# Proposed Social Housing Scheme at Keeraun, Ballymoneen Road, Galway City, Co. Galway

# Biodiversity Assessment Report

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## EXECUTIVE SUMMARY

The current report provides a biodiversity assessment of the proposed Social Housing Scheme at a site in Keeraun, Ballymoneen Road in Galway City, Co. Galway. The proposed development comprises a total of 71 housing units, including social houses, Traveller Appropriate Accommodation (TAA) houses as well as apartments. The potential impacts on designated areas are discussed and assessed in the accompanying Screening for Appropriate Assessment Report. Mitigation to protect water quality is required and the Screening concludes that a Natura Impact Statement is required. The current report assesses the potential impacts of the proposed development on terrestrial and aquatic flora and fauna.

The proposed development site at Keeraun was visited in October 2020 for a site walkover survey. This site visit was conducted as a preliminary survey prior to the Site Enabling Works. There are a total of 10 habitats found at the site, recorded during the site survey prior to the site enabling works. The main habitats at the site are Recolonising Bare Ground, Scrub, Drainage Ditch and Wet grassland. However, there are also small sections and mosaics of other habitats at the site including Dense Bracken, Improved Agricultural Grassland, Exposed Siliceous Rock, Fen and Flush, Spoil and Bare Ground and Treelines. Some of the habitats present on the site do have potential links with Annex I habitats and further surveys are required. There are no records of invasive species for the site nor were any found during the site walkover. Some mammal trails were noted in the scrub and dense bracken on the site but no mammal dwellings were found. No potential bat roosting habitat was found but potential foraging areas were noted due to the presence of suitable insect breeding areas. Two Snipe were noted on the site during the survey, as well as other common passerine and corvid species. It is likely that the proposed development will be connected to the Galway WwTP which provides a connection to the aquatic ecology present in Galway Bay. The drain on the site does provide suitable amphibian and reptile habitat, but is more likely to be suited to amphibians due to water depth. Common frog may breed on the site. Devil's bit scabious was noted on the site in very low abundance and there are records of Marsh fritillary in the 10km grid square which encompasses the site.

The potential for habitat loss, disturbance / displacement, water quality and invasive species impacts were identified in the current report. These impacts are noted to have the potential to affect the following Key Ecological Receptors identified for the site: designated areas, exposed siliceous rock, drainage ditch, fen and flush, treeline, terrestrial mammals, bats, aquatic ecology, reptiles and amphibians and terrestrial macroinvertebrates. The habitats present are not considered to be a significant ecological importance due to fragmentation and size, but are of some importance locally. Further surveys for potential Annex I habitat links are required. There will be direct habitat loss, water quality, disturbance and invasive species impacts on habitats and flora. Mammals are likely to be disturbed. Birds and bats may also be disturbed from the works. Disturbance was noted as likely to also occur during the operational phase. Displacement and mortality were also noted as potential impacts on amphibians and terrestrial invertebrates, in the absence of mitigation measures. Mitigation measures are provided to offset or reduce potential impacts on flora and fauna. These include measures including further surveying, to protect habitats, water quality, biosecurity mitigation, measures to reduce disturbance and following relevant guidelines. This includes works outside bird nesting season, common frog breeding season, and the marsh fritillary breeding season. A pre-construction mammal survey will be required. Surveys for potential Annex I habitat links and a species-specific Marsh Fritillary survey are required. A biodiversity area / pond is recommended to be included, as well as buffer zones around the site. Water quality mitigation will be outlined in detail in the NIS but likely measures are also listed in this report.

If mitigation is implemented, the proposed Social Housing Scheme at a site in Keeraun, Ballymoneen Road in Galway City, Co. Galway can be appropriately built and operated without significant adverse effects on designated areas, flora and fauna.

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# 1. INTRODUCTION

Ecofact Environmental Consultants Ltd. were commissioned to undertake a biodiversity assessment of the proposed social housing development at a site in Keeraun, Ballymoneen Road in Galway City, Co. Galway. The location of the proposed development is illustrated in Figure 1.

This report assesses the potential impacts of the proposed development on terrestrial and aquatic flora and fauna (ecology). The aim of the study is to identify features of ecological interest along the proposed development that may present constraints to development or where special mitigation is necessary. An evaluation is made of the scientific or conservation value of the sites identified and the potential for adverse impacts affecting designated sites following the implementation of appropriate mitigation at design stage.

The proposed social housing development at a site in Keeraun, Ballymoneen Road in Galway City does not lie within any SAC or SPA. However, there are connections present between the site and both the Galway Bay Complex SAC and the Inner Galway Bay SPA, as identified in the Screening for Appropriate Assessment Report (Ecofact, 2021). The Screening for Appropriate Assessment determined that a Natura Impact Statement is required due to the potential pathways for impacts, uncertainty and the requirement for mitigation (Ecofact, 2021).

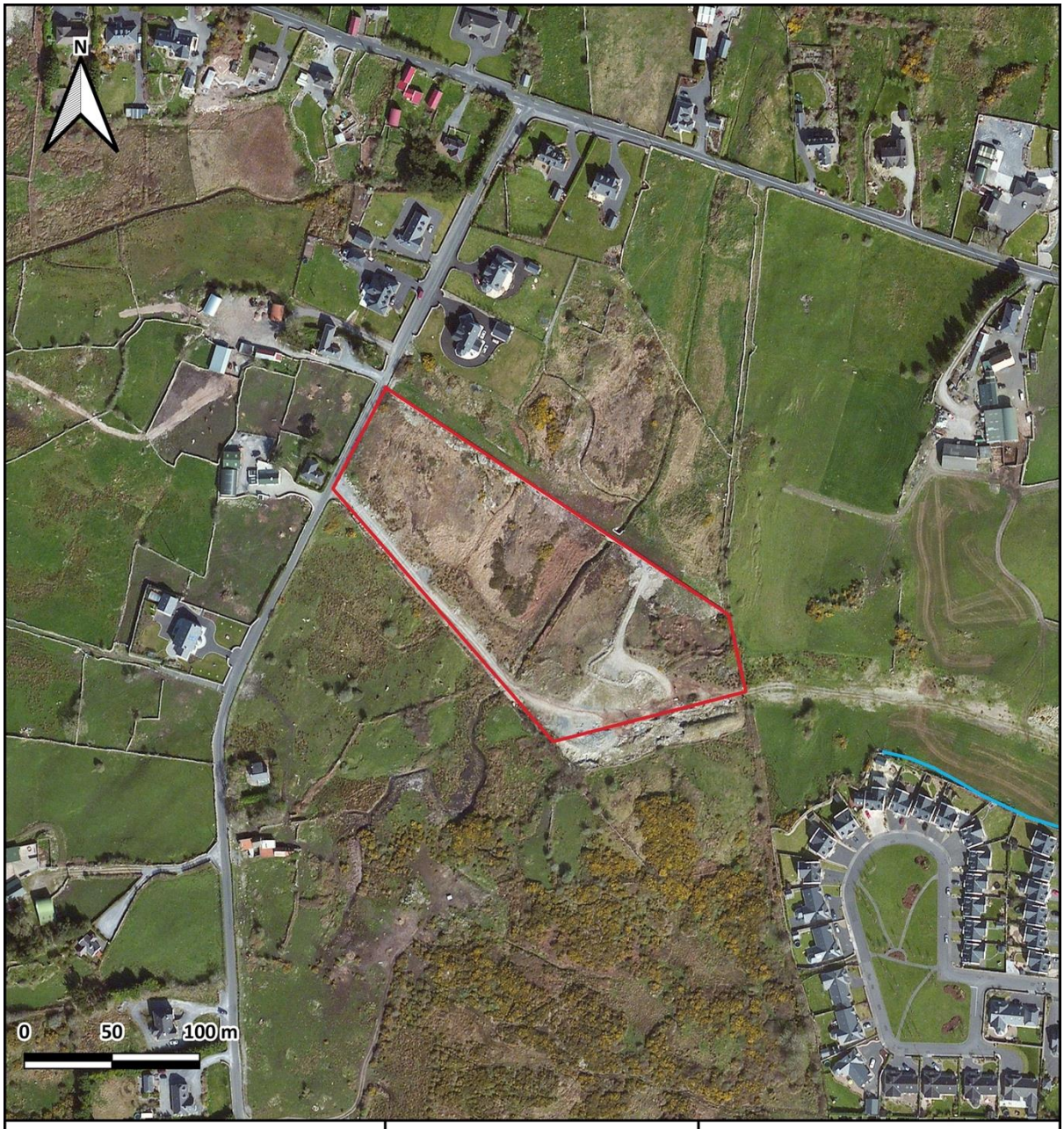


**Figure 1** Location of Proposed Development Site at Keeraun, Co. Galway.

# 2. METHODOLOGY

## 2.1 Guidelines and legislative context

This assessment has been prepared with regard to the following guidance documents, while further references are provided throughout this chapter:

- EPA (2017) Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR);
- European Commission (2017b) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report;
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine;
- National Roads Authority (2009) Guidelines for Assessment of Ecological Impacts of National Road Schemes; and
- The Heritage Council publication '*Best Practice Guidance for Habitat Survey & Mapping'* (Smith *et al*., 2011) was also referenced for habitat mapping.

## 2.2 Desk study

A desktop study was carried out to identify features of ecological importance within the proposed development site and surrounding areas. The ecological assessment included designated and sensitive areas in the vicinity of the proposed development site to enable sufficient assessment of the likelihood of significant effects on habitats, flora and fauna.

Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) in the vicinity of the proposed development site were identified. This information was collated by accessing the NPWS website.

Protected habitats, Annex I habitat layers from NPWS and NBDC, and results of NPWS national surveys were also accessed to gain an understanding of the site and study area. This included Limestone pavement distribution, National Juniper Survey, Article 17 Habitat Grid Squares, Semi-natural Grassland Survey and more.

The online database hosted by the Irish National Biodiversity Data Centre (NBDC) (www.biodiversityireland.ie) was also utilised to assess the importance of the study area for mammals and bats. Other sources accessed to gather information on bats in the study area include: -

- Bat Conservation Trust Distribution Atlas of Bats in Britain and Ireland 1980-1999 (Richardson, 2000);
- Irish Red Data Book 2: Vertebrates - Threatened Mammals, Birds, Amphibians and Fish in Ireland (Whilde 1993); and
- Irish Red List No. 3: Terrestrial Mammals (Marnell et al. 2009).

## 2.3 Field Survey

The proposed development site at Keeraun was visited in October 2020. This site visit was conducted as a preliminary survey prior to the Site Enabling Works. A preliminary impact assessment for the site enabling works was then carried out based on the findings of the walkover survey. At the time of writing, the site enabling works have been carried out. This method statement for these works were detailed in

a method statement prepared by P&D Lydon Contractors for Galway City Council (P&D Lydon, 2020). The multidisciplinary ecological site walkover therefore utilises information gathered prior to the commencement of site enabling works. Since carrying out the initial walkover survey, a *'Report on the Geophyscial Investigation at Keeraun Ballymoneen, Co. Galway'* has been undertaken by Apex Geophysics (2020).

A walkover habitat survey was undertaken during daylight hours. The habitats present in the study area were categorised and photographed and particular attention was paid to the primary habitats and land take to be directly affected by the proposed development, with regard to *'Best Practise Guidance for Habitat Surveying and Mapping*' (Smith *et al.,* 2011). Habitats were assessed and categorised as per '*A Guide to Habitats in Ireland'* by J.A. Fossitt (2000) and habitat maps were produced. The proposed development area was also inspected for evidence of ecological features of high conservation concern such as those flora and fauna that occur in the closest Natura 2000 sites.

A walkover mammal survey of the proposed development site was completed. The walkover mammal surveys were conducted to assess the potential for mammal activity in the study area, including observing trails, tracks and other mammal signs such as scat.

Regarding bats, all potential bat roost features (PRFs), which includes trees and built structures, that were considered likely to be disturbed or removed during the project, i.e. those within the footprint of the proposed development area, were assessed in the field survey. The survey had regard to the methodology outlined in *Bat Mitigation Guidelines for Ireland* by Kelleher & Marnell (2006), *Bat Surveys for Professional Ecologists: Good Practice Guidelines* by Collins (2016) and *Bat Tree Habitat Key* by Andrews and Gardener (2016). The assessment of features involved careful inspection from the ground to identify evidence indicating the level of potential of each feature as a bat roost and / or the presence of bats. Key indications of potential as a roost habitat that were searched for in the inspection included, rot / knot / woodpecker holes, cracks and splits in stems and branches, cavities from branch tearing, detached bark, ivy growth, gaps between overlapping stems or branches and other hollows.

The trees and hedgerows on the proposed development site and environs were assessed in terms of their importance for birds. The presence of potential nesting habitat was identified on the site.

Cognisance of any other ecological features of interest such as potential for aquatic ecological interests on site, the occurrence of any terrestrial invertebrates, reptiles or amphibians of conservation importance, and any invasive species of concern was also noted during the site survey.

## 2.4 Evaluation

The evaluation of impact (effect) significance is a combined function of the value of the affected feature (its ecological importance), the type of impact, and the magnitude of the impact. It is therefore necessary to identify the value of ecological features within the study area in order to evaluate the significance and magnitude of possible effects. Ecological features are assessed on a scale ranging from international-national-county-local. The local scale is approximately equivalent to one 10 km square but can be operationally defined to reflect the character of the area of interest. This significance evaluation, taken from NRA (2009), for assessing impact magnitude is provided in Appendix 3.

