August 2021, in accordance with Collins (2016). Two surveyors were equipped with Bat Logger M bat detectors (Elekon AG, Lucerne, Switzerland) for each survey.

Table 4-8 Emergence/Re-entry Survey Results

Date	Survey Type	Structure	Results
16 th September	Dusk	Derelict cottage	No bats observed emerging from structures. Bats
2020		and farm shed	observed commuting and foraging in vicinity.
17 th September	Dawn	Derelict cottage	No bats observed re-entering the structures.
2020		and farm shed	
27 th July 2021	Dusk	Derelict cottage	No bats observed emerging from structures. Bats
		and farm shed	observed commuting and foraging in vicinity.
10 th August	Dawn	Derelict cottage	No bats observed re-entering the structures.
2021		and farm shed	
24 th August	Dusk	Occupied	No bats observed emerging from structure. Bats
2021		dwelling	observed commuting and foraging in vicinity.

Figures 4-1 to 4-4 show that there were concentrations of bat activity around the structures within the site. Surveyors were positioned at the buildings for approximately 1.5 hours to look for bats emerging and re-entering the buildings. Bats were seen feeding continuously in the area during the emergence and re-entry surveys and were observed and recorded commuting between buildings and treelines to surrounding areas. No bats were observed emerging or re-entering any of the structures during any of the emergence/re-entry surveys. The emergence/re-entry surveys were followed by a walked transect around the site.



4.6 **Dusk and Dawn Activity Surveys**

4.6.1 **2020 Results**

Dusk Survey

In total, 83 bat passes were recorded during the dusk survey. Overall, the level of bat activity was low. The following species were recorded foraging and commuting within the site with activity concentrated along the site boundary:

- > Common pipistrelle (n=40)
- > Soprano pipistrelle (n=36)
- Lesser horseshoe bat (n=3)
- Leisler's bat (n=2)
- > Brown long-eared bat (n=2)

Dawn Survey

Overall, the level of bat activity recorded during the dawn survey was low with a total of 7 bat passes recorded. The following species were recorded foraging and commuting within the site:

> Soprano pipistrelle (n=7)

Plate 4-10 shows total bat species composition. The survey results are shown on Figure 4-1.

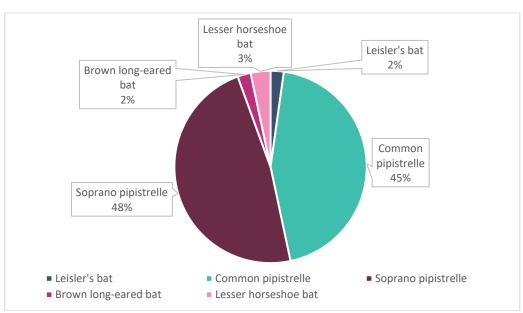


Plate 4-10 Manual Transect: Total Bat Species Composition 2020

4.6.2 **2021 Results**

Numerous foraging and commuting bats were recorded during the dusk and dawn bat activity surveys. In total, 307 bat passes were recorded. Activity was dominated by Soprano pipistrelle (*Pipistrellus pygmaeus*) n=278. This species is common and widespread across Ireland. In addition, very small numbers of lesser horseshoe bat (*Rhinolophus hipposideros*) n=16, brown long-eared bat (*Plecotus auritus*) n=7, common pipistrelle (*Pipistrellus pipistrellus*) n=5 and *Myotis sp.* n=1 were also recorded. Activity levels were concentrated along the field boundaries and treeline edge habitats bordering the site (Figures 42 – 44). Plate 4-11 shows total bat species composition and Table 4-9 presents the results per survey. A small number of soprano pipistrelle bats were observed foraging continually within the



site which contributed to the higher levels of activity on the final dusk survey. Plate 4-12 shows total bat passes per night.

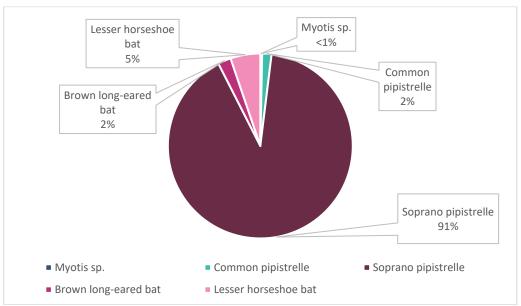


Plate 4-11 Manual Transect: Total Bat Species Composition 2021

Table 4-9 Manual Transect Bat Pass Results Per Survey 2021

Species	Dusk 27 th July	Dawn 10 th August	Dusk 24 th August	Total
Myotis sp.	1	-	-	1
Common pipistrelle	-		5	5
Soprano pipistrelle	3	6	269	278
Brown long-eared bat	-	6	1	7
Lesser horseshoe bat	-	-	16	16
Grand Total	4	12	291	307

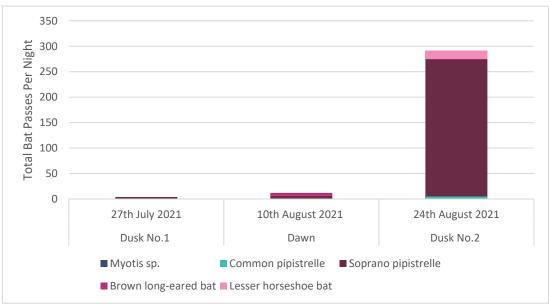


Plate 4-12 Total Bat Passes Per Night 2021











4.7 **Static Detector Survey**

4.7.1 **2020 Results**

A static detector was placed on site to record bat activity for a total of 9 nights. This detector allowed a specified look into species composition, commuting and foraging activities within the site.

