Gort Mhaoilir Estate

Ecological Impact Assessment

Final

April 2025

Prepared for:

Paul Keogh Architects

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Contract

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This report describes work commissioned by Ellen Mathews, on behalf of Paul Keogh Architects by an instruction dated 12/09/2024. The Client's representative for the contract was Ellen Mathews of Paul Keogh Architects. Johanna Healy and Mia Heigh of JBA Consulting carried out this work.

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Where field investigations are carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in issuing this Report.

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Abbreviations

AA……Appropriate Assessment

BAP……Biodiversity Action Plan

CIEEM……...Charted Institute of Environmental and Ecological Management

DEHLG……..Department of Environment, Heritage and Local Government

EC……..European Commission

EcIA……...Ecological Impact Assessment

ECoW……Ecological Clerk of Works

EEC……European Economic Community

EPA……Environmental Protection Agency

EPS……European Protected Species

IFI……Inland Fisheries Ireland

LA……...Local Authority

NBDC……National Biodiversity Data Centre

NHA……National Heritage Area

NPWS……National Parks and Wildlife Services

NRA……National Road Authority

OPR……Office of the Planning Regulator

pNHA……..Proposed National Heritage Area

QI……Qualifying Interest

RBMP……River Basin Management Plan

SAC……Special Area of Conservation

SPA……Special Protection Area

WFD……...Water Framework Directive

ZoI……..Zone of Influence

1 Introduction

JBA Consulting Engineers and Scientists Ltd. (hereafter JBA) has been commissioned by Paul Keogh Architects to prepare an Ecological Impact Assessment (EcIA) for a proposed social housing development at Gort Mhaoilir, Athenry.

The proposed development includes the construction of 43 no. new dwellings.

A Screening for Appropriate Assessment has also been carried out for the proposed development (JBA Consulting, 2024).

1.1 Aims

The aims of this EcIA are to:

- Establish baseline ecology conditions to enable identification of potentially important ecological features within the zone of influence of the project,
- Determine the ecological value of identified ecological features,
- Assess the significance of impacts of the proposed project on ecological features of value,
- Identify avoidance, mitigation, or compensatory measures,
- Identify residual impacts after mitigation and the significance of their effect,
- Identify any in-combination impacts from other projects,
- Identify opportunities for ecological enhancement and net gain of biodiversity.

1.2 Site Location

The project will be undertaken in Gort Mhaoilir Estate in Athenry, Co. Galway. The site is located within an existing housing state in Athenry on the R347, close to the Athenry train station (Figure 1-1).

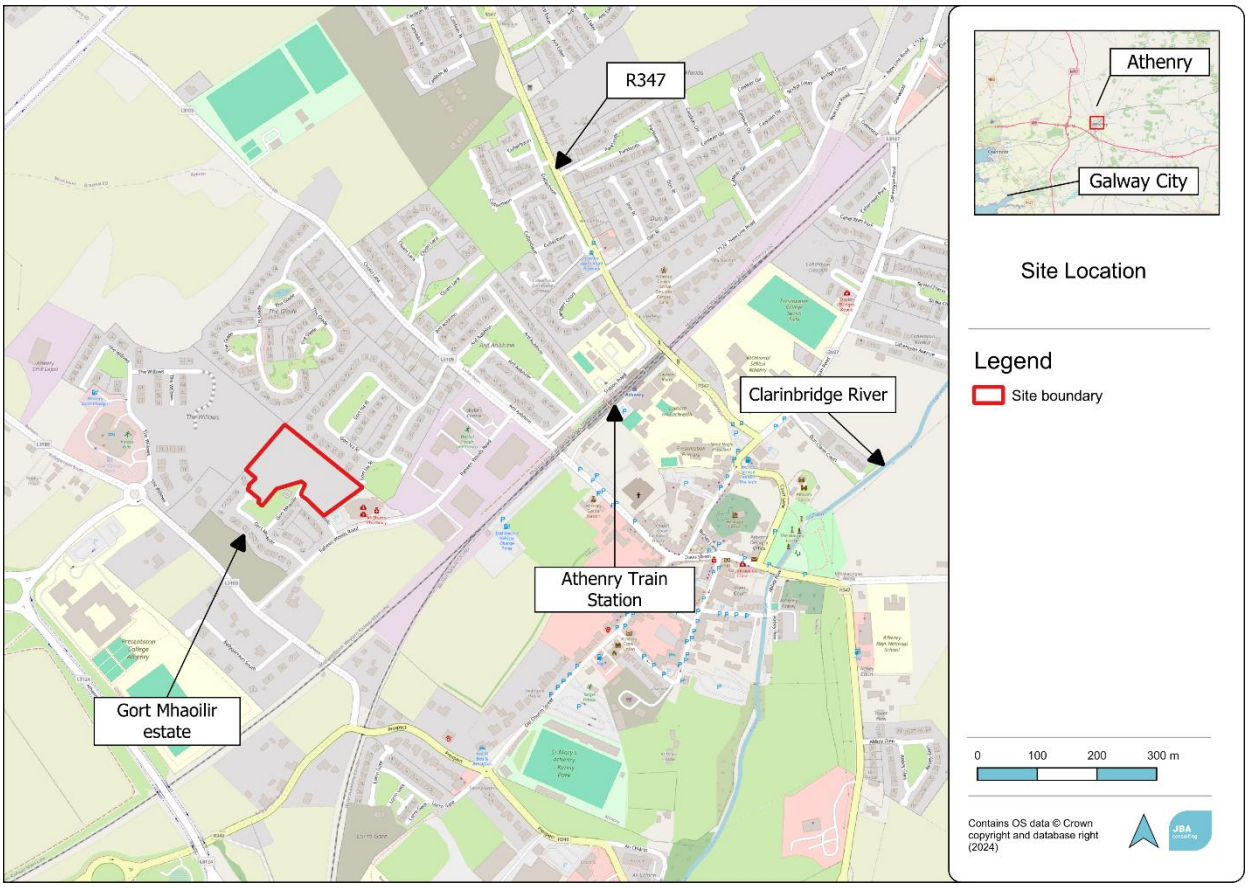

Figure 1-1: Site location

1.3 Description of Works

The proposed development includes the construction of 43 no. new dwellings, including:

- 14no. 2-bedroom housing units
- 16no. 3-bedroom housing units
- 1no. 4-bedroom housing unit
- 6no. 2-bedroom duplex units; and
- 6no. 1-bedroom duplex units.

Ancillary site works include the provision of access roads, car parking and landscaping.

The site covers an area of c. 1.4ha and currently consists of a fenced off greenfield area.

The site layout in included in Appendix A.

1.3.1 Site Drainage Design

The drainage for the project will connect into the existing network within Athenry/Gort Mhaoilir estate, with new water mains, storm water drains and foul sewers included in the drainage plan for the development. The existing surface water drainage network is assumed to outfall to the Clarinbridge River 700m from the proposed site. Proposed drainage plans are provided in Appendix B.

1.3.1.1 Surface Water Drainage

Surface water leaving the site will pass through a silt trap and class 1 petrol interceptor and enter a graf eco bloc attenuation tank before discharging to the existing storm water system. These standard environmental measures are not currently in place for the site and will be constructed as part of the development.

All water infrastructure to be designed and constructed in accordance with Irish Water guidance:

- Code Of Practice For Water Infrastructure, Connections And Developer Services, Design And Construction Requirements For Self-Lay Developments; July 2020 (revision 2); IW-CDS-5020-03
- Water Infrastructure Standard Details, Connections And Developer Services, Construction Requirements For Self-Lay Developments; July 2020 (revision 04); IW-CDS-5020-01

Where the above documents are revised by Irish Water, the latest revision of the relevant document shall be used.

All pipe materials shall be in compliance with section 3.9 of the Irish Water Code Of Practice.

1.3.1.2 Foul Water Drainage

Foul water will be diverted to Athenry Wastewater Treatment Plant (WWTP), which currently has potential spare capacity; applications are to be considered on an individual basis considering their specific load requirements (Irish Water, 2022).

All wastewater infrastructure to be designed and constructed in accordance with Irish Water guidance:

- Code Of Practice For Wastewater Infrastructure, Connections And Developer Services, Design And Construction Requirements For Self-Lay Developments; July 2020 (revision 2); IW-CDS-5030-03
- Wastewater Infrastructure Standard Details, Connections And Developer Services, Construction Requirements For Self-Lay Developments; July 2020 (revision 04); IW-CDS-5030-01

Where the above documents are revised by Irish Water, the latest revision of the relevant document shall be used.

All pipe materials shall be in compliance with section 3.9 of the Irish Water Code Of Practice.

1.3.2 Site Investigations

A report detailing site investigations undertaken for the proposed site at Gort Mhaoilir was prepared by Site Investigations Ltd (Site Investigations Ltd, 2024). Cable percussion boreholes were undertaken at 6 locations. 7 no. trial pits were excavated, with soil samples for geotechnical testing taken at each. Soakaway tests were completed at 5 no. locations. A slit trench was completed to investigate potential contamination from an old septic tank leaking on an adjacent site.

The following is a summary of findings relevant to this assessment:

- No groundwater was recorded in any boreholes or trial pits.
    - A caveat was noted in this report that boreholes and trial pit logs do not in general give an accurate indication of groundwater conditions. An extended period of groundwater monitoring is required for more accurate information. Pumping tests would be required to determine likely seepage rates and persistence into excavations taken below groundwater level.
- Soils on site are unsuitable for soakaways.
- Environmental testing and waste classification reports showed that material on site can be classified as non-hazardous. Soils tested can be treated as Inert Waste.

1.3.3 Landscape Plan

The proposed landscape plan shown in Figure 1-2 is the final plan for the development and has been prepared by JBA Consulting. The full plan is included in Appendix C. All existing habitats at the site will be lost during the construction of the proposed development.

A wildflower meadow is proposed along to the east of the development. Numerous areas of tree planting and amenity grassland areas are included across the site. Ornamental planting will be included in private garden areas.

The proposed planting list has been reviewed by suitably qualified Ecologists and does not include any potential invasive species.

Figure 1-2: Landscape plan

1.3.4 Duration of the Works

The expected duration of works is approximately 2 years.

1.3.5 Excavation requirements

Strip foundations are proposed for the development, with an estimated minimum excavation depth of 900mm below ground level. Maximum excavations are expected to be 3.18m for foul / surface water manholes to connect to existing lines.

1.3.6 Lighting Plans

The proposed lighting plan is included in Appendix D. Lighting across the majority of the proposed housing area will have horizontal illuminance levels of 1.5lux with 1.0lux closer to the estate edges. The southwestern area with kickabout, playground, grass and tree planting areas is darker with a larger proportion of this area predicted to have 1.0lux horizontal illuminance.

2 Methodology

2.1 The EcIA Team

The surveys for the baseline ecology were undertaken by JBA Graduate Ecologists Johanna Healy (BSc (Hons), MSc) and Mia Heigh (BSc (Hons)).

The report has been reviewed by JBA Principal Ecologist Patricia Byrne BSc (Hons), PhD, MCIEEM

These staff members thus fulfil the Environmental Impact Assessment (EIA) Directive personnel requirements of 'competent persons'.

2.2 Policy and Legislation

Policy and legislation for nature conservation, protected and priority species relevant to the proposed project is provided in Appendix A.

2.3 Methods

This EcIA assesses the ecological features present within the site and its surrounding area (the Zone of Influence (ZoI)) in relation to the proposed works. This allows for identification of the potential impacts of the proposed works upon the ecological features of the site at an early stage, whilst identifying the potential ecological constraints upon the proposed works. The assessment is based on a desk-based assessment, which determines the baseline conditions at the site of the proposed works, as well as site surveys, which provided information on habitats and species present on the site and its surroundings.

The EcIA will outline the findings of the desk-based assessment and the surveys and identify any potential impacts of the proposed works on ecological features within the ZoI of the site and propose mitigation measures to avoid or reduce impacts where necessary.

2.4 Guidance

This assessment was conducted in accordance with the following guidance documents:

- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2024)
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2008)
- On the lifespan of ecological reports and surveys (CIEEM, 2019)
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022)

2.5 Ecological Baseline

To determine the ecological baseline conditions at the site a review of all available information was made. When determining the pre-work conditions on-site, including the presence or absence of protected habitats and/or species, the precautionary principle was used where limited information was available. This review included the following:

- A desk-based assessment was carried out to collate information regarding protected/notable species and statutorily designated nature conservation sites in, or within close proximity to, the study area.
- A data search for protected and notable species was conducted using the National Biodiversity Data Centre (NBDC) Mapping System (NBDC, 2024). A study area encompassing a 5km radius from the site was used.
- Information for statutory designated sites including Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar Sites, National Heritage Areas (NHAs) and proposed NHAs (pNHAs) was collected from the online resources provided by the National Parks and Wildlife Service (NPWS).