## 2.5 Study Area / Zone of Influence

The study area for the proposed development was defined with reference to the following: -

- The nature, size and location of the project;

- The sensitivities of the ecological receptors; and
- The likely cumulative effects.

The proposed development was assessed, having regard to its characteristics, to identify the extent over which likely significant effects on the ecological environment could occur. From this, the study area was defined.

In relation to terrestrial habitats and flora and terrestrial invertebrates, the study area was defined as 100m surrounding the footprint of the proposed development. No likely effects on terrestrial habitats and flora are envisaged beyond 100m from the footprint of the development.

In relation to aquatic habitats and flora as well as reptiles and amphibians; due to the presence of the drainage ditch on site, impacts on aquatic habitats and flora may arise. Due to the size of the development, the nature of the receiving environment, potential cumulative effects and the sensitivity of the habitats at the site, areas with a downstream hydrological connection up to 10km, and downstream in relation to the connection via the Galway WwTP, were assessed for likely significant effects.

## 3. DESCRIPTION OF PROJECT CHARACTERISTICS

The proposed development comprises a Social Housing Scheme at a site in Keeraun, Ballymoneen Road in Galway City, Co. Galway. The proposed development comprises a total of 71 housing units (mix of 1-4 bed housing units), including social houses, Traveller Appropriate Accommodation (TAA) houses as well as Apartments. Enabling Works have already been undertaken at the proposed development site.

A Civil and Structural Design Report has been completed for the development by RPS Engineering (2021). This report details that there are main foul and surface water services crossing the site, with a watermain owned by Irish Water located on the Ballymoneen Road. There is an existing foul water pipe along the access road within the site with several manholes and is noted in the report to have the ability to facilitate a foul water connection (RPS Consulting, 2021). The proposal includes for a diversion to this network to accommodate the layout of houses for the site. Foul water pipe layout drawings are provided Appendix E of the RPS report. No pre-connection letter from Irish Water has been received.

Storm water is detailed to be directed to an onsite attenuation tank and is aligned with Sustainable Urban Drainage Systems (SuDS) requirements, with a petrol interceptor included. There is also an existing storm water pipe on the site that will have to be diverted. Drawings of the Storm Water network layout are provided in Appendix E of the RPS Report. This report also notes that the drainage ditch on the site will have to be diverted due to the layout of houses, and it is proposed to culvert the drain along its full length. No detailed drawings of the proposed culvert have been provided and the route has yet to be confirmed, according to drawings in Appendix E of the RPS report. The report further notes that a Stage 1 Flood Risk Assessment will be carried out but there are no indications from an initial assessment that the site is subject to flooding (RPS Consulting, 2021). The Stage 1 Flood Risk Assessment has not been completed at the time of writing the current report.

Due to the location of the site, it is considered likely that the proposed development will be connected to the Galway Wastewater Treatment Plant (WwTP) which is located on Mutton Island and discharges directly into both the Galway Bay Complex SAC and the Inner Galway Bay SPA. It appears that this WwTP was upgraded in 2017 to 170, 000 P.E. The most recent available Annual Environmental Report (AER) at the time of writing (4th May 2021) is from 2019. This AER indicates that the discharge at this

time was compliant and the annual mean and maximum hydraulic loading is less than the peak Treatment Plant Capacity. The remaining capacity of the plant is given as 67,722 for 2019 and the AER notes that the capacity will not be exceeded in the next three years. The AER also notes upgrades planned at the plant to completed with many noted to be at the planning stage (Irish Water, 2019). An Taisce completed a report in August 2020 on the Mutton Island treatment plant (An Taisce, 2020). This report raises serious concerns over the regular release of raw sewage during high overflow events, backed by testing, coupled with restrictions on swimming in nearby beaches issued by the EPA for 'Poor' bathing water quality and therefore challenges that the current capacity of the Mutton Island plant has already been exceed, there is strong uncertainty regarding the adequacy of this plant (An Taisce, 2020).

The Geophysical Investigation undertaken by Apex Geophysics (2020) involved trial pits and boreholes to provide geophysical data and was undertaken after the current ecological walkover survey. The report found that the site is covered in thin topsoil over ground comprising of slightly sandy, slightly clayey silty gravel soils, with up to 1.3m of peat encountered. Furthermore, up to 2.4m of presumed weathered granite comprising slightly sandy, slightly clayey silty gravel was encountered over medium strong to very strong massive granite (Apex Geophysics, 2020). No faults or fissure zones were interpreted in the bedrock. The report concludes that the ability for excavation of the *'highly to moderately weathered granite would vary from diggable to requiring breaking and any excavation of the slightly weathered to fresh granite would require heavy breaking and / or blasting'* (Apex Geophysics, 2020).

# 4. RECEIVING ENVIRONMENT

## 4.1 Designated Areas

### *4.1.1 Natura 2000 Sites*

The location of the proposed development in the context of the Natura 2000 network is shown in Figure 2 below. The closest Natura 2000 sites to the proposed development are the Galway Bay Complex SAC (000268) and the Inner Galway Bay SPA (004031). The Galway Bay Complex SAC is located c. 1.8km south and the Inner Galway Bay SPA is located c. 1.9km south.

In relation to other Natura 2000 sites within 15km of the proposed development, the Lough Corrib SAC (000297) is located c. 3.6km east, the Lough Corrib SPA (004042) is located c. 3.1km north-east, the Connemara Bog Complex SAC (002034) is located c. 9.1km west, the Ross Lake and Woods SAC (001312) is located c. 10.9km north, the Creggana Marsh SPA (004142) is located c. 12.1km east, the Connemara Bog Complex SPA (004181) is located c. 13.1km west, the East Burren Complex SAC (001926) is c. 14.7km south of the site, and the Gortnadarragh Limestone Pavement SAC (001217) is located c. 14.5km north.

### *4.1.2 Natural Heritage Areas*

Natural Heritage Areas (NHAs) are sites of national ecological importance in the Republic of Ireland. NHAs and pNHAs within 5km of the proposed development are illustrated in Figure 3.

The only Natural Heritage Area within 5km of the proposed development site is the Moycullen Bogs NHA, which is located c. 335m north-west of the site. There is no hydrological connection with the bog complex of this NHA. The Galway Bay Complex Proposed Natural Heritage Area is located c. 1.8km south of the site and shares the boundary with the Galway Bay Complex SAC, which is assessed in the Screening for Appropriate Assessment Report (Ecofact, 2021). The final pNHA within 5km of the proposed development is the Lough Corrib pNHA, which is c. 3.4km east. There is no hydrological connection between the proposed development site and this pNHA.

### *4.1.3 Other*

Inner Galway Bay south of the proposed development site is designated as a Ramsar Convention Site (Site Code: 838). The description of the site notes that it supports the richest seaweed flora on the Irish Coast (500+ species) and 65% of the Irish marine algal flora occur in the area. The site also supports internationally and nationally important numbers of numerous species of waterbirds, with a large Cormorant colony on Deer Island.

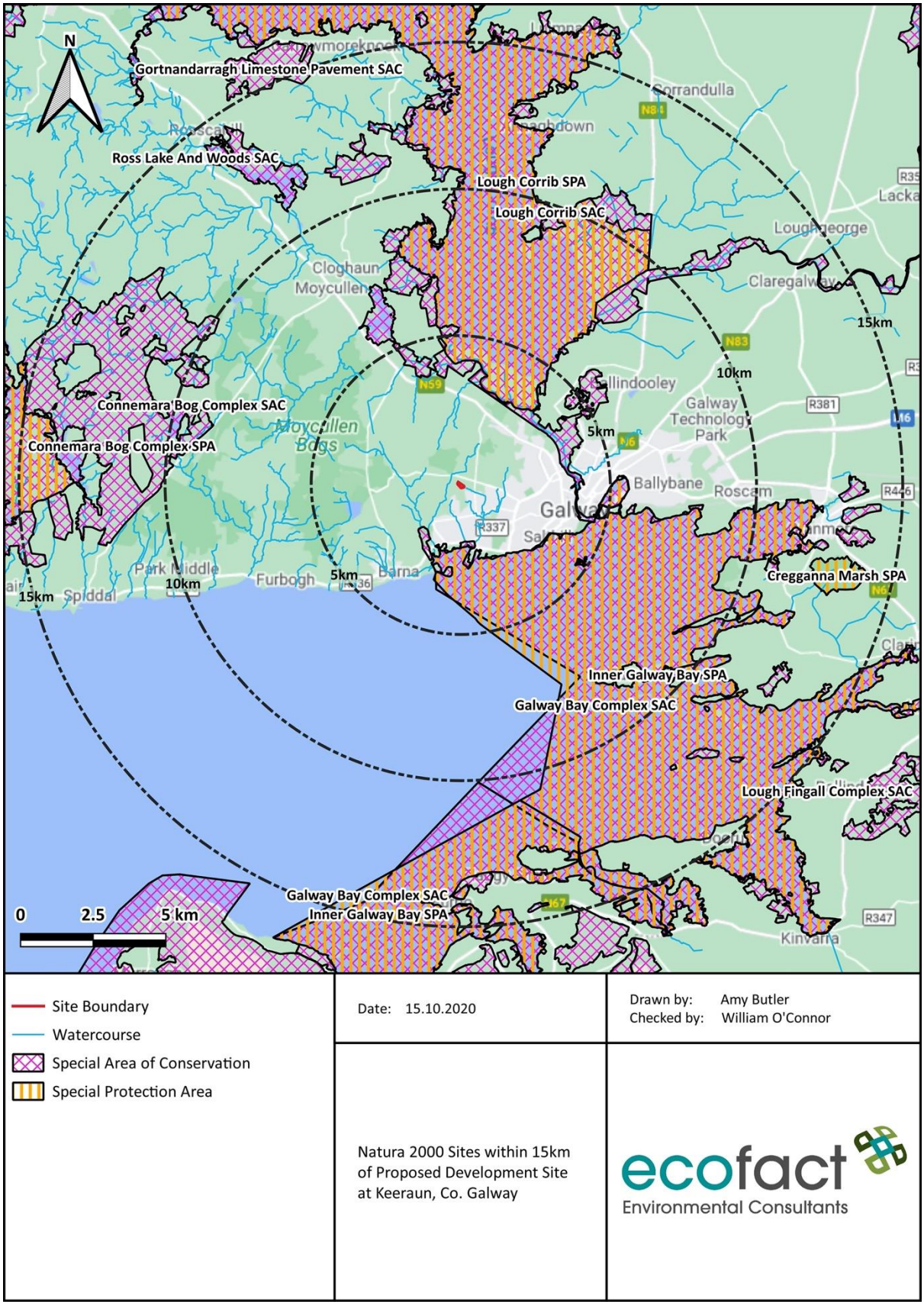


**Figure 2** Natura 2000 Sites within 15km of Proposed Development Site at Keeraun, Co. Galway.

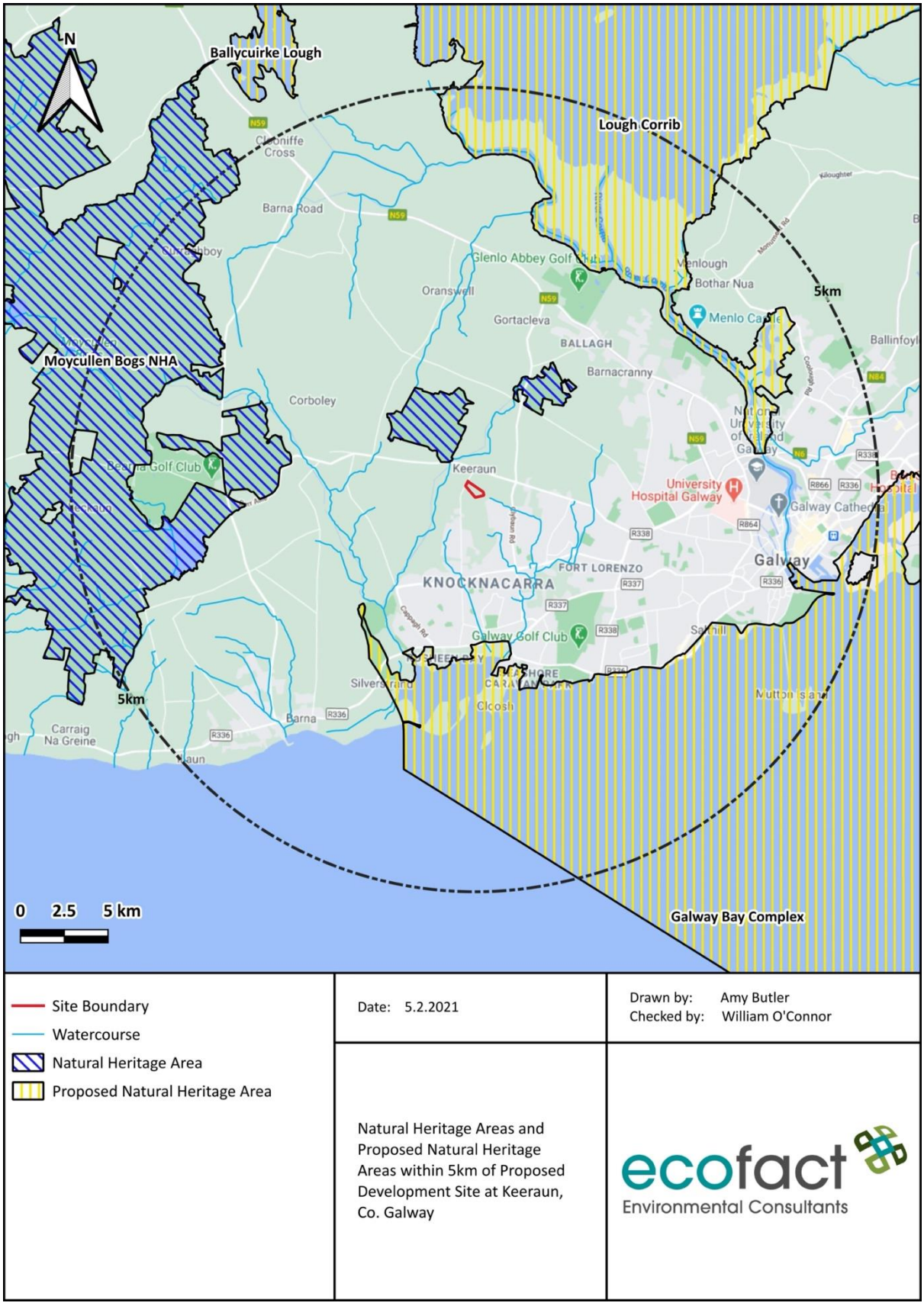


**Figure 3** Natural Heritage Areas and Proposed Natural Heritage Areas within 5km of Proposed Development Site at Keeraun, Co. Galway.