All recordings were later analysed using bat call analysis software Kaleidoscope Pro v.5.1.9 (Wildlife Acoustics, MA, USA). Bat species were identified using established call parameters, to create site-specific custom classifiers. All identified calls were also manually verified. In total 709 bat passes were recorded.

Analysis of the detector recordings positively identified six bats to species level with *Myotis* genus also present. Bat species included: Soprano pipistrelle (*Pipistrellus pygmaeus*) (n=382), lesser horseshoe bat (*Rhinolophus hipposideros*) (n=148) and common pipistrelle (*Pipistrellus pipistrellus*) (n=101). *Myotis* sp. (n=25), Leisler's bat (*Nyctalus leisleri*) (n=23) and Brown long-eared bat (*Plecotus auritus*) (n=22) were less frequent. Nathusius' pipistrelle (*Pipistrellus nathusii*) (n=8) were rarely encountered, with 1% of total bats recorded (Plate 4-13).

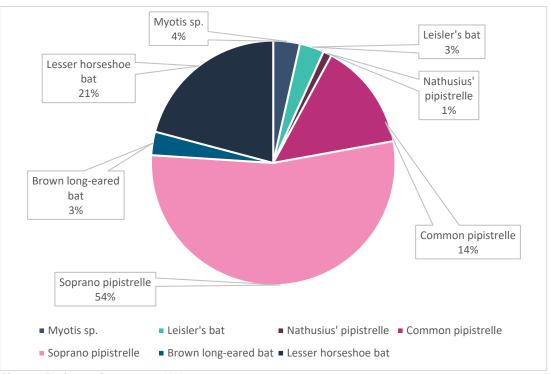


Plate 4-13 Bat Species Composition – 2020.

Analysis of the detector recordings also highlighted the total bat passes per night. Activity varied across each night. The graph demonstrates that soprano pipistrelle bats were most commonly recorded during the survey periods followed by lesser horseshoe bat and common pipistrelle. Plate 4-14 shows species composition per night.



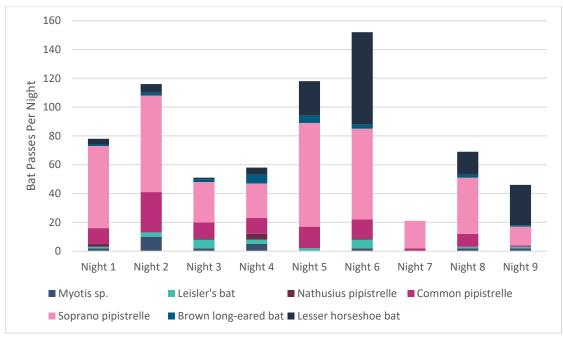


Plate 4-14 Total Bat Passes Per Night

4.7.2 **2021 Results**

Two static detectors, were deployed on the site at four different locations (Figure 3-4), based on likely areas of bat activity, for a total of 28 nights. The locations of the statics were changed after the first two weeks to give a more comprehensive assessment of how bats are using the site and where most of the bat activity is occurring. These detectors allowed a specified look into species composition, commuting and foraging activities within the site.

All recordings were later analysed using bat call analysis software Kaleidoscope Pro v.5.4.2 (Wildlife Acoustics, MA, USA). Bat species were identified using established call parameters, to create site-specific custom classifiers. All identified calls were also manually verified. In total 4,704 bat passes were recorded.

Analysis of the detector recordings positively identified six bats to species level with *Myotis* genus also present. Bat species included: Soprano pipistrelle (*Pipistrellus pygmaeus*) (n=2,960), common pipistrelle (*Pipistrellus pipistrellus*) (n=1,281) and Leisler's bat (*Nyctalus leisleri*) (n=349). *Myotis* sp. (n=65), brown long-eared bat (*Plecotus auritus*) (n=20), lesser horseshoe bat (*Rhinolophus hipposideros*) (n=15) and Nathusius' pipistrelle (*Pipistrellus nathusii*) (n=14) were rarely encountered, with 1% or less of total bats recorded (*Plate 4-15*).