Other information on the local area was obtained, including information from the following sources:

- NPWS (2019a). The Status of EU Protected Habitats and Species in Ireland. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland (NPWS, 2019a).
- NPWS (2019b). The Status of EU Protected Habitats and Species in Ireland. Habitats Assessment Volume 2. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland (NPWS, 2019b)
- NPWS (2019c). The Status of EU Protected Habitats and Species in Ireland. Species Assessment Volume 3. Habitats Assessment Volume 2. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland (NPWS, 2019c)
- Aerial photography available from www.osi.ie and Google Maps http://maps.google.com/;
- All Ireland Red Data lists for vascular flora, mammals, butterflies, various invertebrate classes, amphibians and fish.
- Water Framework Directive water maps (available online at http://www.wfdireland.ie/maps.html and https://www.catchments.ie/); and
- International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species
- NPWS website (https://www.npws.ie/), for information about designated sites, along with Annex habitat and species distribution data and status reports.
- National Biodiversity Data Centre (NBDC) Maps: data within the 2 km of the site, within the past 10 years. (http://maps.biodiversityireland.ie/#/Map)
- Environmental Protection Agency (EPA) maps website (https://gis.epa.ie/EPAMaps/)
- Catchments (www.catchments.ie)

- Flora Protection Order Map Viewer (https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=a41ef4e10227499d8de17a8abe42bd1e)
- IFI: Water Framework Directive Rivers Fish Ecological Status 2008-2022 (https://opendata-ifigeo.hub.arcgis.com/datasets/0bbd4ae9a34b47dbb38d7b8a0bb7f52e_0/explore?location=52.675008%2C-8.523539%2C11.91)
- Red List of Threatened Species (*The IUCN Red List of Threatened Species*, no date)
- Ireland Red List (NPWS, 2024).

2.5.1 Field Surveys

An ecological walkover of the site, including habitat mapping, mammal and preliminary bat roost surveys were conducted by Johanna Healy and Mia Heigh on 12 November 2024.

Trail cameras were placed around the site from 12 November 2024 to 27 November 2024 to monitor for fauna present on the site.

A static bat detector was placed within the site and was recording for 15 days from 12 November 2024 to 27 November 2024.

The ecological walkover survey recorded habitats and protected species, following the methods outlined in the documents below:

- Heritage Council (2011). Best Practice Guidance for Habitat Survey and Mapping (Smith *et al.*, 2011).
- Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (NRA, 2009).
- Bat Surveys for professional Ecologists: Good Practice Guidelines (4th Edition). Bat Conservation Trust (Collins, 2024).
- Bat Mitigation Guidelines for Ireland – V2 (Marnell et al., 2022)

Aerial photographs and site maps assisted the survey. Habitats have been named and described following Fossitt (2000). Nomenclature for higher plants follows that given in The New Flora of the British Isles 4th Edition (Stace, 2019). Identification of Irish plants generally follows Webb's An Irish Flora (Parnell and Curtis, 2012).

2.6 Water Framework Directive

In response to the increasing threat of pollution and the increasing demand from the public for cleaner rivers, lakes and beaches, the EU developed the Water Framework Directive (WFD). This Directive is unique in that, for all the first time, it established a framework for the protection of all waters including rivers, lakes, estuaries, coastal waters

and groundwater, and their dependent wildlife/habitats under one piece of environmental legislation for all European member states.

The WFD (Directive 2000/60/EC) is a substantial piece of EU water legislation that came into force in 2000. The overarching objective of the WFD is for the water bodies in Europe to attain Good or High Ecological Status. The Environment Protection Agency (EPA) is the competent authority in Ireland responsible for delivering the WFD. River Basin Management Plans (RBMP) have been created which set out measures to ensure that water bodies in the country achieve 'Good Ecological Status'.

Good Ecological Quality will depend on the quality of the individual quality elements on which the Ecological status is scored; namely the biological, chemical and morphological condition in a particular water body. Any reduction in any of these elements will result in a reduction of the overall ecological status.

2.6.1 WFD Objectives

It is understood that the River Basin Management Plan (2022-2027) has been adopted by all local authorities in order to achieve the aims of the WFD (DHLGH, 2022). The Plan sets out the new approach that Ireland will take to enhance protection, prevention, and monitoring of Irish waterbodies. The main actions include:

- Improve wastewater treatment;
- Conservation of leakage reduction;
- Scientific assessment of waterbodies and implementation of local measures;
- A new collaborative Sustainability and Advisory Support Programme;
- Dairy Sustainability Initiative;
- Development of water and planning guidance for local authorities;
- Extension of Domestic Waste Water Treatment Systems grant schemes; and
- A new Community Water Development Fund.

Regardless of their current quality, surface water should be treated the same in terms of the level of protection and mitigation measures employed, i.e., there should be no negative change in status.

The third and current cycle aims to build particularly on the initiatives of the second cycle, particularly the governance and implementation structures, and to improve the establishment of Irish Water, An Fóram Uisce (The Water Forum), the Local Authority Waters Programme and the Agricultural Sustainability Support and Advisory Programme.

2.7 Screening of Ecological Features

The ecological features identified during the walkover survey and from desk-based assessments were reviewed. An informal screening process is presented at the start of the results section to ensure that the assessment focuses only on features where the impact could have important consequences for biodiversity (valued ecological features). Any features which are important beyond the site level were identified for further

evaluation. Ecological features with little or no value beyond the site level were screened out and a short statement explaining this is given in the screening section.

2.8 Assessment of the Effects on Features

Ecological features include nature conservation sites, habitats, species assemblages/communities, populations, or groups of species. The assessment of the significance of predicted impacts on ecological features is based on both the 'value' of a feature, and the nature and magnitude of the impact that the project will have on it.

2.9 Valuation of Ecological Features

The value of designated sites, habitats and species populations is assessed with reference to:

- Their importance in terms of 'biodiversity conservation' value (which relates to the need to conserve representative areas of different habitats and the genetic diversity of species populations).
- Any social benefits that habitats and species deliver (e.g., relating to the enjoyment of flora and fauna by the public).
- Any economic benefit that they provide.

The valuation of designated sites considers different levels of statutory and non-statutory protection. Assessment of habitat depends on several factors, including the size of the habitat, its conservation status and quality. This assessment also takes into account of connected off-site habitat that may increase the value of the on-site habitat through association. Valuation of species depends on a number of factors including distribution, status, rarity, vulnerability, and the population size present.

Table 2-1: Examples of criteria used to define the value of ecological features (NRA, 2009)

Level of Value	Examples of Criteria
International	An internationally important site e.g., Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar (or a site considered worthy of such designation). A regularly occurring substantial population of an internationally important species (listed on Annex IV of the Habitats Directive). Designated shellfish waters. Major fisheries area.
National	A nationally designated site e.g., Natural Heritage Area (NHA), a proposed Natural Heritage Area (pNHA), statutory Nature Reserve, or a site considered worthy of such designation. A viable area of a habitat type listed in Annex I of the Habitats Directive or of smaller areas of such habitat which are essential to maintain the viability of a larger whole. A regularly occurring substantial population of a nationally important species, e.g., listed on The Wildlife Acts 1976-2021 or

Level of Value	Examples of Criteria
	The Wildlife (Amendment) Act 2023. A species included in the Irish Red Data Lists/Books. Significant populations of breeding birds.
Regional/County	Species and habitats of special conservation significance within County Galway An area subject to a project/initiative under the County's Biodiversity Action Plan. A regularly occurring substantial population of a nationally scarce species.
Local (work site and its vicinity)	Areas of internationally or nationally important habitats which are degraded and have little or no potential for restoration. A good example of a common or widespread habitat in the local area. Species of national or local importance, but which are only present very infrequently or in very low numbers within site area.
Less than local	Areas of heavily modified or managed vegetation of low species diversity or low value as habitat to species of nature conservation interest. Common and widespread species.

Ecological valuation may also be considered of Local Importance (higher value) or Local Importance (lower value) (Table 2-2).

Table 2-2: Examples of criteria used to define the value of ecological features of local importance (NRA, 2009a)

Level of Value	Examples of Criteria
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. Resident or regularly occurring populations (assessed to be important at the Local level) of the following: *Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive: *Species of animal and plants listed in Annex II and/or IV of the Habitats Directive: *Species protected under the Wildlife Acts; and/or *Species listed on the relevant Red Data List. 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 Sites or features containing common or lower value habitats,

Level of Value	Examples of Criteria
	including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value)	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife: Sites or features containing non-native species that are of some importance in maintaining habitat links.

2.10 Descriptive Terminology

Ecological effects or impacts can be described and categorized in a number of ways. Examples of relevant terms are listed in the table below (Table 2-3).

Table 2-3: Categories of Effects (EPA, 2022)

Effects	Categories of Effects
Quality of Effects	Positive Effects A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities),
	Neutral Effects No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative/adverse Effects A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Probability of Effects	Likely Effects The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
	Unlikely Effects The effects that can be reasonably expected not to occur because of the planned project if all mitigation measures are properly implemented.
Significance of Effects	Imperceptible An effect capable of measurement but without significant consequences.
	Not Significant An effect which causes noticeable changes in the character of the environment but without significant consequences.

Effects	Categories of Effects
	Slight Effects An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate Effects An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant Effects An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
	Very Significant An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
	Profound Effects An effect which obliterates sensitive characteristics.
Duration and Frequency of Effects	Temporary Effects Effects lasting less than a year.
	Short-term Effects Effects lasting one to seven years.
	Medium-term Effects Effects lasting seven to fifteen years.
	Long-term Effects Effects lasting fifteen to sixty years.
Types of Effects	Indirect Effects (a.k.a. Secondary Effects) Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative Effects The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
	'Do-Nothing' Effects The environment as it would be in the future should the subject project not be carried out.
	'Worst Case' Effects The effects arising from a project in the case where mitigation measures substantially fail.
	Residual Effects The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
	Synergistic Effects

Effects	Categories of Effects
	Where the resultant effect is of greater significance than the sum of its constituents (e.g., combination of SOx and NOx to produce smog).

These factors are assessed together to determine the magnitude of the impact on the status of a habitat or species population, and on the integrity of the site that supports them. Professional judgement is then used to assign the impacts on the receptors to one of four classes of magnitude, detailed in Table 2-4.

2.10.1 Magnitude of Impacts

Ecological impacts can be categorised and assessed in a number of ways. They can be considered to be:

Table 2-4: Definition of magnitude

Level of Magnitude	Examples of Criteria
High	An irreversible or long-term impact on the integrity of a site or conservation status of a habitat, species assemblage/community, population or group. If adverse, this is likely to threaten its sustainability; if beneficial, this is likely to enhance its conservation status.
Medium	A medium to long-term impact on the integrity of a site or conservation status to a habitat, species assemblage/community, population or group, which if adverse, is unlikely to threaten its sustainability (or if beneficial, is likely to be sustainable but is unlikely to enhance its conservation status).
Low	A short-term but temporary impact on the integrity of a site or conservation status of a habitat, species assemblage/community, population or group that is within the range of variation normally experienced between years.
Negligible	A short-term but temporary impact on the integrity of a site or conservation status of a habitat, species assemblage/community, population or group that is within the normal range of annual variation.

2.10.2 Significance of Impacts

The overall significance of an impact can be derived from the total description of the effect compared against the sensitivity and significance (value) of the receptor as shown overleaf in Figure 2-1 which is taken from the EPAs EIAR Guidelines (EPA, 2022). The context and character of the receptor must also be assessed, such as its position in relation to the effect and its connectivity to the effect, however this should be determined before assessing the significance of the impact.

The total description of the effect includes the character, magnitude, probability and consequences of the effect as described in Figure 2-1 which are combined to give a general description of the effect on an ordinal scale from Negligible to High. The sensitivity and significance of the receptor is also described on an ordinal scale from Negligible to High.

The placement of the general description of the effect, and the sensitivity/significance of the receptor on this scale is determined by a Competent Person (a qualified ecologist in this case) as they interpret the qualities of the effect from the categories listed in Figure 2-1 and the receptors sensitivity and significance. Level of significance, also described as value of the receptor is previously set out in sub-section 2.8 above. Sensitivity of the receptor is assessed by the Competent Person based on the receptor's characteristics and how susceptible to impact they are from the type of effect.