## 4.2 Habitats and Flora

There are a total of 10 habitats found at the proposed development site, recorded during the site survey prior to the site enabling works. The main habitats at the site are Recolonising Bare Ground (ED3), Scrub (WS1), Drainage Ditch (FW4) and Wet grassland (GS4). However, there are also small sections and mosaics of other habitats at the site including Dense Bracken (HD1), Improved Agricultural Grassland (GA1), Exposed Siliceous Rock (ER1), Fen and Flush (PF1/PF2), Spoil and Bare Ground (ED2) and Treelines (WL2). The habitats found at the site are given in table 1 below. Furthermore, a habitat map of the site is provided in Figure 4.

**Table 1** Habitats found at the proposed development site classified using Fossitt (2000).

| Habitat Code | Habitat Type |
|---|---|
| ED3 | Recolonising Bare Ground |
| WS1 | Scrub |
| FW4 | Drainage Ditch |
| GS4 | Wet Grassland |
| HD1 | Dense Bracken |
| GA1 | Improved Agricultural Grassland |
| ER1 | Exposed Siliceous Rock |
| PF1/PF2 | Fen and Flush (Rich/Poor) |
| ED2 | Spoil and Bare Ground |
| WL2 | Treeline |

A search for invasive species in the study area was undertaken using the National Invasive Species database on the National Biodiversity Data Centre online maps. There are no records from this database for any invasive species at the proposed development site. The nearest record is c. 1km from the site, as is for Japanese knotweed *Fallopia japonica* I 2014.

### *4.2.1 Recolonising Bare Ground ED3*

Recolonising Bare Ground is present along the rough access road from the main road to the north-west, along the southern boundary and to the south-eastern side of the site. This access track is not regularly used due to the level of vegetation present.

This habitat type is used for any areas where bare or disturbed ground, derelict sites or artificial surfaces of tarmac, concrete or hard core have been invaded by herbaceous plants. Vegetation cover should be greater than 50%. Most of the typical colonisers are ruderals, or weed plants. Common examples include Colt's Foot *(Tussilago farfara*), Nettle *(Urtica dioica*), Dandelion *(Taraxacum* spp.), willow-herbs *(Epilobium* spp.) and ragworts *(Senecio* spp.).

*Evaluation:* This habitat is evaluated as being of 'Local Importance'.

### *4.2.2 Scrub WS1*

Scrub is one of the most common habitats on the proposed development site. This may have been cleared during the site enabling works. This is present in sections of varying size, as shown in Figure 4. Some old mammal trails were noted in this habitat which mainly comprised of Gorse *Ulex europaeus*.

Scrub is defined as areas that are dominated by at least 50% cover of shrubs, stunted trees or brambles. The canopy height is generally less than 5m, or 4m in the case of wetland areas. Common species found in this habitat type include spinose plants such as Hawthorn (*Crataegus monogyna)*, Blackthorn (*Prunus spinosa)* and Gorse (*Ulex europaeus)* (Fossitt, 2000).

*Evaluation:* This habitat is evaluated as being of 'Local Importance' as it does provide protection for mammals moving through the landscape.

### *4.2.3 Drainage Ditch FW4*

There is a drainage ditch which flows through the proposed development site, from the southern boundary, flowing north-west, as can be seen in Figure 4. This drainage ditch is heavily vegetated in parts with Rushes and has a low flow likely due to gradient. There is a good amount of standing water present. This habitat type likely provides amphibian habitat and also a surface water source for the Fen and Flush present north-east of the drain.

Drainage ditches consist of entirely artificial linear water bodies or wet channels, and also include small sections of natural watercourses that have been excavated or modified. These water bodies are not used for navigation and are generally created to improve drainage and control the flow of water. This habitat type must either contain water or be wet enough to support wetland vegetation. These water bodies must be maintained and cleared in order to keep them open. Water levels will undergo seasonal fluctuations and these habitats are generally associated with hedgerows (Fossitt, 2000).

*Evaluation:* This habitat is evaluated as being of 'Local Importance, Higher Value'.

### *4.2.4 Wet grassland GS4*

Wet grassland is common on the proposed development site as can be seen in Figure 4. This is present mainly adjacent to the drainage ditch on the site. This area is wet with large areas of dense rush growth. This may have been cleared by the site enabling works. Wet grassland can provide good insect production for birds and bats.

Wet grassland typically occurs on wet or waterlogged mineral or organic soils that are poorly drained, and can be found on sloping or flat ground in upland and lowland areas. In some cases this habitat type can be influenced by seasonal or periodic flooding, for example in the River Shannon Callows or the wet grasslands of turlough basins. This habitat type also consists of areas of poorly-drained farmland that has not recently been improved. The most common species that can be found in this type of habitat include rushes (*Juncus effusus, J. acutiflorus, J. articulatus, J. inflexus*), Yorkshire-fog *(Holcus lanatus*), Marsh Foxtail *(Alopecurus geniculatus*) and small sedges (*Carex flacca, C. hirta, C. ovalis*) (Fossitt, 2000).

*Evaluation:* This habitat has been evaluated as being of 'Local Importance'.

### *4.2.5 Dense Bracken HD1*

Dense bracken is present on the proposed development site mainly to the eastern boundary but with a small section also present north of the drainage ditch. At the time of the survey in 2020 some of the bracken had died back but the fronds were still visible.

Dense bracken habitat type is used for areas of open vegetation that are dominated by Bracken *(Pteridium aquilinum*). Cover of the fern may be either patchy or continuous, but should exceed 50% overall. The ferns die back in the autumn but remains of fronds usually persist throughout the winter.

*Evaluation:* This habitat has been evaluated as being of 'Local Importance'.

### *4.2.6 Improved Agricultural Grassland GA1*

This is a very common habitat type in Ireland and is found in some small sections on the proposed development site. This habitat type is unlikely to be used for agriculture due to its small fragmentation on the site but it comprises a species-poor mosaic when compared with other habitats on the site

Improved Agricultural Grassland (GA1) consists of heavily modified or intensively managed grassland typically used for grazing and / or silage making. This habitat type is generally species-poor with abundant Rye-grass (*Lolium* sp.) often associated with White Clover (*Trifolium repens*). Improved Agricultural Grassland comprises of monoculture grasslands and rye-grass leys which typically form part of an arable rotation. Common species which can be found in this type of habitat include Meadow grasses *(Poa* spp.), Dandelion *(Taraxacum* spp.), thistles *(Cirsium arvense, C. vulgare*), and docks *(Rumex* spp.) (Fossitt, 2000).

*Evaluation:* This species-poor grassland habitat has been evaluated as being of 'Local Importance'.

### *4.2.7 Exposed Siliceous Rock ER1*

This habitat type is not present on the site in any large sections, but exposed rock is noted in some areas close to the Dense Bracken habitat to the east and among the fen and flush habitat to the mid-north of the site. According to the Apex Geophysics survey, the bedrock on the site is comprised of granite (Apex Geophysics, 2020). The Geological Survey of Ireland maps also confirm this.

This habitat type is used for all natural and artificial exposures of siliceous bedrock or loose rock, apart from some areas of rocky coastline, unstable accumulations of rocky material, and built stone structures. It occurs in upland and lowland areas and can include inland cliffs, crags and other naturally exposed bedrock surfaces, in addition to rock surfaces that are exposed through excavation and construction. Exposed siliceous rock may have some patchy cover of vegetation but this should not exceed 50% in total. Plant communities of rocky ledges and crevices may feature a wide range of herbs, ferns and mosses. This habitat type can have links with the Annex I habitat 'Siliceous rocky slopes with chasmophytic vegetation (8220)'. Further specific surveys are required to determine if there are potential links with this Annex I habitat.

*Evaluation:* Further surveys are required to evaluate this habitat on site.

### *4.2.8 Fen and Flush PF1/PF2*

This habitat is located to the mid-north of the site and is fed by the surface water drain on the site. This area is wet and comprises some mosses as well as a small abundance of Devil's bit scabious *(Succisa pratensis*). A pair of Snipe were noted to be using this habitat for foraging at the time of the current survey. This is likely to be base-poor due to the presence of granite on the site, but further investigation is required to determine the fen and flush habitat on the site.

Fen and Flush are fed by groundwater or flowing surface waters that are at least midly base-rich or calcareous, and are usually found over areas of limestone bedrock. The substratum is waterlogged peat and this usually has a high mineral content. Vegetation is typically dominated by Black Bog-rush *(Schoenus nigricans*) and / or small to medium sedges such as *Carex viridula*, *C. nigra*, *C. dioica* and *C. panicea*. Other prominent components of the vegetation include rushes, particularly Blunt-flowered Rush *(Juncus subnodulosus*), Purple Moor-grass *(Molinia caerulea*), Marsh Pennywort *(Hydrocotyle vulgaris*), Lesser Spearwort *(Ranunculus flammula*), Water Mint *(Mentha aquatica*), Common Marsh-bedstraw *(Galium palustre*), Grass-of-parnassus *(Parnassia palustris*), Common Butterwort *(Pinguicula vulgaris*) and Devil's bit scabious *(Succisa pratensis*).

Poor Fen and Flush (PF2) includes peat-forming fens and flushes that are fed by groundwater or flowing surface waters that are acidic. In most cases the substratum is acid peat which has a higher nutrient status than that of ombrotrophic bogs. The vegetation of poor fens and flushes is typically dominated by sedges particularly *Carex rostrata, C. nigra, C. curta, C. lasiocarpa,* and *C. echinata* and / or rushes *Juncus effusus, J. articulates, J. acutiflorus*). Other common components include Common Cottongrass *Eriophorum angustifolium*, Velvet Bent *Agrostis canina*, Purple Moor-grass *Molinia caerulea*, Yorkshire-fog *Holcus lanatus* and broadleaved herbs such as Marsh Violet *Viola palustris*. Poor fen and flush are not listed on Annex I of the Habitats Directive, but Fossitt (2000) does note that due to its limited extent in Ireland it should be regarding as being of special conservation importance.

*Evaluation:* Further surveys are required to evaluate this habitat on site.

### *4.2.9 Spoil and Bare Ground ED2*

This habitat type is sparse on the proposed development site as many areas of spoil have been recolonised, as thus are classified as Recolonised Bare Ground. However, two very small areas of disturbed spoil were noted to the norther boundary of the site and comprised some rubble.

This habitat type includes heaps of spoil and rubble, and other areas of bare ground that are either very transient in nature, or persist for longer periods of time because of ongoing disturbance or maintenance. Spoil is generally associated with the excavation or construction of roads and buildings, or with drainage and dredging activities. Once the disturbance ends, spoil is readily colonised by plants.

*Evaluation:* This habitat type is evaluated as being of 'No Ecological Value'.

### *4.2.10 Treelines WL2*

Treelines are relatively sparse and scattered on the proposed development site and occur only along the boundary to the road north-west of the proposed development.

Treelines includes a single or narrow line of trees that are greater than 5m in height and like hedgerows; they typically occur at field or property boundaries. Hedgerows that are dominated by trees greater than 5m in height are also included within this category. Most treelines are planted and are spaced apart. The majority of treelines comprise non-native tree species such as Sycamore *(Acer pseudoplatanus*), Beech *(Fagus sylvatica*), limes *(Tilia* spp.), some poplars *(Populus* spp.), Horse Chestnut *(Aesculus hippocastanum*) and conifers (Fossitt, 2000).

*Evaluation:* This habitat is evaluated as being of 'Local Importance, Higher Value'. This type of habitat is valuable to wildlife for protection and movement.