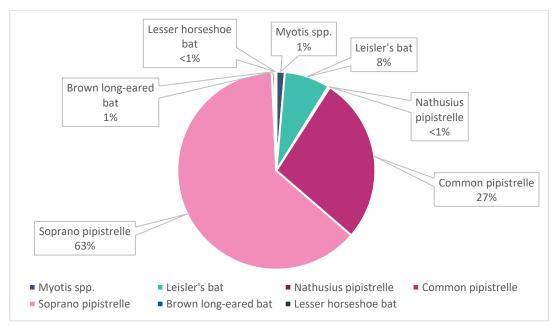


Plate 4-15 Static Detector Bat Species Composition 2021

Plate 4-16 shows total bat passes per detector. Detector D01 was located along the western site boundary adjacent to a mature hedgerow/treeline. Detector D02 was located beside the farm outbuilding to the east of the site. Detector D03 was located along the southern boundary of the site near an area of scrub and stone wall, next to the main road. Detector D04 was located near the northeastern boundary of the site.

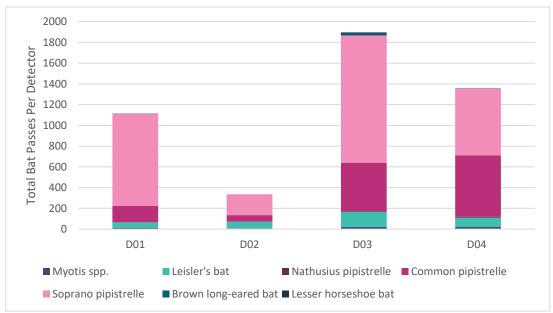


Plate 4-16 Total Bat Passes Per Detector 2021

Analysis of the detector recordings also highlighted the total bat passes per night. Species composition per night is shown in Plate 4-17. Nights 1-14 are associated with the first deployment locations D01 and D02. Nights 15-28 include bat passes from the second deployment location D03 and D04. Activity varied across each deployment and each night. The graph demonstrates that soprano pipistrelle bats were most commonly recorded during the survey periods followed by common pipistrelle and Leisler's bat. These species are common and widespread across Ireland.



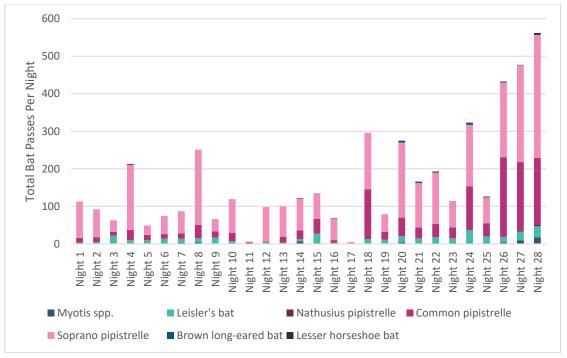


Plate 4-17 Total Bat Passes per Night 2021



4.7.3 Comparisons of 2020 and 2021 Results

In 2020, the species composition was comprised of soprano pipistrelle, common pipistrelle, lesser horseshoe bat, brown long-eared bat, *Myotis* sp., Leisler's bat and nathusius' pipistrelle.

The 2021 surveys identified soprano pipistrelle, common pipistrelle, lesser horseshoe bat, brown longeared bat, *Myotis* spp., Leisler's bat and nathusius' pipistrelle within the proposed development site.

Soprano pipistrelle was the most commonly recorded species in 2020 and 2021.

The findings from the surveys completed in 2021 showed a largely similar species composition and abundance to that of the surveys carried out throughout 2020.

4.8 Importance of Bat Population Recorded at the Site

Ecological evaluation within this section follows a methodology that is set out in Chapter three of the 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009).

All bat species in Ireland are protected under the Bonn Convention (1992), Bern Convention (1982) and the EU Habitats Directive (92/43/EEC). Additionally, in Ireland bat species are afforded further protection under the Birds and Natural Habitats Regulations (2011) and the Wildlife Acts 1976-2021.

Bats as an Ecological Receptor have been assigned *Local Importance (Higher value)* on the basis that the habitats within the proposed development site are utilized by a regularly occurring bat population of *Local Importance*.

No roosting bats or evidence of bat use was identified within the structures or trees within the site. The results of the bat surveys, carried out in 2020 and 2021 indicate that the proposed development site does not provide significant suitable habitat for a roosting bat population of ecological significance. No roosting site of *National Importance* (i.e. site greater than 100 individuals) was recorded within the site.