The overall significance of an effect is then categorised into one of the following seven classifications:

- Imperceptible
- Not Significant
- Slight
- Moderate
- Significant
- Very Significant
- Profound

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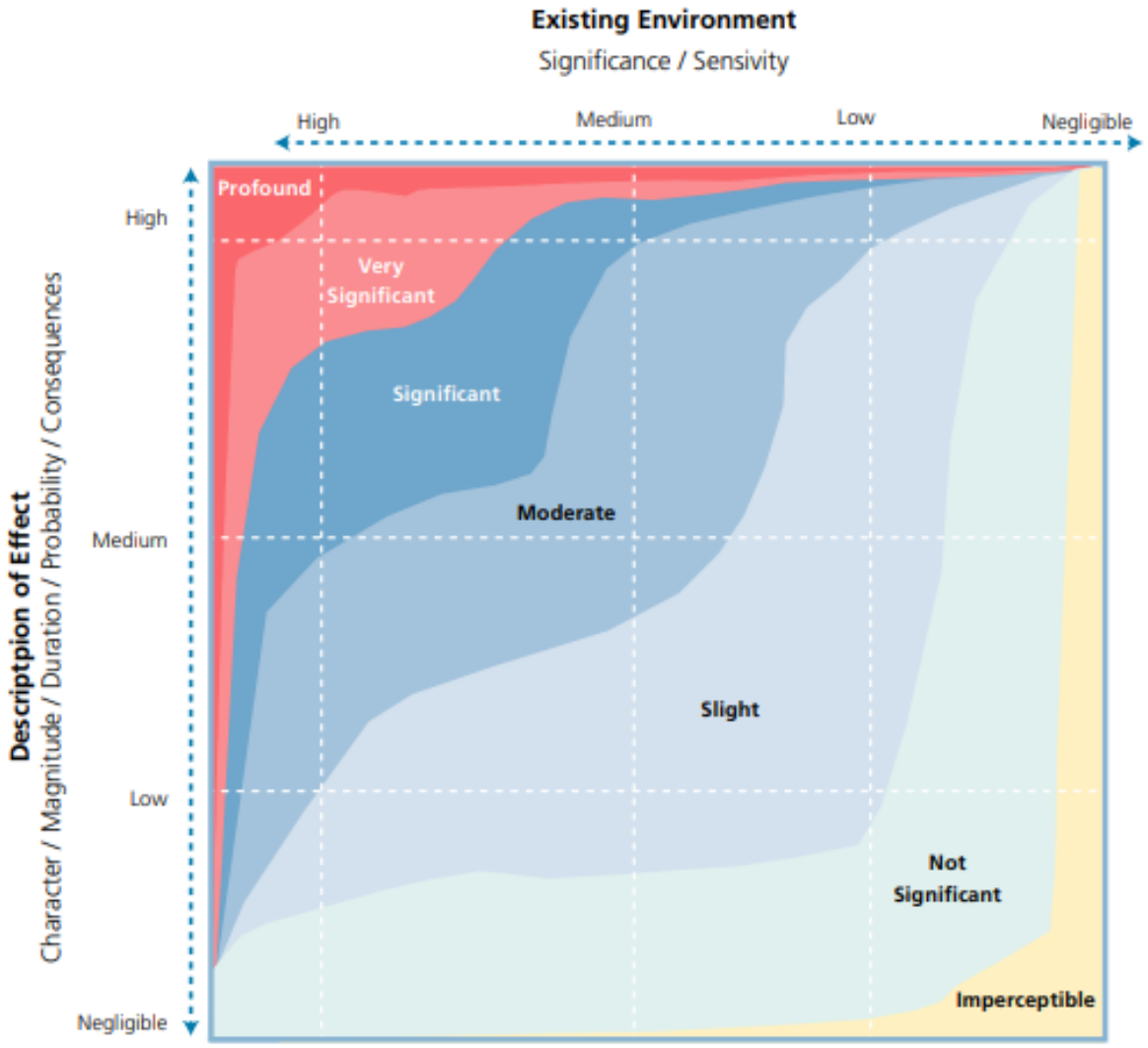


Figure 2-1: Chart showing typical classifications of the significance of effects

2.10.3 Residual Impacts

Where significant residual impacts are still identified, further mitigation measures will be proposed as part of the Ecological Impact Assessment process to avoid, reduce, or minimise them. Each impact assessment section assigns a final significance level to the impact described, which considers and includes the implementation of any stated mitigation measures; these are the residual impacts.

2.11 Cumulative Impacts

Potential sources of cumulative impacts were identified based on the ecology of valued ecological features. Potential sources of cumulative impacts were sought within an area where there is potential for a significant impact on a site or species. A desk-based search was made to identify plans and projects that could be a potential source of cumulative impact.

2.12 Limitations and Assumptions

This EcIA is based on site visits and existing data from the above-mentioned sources. The report relies on some assumptions and is subject to some limitations. These do not affect the conclusion, but the following points are recorded in order to ensure the basis of the assessment is clear:

- The walkover survey was carried out for the areas where works are proposed and within 100m. Field data from outside this area but within the zone of influence (e.g., grasslands) is limited and was not the subject of the walkover survey. Available desktop data compliments the survey data, and the gathered data is considered to be sufficient to carry out the assessment.
- Changes to the site since surveys were undertaken cannot be accounted for, however the site surveys have followed the CIEEM guidance provided on suitable lifespan for surveys (CIEEM, 2018). Significant changes to the site are unlikely in the time between the site visit (November 2024) and likely determination date.
- Any changes to the proposed works will require an assessment by a suitably qualified Ecologist to determine if re-assessment is required.
- Adverse weather can cause delays to the schedule and alter the timing of works. This has been accounted for using a worst-case scenario where possible.
- The site visits were carried out only in November, which is outside of optimal surveying periods for flora and bats. Therefore the data gathered may be limited and may not reflect the whole ecology of the site throughout the year. The precautionary principle is used at all times when determining potential ecological sensitivity of the site.

2.13 Zone of Influence

The zone of influence (ZoI) for the project is based on a judgement of the likely extent of the ecological impacts. This will vary for different ecological features, depending on their sensitivities to environmental change. Most impacts will occur within the immediate vicinity of the works (<10m). However, some effects may be transmitted further afield. The ZoI extends to 250m for air pollution (emissions and dust) (IAQM, 2024), up to 600m for noise disturbance (Goodship and Furness, 2022), 3km for transitional waterbodies, 10km for groundwater, 5km for surface waters with an additional downstream buffer of 15km for hydrologically connected sites. Ground water impacts are dependent on the types of work as well as the aquifer and bedrock present on site. The ZoI extends to associated habitats and species that may use them.

3 Desktop Study

3.1 Designated Sites

This section lists the designated sites of international and national importance which includes Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar sites, Natural Heritage Area (NHA), a proposed Natural Heritage Area (pNHA), and statutory Nature Reserves.

The Zone of Influence (ZoI) for this project is noise disturbance (500m), air pollution (250m), surface water (5km + 15 km with downstream hydrological connections), groundwater (5km + 10km within the same groundwater body) and any supporting habitat for SAC/SPA species (5km), and a general 10km radius for non-statutory sites.

Appropriate Assessment Screening has been carried out for this project in a separate report and concluded there will be no likely significant effects to any Natura 2000 sites.

3.1.1 Natura 2000 Sites

Natura 2000 sites within the project ZoI as identified in the AA Screening are listed in Table 3-1.

Table 3-1: Natura 2000 sites within the ZoI

Site Name	Site code	Approximate distance from site
Monivea Bog SAC	002352	7.4km
Lough Corrib SAC	000297	8.3km
Rahasane Turlough SAC	000322	7.7km
Rahasane Turlough SPA	004089	7.7km
Galway Bay Complex SAC	000268	9.9km
Cregganna Marsh SPA	004142	11.3km
Inner Galway Bay SPA	004031	11.6km
Castletaylor Complex SAC	000242	12.5km
Lough Fingall Complex SAC	000606	13.9km
Kiltiernan Turlough SAC	001285	14.4km
Ardrahan Grassland SAC	002244	14.8km

3.1.2 Nationally Designated and Proposed Sites

In addition to the Natura 2000 sites, the non-statutory sites within the ZoI were examined. Non-statutory sites include proposed and existing Natural Heritage Areas, sites which are considered of significance for wildlife and habitats.

Nationally designated sites occurring within the ZoI are listed in Table 3-2. Site descriptions and their respective ecological features are given in the sections below.

Table 3-2: NHAs and pNHAs within project ZoI

Site	Site code	Approx. direct distance from site	Approx. distance via nearest watercourse
Rahasane Turlough pNHA	000322	7.7km	-
Monivea Bog pNHA	000311	7.4km	-
Tiaquin Bog pNHA	001709	9.9km	-

3.1.2.1 Rahasane Turlough pNHA 000322

This site is now designated as the Rahasane Turlough SAC and SPA. The SAC is designated for turloughs [3180] and the SPA is designated for Whooper Swan *Cygnus cygnus* [A038], Wigeon *Anas penelope* [A050], Golden Plover *Pluvialis apricaria* [A140], Black-tailed Godwit *Limosa limosa* [A156], Greenland White-fronted Goose *Anser albifrons flavirostris* [A395] and wetland and waterbirds [A999].

Rahasane is a large turlough consisting of grassland and marshes sunken in an area of outcropping limestone. It consists of two basins that are connected at times of flood but separated as the waters decline. It is fed by a large catchment (Dunkellin River) and so is naturally eutrophic and productive with a large number of wintering birds. There is a little marl but no peat in the basin. The river flows through most of the area and its natural course is the centre of a significant aquatic community.

This site has an excellent variety of vegetation divided between wet and dry communities; and supports two rare plant species such as Fen Violet *Viola persicifolia* and Northern Yellow-cress *Rorippa islandica* listed in the Irish Red Data Book. It was also the first place that Fairy Shrimp *Tanymastix stagnalis* was recorded in Ireland. Rahasane Turlough is of major ecological significance as one of only two large turloughs in the country which still function naturally. Turloughs are a rare habitat type and are given priority status under Annex I of the E.U. Habitats Directive.

Rahasane Turlough is considered to be the most important turlough in the country for wintering waterfowl and is of high ornithological importance; it supports nationally important populations of Whooper Swan, Wigeon, Northern Pintail *Anas acuta*, Northern Shoveler *Anas clypeata*, Northern Lapwing *Vanellus vanellus* and Black-tailed Godwit. The Wigeon and Golden Plover populations are of particular note as they each represent approximately 4% of the All-Ireland totals of these species. It is the largest site inland for Dunlin *Calidris alpina* in Ireland and Britain. The regular occurrence of Greenland White-fronted Goose, Whooper Swan and Golden Plover is of note as these species are listed on Annex I of the E.U. Birds Directive.

(NPWS, 2013, 2014b, 2020, 2021)

3.1.2.2 Monivea Bog pNHA 000311

This site is now designated as the Monivea Bog SAC. The site is designated for active raised bogs [7110], degraded raised bogs still capable of natural regeneration [7120] and depressions on peat substrates of the Rhynchosporion [7150].

Monivea Bog is a medium-sized bog located approximately 5 km north-east of Athenry, Co. Galway. It is located in an area of karstic limestone. The site overlies Carboniferous limestone bedrock and the Killaclogher river runs close to the eastern edge. Approximately 60% of the site area is occupied by uncut high bog with the remainder cutover, some of which has been afforested or colonized by scrub. Small areas of the cutover have been converted to semi-improved grassland. A striking feature of the site is the occurrence of a small lake and an associated linear drainage feature which traverses the site in a north-west to south-east direction. This drainage feature effectively divides the high bog into two lobes.

This site contains significant to good examples of active raised bog, degraded raised bog and Rhynchosporion vegetation and it is one of the most westerly examples of a relatively intact raised bog in the Republic of Ireland. Although the area of active raised bog is small the condition of the habitat is good, with a high Sphagnum cover that includes the scarce species *Sphagnum fuscum* and *Sphagnum imbricatum*. Pools within the site support populations of *Rhynchospora fusca*, a rather rare species in Ireland. The occurrence of a small lake and associated flush is a relatively rare feature in Irish raised bogs and the presence of these habitats adds to the interest of the site.

(NPWS, 2014a, 2020)

3.1.2.3 Tiaquin Bog pNHA 001709

Tiaquin Bog is situated approximately 10km north-east of Athenry. The site is located east of Monivea village, with the Killaclogher River flowing just west of the site boundary. The underlying geology of the site consists of carboniferous limestone. In 1971 the An Foras Forbartha Galway County Report provided the following description for the site:

“Tiaquin Bog is an excellent example of a raised bog, included in a Game Reserve. The bog is bordered by some Downy Birch *Betula pubescens* wood, which adds to its value because of the change in plant communities from bog through to woodland. No information on the present condition of the habitats occurring in this site is available. However, turf cutting by "sausage machine" is presently damaging the site as well as the planting of coniferous trees.”