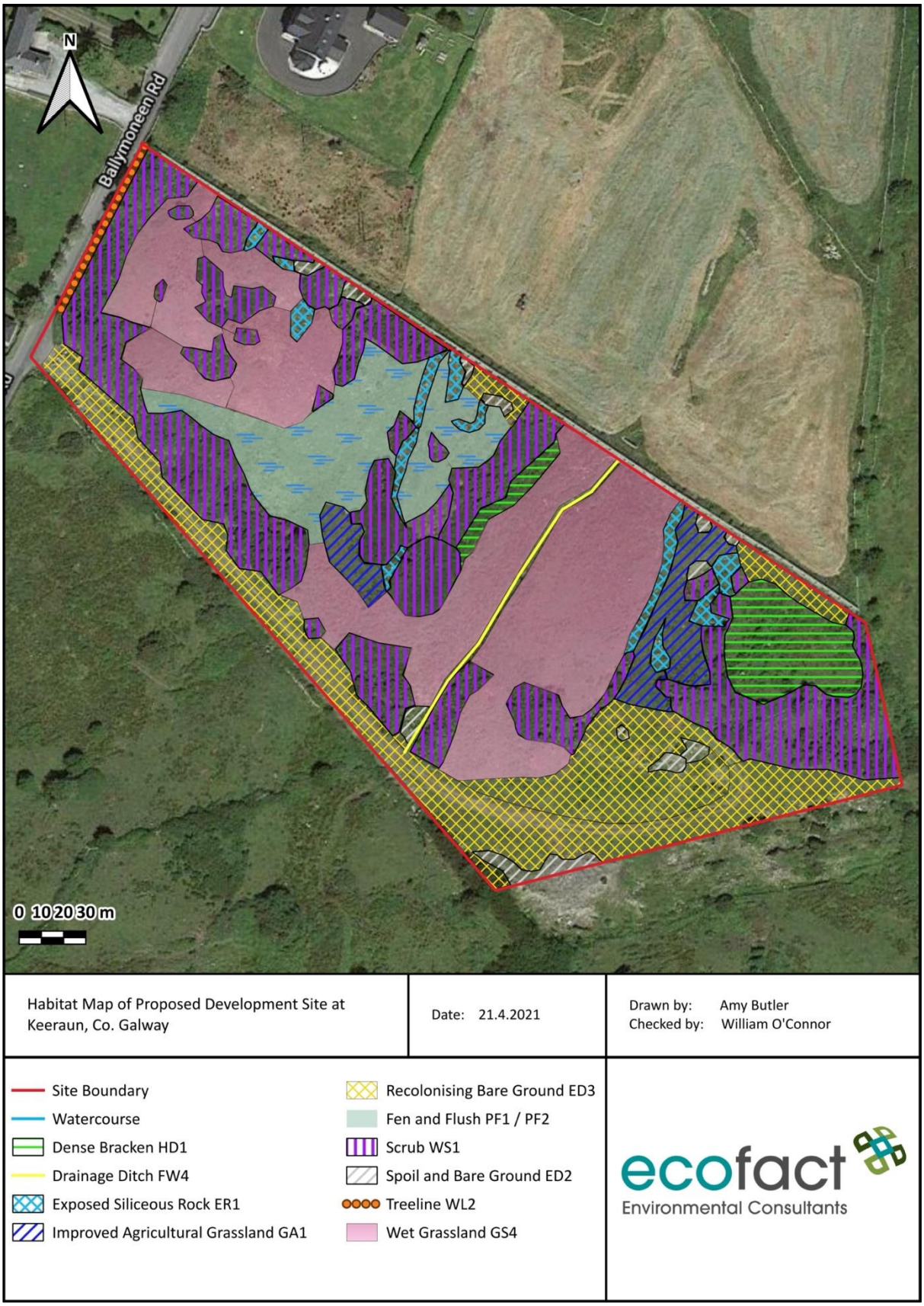


**Figure 4** Habitat Map of Proposed Development Site at Keeraun, Co. Galway.

## 4.3 Fauna

### *4.3.1 Non-volant Mammals*

There are multiple records of Red Fox *Vulpes vulpes* in the 10km grid square that encompasses the proposed development site (M22). This species is considered likely to forage at the site although no evidence was found during the walkover survey. No evidence of any mammal dwellings were found on the site. Old mammal trails through the scrub on site may be used however. Pine marten *Martes martes* have also been recorded in the 10km grid square M22 but are unlikely to be found at the site, but may pass through on occasion to more suitable habitats. Irish Hare *Lepus timidus* subsp. *hibernicus* and Irish Stoat *Mustela erminea* subsp. *Hibernica* were also recorded in this grid square. Red squirrel *Sciurus vulgaris* were also recorded but are unlikely to be found at the proposed development site due to a lack of woodland habitat. Eurasian Badger *Meles meles* have 20 records for the 10km grid square M22. Badger may pass through the site on occasion but again no mammal dwellings were found.

Bank Vole *Myodes glareolus*, Brown Rat *Rattus norvegicus* and the Eurasian Pygmy Shrew *Sorex minutus* were also recorded in the 10km grid square M22 which encompasses the site. These small mammals may pass through the proposed development site. Otter *Lutra lutra* have also been recorded multiple times in this 10km grid square but this is considered to be associated with streams and rivers that are not located on the proposed development site, but may be present downstream.

The following invasive mammal species have been recorded in the 10km grid square M22: American Mink *Mustela vison*, Bank Vole *M. glareolus*. , Brown Rat *R. norvegicus*, European Rabbit *Oryctolagus cuninculus* and House mouse *Mus musculus.* Again Brown Rat, Bank Vole and House Mouse may be found on the site but it is considered that there is no suitable habitat on the site for Rabbits or Mink.

*Evaluation:* Mammals in the study area are evaluated as being of 'Local Importance, Higher Value' due to the potential presence of protected species Badger in the vicinity.

### *4.3.2 Bats*

The National Biodiversity Data Centre (NBDC) maps landscape suitability for bats based on Lundy *et al.,* (2011). The maps are a visualisation of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats. Table 2 below gives the suitability of the study area for the bat species found in Ireland (based on NBDC) along with their Irish Red List Status (from Marnell *et al.,* 2009). The overall assessment of bat habitats for the current study area is given as 30.89. This is considered to be a low-medium range rating, however the rating is high for some individual species, such as 51 for Soprano pipistrelle *Pipistrellus pygmaeus*.

The National Bat Database of Ireland was accessed on the National Biodiversity Data Centre online maps. The closest bat records to the proposed development site are c. 1.7km south of the site in silverstrand. The species recorded here were Soprano pipistrelle and Leisler's bat, as part of the BATLAS 2010 surveys as well as a batbox roost near Rusheen Bay.

There are no buildings or structures on the proposed development site and therefore no potential roost habitats in the form of artificial man-made structures. There are few mature trees on the site, with many of them located on the treeline to the north of the site adjacent to the road. The trees on the site are not considered to have a high potential for bat roosting habitat. This is mainly due to the growth types on

site as well as a lack of knotholes, ivy, splits in stems and branches, gaps in bark and ivy growth etc. which provides suitable crevices for roosting bats.

**Table 2** Suitability of the study area for the bat species previously recorded in the study area (based on the NBDC data). Irish Red list status also indicated (based on Marnell et al., 2009).

| Common name | Scientific name | Suitability index | Irish red list status |
|---|---|---|---|
| All bats | - | 30.89 | |
| Common pipistrelle | *Pipistrellus pipistrellus* | 39 | Least Concern |
| Leisler's bat | *Nyctalus leisleri* | 43 | Near Threatened |
| Natterer's bat | *Myotis nattererii* | 33 | Least Concern |
| Soprano pipistrelle | *Pipistrellus pygmaeus* | 51 | Least Concern |
| Brown long-eared bat | *Plecotus auritus* | 39 | Least Concern |
| Lesser horseshoe bat | *Rhinolophus hipposideros* | 14 | Least Concern |
| Whiskered bat | *Myotis mystacinus* | 6 | Least Concern |
| Daubenton's bat | *Myotis daubentonii* | 38 | Least Concern |
| Nathusiius's pipistrelle | *Pipistrellus nauthusii* | 15 | Least Concern |

Due to the wet grassland / drainage ditch and scrub habitats on site however the site is likely to be somewhat productive in terms of insect breeding. This would provide suitable food sources for local bats and therefore the proposed development site may be used by foraging bats in the area. However, again the site is relatively fragmented in the landscape here, with residential housing nearby as well as roads. The foraging habitat therefore is unlikely to be of significant importance in the context of the wider study area, with more suitable foraging habitat located west of the site.

*Evaluation:* Bats in the study area are considered to comprise common species throughout Ireland but would be locally important and all bats are protected. Bats in the study area are evaluated as being of 'Local Importance, Higher Value'.

### *4.3.3 Birds*

A list of protected bird species from the 10km grid square M22, which encompasses the proposed development site and surrounding habitats, is provided in Appendix 5. There is a large number of protected bird species that have been recorded in this 10km grid square previously. There are a lot of common species which can be found in a wide range of habitats all over the island, such as Barn Swallow *Hirundo rustica*, Common kestrel *Falco tinnunculus*, Common pheasant *Phasianus colchicus*, Common starling *Sturnus vulgaris*, Common Wood pigeon *Columba palumbus*, House Martin *Delichon urbicum* and Mute swan *Cygnus olor.* There is the potential for some of these species to occur at or near the proposed development site, but are typical of a lot of agricultural and lake type habitats all over the island.

Many of the bird species recorded would be found on coastal and marine habitats likely because the 10km grid square M22 encompasses a good portion of Galway Bay to the south of the proposed development site. It is unlikely that any of these species would be found on the site due to a lack of suitable habitat.

The 1km grid square M2525, which encompasses the proposed development site, shows that there are currently no bird records for the this grid square. Therefore, the bird species recorded in the 10km grid square M22 are at least 1km from the proposed development site.

It is noted that Snipe *Gallinago gallinago* were recorded on the site during the walkover survey, and flushed from the fen area north of the site with two individuals noted. Other birds recorded on the site

during the walkover were Starlings *Sturnus vulgaris*, Hooded Crow *Corvus cornix*, and Great tits *Parus major*. These are birds that typical of these types of habitats in Ireland.

*Evaluation:* Trees and shrubs on the site may are likely to be used by common bird species. The site is not of significant importance to any species listed in the EU Birds Directive. The study site is evaluated as 'Local Importance'.

### *4.3.4 Aquatic Ecology*

The only aquatic type habitat on the site is the drainage ditch and the fen habitat north of the drain. The drainage ditch runs from the south of the site, flowing north through the middle of the site. This drainage ditch is heavily vegetated in parts with Rushes and has a low flow likely due to gradient. There is a good amount of standing water present. This habitat type likely provides amphibian habitat and also a surface water source for the Fen and Flush present north-east of the drain. This drain provides very little in terms of aquatic ecology. It is unlikely that any fish would be present in the drain due to low water levels but aquatic macroinvertebrates are likely to occur.

The drain is likely to flow into the tonabrocky stream to the east of the site, which flows into the Galway Bay SAC c. 2.5rkm downstream. This is a small stream but may provide some habitat for small fish species further downstream such as Three-spined sticklebacks *Gasterosteus aculeatus*.

The proposed development will be connected to the Galway WwTP which provides a connection to the aquatic ecology present in Galway Bay. Annex II species such as Salmon, and Otter and Harbour Seal occur here. Otter and Harbour Seal are designated as part of the Galway Bay Complex SAC which is assessed in the Screening for Appropriate Assessment (Ecofact, 2021).

*Evaluation:* The study site is of little importance for aquatic ecology and therefore is evaluated as being of ‘Local Importance’. However, there is a connection with Galway Bay, which would be considered to be of ‘International Importance’, due to its designation as an SAC for the presence of Otter and Harbour Seal.

### *4.3.5 Reptiles and Amphibians*

The closest record of reptiles is the Smooth Newt *Lissotriton vulgaris* near the Barna stream c. 1.2km south-west of the site. This record is from 2020 for the Amphibians and reptiles of Ireland database. The drainage ditch on the proposed development site does provide some potential habitat for this species, which are known to use a wide variety of waterbody types such as garden ponds, natural pools, drainage ditches and quarry pools (IWT, 2013). Due to water depth, the drain is unlikely to be of significance for smooth newt but is more likely to be used by amphibians.

There are numerous records of Common frog *Rana temporaria* from the 1km grid square M2525 encompassing the proposed development site as well as over 50+ records from the M22 10km grid square. Similar to smooth newt, the drainage ditch on the proposed development site does provide suitable amphibian habitat and there is some potential for breeding habitat here.

*Evaluation:* The drainage ditch on the proposed development site does provide suitable reptile and amphibian habitat. Common frog *(Rana temporaria)* are protected under Annex V of the E.U. Habitats Directive. Therefore, reptiles and amphibians are evaluated as being of ‘Local Importance, Higher Value’.

### *4.3.6 Terrestrial Invertebrates*

Devil's bit scabious *Succisa pratensis* was recorded in the Fen and Flush habitat on the site. This flowering plant is known to be the main foodplant of the Annex II butterfly species Marsh Fritillary *Euphydryas aurinia*. There are records of Marsh Fritillary from the 10km grid square M22 which encompasses the site, as well as records of Devil's bit scabious in the area. Again, it is noted that the site walkover survey was completed prior to the completion of any site enabling works. It is noted that the Devil's bit scabious was present on site in very low abundance, with less than 5 flowering plants present.

*Evaluation:* Although no records of Marsh Fritillary were noted during the site walkover, no formal survey was completed. There was a low abundance of Devil's bit scabious, however there is the potential for Marsh fritillary to occur on the site. Therefore, taking the precautionary principle, species specific Marsh Fritillary surveys are required.

## 4.4 Key ecological receptors

The key ecological receptors identified from the ecological interests (designated sites, habitats, flora and fauna) recorded within the study area are presented in Table 3. Key Ecological Receptors are those identified as being greater than 'Local Importance'.