ASSESSMENT OF LIKELY EFFECTS

Loss of Roosting Habitat

Table 5-1 Assessment of Potential Impacts on Roosting Bats

Table 3-1 Assessment o	f Potential Impacts on Roosting Bats
Description of Effect	Although no evidence of roosting bats was identified in the structures surveyed within the site, the structures were assessed as having <i>Moderate suitability</i> for roosting bats due to the presence of potential roost features. Following the precautionary principle, the demolition of the derelict cottage, adjacent farm outbuilding and occupied dwelling have the potential to result in direct loss of potential roosting habitat and the potential for bat mortality.
	No evidence of roosting bats was identified in trees within the site, and no trees were identified as having roosting potential for bats. No loss of roosting habitat or bat mortality is anticipated as a result of tree felling.
Characterisation of unmitigated effect	The construction of the proposed development has the potential to result in a Long-Term Slight Negative effect on the local bat populations in the form of habitat loss, disturbance or direct mortality.
Assessment of Importance prior to mitigation	Significant effects on bats are not anticipated at any geographic scale during the construction of the proposed development.
Mitigation	 Structures Proposed for Demolition No evidence of bats was identified within the derelict cottage, farm outbuilding or occupied dwelling and no bats were observed emerging or re-entering the structures on any of the surveys. On a precautionary basis, prior to demolition, the buildings must be re-examined by a licensed ecologist, for the presence of bats. A pre-construction bat survey will be undertaken by a licensed ecologist prior to any works, to ensure roosting bats have not occupied the structures. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the survey in 2020 and 2021. Should bats be identified within the structures, a bat derogation licence must be obtained from the NPWS prior to any demolition works. Alternative roost sites will be provided for potential roosting bats. Bat boxes will be erected on mature trees within the survey area following best practice guidelines (Kelleher & Marnell 2006, NRA 2006). A minimum of two bat boxes are recommended for installation prior to any works commencing. Schwegler 1FF woodcrete bat boxes are recommended. Bat boxes will have a southerly orientation and be positioned at least 2m from the ground, away from artificial lighting. They will be placed adjacent to vegetation features such as treelines and hedgerows to ensure they are close to existing flight paths and can avoid wide open spaces (Collins, 2016). Final bat box locations will be decided by a licenced ecologist on completion of the pre-commencement survey.
Residual Effect following Mitigation	With the implementation of the prescribed mitigation measures, no significant residual effects are predicted.



Loss of Foraging and Commuting Habitat

Table 5-2 Assessment of Potential Impacts on Commuting/Foraging Bats

Description of Effect	The proposed development has been designed to avoid the majority of the mature trees and treelines/hedgerows forming site boundaries and maintains landscape connectivity. There will be no loss of mature linear treeline or hedgerow; however, the proposed development will result in the loss of a small number of individual trees and scrub habitat along the southern site boundary, which are occasionally used by commuting and foraging bats. The proposed development will also result in the loss of a small amount of scrub along the Castlegar road to facilitate road widening works. However, this only represent a small fraction of the total scrub present and linear habitat along this road will be retained. Additional tree and hedgerow planting is also proposed throughout the main development site. The impact of the proposed development is considered slight as the majority of linear features will be retained or replanted/enhanced, providing continued habitat connectivity.
Characterisation of unmitigated effect	The loss of linear habitat features would constitute a medium-term slight effect on commuting and foraging bats. While the trees individually are of limited biodiversity value, collectively they contribute to ecological and habitat connectivity throughout the site and with the wider area. The magnitude of this impact is Slight at the local scale given the small number affected.
Assessment of Importance prior to mitigation	This is a slight effect on a receptor of <i>Local Importance (Higher Value)</i> . The loss of a small number of trees within the site is not significant at a county, national or international scale.
Mitigation	 A landscape plan has been prepared for the proposed development which allows for the retention of the majority of trees within the site and which provides for additional planting. A linear greenway/amenity area has been proposed for the length of the western site boundary and will include large native tree species such as Oak, Alder and White willow which will be interplanted with medium native tree species including White beam, downy birch and goat willow. New sections of hedgerow will also be created along the eastern and southern sections of the site, increasing the ecological connectivity to the wider landscape. A formal green open space is proposed near the centre of the site which will include feature tree and ornamental shrub planting. A communal garden space is proposed for the eastern boundary of the proposed development site and will consist of fruit trees and pollinator friendly tree species. Habitat connectivity around the site will be retained and there will be no net loss of linear landscape features for commuting and foraging bats.
Residual Effect following Mitigation	With the implementation of the prescribed mitigation measures, no significant residual effects are predicted.