(NPWS, 2009)

3.1.3 Screening of Designated Sites

JBA carried out an AA screening for this proposed development on this site in November 2024. It was concluded that no **significant effects** from the proposed project are likely to occur to any designated sites.

The pNHA sites below, are being **screened out** due to one or more of the following: lack of hydrological connectivity (surface water and groundwater) and/or distance from the proposed site; and the development's scale (capacity for dust generation):

- Rahasane Turlough pNHA 000322
- Monivea Bog pNHA 000311
- Tiaquin Bog pNHA 001709

3.2 Surface Water

The site lies within the Clarinbridge_SC_010 subcatchment, which is part of the Galway Bay South East catchment. The Clarinbridge River (Waterbody code: IE_WE_29C020200) flows c. 700m from the proposed development, which enters Dunbulcaun Bay approximately 14.5km downstream.

There is no clear connection from the site to the local waterbodies.

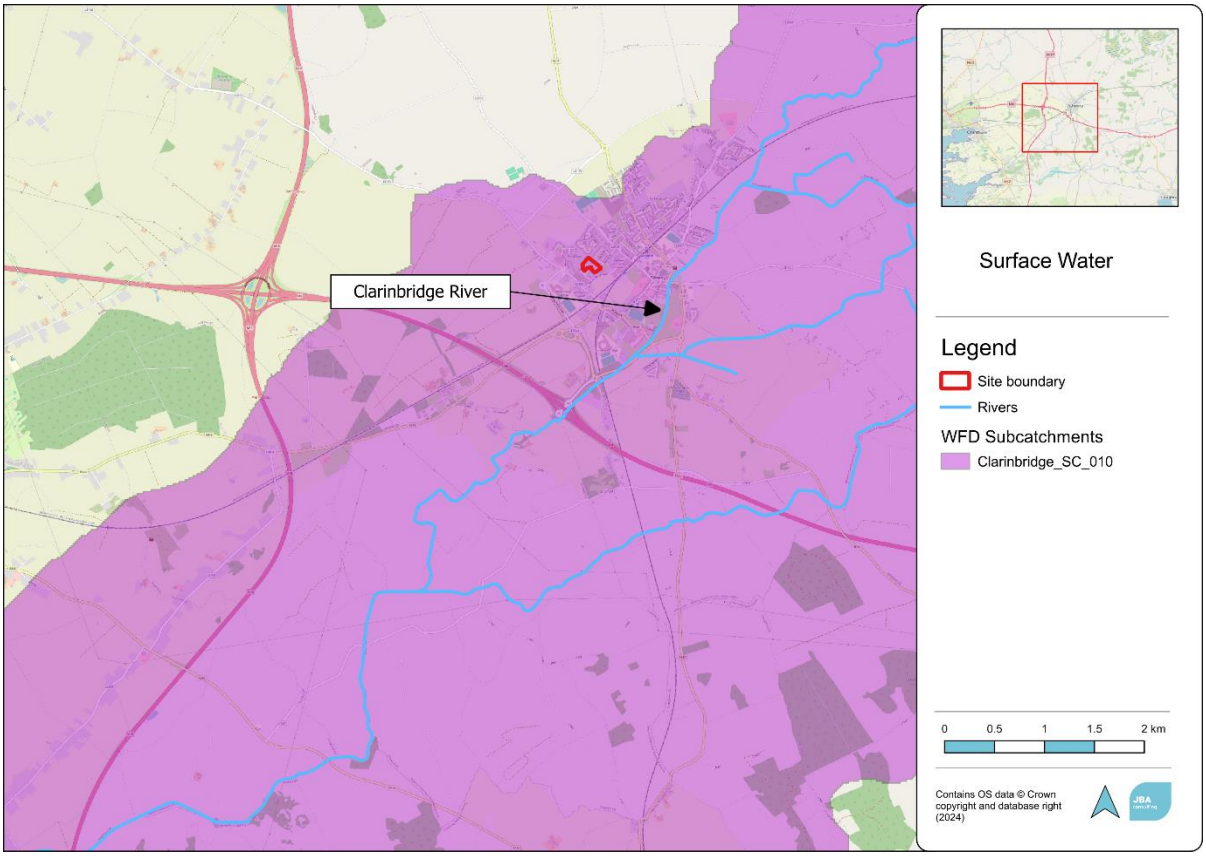


Figure 3-1: Surface water network associated with the site

3.3 Groundwater Bodies

Underlying bedrock is pale grey clean skeletal limestone (Burren Formation). The site occurs within a Regionally Important Aquifer – karstified (conduit); an aquifer in which there is an uneven distribution of permeability throughout the rock. Drainage is largely underground, with most flow occurring through the more permeable, solutionally-

enlarged, interconnected conduit zones, which may be several kilometres long. Karst landforms at the surface such as swallow holes, caves or dry valleys can provide direct access for recharge/surface water to enter the aquifer. Aquifer storage is frequently low and groundwater flow is mainly via conduit; velocity through conduits is high. There is a strong interconnection between surface water and groundwater in this aquifer type.

The groundwater body the site is located in is the Clarinbridge IE_WE_G_0008 WFD groundwater body, which has overall status of 'Good' and is classed as 'Not at risk'. Groundwater vulnerability on-site is 'Extreme' with a small area of karst/rock at or near the surface along the southeastern boundary. The average recharge coefficient of the underlying groundwater body is 60-85%.

(GSI, 2017, 2024; EPA, 2024)

3.3.1 Soils

The underlying soil type is fine loamy drift with limestones; subsoil type is limestone till, with a small portion of the southeastern boundary of the underlain by karstified limestone bedrock at the surface. Subsoil permeability is classified as 'Moderate'.

No bedrock was noted to be visible at surface level during the site surveys.

3.4 Records of Protected/Threatened Species

Records of protected and /or threatened species within the proposed site and a 5km buffer within the last 10 years were obtained from the NBDC database (NBDC, 2024). The list includes their level of protection, if they are red or amber listed on the International Union for the Conservation of Nature and Natural Resources (IUCN) Red List and the date of the last record of this species at this location.

No protected/threatened species of amphibian or reptile has been recently recorded.

Information of fisheries data was obtained from IFI datasets (IFI, 2024).

3.4.1 Mammals

Species	Date of last record	Designation
Non-volant Mammals		
Eurasian Badger (Meles meles)	30/10/2022	Protected Species: Wildlife Acts
Eurasian Red Squirrel (Sciurus vulgaris)	10/04/2022	Protected Species: Wildlife Acts
Fallow Deer (Dama dama)	31/12/2008	Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species >> Regulation S.I. 477 (Ireland) || Protected Species: Wildlife Acts

Species	Date of last record	Designation
Pine Marten (Martes martes)	05/01/2021	Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
West European Hedgehog (Erinaceus europaeus)	10/12/2023	Protected Species: Wildlife Acts
Bats		
Brown Long-eared Bat (Plecotus auritus)	05/07/2022	Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Lesser Noctule (Nyctalus leisleri)	13/06/2022	Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Natterer's Bat (Myotis nattereri)	11/10/2021	Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Pipistrelle (Pipistrellus pipistrellus sensu lato)	11/10/2021	Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Soprano Pipistrelle (Pipistrellus pygmaeus)	13/06/2022	Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts

3.4.2 Birds

Species	Date of last record	Designation
Barn Owl (Tyto alba)	24/06/2020	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Red List
Barn Swallow (Hirundo rustica)	30/04/2023	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Amber List
Common Coot (Fulica atra)	20/03/2022	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I & Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern >> Amber List
Common Kestrel (Falco tinnunculus)	08/06/2022	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Amber List
Common Linnet (Carduelis cannabina)	20/04/2021	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Amber List
Common Pheasant (Phasianus colchicus)	28/11/2020	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I & Annex III, Section I Bird Species

Species	Date of last record	Designation
Common Snipe (Gallinago gallinago)	12/04/2023	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I & Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern >> Amber List
Common Starling (Sturnus vulgaris)	26/01/2023	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Amber List
Common Swift (Apus apus)	22/07/2023	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Amber List
Common Wood Pigeon (Columba palumbus)	30/04/2023	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I & Annex III, Section I Bird Species
Eurasian Curlew (Numenius arquata)	10/12/2020	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern >> Red List
Eurasian Woodcock (Scolopax rusticola)	28/11/2020	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I & Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern >> Amber List
European Golden Plover (Pluvialis apricaria)	22/04/2018	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex I Bird Species || Protected Species: EU Birds Directive >> Annex II, Section II & Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern >> Red List
European Greenfinch (Carduelis chloris)	26/01/2023	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Amber List
Grey Wagtail (Motacilla cinerea)	05/06/2022	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Red List
Hen Harrier (Circus cyaneus)	12/10/2021	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern >> Amber List
House Sparrow (Passer domesticus)	26/01/2023	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Amber List
Little Egret (Egretta garzetta)	22/05/2017	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex I Bird Species

Species	Date of last record	Designation
Meadow Pipit (Anthus pratensis)	20/04/2021	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Red List
Northern Lapwing (Vanellus vanellus)	29/12/2014	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern >> Red List
Northern Wheatear (Oenanthe oenanthe)	26/09/2017	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Amber List
Peregrine Falcon (Falco peregrinus)	27/01/2021	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex I Bird Species
Redwing (Turdus iliacus)	30/01/2023	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Red List
Rock Pigeon (Columba livia)	26/01/2023	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Whooper Swan (Cygnus cygnus)	20/11/2018	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern >> Amber List
Willow Warbler (Phylloscopus trochilus)	20/04/2021	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Amber List

3.4.3 Amphibians

Species	Date of last record	Designation
Common Frog (Rana temporaria)	25/02/2023	Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Smooth Newt (Lissotriton vulgaris)	26/07/2020	Protected Species: Wildlife Acts

3.4.4 Invertebrates

Species	Date of last record	Designation
Freshwater White-clawed Crayfish (Austropotamobius pallipes)	31/12/2021	Protected Species: EU Habitats Directive >> Annex II & V || Protected Species: Wildlife Acts

Species	Date of last record	Designation
Dark Green Fritillary (Argynnis aglaja)	26/06/2019	Threatened Species: Vulnerable
Dingy Skipper (Erynnis tages)	26/05/2023	Threatened Species: Near threatened
Marsh Fritillary (Euphydryas aurinia)	18/06/2021	Protected Species: EU Habitats Directive >> Annex II || Threatened Species: Vulnerable
Small Blue (Cupido minimus)	11/06/2023	Threatened Species: Endangered
Small Heath (Coenonympha pamphilus)	11/06/2023	Threatened Species: Near threatened
Large Red Tailed Bumble Bee (Bombus (Melanobombus) lapidarius)	26/05/2023	Threatened Species: Near threatened

3.4.5 Plants

Species	Date of last record	Designation
Dense-flowered Orchid (Neotinea maculata)	20/04/2024	Threatened Species: Near threatened
Greater Knapweed (Centaurea scabiosa)	29/08/2023	Threatened Species: Near threatened
Spring Gentian (Gentiana verna)	20/04/2024	Threatened Species: Near threatened

3.4.6 Fish

No data is present from IFI for the Clarinbridge River.

3.4.7 Invasive Species

Species	Date of last record	Designation
Flowering Plants		
Himalayan Honeysuckle (Leycesteria formosa)	27/07/2021	Medium Impact Invasive Species
Sycamore (Acer pseudoplatanus)	25/07/2021	Medium Impact Invasive Species
Traveller's-joy (Clematis vitalba)	03/06/2019	Medium Impact Invasive Species
Invertebrates		
New Zealand Flatworm Arthurdendyus triangulatus	03/06/2019	High Impact Invasive Species

Species	Date of last record	Designation
Jenkins' Spire Snail (Potamopyrgus antipodarum)	22/07/2015	Medium Impact Invasive Species
Mammals		
American Mink (Mustela vison)	01/08/2017	High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
European Rabbit (Oryctolagus cuniculus)	16/06/2015	Medium Impact Invasive Species
Fallow Deer (Dama dama)	31/12/2008	High Impact Invasive Species || Invasive Species >> Regulation S.I. 477 (Ireland) || Protected Species: Wildlife Acts

4 Existing Environment

Designated sites, habitats, and species identified in the baseline survey are presented in detail in the following sections.