**Table 3** Identification of key ecological receptors in the study area (based on NRA, 2009).

| Ecological receptors | Summary description of the ecological receptors | Evaluation of the ecological receptors (Key ecological receptors are those identified as being > local importance (lower value)) |
|---|---|---|
| Designated Areas | Galway Bay Complex SAC and the Inner Galway Bay SPA downstream; discussed and assessed in the accompanying Screening for Appropriate Assessment Report | International Importance |
| Drainage Ditch FW4 | Present in the middle of the proposed development site flowing from south to north. Provides insect production and potential reptile and amphibian habitat | Local Importance, Higher Value. |
| Exposed Siliceous Rock ER2 | Not present on the site in any large sections, but exposed rock is noted in some areas close to the Dense Bracken habitat to the east and among the fen and flush habitat to the mid-north of the site. | Further Surveys Required. |
| Fen and Flush PF1/PF2 | Present in small fragmented sections in the proposed development site boundary north of the drainage ditch | Further Surveys Required. |
| Treeline WL2 | This habitat within the proposed development site can provide some benefit to wildlife in the local area, particular for birds, bats and mammals | Local Importance, Higher Value. |
| Terrestrial Mammals | Potential presence of badgers or red fox moving through the site, using old mammal trails in the scrub habitats. No mammal dwellings on site | Local Importance, Higher Value. |
| Bats | Local species likely to forage on the site but no potential roost habitat found. All Bats are protected under Annex V of the EU Habitats Directive | Local Importance, Higher Value. |
| Aquatic Ecology | The study site is of little importance for aquatic ecology, however, there is a connection with Galway Bay, which is | International Importance. |

| Ecological receptors | Summary description of the ecological receptors | Evaluation of the ecological receptors (Key ecological receptors are those identified as being > local importance (lower value)) |
|---|---|---|
| | designated as an SAC for the presence of Otter and Harbour Seal. | |
| Reptiles and Amphibians | Potential reptile and amphibian habitat on the site in the form of the drainage ditch; likely to be more suited to common frog / amphibian habitat due to water depth | Local Importance, Higher Value |
| Terrestrial Invertebrates | Devil's bit scabious recorded during site walkover in low abundance, potential for low abundance therefore of Marsh Fritillary butterfly – a species protected under Annex II of the EU Habitats Directive. Species Specific Marsh Fritillary Surveys Required. | Further Surveys Required. |

# 5. POTENTIAL IMPACTS

## 5.1 Designated Areas

The potential impacts on designated areas arising from the proposed development at Keeraun are discussed and assessed in the accompanying Screening for Appropriate Assessment Report (Ecofact, 2021).

The proposed development does not lie within the boundary of any Natura 2000 site. The site is located c. 1.8km and c. 1.9km north of the Galway Bay Complex SAC and the Inner Galway Bay SPA respectively. No direct impacts were identified due to the separation from the site and the Natura 2000 network. Using the Source-Pathway-Receptor model, potential pathways for significant effects have been identified. Two pathways for potential significant indirect and cumulative effects have been identified; via the drain on site and via Galway WwTP. These pathways have the potential to result in significant impacts resulting from the following sources: construction phase impacts and run-off and foul water treatment. Earth works and levelling will be required at the site as well as culverting the existing drain. With construction machinery and workers on site, this also adds to the potential for pollution run-off, suspended solids and accidental spillages of oils / fuels, which could enter the SAC and SPA via the drain, in the absence of any mitigation. The receptors for these potential significant effects have been identified as Mudflats and sandflats not covered by seawater at low tide, Large shallow inlets and bays, Reefs, Atlantic salt meadows, Mediterranean salt meadows, Otters and Harbour seal for the SAC, and the bird species and Wetland and Waterbirds habitats of the SPA. The Screening for Appropriate Assessment concludes that a Natura Impact Statement is required due to potential pathways, uncertainty and the requirement for mitigation and further assessment (Ecofact, 2021).

The Inner Galway Bay Ramsar Site and the Galway Bay Complex Proposed Natural Heritage Area are located in the same boundary as the Galway Bay Complex SAC and Inner Galway Bay SPA, therefore the potential for impacts would be considered the same as the Natura 2000 network. These impacts are assessed in the Screening for Appropriate Assessment as noted above. There are no potential pathways for impacts on any NHAs.

## 5.2 Habitats and Flora

The proposed development will lead to direct impacts on habitats and flora that are present on the site. Potential impacts are related to direct habitat loss, water quality, disturbance and invasive species.

There will be a direct loss of habitats within the footprint of the proposed development. This will lead to a loss of recolonising bare ground, scrub, drainage ditches, wet grassland, dense bracken, improved agricultural grassland, exposed siliceous rock, fen and flush, spoil and bare ground and treelines. The majority of these habitats are evaluated as being of 'Local Importance' or no ecological value, however, drainage ditches and treelines are evaluated as being of 'Local Importance, higher value'. Further surveys are required to evaluate the exposed siliceous rock habitat and the fen and flush habitats, as these have potential links with Annex I protected habitats.

The drainage ditch on the site does provide some good amphibian habitat and is heavily vegetated with some good levels of water in parts. This drainage ditch will be culverted on the site and therefore this will lead to a direct loss of this habitat on the site. As drainage ditches are common in the wider study area, and the site is relatively small, this is unlikely to be a significant loss. The fen and flush habitat on the site does provide good ecosystem services here but it is present only in a small fragmented area and mosaic on the site. It is separated from other habitats outside the site by an existing large blockwork wall to the north. It is considered that due to the size of the habitat present here that the loss of this would not be significant, but this cannot be determined in the absence of further surveys of this habitat on the site. The treeline habitat to the north-west of the site will likely be lost as part of the proposed development. However, there were no large specimen trees present, and mature trees that were on the site are not considered to be of particular importance. The treeline is of limited length here and it is considered that landscaping and tree planting would make up for the loss of these trees. Other habitats on the site have been evaluated as being of 'Local importance'. Overall, habitat loss on the proposed development site is evaluated as being slight negative, long-term and in the local context.

Water quality impacts may arise that could enter the drainage ditch and travel further downstream. This may arise through the construction phase of the project, through run-off, accidental spillages and increased suspended solids, particularly during the installation of the culvert. Final designs of the culvert have yet to be provided. Best practise standard mitigation to protect water quality in the drain will be required. Water quality impacts are also likely to affect the fen and flush habitat, which appears on site to be fed by this drain. This habitat will be removed as part of the proposed development however, so there would be no water quality impacts remaining as the habitat would no longer be present and is likely to be levelled and possibly infilled. Water quality impacts are considered, in the absence of mitigation, to be slight negative, short-term and in the local context.

Non-native invasive species impacts can also arise and adversely affect habitats and flora in the vicinity. While no non-native invasive species are present on the site, there is the potential for invasive species to be brought onto site from machinery, tools or personnel accessing the site during the construction phase. Species such as Japanese knotweed, of which there are records in the wider study area, can be easily spread in this manner and can out compete native species, resulting in a loss of ecosystem balance. Non-native invasive species impacts are evaluated as being moderate negative, medium term and in the local context.

## 5.3 Fauna

### *5.3.1 Non-volant Mammals*

Impacts on non-volant mammals at the site primarily concern disturbance impacts, that could arise during the construction phase due to increased machinery, human activity and noise. This could affect all mammals in the study area, particularly badger which may pass through the site. No mammal dwellings were noted on the site at the time of the survey, which again was conducted prior to the site enabling works. The site itself is not considered to be of particular importance to mammals but may act as an area for which the mammals may pass through. Foxes may also be affected by disturbance, but there are residential houses in the vicinity and foxes are likely to be accustomed to some levels of disturbance. Habitat loss is likely to be the main impact affecting mammals that may utilise the proposed development site, which would also result in displacement and fragmentation. Invasive species impacts as discussed above in section 5.2 could also adversely affect mammals by reducing habitat quality. Operational phase impacts may also arise relating to disturbance, with residential housing proposed for the site which will lead to human activity and noise. The site is likely to be locally important to mammals in the area, for foraging and commuting purposes. There are other areas particularly west and south of the site which would also be used for these purposes. Cattle do use the site and it is farmed at a low intensity, based on the habitats present. It is considered that the loss of this habitat would not be significant to mammals in the local area, therefore impacts regarding habitat loss would be evaluated as being slight negative, long-term and in the local context. Impacts regarding disturbance are evaluated as being slight negative, long-term and in the local context. Mitigation may be provided for buffer areas and planting to reduce potential disturbance and fragmentation impacts.

### *5.3.2 Bats*

There are no buildings or structures on the proposed development site and therefore no potential roost habitats in the form of artificial man-made structures. No formal bat survey has been undertaken at the proposed development site and it is noted that site enabling works have already taken place. Foraging habitat, as noted in the site survey prior to the enabling works, was present in the form of scrub, drainage ditches and trees on the site. This is considered likely to provide good insect production and therefore foraging and commuting habitat for bats in the local area. However, this is common in habitats in the wider study area. The loss of this foraging habitat would also result in displacement and fragmentation impacts. It is considered that the loss of this habitat however would not be significant as it is not uncommon in the wider study area, there are more suitable areas away from residential housing to the west, north and south of the site. However, in the absence of a formal survey, the precautionary principle must be used. Impacts on bats are therefore evaluated as being moderate negative, long-term and in the local context.

### *5.3.3 Birds*

No significant impacts on birds are envisaged, however there is the potential for some disturbance impacts to arise. During the construction works, disturbance impacts relating to increased human activity and noise are likely to arise. If these works, particularly in relation to site clearance, take place during the bird nesting season, nesting birds in the mature trees or treelines nearby may be disturbed. No protected bird species or birds of significant conservation concern are expected to occur at the proposed development site due to its location and the habitats present. Therefore, it is common passerine species and corvids that are likely to be affected. These are common and adaptable bird species found all over the island. There is also the potential for operational phase disturbance impacts to arise. It must be noted that no formal bird surveys have been undertaken and this assessment is based on a multidisciplinary ecological site walkover and evaluation of the habitats present. The precautionary principle is therefore applied. Therefore disturbance impacts on birds are assessed as being slight negative, short-term and in the local context. Standard best practise mitigation, such as the works taking place outside of the bird nesting season, would reduce this impact further.

### *5.3.4 Aquatic Ecology*

The only watercourse present on the proposed development site is the drainage ditch running from the south to the north of the site. As noted previously, this drain provides very little in terms of aquatic ecology. It is unlikely that any fish would be present in the drain due to low water levels but aquatic macroinvertebrates are likely to occur. Impacts on aquatic ecology primarily concern potential water quality impacts. This may arise through the construction phase of the project, through run-off, accidental spillages and increased suspended solids, particularly during the installation of the culvert. Due to the small size of the drain on the site and the quality of habitat present, impacts on aquatic ecology relating to water quality are evaluated as being slight negative, short-term and in the local context. Standard best practise mitigation is considered sufficient to reduce this impact further.

Due to the location of the site, it is considered likely that the proposed development will be connected to the Galway Wastewater Treatment Plant (WwTP) which is located on Mutton Island and discharges directly into both the Galway Bay Complex SAC and the Inner Galway Bay SPA. It appears that this WwTP was upgraded in 2017 to 170, 000 P.E. The most recent available Annual Environmental Report (AER) at the time of writing (4th May 2021) is from 2019. An Taisce completed a report in August 2020 on the Mutton Island treatment plant (An Taisce, 2020). This report raises serious concerns over the regular release of raw sewage during high overflow events, backed by testing, coupled with restrictions on swimming in nearby beaches issued by the EPA for 'Poor' bathing water quality and therefore challenges that the current capacity of the Mutton Island plant has already been exceed, there is uncertainty regarding the adequacy of this plant (An Taisce, 2020). This impact is identified in the Screening for Appropriate Assessment and will be further assessed in a Natura Impact Statement (Ecofact, 2021). Taking the precautionary principle, this impact is evaluated as being significant negative, long-term and in the national context at worst.

### *5.3.5 Reptiles and Amphibians*

The drainage ditch on the proposed development site does provide some potential habitat for reptiles due to the presence of the drainage ditch, but due to water depth, the drain is unlikely to be of significance for smooth newt but is more likely to be used by amphibians. The drainage ditch may provide breeding and foraging habitat for Common frog *Rana temporaria.* The proposed development may lead to mortality, water quality and disturbance impacts affecting amphibians.

If the construction works take place during the frog breeding season, this may result in impacts on breeding successes and mortality. Machinery tracking over the drain or the installation of the culvert may result in such impacts. Water quality impacts may also arise and reduce habitat quality for frogs. This may arise through the construction phase of the project, through run-off, accidental spillages and increased suspended solids, particularly during the installation of the culvert. Furthermore, works could result in impacts relating to disturbance, either through the breeding period or wintering period as frogs may be present here year round. In the absence of formal surveys, the precautionary principle must be applied. Impacts on amphibians are evaluated as being moderate negative, short-term and in the local context. This may be mitigated through standard best practise construction mitigation as well as avoiding certain times of the year.

### *5.3.6 Terrestrial Invertebrates*

Devil's bit scabious was recorded in low abundance on the site during the ecological site walkover prior to the commencement of site enabling works. This flowering plant is known to be the main foodplant of

the Annex II butterfly species Marsh Fritillary – a species protected under Annex II of the EU Habitats Directive. No formal survey for Marsh Fritillary has been undertaken and therefore the precautionary principle must be applied. Due to the presence of devils bit scabious and records from the 10km grid square, marsh fritillary may be present in low densities on the proposed development site. Therefore, there is the potential for mortality, disturbance and habitat loss impacts on this protected butterfly. This may arise if machinery tracks over suitable habitat during the breeding season, resulting in mortality and reduced breeding successes. Disturbance impacts could also occur during the construction phase and any potential habitat that is present on the site will be lost as a result of the development. Species-specific surveys are required.