Disturbance

Table 5-3 Assessment of Potential Impacts from Disturbance on Bats

Description of Effect Characterisation of unmitigated effect	Construction and operation of the proposed development will result in increased human activity, noise and lighting within the proposed development site. Therefore, the potential for disturbance to bats requires consideration. However, the proposed development is bordered by existing residential and commercial developments to the south and northwest as well as busy local roads. It is likely that bat species in the area are accustomed to some levels of disturbance. In the absence of appropriate design, the proposed development has the potential to disturb bats by illumination of commuting and foraging areas. This is assessed as a long-term slight effect.
Assessment of Importance prior to mitigation	This is assessed as a long-term slight effect on a receptor of <i>Local Importance (Higher Value)</i> .
Mitigation	Where lighting is unavoidable during construction, low-intensity lighting and motion sensors will be used to limit illumination. The lighting plan for the operational phase of the proposed development, has been designed with consideration of the following guidelines: Bat Conservation Ireland (Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers, BCI, 2010) and the Bat Conservation Trust (Guidance Note 08/18 Bats and Artificial Lighting in the UK (BCT, 2018), Dark Sky Ireland, to minimise light spillage, thus reducing any potential disturbance to bats. The proposed light fitting/scheme has been designed to help mitigate the effect of the artificial lighting on the local bat populations by incorporating: Warm White LED (2700K) light source – less attractive to insects, and a good light source to enable directional luminaires. Internal Louvres – to reduce light spill and eliminate upward light. Lowest possible design illuminance levels considering the nature of the site and 6m mounting height. Lamps have also been specified with 0 Degree tilt (where possible) to ensure limited unwanted light spill. The fittings will be angled no greater than 5 degrees to further reduce light spill. The public lighting has been designed for pathways and roads to a Lighting class of P2 and P3 as per IS EN 13201/BS5489. A lighting control regime is proposed to reduce illuminance during hours of lower human activity (i.e. 12:00am – 6:00am) - Public Lighting Profile 2A. This can be switched to Public Lighting Profile 4D, where necessary, to further reduce lux levels during periods of peak bat activity (i.e. 30mins after sunset and 40 minutes before sunrise).
Residual Effect following Mitigation	With the implementation of the prescribed mitigation measures, no significant residual effects are predicted.



6. CONCLUSION

Seven but species were recorded across the proposed development site. No roosts were identified within the derelict cottage, adjacent shed or residential bungalow. Foraging and commuting was mainly associated with mature trees/hedgerows forming field boundaries.

This report provides a full and comprehensive assessment of the potential for impact on bat populations within the site boundary. The surveys and assessment provided in this report are in accordance with the relevant industry guidance. It is noted that the proposed development will not result in any significant effects on bats.

Taking the above information into consideration and having regard to the precautionary principle, it is considered that the proposed development will not result in the significant loss of habitats of high ecological significance for bat species and will not have any significant impacts on the ecology of the wider area for bats.

Provided that the proposed development is constructed and operated in accordance with the design, best practice and mitigation that is described within this report; no significant impacts on local bat populations will occur at any geographic scale.



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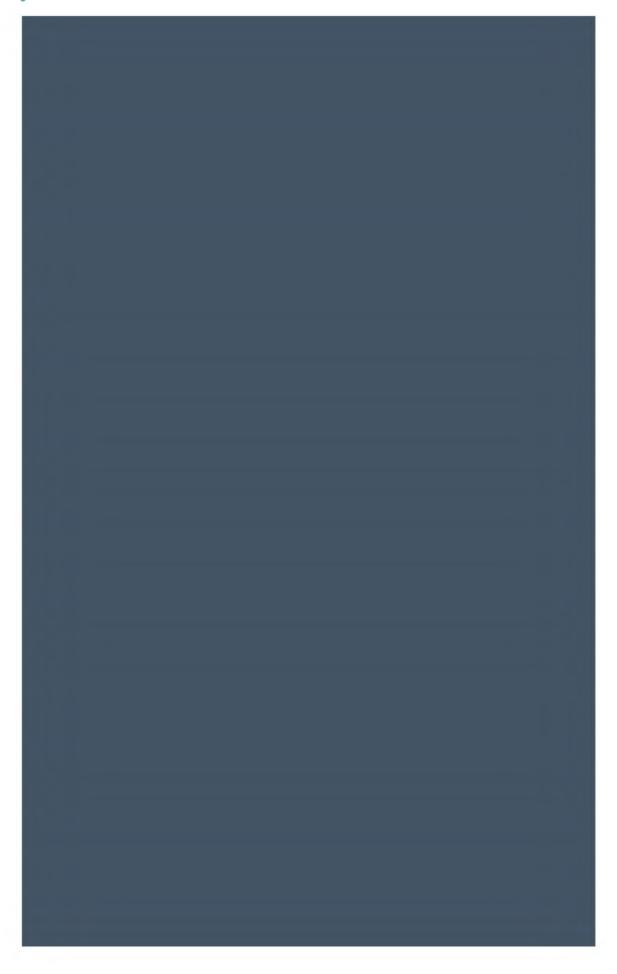
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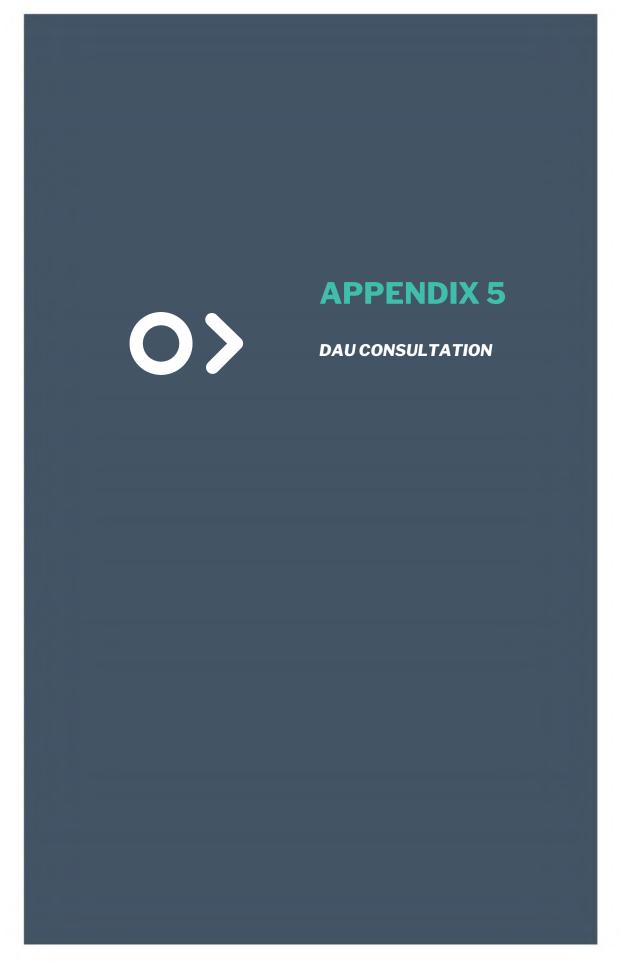
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Your Ref: 180747 - Castlegar SHD