The survey for the baseline ecology were undertaken by JBA Ecologists Johanna Healy and Mia Heigh on the 12th November 2024. Habitats and species recorded are presented in detail in the following sections.

The ZoI for this project is dependent on the criteria assessed. This EcIA focuses on the proposed site in Athenry, Co. Galway and any ecological receptors that have a functional link with this site that lie within the ZoI of the works.

4.1 Habitats

Habitats and species recorded at the site are presented in detail in the following sections. The value of each feature is based on recordings from the site visit, and is assessed following the criteria set out in Section 2.9.

The valuation of designated sites considers different levels of statutory and non-statutory protection. Assessment of habitat depends on several factors, including the size of the habitat, its conservation status and quality. The assessment also takes account of connected off-site habitat that may increase the value of on-site habitat through association. Valuation of species depends on a number of factors including distribution, status, rarity, vulnerability, and the population size present.

Habitats recorded during site visit are laid out in Table 4-1 and mapped in Figure 4-1.

Table 4-1: Habitats recorded on site classified by Fossitt (2000)

Habitat	Annex I Potential
BL1 Stone walls and other stonework	No
GS2 Dry meadows and grassy verges	No
WL1 Hedgerows	No
WS1 Scrub	No

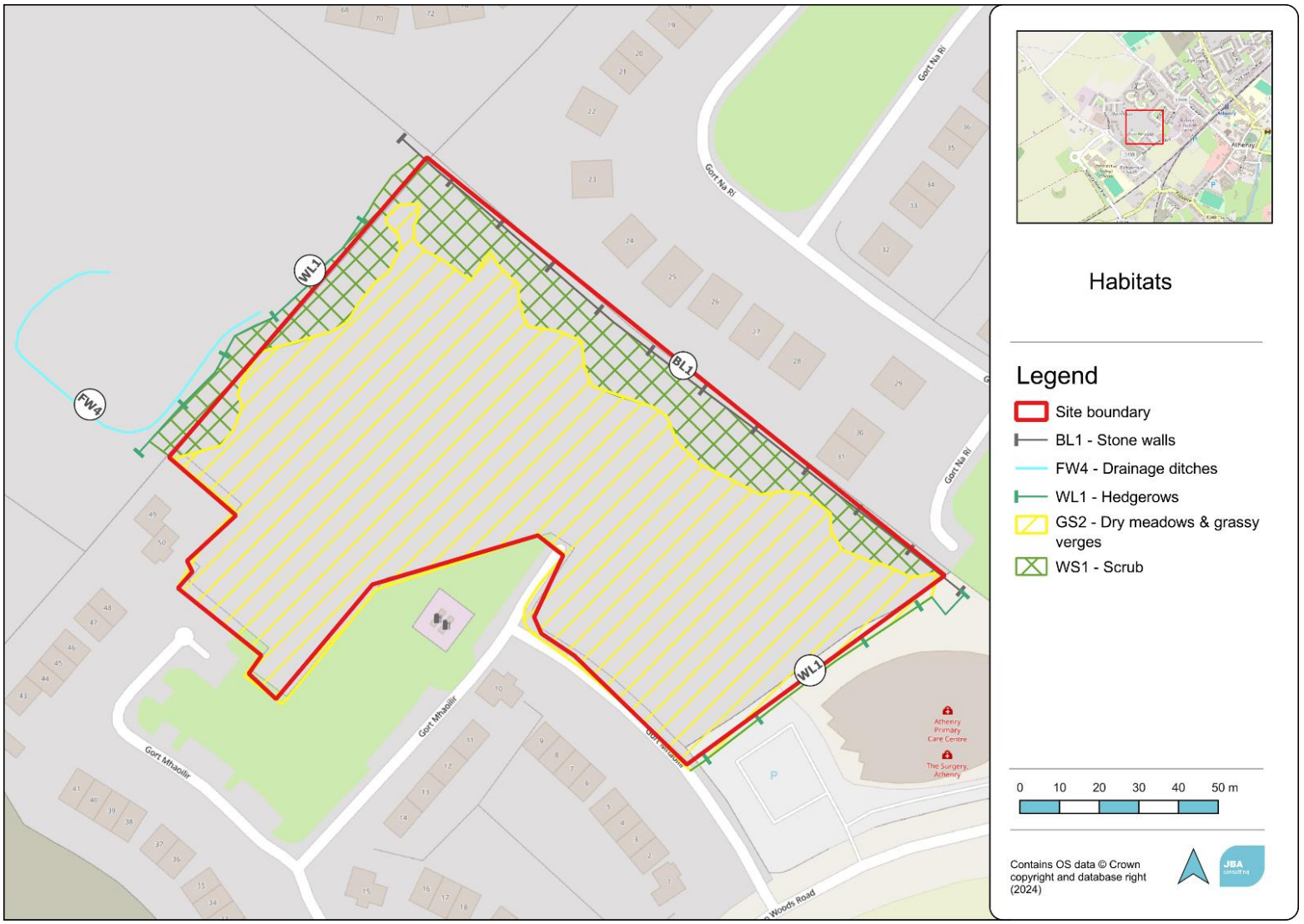


Figure 4-1: Habitats within the site boundary

4.1.1 BL1 – Stone walls and other stonework

This habitat consists of brick boundary walls along the eastern site boundary bordering existing housing. This habitat was not considered to be of ecological significance and is not likely to support local flora and fauna.

Figure 4-2: Example of brick wall bordering the site

This habitat is considered to be of **Less than Local Importance**, and will be retained in the current design.

4.1.1 FW4 – Drainage ditch

A drainage ditch was noted near the northwestern boundary of the site just outside the proposed development's footprint. The ditch was full of stagnant water with no signs of flow and high cover of Common Duckweed *Lemna minor*. It is not likely to connect to any other waterbodies based on observations made during the site survey and an inspection of satellite imagery of the area.

Figure 4-3: Drainage ditch near project boundary

4.1.2 GS2 – Dry meadows and grassy verges

The site mainly consists of rank GS2 grassland. Grass cover is high, at least 90% with some areas of bare ground across the site. This habitat was dominated by grass species including False Oat-grass *Arrhenatherum elatius*, Yorkshire-fog *Holcus lanatus* and Cock's-foot *Dactylis glomerata* with Creeping Thistle *Cirsium arvense* frequent across the site also. Other species recorded include Bush Vetch *Vicia sepium* and Broad-leaved Dock *Rumex obtusifolius*.

While few species were recorded, it is important to note that habitat surveys took place in November which is outside of the optimal surveying period (April to September).

Figure 4-4: Rank grassland recorded on site

In the context of this site, this habitat is considered to be of **Local Importance (Higher)**. Given the limitations of the timing of habitat surveys for the site, the precautionary principle is applied and this grassland is assumed to be of higher value for local flora and fauna.

This grassland will be lost within the current design.

4.1.3 WL1 – Hedgerows

The hedgerows bordering the site are of low value, with large gaps between this and adjacent hedgerows/treelines, providing poor connectivity and cover for commuting mammals, birds and bats, and contained species including Willow Salix spp., Ash *Fraxinus excelsior* and Bramble *Rubus fruticosus agg*.

Figure 4-5: Hedgerow observed along site boundary

In the context of this site, considering the potential for use by local mammals, birds and invertebrates, this habitat is considered to be of **Local Importance (Higher)**. Given the limitations of the timing of habitat and species surveys for the site, the precautionary principle is applied and this hedgerow is assumed to be of higher value for local fauna.

This hedgerow will be retained in the current design, as it is outside the site boundary.

4.1.4 WS1 – Scrub

The scrub on site consists mainly of Bramble, with some other species such as Nettle *Urtica dioica*, Willowherb *Epilobium* spp. and Cleavers *Galium aparine* occurring in lower proportions throughout. The majority of the scrub habitat was inaccessible to surveyors during the site walkover, however signs of mammal activity were noted throughout the site and passing through scrub areas. This is likely to be mainly from domestic cats, as supported by observations from the trail cameras deployed on site. Results are further discussed in Section 4.2.1.1.

Figure 4-6: Example of scrub habitat

In the context of this site, this habitat is considered to be of **Local Importance (Higher)**, as it can provide foraging habitat and shelter for pollinators and small mammals, as well as nesting opportunities for breeding birds.

All of the scrub on site will be removed in the current design.

4.2 Protected Species

4.2.1 Mammals

Numerous mammal paths were recorded during the site walkover survey throughout the site, the majority of which were noted along the northwestern site boundary where scrub and hedgerow are present. A potential Red Squirrel scat was also recorded along the southeastern site boundary along a planted Beech hedgerow bordering the site (Figure 4-7).

Figure 4-7: Potential scat from Red Squirrel or other small mammal species

4.2.1.1 Trail camera results

Two trail cameras were placed on site from 12 to 27 November 2024 (locations shown in Figure 4-8). Mammal species recorded by these included Fox. The majority of records consisted of a number of domestic cats.

Due to the size and nature of the site, and based on survey findings, it is likely that the majority site is used for commuting by local mammals, with opportunistic foraging. Smaller mammals such as Squirrels, Hedgehogs and other rodents such as Wood Mice may be using the site and are less likely to be captured by trail cameras.

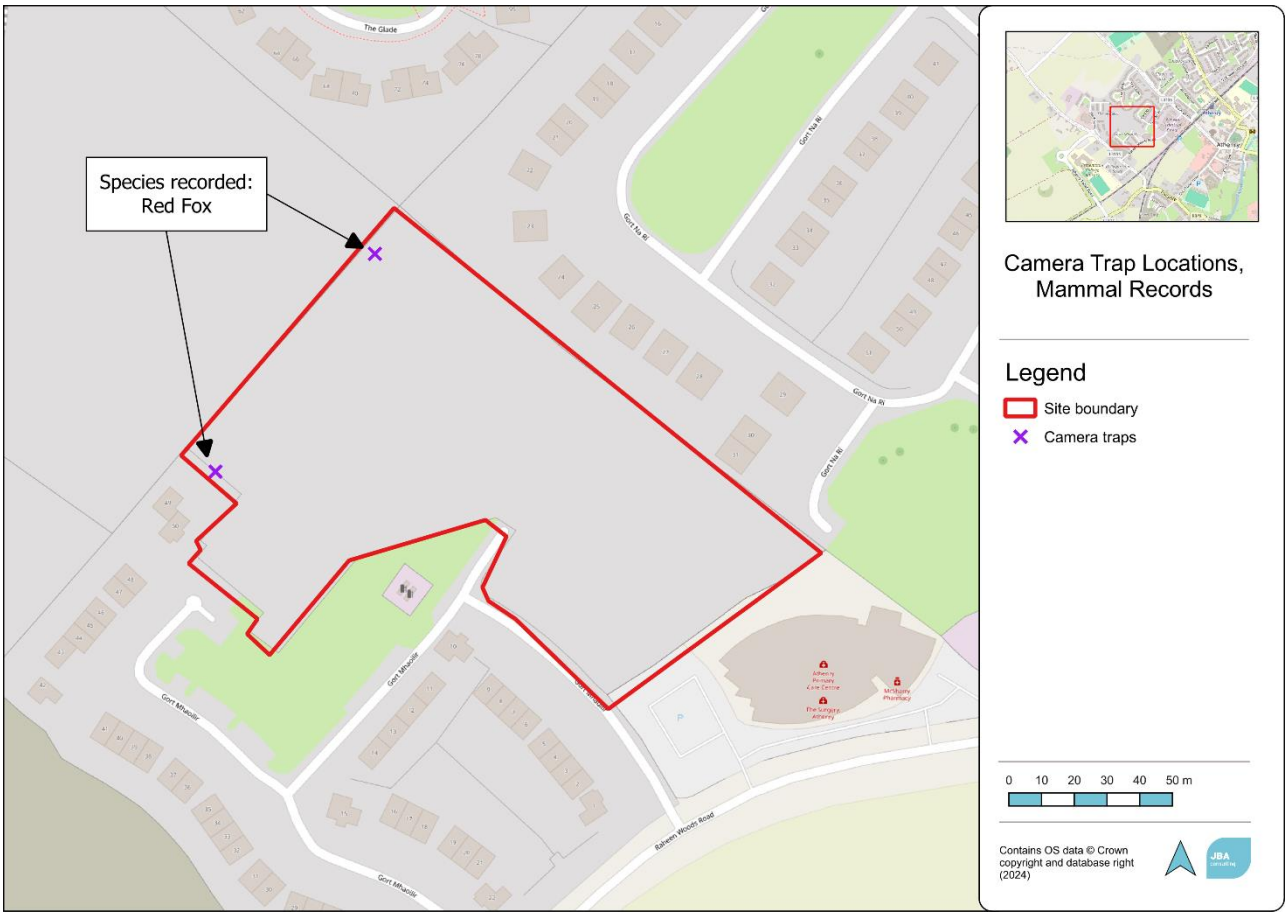


Figure 4-8: Locations of trail cameras and mammal records

Due to the nature of the habitats found on site, and potential for use by local mammals, this site is considered to be of **Local Importance (Higher)** for mammals in the context of the site in a wider urban landscape.