# 6. MITIGATION MEASURES

## 6.1 Designated Areas

The Screening for Appropriate Assessment report prepared for the proposed development identified potential pathways for impacts, uncertainty and the requirement for mitigation and further assessment. A Natura Impact Statement is required (Ecofact, 2021).

The Inner Galway Bay Ramsar Site and the Galway Bay Complex Proposed Natural Heritage Area are located in the same boundary as the Galway Bay Complex SAC and Inner Galway Bay SPA, therefore the mitigation measures required to protect these sites would be considered the same as the Natura 2000 network. As noted above, a Natura Impact Statement will be prepared which will detail the necessary mitigation measures for designated areas.

## 6.2 Habitats and Flora

Habitat loss impacts will occur as a result of the proposed development and cannot be avoided. It is considered that the habitats on site of ecological value, are fragmented and of a relatively small scale taking into account the size of the site. Further surveys of the exposed siliceous rock and fen and flush habitats are required and further mitigation may be needed following these surveys. However, landscaping and buffer zones mitigation will aid in reducing the significance of habitat loss. The following NRA guidelines should be followed as relevant: NRA (2006a) *A Guide to Landscape Treatment for National Road Schemes,* NRA (2006b) *Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub prior to, During and Post Construction of National Road Schemes.* If any trees are being retained, a buffer zone should be created around each of the mature trees on the site to protect them from damage from machinery used for the works. A full landscaping plan will be developed for the proposed development prior to commencement of construction. There is a strip of native woodland planting proposed for the eastern boundary which would provide a buffer zone from adjacent habitats. Any further planting included as part of the proposed development should include native species only. Pollinator-friendly and diverse native plant species should be chosen. It may be considered that a biodiversity area be created in one corner of the site, that may include a pond feature and night scented plants to aid in insect production or birds and bats in the local area. A pond feature would also provide amphibian / reptile habitat.

Mitigation to protect water quality would be the same as what will be prescribed in the Natura Impact Statement, which has yet to be carried out. Water quality mitigation to protect the Natura 2000 network would be the same as required to protect downstream water quality in the drainage ditch. This is likely to include silt fences and bunds, works on drain taking place in a dry weather window, duration that subsoils exposed minimised to prevent run-off, excavations during dry weather window, waste appropriately dealt with, portaloos provided, precast concrete used for the culvert, spill kits supplied,

machinery checked for leaks prior to use on site and a dedicated refuelling / piling station away from any watercourse, site compound on dry land away from any watercourse, storage for materials on site located so as to not necessitate double handing and tarps used to prevent run-off, emergency procedures, etc.

Regarding non-native invasive species, the '*Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads'* (NRA, 2010) will be followed. All machinery used for the works will be steam cleaned prior to arrival on site and after. Machinery and tools will also be checked for biological matter before use on site, such as plant seeds or material.

## 6.3 Fauna

A pre-construction mammal survey will be undertaken prior to the commencement of works. This is to ensure that no mammal dwellings would have been created in the time elapsed from the current walkover survey to the start of construction. Further mitigation may be required based on the results of this survey. Site clearance works of large areas of scrub or dense bracken will be undertaken slowly, leaving adequate time for any mammals that may be present in these habitats sufficient time to escape.

No formal bat survey was undertaken at the proposed development site. However, it is considered that based on the habitats present there is a general lack of roosting habitat. No specific requirements are therefore required. Site clearance works outside of the bird nesting season would also take cognisance of minimising disturbance to potential foraging bats at night.

To minimise disturbance impacts on birds, works should take place outside the bird nesting season, from the 1st of March to the 31st of August.

Works will be undertaken outside of the Common frog breeding season, as a precautionary measure. Frogs may breed in the drainage ditch on the site. The Common frog breeding season runs from mid-February to July each year. This would also be covered in the bird nesting season mentioned above.

A Species-specific Marsh Fritillary will be undertaken. Further mitigation may be required following the outcome of this survey. Works should be undertaken outside of the Marsh Fritillary breeding season which generally runs from May to July and again would be covered by the bird nesting season.

Works area will be clearly delineated. Works should only take place during daylight hours with works permitted from 7am to 7pm. Works will take place in a timely manner with machinery and noise levels kept to a minimum. This will reduce the potential for disturbance impacts on mammals, bats, birds and terrestrial invertebrates. The consideration of a biodiversity area as mentioned above in section 6.2 would also result in benefits to all fauna. A pond may be considered as habitat in this biodiversity area for reptiles and amphibians.

# 7. Residual Impacts

Residual impacts are those which occur following the implementation of mitigation measures. The mitigation measures proposed will provide robust and effective protection to each species/habitat identified and as a result residual impacts are not anticipated to occur.

## 7.1 Designated Areas

The Screening for Appropriate Assessment report prepared for the proposed development determined that mitigation measures are required and the potential for impacts on both the Galway Bay Complex SAC and the Inner Galway Bay SPA were identified (Ecofact, 2021). A Natura Impact Statement will be prepared which will include a full assessment of potential residual impacts, following the proposed mitigation in the NIS.

## 7.2 Habitats and Flora

Subject to the implementation of mitigation measures, the proposed development will not result in the spread of non-native invasive species. A full evaluation of residual impacts on habitats and flora cannot be carried out in the absence of further surveys on the exposed siliceous rock and fen and flush habtiats on site, to determine potential links to Annex I habitats.

## 7.3 Fauna

### *7.3.1 Non-volant mammals*

Subject to the implementation of the measures outlined above, there will be no residual impacts on non-volant mammals. The residual impact on non-volant mammals is assessed as ‘none’.

### *7.3.2 Bats*

Subject to the implementation of the measures outlined above, there will be no residual impacts on bats. The residual impact on non-volant mammals is assessed as ‘none’.

### *7.3.3 Birds*

Subject to the implementation of the targeted measures outlined above, there will be no residual impacts on birds. The residual impact on birds is assessed as ‘none’.

### *7.3.4 Aquatic Ecology*

Residual impacts on aquatic ecology will also be based on the full assessment of residual impacts, following mitigation, in the Natura Impact Statement which has yet to be carried out.

### *7.3.5 Reptiles and Amphibians*

Subject to the implementation of the targeted measures outlined above, there will be no residual impacts on reptiles or amphibians. The residual impact on reptiles or amphibians is assessed as ‘imperceptible negative’.

### *7.3.6 Terrestrial Invertebrates*

A full evaluation of the residual impacts on terrestrial invertebrates cannot be undertaken at this time as species-specific Marsh Fritillary surveys have yet to be undertaken.

| Ecological receptors | Potential Impact | Mitigation Measures | Residual Impact |
|---|---|---|---|
| Designated Areas | In accompanying Screening for Appropriate Assessment (Ecofact, 2021). | Mitigation not provided in Screening; NIS required | Based on NIS assessment yet to be carried out |
| Drainage Ditch FW4 | Habitat Loss, Water Quality; Disturbance; Invasive Species | Landscaping plan; NRA Guidelines for habitats and invasive species; buffer zones around trees to be retained, native planting; biodiversity area / pond feature; mitigation to protect water quality in NIS but likely to include: silt fences and bunded, works on drain taking place in dry weather window, duration that subsoils exposed minimised to prevent run-off, excavations during dry weather window, waste appropriately dealt with, portaloos provided, precast concrete used for the culvert, spill kits supplied, machinery checked for leaks prior to use on site and a dedicated refuelling / piling station away from any watercourse, site compound on dry land away from any watercourse, storage for materials on site located so as to not necessitate double handing and tarps used to prevent run-off, emergency procedures, etc. | Imperceptible Negative |
| Exposed Siliceous Rock ER2 | Habitat Loss; Disturbance; Invasive Species | As above for drainage ditches. Further mitigation may be required following outcome of detailed habitat surveys. | Based on Further Surveys |
| Fen and Flush PF1/PF2 | Habitat Loss, Water Quality; Disturbance; Invasive Species | As above for drainage ditches. Further mitigation may be required following outcome of detailed habitat surveys. | Based on Further Surveys. |
| Treeline WL2 | Habitat Loss, Disturbance; Invasive Species | As above for drainage ditches. | Imperceptible Negative |
| Terrestrial Mammals | Habitat Loss, Disturbance; Invasive Species | Pre-construction mammal survey; site clearance works undertaken slowly; works area delineated and works only during daylight hours; works in a timely manner with machinery and noise levels kept to a minimum; consideration for biodiversity area and pond; NRA guidelines for invasive species; native planting | None |
| Bats | Foraging Habitat Loss, Disturbance; Invasive Species | Site clearance works outside bird nesting season; works area delineated and works only during daylight hours; works in a timely manner with machinery and noise levels kept to a minimum; consideration for biodiversity area and pond; NRA guidelines for invasive species; native planting | None |

| Ecological receptors | Potential Impact | Mitigation Measures | Residual Impact |
|---|---|---|---|
| Aquatic Ecology | Habitat Loss; Water Quality; Invasive Species | NRA Guidelines for habitats and invasive species; biodiversity area / pond feature; mitigation to protect water quality in NIS but likely to include: silt fences and bunded, works on drain taking place in dry weather window, duration that subsoils exposed minimised to prevent run-off, excavations during dry weather window, waste appropriately dealt with, portaloos provided, precast concrete used for the culvert, spill kits supplied, machinery checked for leaks prior to use on site and a dedicated refuelling / piling station away from any watercourse, site compound on dry land away from any watercourse, storage for materials on site located so as to not necessitate double handing and tarps used to prevent run-off, emergency procedures, etc. | Based on NIS assessment yet to be carried out |
| Reptiles and Amphibians | Mortality; Disturbance; Water Quality | Works outside common frog breeding season; works area delineated and works only during daylight hours; works in a timely manner with machinery and noise levels kept to a minimum; consideration for biodiversity area and pond; NRA guidelines for invasive species; native planting; mitigation to protect water quality in NIS but likely to include: silt fences and bunded, works on drain taking place in dry weather window, duration that subsoils exposed minimised to prevent run-off, excavations during dry weather window, waste appropriately dealt with, portaloos provided, precast concrete used for the culvert, spill kits supplied, machinery checked for leaks prior to use on site and a dedicated refuelling / piling station away from any watercourse, site compound on dry land away from any watercourse, storage for materials on site located so as to not necessitate double handing and tarps used to prevent run-off, emergency procedures, etc. | Imperceptible Negative |
| Terrestrial Invertebrates | Mortality; Disturbance; Habitat Loss | Further mitigation may be required following outcome of detailed surveys. Works outside marsh fritillary breeding season, works area delineated and works only during daylight hours; works in a timely manner with machinery and noise levels kept to a minimum; consideration for biodiversity area and pond; NRA guidelines for invasive species; native planting. | Based on Further Surveys. |

# 8. Conclusion

The proposed development comprises a Social Housing Scheme at a site in Keeraun, Ballymoneen Road in Galway City, Co. Galway. The proposed development comprises a total of 69 housing units, including social houses, Traveller Appropriate Accommodation (TAA) houses as well as apartments. The potential impacts on designated areas arising from the proposed development at Keeraun are discussed and assessed in the accompanying Screening for Appropriate Assessment Report. The Screening for Appropriate Assessment report prepared for the proposed development identified potential pathways for impacts, uncertainty and the requirement for mitigation and further assessment. A Natura Impact Statement is required (Ecofact, 2021).

The potential for habitat loss, disturbance / displacement, water quality and invasive species impacts were identified in the current report. These impacts are noted to have the potential to affect the following Key Ecological Receptors identified for the site: designated areas, drainage ditch, exposed siliceous rock, fen and flush, treeline, terrestrial mammals, bats, aquatic ecology, reptiles and amphibians and terrestrial macroinvertebrates. The habitats present are not considered to be a significant ecological importance due to fragmentation and size, but are of some importance locally. Mitigation measures are provided to offset or reduce potential impacts on flora and fauna. These include measures to protect habitats, water quality, biosecurity mitigation, measures to reduce disturbance and following relevant guidelines listed in the report. Further surveys are required at the site including Marsh Fritillary Surveys, as well as surveys of the Exposed Siliceous Rock and Fen and Flush habitat to investigate potential links to Annex I Protected Habitats.

Providing mitigation and guidelines are followed correctly, the majority of residual impacts have been assessed as ranging from ‘none’ to ‘imperceptible negative’. If mitigation is implemented, the proposed Social Housing Scheme at a site in Keeraun, Ballymoneen Road in Galway City, Co. Galway can be appropriately built and operated without significant adverse effects on designated areas, flora and fauna.