Our Ref: G Pre00109/2021 (Please quote in all related correspondence)

26th May 2021

MKO Tuam Road Galway H91 VW84

Via email: josullivan@mkoireland.ie

Re: 180747 - Castlegar SHD - Consultation

A chara

I refer to your pre-planning correspondence received on 8th April in connection with the above proposed development.

Outlined below are heritage-related observations/recommendations co-ordinated by the Development Applications Unit under the stated headings.

Nature Conservation

The Department refers to your email correspondence and Scoping Documents on the 8th April 2021, in relation to a proposed Strategic Housing Development (SHD) at Bóthar an Chóiste, Castlegar, Galway City. The project location is noted, as is the indicative ecological scope of works. No further documentation has been received.

This submission is made by the Department in its advisory role in relation to biodiversity, nature conservation, and the nature directives (i.e. the Birds and Habitats Directives). The observations are not exhaustive and focus on key issues of potential relevance to European sites, natural habitats and protected species, biodiversity protection, aspects of proper planning and sustainable development, and the scope of the environmental assessments that may be required. The observations are made on the basis of the information provided and are without prejudice to any future recommendation that may be made by the Department if/when a planning application is made.

Aonad na nIarratas ar Fhorbairt

Development Applications Unit

Oifigí an Rialtais

Government Offices

Bóthar an Bhaile Nua, Loch Garman, Contae Loch Garman, Y35 AP90

Newtown Road, Wexford, County Wexford, Y35 AP90



The following documents and guidelines should be consulted during preparation of any EIAR or EIAR screening document:

- Circular Letter: PL 05/2018 Transposition into Planning Law of Directive 2014/52/EU
- Dept. of Housing, Planning and Local Government (2018), Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment,

Other important guidance documents that should be consulted include the following:

- Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2017.
- European Commission guidance document on the implementation of the EIA Directive (Directive 2011/92/EU as amended by 2014/52/EU): Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impacts Assessment Report, European Commission, 2017. Noting in particular the 'Review Checklist'.

General ecological considerations

Assessment of the direct and indirect significant effects of the project on biodiversity should be made, where applicable, with regard to:

- Natura 2000 sites, i.e. Special Areas of Conservation (SAC) designated under the EC Habitats Directive (Council Directive 92/43/EEC) and Special Protection Areas (SPA) designated under the EC Birds Directive (Directive 2009/147 EC),
- Habitats and species protected under Habitats Directive Annex I habitats, Annex II species and their habitats, and Annex IV species and their breeding sites and resting places (wherever they occur), Bird species protected under the Birds Directive – Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur),
- Other designated sites, or sites proposed for designation, such as Natural Heritage Areas and proposed Natural Heritage Areas, Nature Reserves and Refuges for Fauna or Flora, designated under the Wildlife Acts 1976 to 2018
- Species protected under the Wildlife Acts including protected flora (note Flora (Protection) Order 2015)
- Important bird areas such as those identified by Birdwatch Ireland,
- Features of the landscape, which are of major importance for wild flora and fauna, such as those with a "stepping stone" and ecological corridors function, as referenced in Article 10 of the Habitats Directive.
- Other habitats of ecological value in a national to local context (such as those identified as locally important biodiversity areas within Local Biodiversity Action Plans and County Development Plans),
- Red data book species,
- and biodiversity in general.



Reference should be made to the National Biodiversity Action Plan 2017-2021, Galway City Development Plan 2017-2023, Galway City Biodiversity Action Plan, as well as the All Ireland Pollinator Plan 2015-2020.