4.2.2 Bats

One bat detector was placed within the site to record potential activity along the hedgerow bordering the site to the northwest (Figure 4-9), and was recording for 15 days from the 12th to the 27th November 2024. The site surveys were undertaken outside the bat activity season (April to September inclusive) and hence no bat activity surveys were carried out for the site. A preliminary roost assessment of any trees at the site as undertaken during the ecological walkover on the 12th November. No potential roost features were identified and it is unlikely for roosting bats to be using the site. The site is of negligible suitability for roosting bats.

Despite surveys being outside the bat activity season, bat calls were recorded by the static detector on 7 nights, indicating the site is likely of value for commuting bats. Results are given below.

4.2.2.1 Static bat detector results

One bat detector was placed within the site to record potential activity along the hedgerow bordering the site to the northwest (Figure 4-9), and was recording for 15 days from the 12th to the 27th November 2024.

Table 4-2 below give a summary of the calls recorded the static detector. It is important to note that the number of calls recorded is not equivalent to numbers of bats recorded, and it is merely an indicator of activity.

Despite surveys being carried out outside the bat activity season (April to September inclusive), calls were recorded by the static detector on 7 nights, indicating the site is likely of value for local commuting/foraging bats. Three species were recorded – Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat / Lesser Noctule. Calls were not recorded after weather conditions changed with a drop in temperature during the week of the 18th November coinciding with a lack of calls recorded during this period.

Table 4-2: Calls recorded by static bat detector

	Common Pipistrelle *Pipistrellus pipistrellus*	Soprano Pipistrelle *Pipistrellus pygmaeus*	Leisler's Bat *Nyctalus leisleri*	Total no. calls
12/11/2024	1	-	-	**1**
13/11/2024	-	152	-	**152**
14/11/2024	104	38	3	**145**
15/11/2024	10	2	-	**12**
16/11/2024	-	-	-	**0**
17/11/2024	2	-	-	**2**
18/11/2024	-	-	-	**0**
19/11/2024	-	-	-	**0**
20/11/2024	-	-	-	**0**
21/11/2024	-	-	-	**0**
22/11/2024	-	-	-	**0**
23/11/2024	-	-	-	**0**
24/11/2024	-	-	-	**0**
25/11/2024	1	-	-	**1**
26/11/2024	1	1	-	**2**

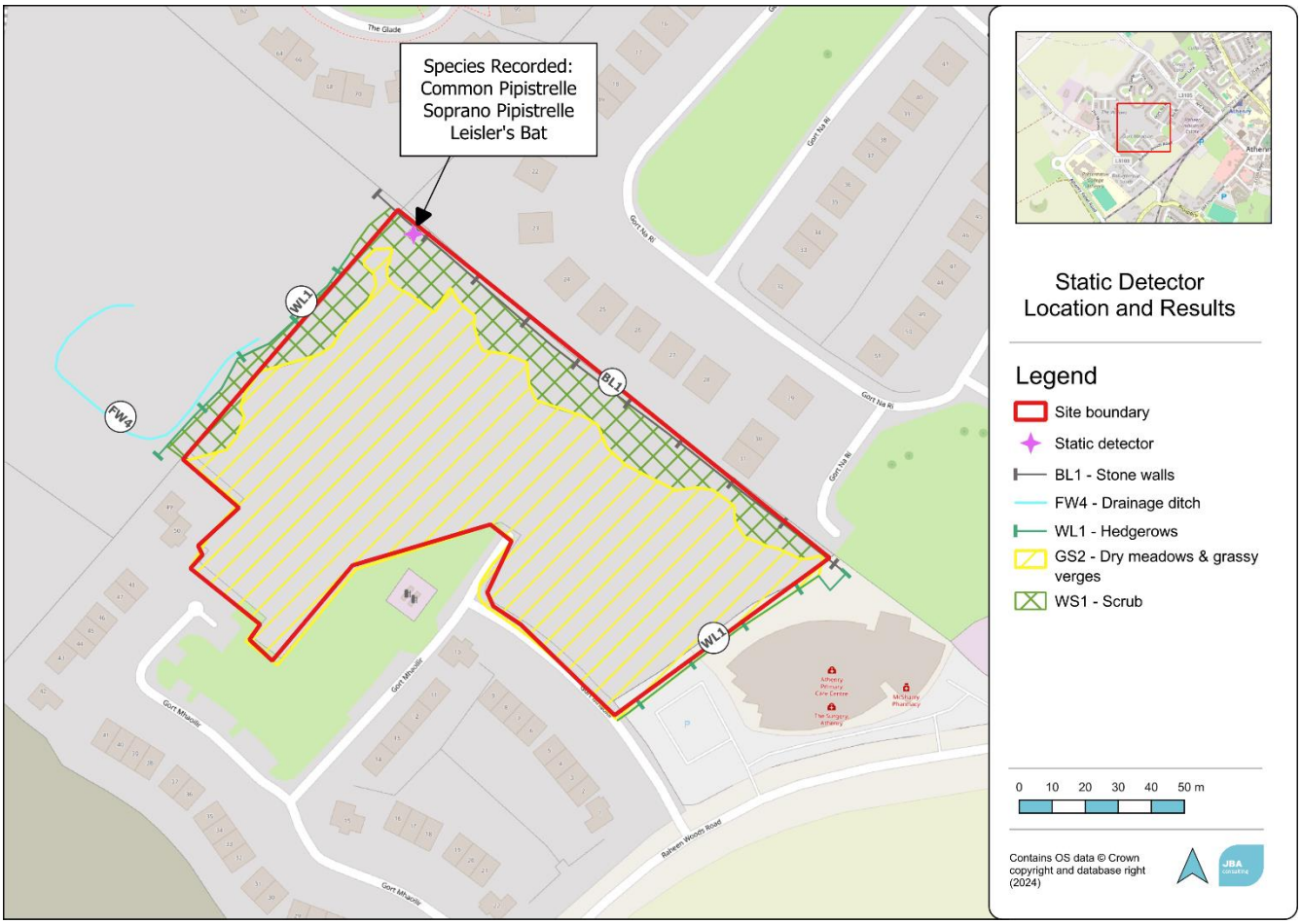


Figure 4-9: Details of static detector surveys

4.2.2.2 Summary

In the absence of dusk/dawn activity surveys the nature of the use of the site by bats is not certain, but it is likely that use is limited to travel along the small, gappy hedgerow along the northwestern site boundary to more suitable habitats for foraging. The open habitat across the site and lighting within the existing Gort Mhaoilir housing estate indicates that this site is of low value for commuting and/or foraging bats; however in the absence of activity surveys it is presumed under the precautionary principle that these habitats are used by foraging bats opportunistically.

In the context of this site within the wider area and in the absence of further activity surveys, the site is considered to be of **Local Importance (Higher)** for commuting and foraging bats.

4.2.3 Birds

No dedicated bird surveys were carried out. Common species such as Robin *Erithacus rubecula* and Rook *Corvus frugilegus* were recorded during the site walkover in casual observation. The hedgerows bordering the site and scrub throughout are areas of nesting

potential for birds. No nests or nest sites were noted during the site visit, but the survey was outside of the main breeding season for birds.

The site is assessed as **Local Importance (Higher)** for birds due to the potential nesting and foraging opportunities present within a wider urban landscape.

4.2.4 Amphibians and Reptiles

No amphibians or reptiles were recorded during the ecological walkover survey. The drainage ditch noted during site surveys is not likely to be suitable breeding habitat for Common Frog *Rana temporaria* or Smooth Newt *Lissotriton vulgaris* as the water levels are too deep for Frogs and of poor quality.

Given the potential habitats recorded for amphibians, the site is assessed as being of **Less than Local Importance**.

4.2.5 Invertebrates

No terrestrial or aquatic invertebrate species were recorded during the walkover survey.

Given the habitats on site, hedgerows, grassland, and bare ground, it is likely that common and widespread invertebrate species occur within the site. Surveys were also conducted at suboptimal times for recording habitats, flora and invertebrates (November 2024) and hence there may be a higher diversity of species than is apparent from the site surveys. Given the nature of habitats surrounding the site (i.e., urban built ground, mown amenity grassland) with poor potential for use by invertebrates, the site is assessed as **Local Importance (Higher)** for invertebrates in the context of the surrounding areas.

4.2.6 Protected / Notable Flora

A search of the Flora Protection Order database revealed no recorded species for the site, nor the surrounding areas. Flora is likely to be under recorded, and therefore caution must be applied, considering the limitations of the habitat surveys undertaken for the site.

4.3 Invasive Non-native Species

No First Schedule species (S.I. No. 374/2024 - European Union (Invasive Alien Species) Regulations 2024, 2024) or Third Schedule species (S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011, 2011) were recorded during the site survey. As with most construction activities that require excavations and movement of plant and materials there is a risk of contamination if strict biosecurity measures are not implemented.

A non-native invasive species not listed under these regulations, Red Osier Dogwood *Cornus sericea*, was recorded in a stand along the northwestern site boundary. This species is mainly of concern in wetland habitats. More detail is provided in the Invasive Species Report provided in Appendix B.

4.4 Ecological Features Considered for Further Assessment

The screening of designated sites and ecological features identified during the desktop study and ecological survey are given in Table 4-3. Sites and features screened out are not considered further in this assessment. Ecological features carried forward are assessed for potential impact during construction and operation in the following sections.

Table 4-3: Summary of ecological features and the screening assessment

Ecological Feature	Value	Screening	Reasoning
Monivea Bog SAC	International	Screened out	Distance
Lough Corrib SAC	International	Screened out	Distance
Rahasane Turlough SAC	International	Screened out	Distance
Rahasane Turlough SPA	International	Screened out	Distance
Galway Bay Complex SAC	International	Screened out	Distance
Cregganna Marsh SPA	International	Screened out	Distance
Inner Galway Bay SPA	International	Screened out	Distance
Castletaylor Complex SAC	International	Screened out	Distance
Lough Fingall Complex SAC	International	Screened out	Distance
Kiltiernan Turlough SAC	International	Screened out	Distance
Ardrahan Grassland SAC	International	Screened out	Distance
Rahasane Turlough pNHA	National	Screened out	Distance
Monivea Bog pNHA	National	Screened out	Distance
Tiaquin Bog pNHA	National	Screened out	Distance
BL1 – Stone walls	Less than Local	Screened out	Low value habitat
FW4 – Drainage ditch	Local Lower	Screened out	Not connected to wider hydrological network; low value manmade drain
GS2 Dry meadows and grassy verges	**Local Higher**	**Screened in**	**Loss of locally important habitat**
WL1 Hedgerows	**Local Higher**	**Screened in**	**Loss of locally important habitat**

Ecological Feature	Value	Screening	Reasoning
WS1 Scrub	**Local Higher**	**Screened in**	**Local importance for fauna**
Mammals	**Local Higher**	**Screened in**	**Local importance for protected mammals**
Bats	**Local Higher**	**Screened in**	**Locally important use across the site with presence of Annex II & IV species**
Birds	**Local Higher**	**Screened in**	**Potential for breeding on site**
Reptiles and Amphibians	Less than Local	Screened out	Lack of supporting habitat on site
Invertebrates	**Local Higher**	**Screened in**	**Potential supporting habitat for local species**
Invasive Species	Less than Local	Screened out	No Scheduled invasive species present on site

5 Other Relevant Plans and Projects

5.1 Cumulative Effects

As part of the Ecological Impact Assessment, in addition to the proposed works, other relevant projects and plans in the region that may induce cumulative effects must also be considered at this stage.

5.2 Plans

The following projects or plans were identified as potential sources of cumulative effects:

- Galway County Development Plan 2022-2028
- Athenry Local Area Plan 2024-2030
- Third Cycle River Basin Management Plan for Ireland 2022-2027;
- Planning Applications (retrieved from Data.gov.ie - Planning Application Sites,).