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## PLATES

**Plate 1** Entrance to the proposed development site at Keeraun.

**Plate 2** There is an old road into the site that is now recolonised.

**Plate 3** Spoil and rubble are evident mostly to the south-east of the site.

**Plate 4** The one treeline on the site is sparse and does not provide bat roosting habitat.

**Plate 5** The Fen and Flush habitat, with wet grassland mosaic.

**Plate 6** Cladium sp. lichen present.

**Plate 7** Sphagnum mosses in the fen and flush habitat.

**Plate 8** Devil's bit scabious was present on the site in very low abundance.

**Plate 9** Hooded Crow and other corvid species were common in the area.

**Plate 10** The drainage ditch on the site heavily vegetated but with a good level of water present underneath.

**Plate 11** The drainage ditch provides good amphibian habitat.

**Plate 12** Exposed siliceous rock.

**Plate 13** There is a blockwork wall along the northern boundary.

**Plate 14** Dense bracken and wet grassland to the east of the site.

**Plate 15** Mammal trails were noted in the gorse scrub on site.

**Plate 16** The area of Rusheen Bay south of the proposed development site.

## APPENDIX 1NPWS Site Synopsis

**SITE NAME: Galway Bay Complex SAC**
**SITE CODE: 000268**

Situated on the west coast of Ireland, this site comprises the inner, shallow part of a large bay which is partially sheltered by the Aran Islands. The Burren karstic limestone fringes the southern sides and extends into the sublittoral. West of Galway city the bedrock geology is granite. There are numerous shallow and intertidal inlets on the eastern and southern sides, notably Muckinish, Aughinish and Kinvarra Bays. A number of small islands composed of glacial deposits are located along the eastern side. These include Eddy Island, Deer Island and Tawin Island. A diverse range of marine, coastal and terrestrial habitats, including several listed on Annex I of the E.U. Habitats Directive, occur within the site, making the area of high scientific importance.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1140] Tidal Mudflats and Sandflats; [1150] Coastal Lagoons*;[1160] Large Shallow Inlets and Bays; [1170] Reefs; [1220] Perennial Vegetation of Stony Banks; [1230] Vegetated sea cliffs of the Atlantic and Baltic coasts; [1310] Salicornia Mud; [1330] Atlantic Salt Meadows; [1410] Mediterranean Salt Meadows; [3180] Turloughs*; [5130] Juniper Scrub; [6210] Orchid-rich Calcareous Grassland*; [7210] Cladium Fens*; [7230] Alkaline Fens; [8240] Limestone Pavement*; [1355] Otter (Lutra lutra); [1365] Common (Harbour) Seal (Phoca vitulina).

Galway Bay South holds a very high number of littoral communities (12). They range from rocky terraces, to sandy beaches with rock or sand dunes behind. The intertidal sediments of Galway Bay support good examples of communities that are moderately exposed to wave action. A well-defined talitrid amphipod zone in the upper shore gives way to an intertidal, mid shore zone with sparse epifauna or infauna. On the lower, flat part of the shore, the tubes of the deposit-feeding terebellid worm, Lanice conchilega, are common on the surface. Nereid and cirratulid polychaete worms (Hediste diversicolor, Arenicola marina), small crustaceans and bivalves (Angulus tenuis, Cerastoderma edule and Macoma balthica) are present. The area has the country's only recorded example of the littoral community characterized by Fucus serratus with sponges, ascidians and red seaweeds on tide-swept lower eulittoral mixed substrata. This community has very high species richness (85 species), as do the sublittoral fringe communities on the Finavarra reef (88 species). The rare Purple Sea Urchin Paracentrotus lividus and the foliose red alga Phyllophora sicula are present at Finavarra, whereas the red alga Rhodymenia delicatula and the rare brown alga, Ascophyllum nodosum var. mackii, occur in Kinvarra and Muckinish Bays. Sublittorally, the area has a number of distinctive and important communities. Of particular note is that Ireland's only reported piddock (bivalve mollusc) bed thrives in the shallows of further interest in an extensive maerl bed of Phymatolithon calcareum which occurs in the strong tidal currents of Muckinish Bay. There is also maerl off Finavarra Point and in Kinvarra Bay (Lithothamnion corallioides, Lithophyllum dentatum and Lithophyllum fasciculatum). An oyster bed in Kinvarra Bay and seagrass (Zostera spp.) beds off Finavarra Point are also important features. Other significant habitats which occur include secondary maerl beds and communities strongly influenced by tidal streams.

Saltmarshes are frequent within this extensive coastal site, with both E.U. Habitats Directive types, 'Atlantic Salt Meadow' and 'Mediterranean Salt Meadow' well represented. Most of the saltmarshes are classified as the bay type, with the substrate being mud or mud/sand. There is one lagoon type and one estuary type. Lagoon saltmarshes are the rarest type found in Ireland. The best examples of saltmarsh are located in inner Galway bay, east of a line running between Galway city and Kinvarra. In

this area the coastline is highly indented, thus providing the sheltered conditions necessary for extensive saltmarsh development. Common saltmarsh species include Thrift (Armeria maritima), Red Fescue (Festuca rubra), Common Scurvygrass (Cochlearia officinalis), Lax-flowered Sea-lavender (Limonium humile), Common Saltmarsh-grass (Puccinellia maritima), Saltmarsh Rush (Juncus gerardi) and Sea Rush (Juncus maritimus). On the lower levels of the saltmarshes and within pans there occurs Glasswort (Salicornia europaea agg.). A noteworthy feature of the saltmarsh habitat within this site is the presence of dwarfed brown seaweeds in the vegetation. These are also known as “turf fucoids” and typical species include Fucus spp., Ascophyllum nodosum and Pelvetia canaliculata. A number of locally rare vascular plant species also grow in saltmarsh areas within the site. These include Reflexed Saltmarsh-grass (Puccinellia distans) and Sea-purslane (Halimione portulacoides), which are both relatively rare in the western half of the country.

Shingle and stony beaches can be found throughout the site, with the best examples along the more exposed shores to the south and west of Galway city and to the north and east of Finavarra, Co. Clare. In general, these shingle shorelines are sparsely vegetated and frequently occur interspersed with areas of sandy beach and/or bedrock shore. The associated flora is dominated by plant species of frequently disturbed maritime habitats. To the south and west of Galway city, typical plants include Curled Dock (Rumex crispus), Common Couch (Elymus repens), Sea Sandwort (Honkenya peploides), Sea Beet (Beta vulgaris subsp. maritima), Sea Mayweed (Matricaria maritima), Silverweed (Potentilla anserina) and Oraches (Atriplex spp.). Two rare plant species are associated with the habitat: Henbane (Hyoscyamus niger), a threatened species listed in the Irish Red Data Book, grows on shingle beach to the south of Lough Atalia; there are also old records for the threatened plant species Sea- kale (Crambe maritima).

Soft coastal cliffs reaching heights in excess of 10m occur at Rusheen. These support coastal grassland with very sparse vegetation cover. Species recorded include Sea Plantain (Plantago maritima), Creeping Bent (Agrostis stolonifera), False Oat-grass (Arrhenatherum elatius), Cock’s Foot (Dactylis glomerata), Red Fescue, Common Bird’s- foot-trefoil (Lotus corniculatus), and the lichens Ramalina sp. and Xanthoria parietina. They are considered highly representative of the rarer soft type of sea cliffs in Ireland.

An excellent range of lagoons of different types, sizes and salinities occurs within the site. This habitat is given priority status on Annex I of the E.U. Habitats Directive. One unusual type of lagoon, karstic rock lagoon, is particularly well represented. This type of lagoon is common on the Aran Islands, but on mainland Ireland, all but one are confined to this site. Additionally, the best example of all karstic lagoons in the country, Lough Murree, is found at this site. The flora of the habitat is rich and diverse, reflecting the range of salinities in the different lagoons. It is typically brackish, with two species of Tasselweed (Ruppia spp.), two Red Data charophytes Chara canescens and Lamprothamnion papulosum, and Chaetomorpha linum, an alga (all lagoonal specialists). The fauna of the lagoon is also rich, diverse and lagoonal. At least 10 lagoonal specialist species were recorded in 1996 and 1998 from the combined habitat of all the lagoons, which is one of the highest number for any lagoonal habitat in the country. Many of the species appear to be rare. The lagoons within this site are excellent examples of the habitat type and of high conservation importance.

Other terrestrial habitats within this site which are of conservation importance include Great Fen-sedge (Cladium mariscus)-dominated fen and Black Bog-rush (Schoenus nigricans)-dominated alkaline fen at Oranmore, a turlough of moderate size at Ballinacourty, limestone pavement at Ballyconry, Gleninagh North and Newquay, dry calcareous grassland with orchids (best examples occurring west of Salthill), Juniper (Juniperus communis) scrub formations at Oranmore, wet grassland and an area of deciduous woodland at Barna. The orchid-rich grassland occurs on a serious of small drumlin hills found to the

west of Galway City, and is largely confined to the sides of the hills. Calcicole pecies such as Kidney Vetch (Anthyllis vulneraria), Harebell (Campanula rotundifolia), Spring Gentian (Gentiana verna), Common Spotted- orchid (Dactylorhiza fuchsii), Lesser Twayblade (Listera ovata), Pyramidal Orchid (Anacamptis pyramidalis), Yellow-wort (Blackstonia perfoliata) and Greater Knapweed (Centaurea scabiosa) are found here, among others. Juniper is also found in this area.

Areas of alkaline and Cladium fen as best represented near Oranmore, and species such as Great Fen-sedge, Common Reed (Phragmites australis), Purple Moor-grass (Molinia caerulea), Bogbean (Menyanthes trifoliata) and Long-stalked Yellow-sedge (Carex lepidocarpa) are found along with the usually dominant, Black Bog-rush. The turlough at Ballinacourty floods to about 25 ha in winter, and has vegetation with a typical zonation. Wetland species such as Amphibious Bistort (Polygonum amphibium), Common Marsh-bedstraw (Galium palustre) and Marsh Cinquefoil (Potentilla palustris) are found near the swallow-hole, with species of wet grassland close to the flood limit (e.g. Silverweed, Potentilla anserina, Water Mint, Mentha aquatica and Creeping Bent, Agrostis stolonifera). Sedges (Carex spp.) dominate in between.

Inner Galway Bay provides extensive good quality habitat for Common Seal (maximum count of 317 in the all-Ireland survey of 2003). This species is listed on Annex II of the E.U. Habitats Directive. The seals use a range of haul-out sites distributed through the bay - these include inner Oranmore Bay, Rabbit Island, St. Brendan's Island, Tawin Island, Kinvarra Bay, Aughinish Bay and Ballyvaughan. The site provides optimum habitat for Otter, also an Annex II-listed species.

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Fishing and aquaculture are the main commercial activities within the site. A concern is that sewage effluent and detritus of the aquaculture industry could be deleterious to benthic communities. Reef and sediment communities are vulnerable to disturbance or compaction from tractors accessing oyster trestles. The Paracentrotus lividus populations have been shown to be vulnerable to over-fishing. Extraction of maerl in Galway Bay is a threat. Owing to the proximity of Galway city, shoreline and terrestrial habitats are under pressure from urban expansion and recreational activities. Eutrophication is probably affecting some of the lagoons and is a continued threat. Drainage is a general threat to the turlough and fen habitats. Bird populations may be disturbed by aquaculture activities.

This large coastal site is of immense conservation importance, with many habitats listed on Annex I of the E.U. Habitats Directive, four of which have priority status (lagoon, Cladium fen, turlough and orchid-rich calcareous grassland). The examples of shallow bays, reefs, lagoons and saltmarshes found within this site are amongst the best in the country. The site supports an important Common Seal colony and a breeding Otter population (Annex II species), and six regular Annex I E.U. Birds Directive species. The site also has four Red Data Book plant species, plus a host of rare or scarce marine and lagoonal animal and plant species.

**SITE NAME: Inner Galway Bay SPA**
**SITE CODE: 004031**

Inner Galway Bay SPA is a very large, marine-dominated site situated on the west coast of Ireland. The inner bay is protected from exposure to Atlantic swells by the Aran Islands and Black Head. Subsidiary

bays and inlets (e.g. Poulnaclough, Aughinish and Kinvarra Bays) add texture to the patterns of water movement and sediment deposition, which lends variety to the marine habitats and communities. The terraced Carboniferous (Viséan) limestone platform of the Burren sweeps down to the shore and into the sublittoral. The long shoreline is noted for its diversity, and comprises complex mixtures of bedrock shore, shingle beach, sandy beach and fringing salt marshes. Intertidal sand and mud flats occur around much of the shoreline, with the largest areas being found on the sheltered eastern coast between Oranmore Bay and Kinvarra Bay. A number of small islands and rocky islets in the Bay are included within the site.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Black-throated Diver, Great Northern Diver, Cormorant, Grey Heron, Light-bellied Brent Goose, Wigeon, Teal, Red- breasted Merganser, Ringed Plover, Golden Plover, Lapwing, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Black-headed Gull, Common Gull, Sandwich Tern and Common Tern. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Inner Galway Bay supports an excellent diversity of wintering wetland birds, with divers, grebes, cormorants, dabbling duck, sea duck and waders all well represented. There are internationally important wintering populations of Great Northern Diver (88) and Light-Bellied Brent Goose (676) and nationally important wintering populations of an additional sixteen species i.e. Black-throated Diver (36), Cormorant (266), Grey Heron (102), Wigeon (1,168), Teal (700), Red-breasted Merganser (249), Ringed Plover (335), Golden Plover (2,030), Lapwing (3,969), Dunlin (2,155), Bar- tailed Godwit (447), Curlew (697), Redshank (505), Turnstone (182), Black-headed Gull (1,941) and Common Gull (1,066) - all figures given are five year mean peaks for the seasons 1995/96 to 1999/2000. Of note is that the populations of Red-breasted Merganser and Ringed Plover represent 6.8% and 2.3% of the respective all-Ireland totals. Other species which occur in notable numbers include Little Grebe (35), Long- tailed Duck (21), Scaup (44) and Herring Gull (216). In addition, the following species also use the site: Great Crested Grebe (16), Mallard (200), Common Scoter (87), Oystercatcher (576), Grey Plover (60), Black-tailed Godwit (46), Mute Swan (150) and Great Black-backed Gull (129). The site provides both feeding and roost sites for most of the species. Little Egret, a species which has recently colonised Ireland, also occurs at this site.