Likely significant effects on European sites

The site is located 1 km south east from Lough Corrib Special Area of Conservation (SAC 000297), 3.2 km from Lough Corrib Special Protection Area (SPA 004042) and 2 km from Inner Galway Bay SPA (004031) and Galway Bay Complex SAC (SAC 000268). These European sites have site specific conservation objectives, and associated supporting documents and habitat and species datasets, all of which should be accessed and utilised in producing the NIS, if necessary.

In relation to potential significant effects on a European site, assessments are carried out with respect to the implications for the <u>conservation objectives</u> of that site. Where available, the attributes, targets and notes specified as part of the conservation objectives will determine the scope and detail of surveys, data and analyses required to produce an NIS¹, if required. The NIS should present the scientific examination of all necessary evidence and data. It should be noted that the conservation objectives of a European site are wider in scope than the qualifying interests or special conservation interests alone, and will encompass other habitats and species, as well as aspects of habitat structure and function, and existing environmental problems and trends. The final analyses are carried out with respect to whether the conservation objective is <u>to maintain</u> or <u>to restore</u> the favourable conservation condition of the habitat or species in question within the site.

The key concerns in relation to likely significant effects of the project alone and in combination with other plans and projects, on these European sites, in view of their conservation objectives, include the following:

- Disturbance of potential resting / roosting sites for Annex II species (e.g. Lesser Horseshoe Bat)
- Added pressures on existing water services which, in this case, are linked to European sites, e.g. increased water abstraction from, and increased discharges of treated effluent to SACs and SPAs
- Added pressures on other existing services and infrastructure, including transport infrastructure, and the need for future developments such as roads and cycleways which may be unable to avoid European sites, e.g. as set out in the Galway Transport Strategy
- Increased disturbance and displacement of species, and progressive habitat loss, fragmentation and deterioration surrounding European sites arising the development, increased local populations and urban encroachment, and the pressures outlined above
- Consideration should also be given to Article 4(4) of the Birds Directive specifically to avoid pollution or deterioration of bird habitats outside Special Protection Areas. As the

¹ Noting the definition and function of 'NIS' in planning law, and the tests and standards of the appropriate assessment process



species of Special Conservation Interest (SCI) also depend on habitats and landscape features outside designated sites Ballindooly Lough and Wetlands are 140m north of the site location. This wetland provides an import habitat for wintering birds and Special Conservation Interest (SCI) species found in the nearby SPAs. It is important that hydrological integrity of the wetland is maintained in view of its importance for the SCI species and also in terms of its importance with regard to the presence of Annex I habitats (e.g. Molinia meadows, Cladium and Alkaline Fen)

Likely significant effects on the environment

The site map included in the referral to the Department is not clear on the exact site location of the proposed developments. It should be noted that Limestone Pavement (Annex I priority habitat) has been recorded in the Castlegar area.

Scrub and hedgerows link to Ballindooly Lough and wetlands and are an important ecological features as they have a role in relation to the maintenance and restoration of biodiversity, including under Article 10 of the Habitats Directive and as part of the 'green network' of Galway city. This should be recognised and the layout, design and scale of the development should be planned accordingly. This should also be considered with respect to proposed road upgrades.

Taking the above, and the results of habitat and species surveys, into account, a constraints-led approach should be adopted in planning and designing the layout and scale of the development, and in devising mitigation measures, including mitigation by avoidance. At a minimum, it is advised that areas of woodland and treelines on and bordering the site should be retained and protected by appropriate setback distances, landscaping and boundary treatments.

The development of the site should be consistent with protective policies and objectives in Galway City Development Plan, including Policy 4.1: Green network, and Policy 4.2: Protected spaces: Sites of European, national and local importance, Policy 4.3: Blue spaces: Coast, canals and waterways, Policy 4.4: Green spaces: Urban woodlands and trees, in particular.

Recent habitat mapping is available for the much of Galway city and should be sourced. Substantial data on species, particularly the more mobile species such as bats, are also available for parts of the city and the environmental assessment documentation associated with the proposed N6 Galway City Ring Road should be consulted.

Under Article 10 of the Habitats Directive, member states must maintain and where possible **enhance** landscape features to improve the coherence of the Natura 2000 network. Particular note should be given to the EU Green Infrastructure Strategy². Opportunities for landscape enhancement should be considered within the landscape plan which should seek to integrate Green Infrastructure and 'Nature Based Surface Water Management' into the project design and consideration of SuDS requirements. The Inland Fisheries Ireland recent publication "Planning for Watercourse in the Urban Environment" (2020)³ provides a useful quide.

² http://<u>ec.europa.eu/environment/nature/ecosystems/docs/green_infrastructure_broc.pdf</u>

³ http://www.fisheriesireland.ie/fisheries-management-1/86-planning-for-watercourses-in-the-urban-environment-1/file



The Landscape management plan should be guided by valuable resources available as part of the National All-Ireland Pollinator Plan https://pollinators.ie/resources/, and avoid planting of potential invasive species such as Cotoneaster (*Cotoneaster franchetii*).