5.2.1 Galway County Development Plan (CDP) 2022-2028

The Galway County Development Plan 2022 – 2028 sets out a range of proposed policy objectives with supporting narrative for development up to 2028. In accordance with national policy, the plan is seeking to develop in a sustainable and environmentally sensitive manner. It promotes the climate change agenda, and it sets out the housing and economic priorities for the relevant period. The Galway County Development Plan 2022 – 2028 has been prepared in accordance with the provisions of the Planning and Development Act 2000 (as amended). Since the adoption of the existing Galway County Development Plan 2015 – 2021, there has been a significant amount of planning related changes in Ireland. New National and Regional policy has been adopted since 2018 which sets out a clear growth agenda in accordance with sustainable development over the coming years. The overarching national framework now in place is the National Planning Framework with three Regional Spatial and Economic Strategies providing for the implementation and delivery of the NPF. The county now forms part of the Northwest Region and the RSES now includes a Galway Metropolitan Area Strategic Plan. This Plan has considered this policy framework, and it has been set out in accordance therewith.

SS3 Strategic Potential (Level 3) Support the development of Athenry as a town of Strategic Potential as outlined in the Core Strategy and Settlement Strategy in order to sustain a strong, vibrant urban centre which will act as an important driver for the local economy, reduce travel demand and support a large rural hinterland, while providing a complementary role to the Key Towns and MASP and the smaller towns and villages in the County.

The Galway County Development Plan is not anticipated to contribute to cumulative or in-combination effects.

5.2.1 Athenry Local Area Plan (LAP) 2024-2030

The Athenry Local Area Plan 2024-2030 was adopted by the Athenry/Oranmore Municipal District Members on the 9th January 2024 and came into effect on the 20th February 2024.

The proposed development site is identified as an opportunity for residential development as part of Phase 1 of the LAP. The successful implementation of the Plan intends to have a positive impact on Athenry ensuring that it develops in a sustainable manner and complements the implementation of the Galway County Development Plan.

The plan also includes Strategic Environmental Assessment (SEA) Environmental Report, prepared in accordance with the Planning and Development (SEA) Regulations 2004 (as amended), an Appropriate Assessment (AA) Natura Impact Report, pursuant to Article 6 of the Habitats Directive 92/43/EEC.

Considering measures already in force through the Galway County Development Plan 2022-2028 and having incorporated mitigation measures into the Local Area Plan, it is concluded that the Athenry Local Area Plan 2024-2030 is not foreseen to give rise to any significant adverse effects to designated European sites, alone or in combination with other plans or projects. This evaluation was made in view of the conservation objectives of the habitats and/or species, for which these sites have been designated. (CAAS Ltd., 2024)

The Athenry Local Area Plan is not anticipated to contribute to cumulative or in-combination effects.

5.2.2 River Basin Management Plan for Ireland 2022-2027

The Third Cycle River Basin Management Plan (RBMP) for Ireland 2022-2027 outlines the strategies and actions Ireland will take to protect and improve its water resources. This plan is part of Ireland's commitment to the EU Water Framework Directive (WFD), which aims to achieve good water quality across Europe.

The plan aims to achieve good ecological status or potential for all water bodies, reduce pollution, and protect aquatic ecosystems.

Measures include actions to address significant pressures on water bodies, such as agricultural runoff, wastewater discharges, and physical modifications to watercourses. The plan emphasizes the importance of involving local communities and stakeholders in water management decisions. Regular monitoring of water quality and progress reporting are essential components to ensure the plan's objectives are met (DHLGH, 2022).

The Third Cycle River Basin Management Plan for Ireland 2022-2027 is not anticipated to contribute to cumulative or in-combination effects.

5.3 Other Projects

Recent developments or planning applications in the vicinity can have a cumulative impact with the proposed development. Larger development planning applications in the

near vicinity from the last three years that have been granted permission were searched for. Applications for home extensions, internal alterations and retention are not considered.

Table 5-1: Planning applications granted in the last three years within 2km of the site

Planning Reference	Description of Proposed Development	Application Address	Decision Date
22368	The installation of an LPG safety installation in a caged enclosure 1.8m x 1.2m x 1.2 (LxWxH) servicing the existing LPG storage installation with all ancillary services and associated site works. Gross floor space of proposed works: 2.16 sqm	Raheen	20/6/2022
22696	Retention of development and permission for development, to retain and complete amendments to a permitted (and under construction) residential housing development (Reg. Ref: 07/2196 as extended), the Proposed development comprises: 1. Revised elevational detailing and internal layout reconfiguration to (10 no.) three bed and (24.no) four bed dwellings including omission of habitable use of second/ dormer floor level. omission of internal and external chimney features, associated and ancillary modifications, including provision of 3.no four bed dwellings in lieu of 3 no. 3 bed dwellings, and 2. Revised landscaping scheme and all other associated and ancillary	Ballydavid South, Co. Galway	7/11/2022

Planning Reference	Description of Proposed Development	Application Address	Decision Date
	development and works above and below ground level. Gross floor space of works to be retained 4,127 sqm.		
221098	A development consisting of: the demolition of the existing, vacated, two storey, former Clarin College school buildings, including all permanent and ancillary structures, existing footings and hardstanding within the site; as well as the removal of all disused on site drainage system and utility services, including any existing underground attenuation tanks. Gross floor space of any demolition: 4,450 sqm	Caheroyn, Caheroyn Road, Co Galway	6/3/2023
221211	The demolishment of an existing rear single storey building and to construct new single storey rear and side extension and associated services. Gross floor space of proposed works: 46sqm	Raheen, Athenry	27/3/2023
2360106	The construction of a dwelling house and all associated services on revised site boundaries from that previously granted under Planning Reference No. 96/529. Gross floor space of works to be retained 128sqm.	Athenry, Athenry, Co. Galway	15/5/2023
23196	The construction of a new educational campus that will comprise of two	Caheroyn Road, Athenry, Co. Galway	25/9/2023

Planning Reference	Description of Proposed Development	Application Address	Decision Date
	school buildings. Gaelscoil Riada a part one & two-storey, 16 classroom primary school with single class base SEN & ancillary spaces with total floor area of circa 2890sqm. Colaiste an Eachraidh a part one, two & three-storey post primary school with 17 general classrooms, 12 specialist classrooms, sports hall, single class base SEN & ancillary spaces with a total floor area of circa 6985sqm. Proposed site works to include the construction of standalone ESB substation & bin store, 2no. plant enclosures, all new hard play areas, shared central grass play area, general purpose external amenity spaces, access road with lay-by set down, 84no. carparking spaces, 48no. covered bicycle stands, ancillary infrastructure works, including new vehicular access points & new pedestrian access, together with new boundary treatments & landscaping works		
2261321	The development will consist of: • the provision of a 2no. storey industrial warehousing unit & ancillary office space (8826.3sqm.). • the provision of a	Moanbaun Raheen & CULLAIRBAUN, Athenry, County Galway	2/10/2023

Planning Reference	Description of Proposed Development	Application Address	Decision Date
	service yard plant & refuse area, distribution & circulation yard with 5no. level access loading bays. • the provision of solar PV panels; • the provision of 163no. car parking spaces & 163no. bicycle parking spaces. • the provision of internal roadways, pedestrian footpaths & associated landscaping. • the provision of a new vehicular & pedestrian access from Ballydavid South Road. • the provision of signage & all other associated site development works intended to facilitate the proposed development		
2360393	The sub-division of an existing site into two lots hereinafter referred to as 'Site A', which has an area of 3,276 sqm and 'Site B', has an area of 3,243 sqm. Planning permission also for the construction of a new storage warehouse on 'Site B' to include new vehicle access, parking, lighting, and all ancillary services to include all associated site works. Retention permission also for the existing entrance on 'Site A' as constructed on site previously granted under 99/901 & 22224 (Eircode N65 NW84) to include all ancillary services, and	Raheen Industrial Estate, Athenry, Co. Galway	23/10/2023

Planning Reference	Description of Proposed Development	Application Address	Decision Date
	all associated site works with site layout as constructed		
2361014	of outdoor seating area & canopy on the south (front) elevation of the Raheen Woods Hotel. The seating area under the canopy is 29.1m2. The boundary of the seating area is a planter bed with dimensions of 9.2 m in length, 4.27 in width & 0.675 high. The canopy is 2.350 high at the planter bed & rises to 4.038 at the front elevation of the hotel. The canopy is erected with steel beams (3 no 152 UC 23) & is fixed to the existing building with 4no. 16mm chemical anchors at each beam	Raheen Woods Hotel Raheen, Athenry, Co. Galway	4/12/2023
2460020	The demolition of an existing sub-standard, detached, dormer type, 4 - bedroom dwelling house, construction of a new replacement detached, 2 - storey, 4 - bedroom dwellinghouse and garden shed, including all ancillary siteworks and utilising existing service connections. Gross floor space of proposed works: 169.10 sqm (house) & 11.20 sqm (garage). Gross floor space of any demolition:147.60 sqm	Cullairbaun, Athenry, Galway	15/4/2024
2460434	The demolition of existing 99sq.m. single storey 1960's habitable	Caherroyn, Athenry, Co Galway	15/7/2024

Planning Reference	Description of Proposed Development	Application Address	Decision Date
	dwelling and construction of new 227sq.m. two storey, three bedroom, dwelling, including relocated site entrance, new boundary wall, external store and carport and associated landscape works. Gross floor space of proposed works: (House) 227 sqm & (Carport) 23.4 sqm. Gross floor space of any demolition: 99 sqm		
2460627	The construction of a dwelling house with all associated services. Gross floor space of proposed works: 123.30 sqm	Ballygarraun South, Athenry, Co. Galway	26/8/2024

5.3.1 Summary

The County and Local Development Plan; RBMP and projects within the locality of the proposed project are considered in combination with the currently proposed project in the Impact Assessment section below.

6 Impact Assessment

6.1 Introduction

The impacts on the valued ecological features are assessed here. The initial assessment considers the potential impact pathways and whether these apply to the ecological features. The impact assessment considered the scheme maintenance works and the anticipated effects in the absence of mitigation.

The potential impacts from the upgrade works and the site's operation following the works are assessed under the following:

- Direct habitat loss
- Disturbance to species
- Lighting impacts

The following sections describe the nature of immediate/short-term impacts, as well as any medium- or long-term impacts, predicted for designated protected sites, habitats and species in the absence of implemented mitigation measures during the maintenance works.

6.2 Do Nothing Scenario

If the proposed works were not to go ahead, it is likely that no change will occur in the use of the building by fauna in the wider area around the site.

6.3 Impacts on Ecological Features

The following sections describe the nature of the construction phase impacts predicted for protected sites, habitats and species in the absence of implemented mitigation measures during the project's construction phase.

The following ecological features to be assessed include:

- Dry meadows and grassy verges
- Hedgerows
- Scrub
- Mammals
- Bats (Foraging and Commuting)
- Birds
- Invertebrates

6.3.1 Impacts to designated sites

All designated sites have been screened out in the AA Screening report prepared for the project. No mitigation measures are necessary to prevent impacts to the Natura network.

All proposed sites have similarly been screened out, due to a lack of a connection between the project and any pNHAs within the ZoI.

Therefore, no impacts to any designated sites have been identified from the project.

6.3.2 Habitats

A summary of the calculated areas is provided in Table 6-1. Note that due to the complex mosaic of habitats on site, calculations are merely an estimation.

This indicates the areas of habitat to be retained and lost. The significance of these impacts is rated in Sections 6.3.2 and 6.3.3.

Table 6-1: Estimated cover of habitats screened in for impact assessment

Fossitt Habitat Type	Potential impact type	M^2 on site	M^2 loss due to project	M^2 retained	Percentage Retained
GS2 – Dry meadows and grassy verges	Habitat loss	11,833	11,833	0	0%
WL1 - Hedgerows	Disturbance	85m	0m	85m	100%
WS1 - Scrub	Habitat loss	2,822	2,822	0	0%

6.3.2.1 Dry meadows and grassy verges

All of this habitat will be lost during the construction phase of the project. This area has the potential to be used by local fauna including mammals, birds and invertebrates. As the survey took place outside of the optimal surveying season for the majority of habitats and species, including plants, the precautionary principle is applied and it is assumed that this grassland is of higher local value for flora and fauna than apparent during the site surveys.

In the absence of mitigation measures, this will have a slight negative impact, as the habitat is locally important and small in size in the context of the surrounding area.

6.3.2.2 Hedgerows

The hedgerows on site offer cover and foraging opportunities for mammals, birds, bats and invertebrates. It is not anticipated that there will be any removal or alteration of the hedgerows on site during the construction phase of the project as it is outside the current site boundary. Therefore, no direct impacts are expected to occur during the construction or operational phases to this habitat.