The site has several important populations of breeding birds, most notably colonies of Sandwich Tern (81 pairs in 1995) and Common Tern (98 pairs in 1995 on Green Island and 46 pairs in 2001 on Mutton Island). A large Cormorant colony occurs on Deer Island - this had 200 pairs in 1985 and 300 pairs in 1989.

Inner Galway Bay SPA is of high ornithological importance with two wintering species having populations of international importance and a further sixteen wintering species having populations of national importance. The breeding colonies of Sandwich Tern, Common Tern and Cormorant are also of national importance. Also of note is that six of the regularly occurring species are listed on Annex I of the E.U. Birds Directive, i.e. Black-throated Diver, Great Northern Diver, Golden Plover, Bar- tailed Godwit, Sandwich Tern and Common Tern. Inner Galway Bay is a Ramsar Convention site and part of the Inner Galway Bay SPA is a Wildfowl Sanctuary.

# APPENDIX 2CRITERIA USED TO EVALUATE HABITATS AND IMPACTS

**Table A.1** Criteria used to determine the value of ecological resources (taken from NRA, 2009).

| | Criteria |
|---|---|
| **International Importance** | 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.<br>Proposed Special Protection Area (pSPA). Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).<br>Features essential to maintaining the coherence of the Natura 2000 Network<br>Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.<br>Resident or regularly occurring populations (assessed to be important at the national level) of the following:<br>• Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or<br>• Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.<br>• Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).<br>• World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).<br>• Biosphere Reserve (UNESCO Man & The Biosphere Programme)<br>• Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).<br>• Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).<br>• Biogenetic Reserve under the Council of Europe.<br>• European Diploma Site under the Council of Europe.<br>• Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988). |
| **National Importance** | Site designated or proposed as a Natural Heritage Area (NHA).<br>Statutory Nature Reserve. Refuge for Fauna and Flora protected under the Wildlife Acts.<br>National Park.<br>Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.<br>Resident or regularly occurring populations (assessed to be important at the national level) of the following:<br>• Species protected under the Wildlife Acts; and/or<br>• Species listed on the relevant Red Data list.<br>• Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive. |
| **County Importance** | Area of Special Amenity. Area subject to a Tree Preservation Order.<br>Area of High Amenity, or equivalent, designated under the County Development Plan.<br>Resident or regularly occurring populations (assessed to be important at the County level) of the following:<br>• Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;<br>• Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;<br>• Species protected under the Wildlife Acts; and/or<br>• Species listed on the relevant Red Data list.<br>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.<br>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.<br>Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.<br>Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level. |
| **Local Importance (higher value)** | Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;<br>Resident or regularly occurring populations (assessed to be important at the Local level) of the following:<br>• Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;<br>• Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;<br>• Species protected under the Wildlife Acts; and/or<br>• Species listed on the relevant Red Data list.<br>Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;<br>• Sites or features containing common or lower value habitats, including naturalised species that are essential in maintaining links and ecological corridors between features of higher ecological value. |

| | Criteria |
|---|---|
| Local Importanc | Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;<br>Sites or features containing non-native species that are of some importance in maintaining habitat links. |

**Table A.2** Criteria for assessing impact magnitude (NRA, 2009).

| Impact magnitude | Definition |
|---|---|
| No change: | No discernible change in the ecology of the affected feature. |
| Imperceptible Impact: | An impact capable of measurement but without noticeable consequences. |
| Slight Impact: | An impact which causes noticeable changes in the character of the environment without affecting its sensitivities. |
| Moderate Impact: | An impact that alters the character of the environment that is consistent with existing and emerging trends. |
| Significant Impact: | An impact which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment. |
| Profound Impact: | An impact which obliterates sensitive characteristics. |

# APPENDIX 3 MAMMAL RECORDS

**Table A.3** List of mammals recorded in M22 national 10km grid square.

| Group | Species | Designation |
|---|---|---|
| Terrestrial Mammal | American Mink (Mustela vison) | Invasive Species: Invasive Species \|\| Invasive Species: Invasive Species >> High Impact Invasive Species \|\| Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) |
| Terrestrial Mammal | Bank Vole (Myodes glareolus) | Invasive Species: Invasive Species \|\| Invasive Species: Invasive Species >> Medium Impact Invasive Species |
| Terrestrial Mammal | Brown Long-eared Bat (Plecotus auritus) | Protected Species: EU Habitats Directive \|\| Protected Species: EU Habitats Directive >> Annex IV \|\| Protected Species: Wildlife Acts |
| Terrestrial Mammal | Brown Rat (Rattus norvegicus) | Invasive Species: Invasive Species \|\| Invasive Species: Invasive Species >> High Impact Invasive Species \|\| Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) |
| Terrestrial Mammal | Daubenton's Bat (Myotis daubentonii) | Protected Species: EU Habitats Directive \|\| Protected Species: EU Habitats Directive >> Annex IV \|\| Protected Species: Wildlife Acts |
| Terrestrial Mammal | Eurasian Badger (Meles meles) | Protected Species: Wildlife Acts |
| Terrestrial Mammal | Eurasian Pygmy Shrew (Sorex minutus) | Protected Species: Wildlife Acts |
| Terrestrial Mammal | Eurasian Red Squirrel (Sciurus vulgaris) | Protected Species: Wildlife Acts |
| Terrestrial Mammal | European Otter (Lutra lutra) | Protected Species: EU Habitats Directive \|\| Protected Species: EU Habitats Directive >> Annex II \|\| Protected Species: EU Habitats Directive >> Annex IV \|\| Protected Species: Wildlife Acts |
| Terrestrial Mammal | European Rabbit (Oryctolagus cuniculus) | Invasive Species: Invasive Species \|\| Invasive Species: Invasive Species >> Medium Impact Invasive Species |
| Terrestrial Mammal | House Mouse (Mus musculus) | Invasive Species: Invasive Species \|\| Invasive Species: Invasive Species >> High Impact Invasive Species |
| Terrestrial Mammal | Irish Hare (Lepus timidus subsp. hibernicus) | |
| Terrestrial Mammal | Irish Stoat (Mustela erminea subsp. hibernica) | |
| Terrestrial Mammal | Lesser Horseshoe Bat (Rhinolophus hipposideros) | Protected Species: EU Habitats Directive \|\| Protected Species: EU Habitats Directive >> Annex II \|\| Protected Species: EU Habitats Directive >> Annex IV \|\| Protected Species: Wildlife Acts |
| Terrestrial Mammal | Lesser Noctule (Nyctalus leisleri) | Protected Species: EU Habitats Directive \|\| Protected Species: EU Habitats Directive >> Annex IV \|\| Protected Species: Wildlife Acts |
| Terrestrial Mammal | Natterer's Bat (Myotis nattereri) | Protected Species: EU Habitats Directive \|\| Protected Species: EU Habitats Directive >> Annex IV \|\| Protected Species: Wildlife Acts |
| Terrestrial Mammal | Pine Marten (Martes martes) | Protected Species: EU Habitats Directive \|\| Protected Species: EU Habitats Directive >> Annex V \|\| Protected Species: Wildlife Acts |
| Terrestrial Mammal | Pipistrelle (Pipistrellus pipistrellus sensu lato) | Protected Species: EU Habitats Directive \|\| Protected Species: EU Habitats Directive >> Annex IV \|\| Protected Species: Wildlife Acts |
| Terrestrial Mammal | Red Fox (Vulpes vulpes) | |
| Terrestrial Mammal | Soprano Pipistrelle (Pipistrellus pygmaeus) | Protected Species: EU Habitats Directive \|\| Protected Species: EU Habitats Directive >> Annex IV \|\| Protected Species: Wildlife Acts |
| Terrestrial Mammal | West European Hedgehog (Erinaceus europaeus) | Protected Species: Wildlife Acts |
| Terrestrial Mammal | Wood Mouse (Apodemus sylvaticus) | |

# APPENDIX 4 Protected / Threatened Birds

**Table A.4** List of protected / threatened bird species recorded in M22 national 10km grid square.

| Group | Species | Designation |
|---|---|---|
| Bird | Arctic Tern (Sterna paradisaea) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Barn Owl (Tyto alba) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Barn Swallow (Hirundo rustica) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Bar-tailed Godwit (Limosa lapponica) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Black Guillemot (Cepphus grylle) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Black-headed Gull (Larus ridibundus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Black-legged Kittiwake (Rissa tridactyla) | Protected Species: Wildlife Acts \|\| Threatened Species: OSPAR Convention \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Black-throated Diver (Gavia arctica) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Brent Goose (Branta bernicla) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Coot (Fulica atra) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section II Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Goldeneye (Bucephala clangula) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section II Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Grasshopper Warbler (Locustella naevia) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Greenshank (Tringa nebularia) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Guillemot (Uria aalge) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Kestrel (Falco tinnunculus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Kingfisher (Alcedo atthis) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |

| | | |
|---|---|---|
| Bird | Common Linnet (Carduelis cannabina) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Pheasant (Phasianus colchicus) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section I Bird Species |
| Bird | Common Pochard (Aythya ferina) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section II Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Redshank (Tringa totanus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Common Sandpiper (Actitis hypoleucos) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Scoter (Melanitta nigra) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section II Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section III Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Common Shelduck (Tadorna tadorna) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Snipe (Gallinago gallinago) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section III Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Starling (Sturnus vulgaris) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Swift (Apus apus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Tern (Sterna hirundo) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Common Wood Pigeon (Columba palumbus) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section I Bird Species |
| Bird | Corn Crake (Crex crex) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Dunlin (Calidris alpina) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Eurasian Curlew (Numenius arquata) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section II Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Eurasian Oystercatcher (Haematopus ostralegus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Eurasian Teal (Anas crecca) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section II Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |

| | | |
|---|---|---|
| Bird | Eurasian Wigeon (Anas penelope) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section II Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Eurasian Woodcock (Scolopax rusticola) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section III Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | European Golden Plover (Pluvialis apricaria) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Protected Species: EU Birds Directive >> Annex II, Section II Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section III Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | European Shag (Phalacrocorax aristotelis) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | European Turtle Dove (Streptopelia turtur) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Great Black-backed Gull (Larus marinus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Great Cormorant (Phalacrocorax carbo) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Great Crested Grebe (Podiceps cristatus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Great Northern Diver (Gavia immer) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species |
| Bird | Greater Scaup (Aythya marila) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section II Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section III Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Greater White-fronted Goose (Anser albifrons) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Protected Species: EU Birds Directive >> Annex II, Section II Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section III Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Grey Partridge (Perdix perdix) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Grey Plover (Pluvialis squatarola) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Hen Harrier (Circus cyaneus) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Herring Gull (Larus argentatus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | House Martin (Delichon urbicum) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | House Sparrow (Passer domesticus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |

| | | |
|---|---|---|
| Bird | Jack Snipe (Lymnocryptes minimus) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section III Bird Species |
| Bird | Lesser Black-backed Gull (Larus fuscus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Little Egret (Egretta garzetta) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species |
| Bird | Little Grebe (Tachybaptus ruficollis) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Little Gull (Larus minutus) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species |
| Bird | Little Tern (Sternula albifrons) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Long-tailed Duck (Clangula hyemalis) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section II Bird Species |
| Bird | Mallard (Anas platyrhynchos) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section I Bird Species |
| Bird | Mediterranean Gull (Larus melanocephalus) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Merlin (Falco columbarius) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Mew Gull (Larus canus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Mute Swan (Cygnus olor) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Northern Gannet (Morus bassanus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Northern Lapwing (Vanellus vanellus) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section II Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Northern Pintail (Anas acuta) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section II Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Northern Shoveler (Anas clypeata) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section III Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Northern Wheatear (Oenanthe oenanthe) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Peregrine Falcon (Falco peregrinus) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species |
| Bird | Razorbill (Alca torda) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Red Grouse (Lagopus lagopus) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section I Bird Species \|\| |

| | | |
|---|---|---|
| | | Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Red Knot (Calidris canutus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Red-breasted Merganser (Mergus serrator) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section II Bird Species |
| Bird | Red-throated Diver (Gavia stellata) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Ringed Plover (Charadrius hiaticula) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Rock Pigeon (Columba livia) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species |
| Bird | Ruddy Duck (Oxyura jamaicensis) | Invasive Species: Invasive Species \|\| Invasive Species: Invasive Species >> High Impact Invasive Species \|\| Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 \|\| Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) |
| Bird | Sand Martin (Riparia riparia) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Sandwich Tern (Sterna sandvicensis) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Sky Lark (Alauda arvensis) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Slavonian Grebe (Podiceps auritus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Snowy Owl (Bubo scandiaca) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Spotted Flycatcher (Muscicapa striata) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Stock Pigeon (Columba oenas) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Tufted Duck (Aythya fuligula) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex II, Section I Bird Species \|\| Protected Species: EU Birds Directive >> Annex III, Section II Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Twite (Carduelis flavirostris) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |
| Bird | Water Rail (Rallus aquaticus) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Whooper Swan (Cygnus cygnus) | Protected Species: Wildlife Acts \|\| Protected Species: EU Birds Directive \|\| Protected Species: EU Birds Directive >> Annex I Bird Species \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List |
| Bird | Yellowhammer (Emberiza citrinella) | Protected Species: Wildlife Acts \|\| Threatened Species: Birds of Conservation Concern \|\| Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List |