The procedures outlined in 'Guidance Note 08/18 Bats and Artificial Lighting in the UK' ⁴ and Eurobats 'Guidelines for Consideration of Bats in Lighting Projects' should be consulted with respect to the overall lighting design. This should also take into consideration Dark Sky Ireland guidance "Best practice in public lighting" 6, notably that "warm" colour temperatures should be used at 2700K or less. Final sign off and testing of lighting scheme should be carried out at night to ensure that the lighting is directional and targeted and should not spill over onto treelines and hedgerows which can have adverse impacts on bats and biodiversity in general. Bat species are strictly protected under Annex IV of the Habitats Directive.

Ecological surveys required

Ecological surveys should be carried out in accordance with recognised methodologies, and should provide a comprehensive description and evaluation of the ecological baseline of the site, and an assessment of the likely direct, indirect and cumulative effects of all aspects of the proposed development.

Surveys should be carried out by suitably qualified persons at an appropriate time of the year depending on the species being surveyed for. The EIAR should include the results of the surveys, and detail the survey methodology and timing of such surveys. It is expected by this Department, that in any survey methodology used, best practice will be adhered to and if necessary non-Irish methodology adapted for the Irish situation. CIEEM's recent advice titled 'Advice note on the Lifespan of Ecological Reports and Surveys⁷ should be noted.

Specific attention should be given to assessment of:

- Hedgerows and ecological connectivity
- Bird usage of the site and surrounding areas (notably for feeding and roosting) and,
- Bats, including building inspections, roost presence/absence activity surveys, walked transects and automated static detectors.

Baseline data

With regard to the scope of baseline data, details of designated sites can be found at www.npws.ie. For flora and fauna the data of the National Parks and Wildlife Service (NPWS) should be consulted at www.npws.ie. Where further detail is required on any information on the website, a data request form should be submitted. This can be found at https://www.npws.ie/maps-and-data/open-data-policy. Further information may be found at https://dahg.maps.arcgis.com/home/index.html. Other sources of information relating to habitats and species include that of the National Biodiversity Data Centre

⁴http://www.bats.org.uk/news.php/406/new guidance on bats and lighting

http://www.eurobats.org/publications/eurobats_publication_series

⁶ https://www.darksky.ie/wp-

content/uploads/2020/04/BestPracticesInPublicLighting_BEspey2020.pdf

⁷ https://cieem.net/resource/advice-note-on-the-lifespan-of-ecological-reports-and-surveys/



(www.biodiversityireland.ie), Wetlands Surveys Ireland (www.wetlandsurveysireland.com), Environmental Sensitivity Mapping (www.airomaps.geohive.ie), Inland Fisheries Ireland (www.fisheriesireland.ie), BirdWatch Ireland (www.birdwatchireland.ie) and Bat Conservation Ireland (www.batconservationireland.org). Data may also exist at a County level within the Planning Authority.

Appropriate Assessment (AA) Guidance

Guidance on AA is available in the Departmental guidance document on Appropriate Assessment. which is available the **NPWS** web site on at www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf and in the EU Commission guidance entitled "Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the 92/43/EEC" Habitats Directive which can be downloaded http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura 2000 a ssess en.pdf. However CJEU and Irish case law has clarified some issues and should also be consulted.

Mitigation measures

Mitigation measures need to be assessed against the adverse effects the project or plan is likely to cause (alone or in combination with other projects or plans). To assess mitigation measures, the following tasks must be completed:

- list each of the measures to be introduced (e.g. noise bunds, tree planting);
- explain how the measures will avoid the adverse impacts on the site;
- explain how the measures will reduce the adverse impacts on the site.

Then, for each of the listed mitigation measures:

- provide evidence of how they will be secured and implemented and by whom;
- provide evidence of the degree of confidence in their likely success;
- provide a timescale, relative to the project or plan, when they will be implemented;

Where residual impacts remain, further mitigation measures may be required.

Monitoring

Evidence should be provided of how the mitigation measures will be monitored, and, should mitigation failure be identified, how that failure will be rectified.

The applicant should not use any proposed post construction monitoring as mitigation to supplement inadequate information in the assessment.



The above observations/recommendations are based on the papers submitted to this Department on a pre-planning basis and are made without prejudice to any observations that the Minister may make in the context of any consultation arising on foot of any development application referred to the Minister, by the planning authority/ies, in the role as statutory consultee under the Planning and Development Act, 2000, as amended.

You are requested to send further communications to the Development Applications Unit (DAU) at manager.dau@housing.gov.ie, or to the following address:

The Manager Development Applications Unit (DAU) **Government Offices** Newtown Road Wexford Y35 AP90

Is mise, le meas

Diarmuid Buttimer

Development Applications Unit