Some temporary disturbance will occur during construction due to noise and may deter birds and mammals from using the area during the day. Overall, this will have a slight negative impact during the construction phase.

6.3.2.3 Scrub

All of this habitat area will be lost during the construction phase of the project. The scrub on site likely offers foraging and shelter for local invertebrates and mammals. Areas of scrub may offer breeding opportunities for birds in spring/summer. In the absence of mitigation measures, this will have a slight negative impact, as the habitat is locally important but small in size.

6.3.3 Protected Species

6.3.3.1 Mammals

Areas of scrub and dry meadows will be lost during construction, impacting species including Fox, which was recorded as being present on the site. Other small mammal species are likely to be present.

It is likely that species such as Fox and Red Squirrel if present use the site for commuting and potentially opportunistic foraging.

Small mammals such as Hedgehog and Wood Mouse may be nesting in hedgerows, scrub or rank grassland on site.

No populations of regional significance are anticipated at the site. Loss of habitat will impact commuting and foraging mammals on site. During the construction and operational phases of the project, there will be a permanent slight negative impact to locally important mammals.

6.3.3.2 Bats

Foraging and Commuting

The hedgerow, particularly the hedgerow along the northwestern boundary, forms a linear connection to the wider landscape. It was observed from the static detector survey that this hedgerow is used by three bat species. These are likely used as part of a corridor in the landscape connecting to roosts and foraging habitats in the area. This hedgerow is to be retained in the current design of the proposed project.

There will be loss of scrub and grassland habitat of 14,655m^2, which provide foraging for bats as they feed on flying insects that live in these habitats. These will be lost to the construction of the new housing units, which will not provide any foraging habitat for bats. The provision of additional tree planting and amenity grassland areas may retain some foraging opportunities for bats across the site in unlit areas. Therefore this will result in slight loss of foraging area for bats overall.

Lighting impact

Installation of additional lighting for the housing development and car parking during the operational phase may impact foraging and commuting bats. Light levels will be increased across the site, which will discourage use by bats for foraging and commuting. Lighting is proposed along access roads throughout the site. The proposed kickabout area, ornamental tree planting and green area/playground in the southwestern portion of the site will be unlit, and may be utilised by foraging and commuting bats during the operational phase.

Disturbance impacts

Disturbance may be caused by an increase in human presence and increased noise/vibration created by machinery. However, bats are nocturnal, and the works will take place during daylight hours. Therefore, disturbance caused by the works is not anticipated to significantly impact on this species group.

Temporary impacts on commuting and foraging bats are anticipated via disturbance to the existing hedgerow north of the site boundary. A moderate negative effect is anticipated for commuting and foraging bats.

6.3.3.3 Birds

The scrub and hedgerows on site provide good nesting and foraging habitats for birds in the local area. The hedgerows on site will be retained as part of the proposed works. There will be an overall decrease in nesting habitat for birds on site with the removal of 14,655m^2 of scrub and grassland. This will have a permanent slight negative impact on local birds.

Works have the potential to disturb nesting birds. Short-term slight negative impacts on birds are anticipated due to disturbance from construction. Potential nesting area will be removed.

6.3.3.4 Invertebrates

The site has areas of suitable habitat for terrestrial invertebrates in the scrub and grassland across the site. As all of this will be lost during construction, this will have a permanent slight negative impact on locally important invertebrates.

6.4 Summary of Impacts

The following impacts to the Screened-in Ecological Receptors were identified in this section:

Table 6-2: Summary of impacts expected from the proposed project

Ecological Feature	Value	Impact
GS2 Dry meadows and grassy verges	Local Higher	Loss of locally important habitat with potential for supporting protected species

Ecological Feature	Value	Impact
WL1 Hedgerows	Local Higher	Locally important for numerous protected species; disturbance impacts
WS1 Scrub	Local Higher	Loss of locally important habitat with potential for supporting protected species
Mammals	Local Higher	Locally important for several protected species; disturbance impacts
Bats	Local Higher	Locally important use across the site with presence of Annex IV species
Birds	Local Higher	Locally important; potential for breeding on site; disturbance impacts
Invertebrates	Local Higher	Potential for supporting habitat

7 Mitigation

This section describes the mitigation that will be utilised to ensure that the proposed works do not adversely impact on the ecological receptors outlined in Section 6.

Mitigation measures for anticipated impacts on designated sites and ecological features are outlined below.

7.1 Loss of GS2 Dry meadow habitat

There will be a loss of 11,833m^2 of this habitat.

Seeds may be saved from the existing habitats on site depending on the time of year, or soil may be transferred from the existing site if possible to the proposed green areas within the new housing development to retain the natural plant species assemblage to continue supporting local fauna such as invertebrates using the site.

An area of wildflower meadow and areas of amenity grassland with reduced mowing have been included in the landscape plan for the site, which will continue to provide habitat for pollinators and other invertebrates.

7.2 Loss of Scrub habitat

There will be a loss of 2,822m^2 of this habitat.

With the loss of locally important habitats across the site, the landscape plan will include compensatory planting of native species, incorporating those recorded in the areas of scrub and grassland to retain suitable habitat for native fauna using the site.

7.3 Disturbance to Mammals

Species of mammals recorded include Fox and Red Squirrel.

Vegetation to be removed will be check prior to its removal to ensure no small protected mammal species such as Hedgehog, Wood Mouse and Pygmy Shrew are present. If any small mammals are found during removal of scrub, they will be relocated to a safe, suitable habitat nearby by a suitably qualified Ecologist acting as the Ecological Clerk of Works (ECOW).

Fencing or concrete walls should not be erected along existing hedgerows, in order to retain commuting corridors across the northwestern boundary of the site so that mammals used to visiting this area may freely move through. If boundary walls are to be built as part of the new housing development, gaps for commuting mammals should be provided.

7.4 Retaining Commuting and Foraging for Bats

Bats are using the hedgerow bordering the site as a commuting route and may be foraging in the centre of the site, particularly in darker areas.

The hedgerow will be retained in the current design; therefore, it is not expected that there will be a loss of features for bats to navigate to the surrounding landscape. However, there will be an increase in lighting which will impact nocturnal species such as terrestrial mammals and bats. Green areas with dark corridors are particularly important in urban landscapes where much of the land is otherwise built on. Bat-friendly landscaping and planting would support invertebrates that local bats feed on.

Recommendations for gardening and landscaping for bats are:

- Plant Native Species: Native Irish species support a wider variety and abundance of native insects. In turn, this means that there are more foraging opportunities for bats. Native tree species recorded within the site include Ash and Willow.
- Grassland Management: Allow patches to grow tall and flower, improving habitat for night flying insects such as moths.

Bats are using the site as commuting routes and were recorded in low numbers on the western boundary of the site. Creating dark and diverse green areas as suggested would enhance general biodiversity on site and support other local wildlife as well. The landscape plan currently includes an unlit area where tree planting and green areas are proposed in the southwestern and eastern portions of the site, which should retain a dark corridor along the southern boundary for commuting and foraging bats.

7.5 Lighting Impacts Bats

The static detector surveys found the site is regularly used by at least 3 species of bat. The increased lighting may disturb bats from commuting through the site.

Placing artificial lights in proximity to bat foraging pathways can be highly disturbing to bats, may cause disorientation, and should be avoided where feasible. Artificial light spillage out onto or close to a bat foraging pathway can cause many problems for bats, by:

- Altering the feeding behaviour of bats away from their roost. Slower flying species tend to avoid illuminated areas and therefore lose foraging grounds if they are continuously or sporadically lit. This results in slower flying species having to use poorer quality foraging sites and losing out on prey, which are attracted to the surrounding lit areas, leading to a high-density insect population with a smaller focus area.
- Commuting and foraging routes, which will be avoided if there is artificial light spilling into these areas.

7.5.1 Lighting (Operational Phase)

A bat-sensitive lighting design will be developed for the project with assistance from suitably qualified Ecologists to minimise the impact of lighting on bats using the hedgerows and other areas bordering the site. During the design phase of the project, the lighting plan should include directional lighting in proximity to the hedgerows on site, as this has been identified as a commuting route for bats. The lighting plan should follow the guidelines in Table 7-1.

The final lighting plan for the site will be signed off by a suitably qualified Ecologist.

Table 7-1: Evaluation of criteria for suggested lighting plan (based on recommendations from (Stone, 2013; Voigt, Azam and Dekker, 2018)

Criteria	Guidelines	This project should be
Type of light	No UV component. Preferentially warm LED (>2700K) (Voigt, 2018). Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2013).	Warm LED, >2700K, Higher than 550nm.
Height of lights	<6m	<6m
Directionality	Downwards focused to reduce spill. Minimise light spills using shields, masking & louvres. Light can be restricted and directed to below the horizontal plane, preferably at an angle of less than 70°	LED, downward focused. Minimise light spills using cowls. Light can be restricted and directed to below the horizontal plane, preferably at an angle of less than 70°
Timing of lights	Restrict lights to ensure that there are dark hours	Use of sensors, as standard.
Brightness	No specific guideline available – not as relevant for bats given spectral sensitivities. Lux values under 0.5 in the vertical plane are considered ideal for corridors for bats.	Lowest contour as possible of lighting

7.6 Birds

The scrub habitat on site to be removed has potential for nesting birds. No removal of vegetation is allowed during the bird nesting season (March 1st to August 31st) unless a suitably qualified Ecologist acting as the ECOW is present and checks the vegetation prior to removal. If any nesting birds are found, no vegetation may be removed until after the chicks have fledged.

7.7 Invertebrates

Considering the area of suitable habitat to be removed, compensatory planting of plant species similar to those recorded in the grassland and scrub on site should be included in areas not being developed. As the habitat and plant surveys took place outside of the optimal surveying season, saving of seed or soil from this area may be more suitable to accommodate for this as it is likely that a higher plant diversity is present in spring/summer.

An area of wildflower meadow and areas of amenity grassland with reduced mowing have been included in the landscape plan for the site, which will continue to provide habitat for pollinators and other invertebrates.

7.8 General Avoidance Measures

Although it has been identified that there will be no permanent impact through disturbance to wildlife during the work, it is advised that general avoidance measures be undertaken to protect wildlife such as small mammals while the works are being carried out.

General avoidance measures that should be incorporated by the contractors working on site include:

- Preparations of a toolbox talk for staff covering appropriate use of the area, i.e., not to be used as a smoking area, or waste storage facility. This toolbox talk would also cover the event of an unlikely bat occurrence during works, along with safety aspects, i.e., who to contact, and not handling or harming the bat. This can be prepared by a suitably qualified Ecologist and can be delivered on site or to the Site Manager(s) online.
- The use of lighting at night on site should be avoided. If the use of lighting is essential, then a directional cowl should be fitted to all lights to prevent light spill and to be directed away from treelines and hedgerows, and away from any potential roost locations.
- Limit the hours of working to daylight hours, to limit disturbance to nocturnal and crepuscular animals.
- Contactors must ensure that no harm comes to wildlife by maintaining the site efficiently and clearing away materials which are not in use, such as wire or bags in which animals can become entangled.
- Any pipes should be capped when not in use (especially at night) to prevent animals becoming trapped. Any excavations should be covered overnight to prevent animals from falling and getting trapped. If that is not possible, a strategically placed plank should be placed to allow animals to escape.

7.9 Site-specific mitigation measures

7.9.1 Surface Water Management

Precautions shall be put in place to avoid or minimise the generation and release of sediments into the water network. This will include as appropriate:

- Buffer zones to the existing storm water drainage network to prevent impact

The site layout avoids natural watercourses. Work will not be in proximity to watercourses, but fenced buffers will be provided in order to ensure no inadvertent access, or placement of spoil in proximity to existing surface water drainage systems, which is assumed to outfall to the Clarinbridge River in Athenry.

7.9.2 Groundwater treatment during construction

The following mitigation measures should be included in the project

- An appropriately sized settlement pond or tank will be utilised to treat pumped groundwater prior to its discharge to the stormwater system or to a soakaway. No water will be discharged directly to surface water systems.
- The quality of the water being discharged will be monitored by the ECoW.

7.9.3 Reduce volumes of operational stormwater discharge

The following measures will be embedded through the design of the project to reduce volumes of operation stormwater discharge.

- Attenuation of run-off from both the new buildings and the new permanent car park areas (permeable surfaces used where possible).
- HydroBrake limiting flow in peak times and achievement of greenfield run-off rates as appropriate.
- Class 1 hydrocarbon interceptors at appropriate locations.

7.10 General mitigation measures for construction phase

The mitigation measures outlined below will be implemented for the construction and decommissioning phase of the proposed development works.

1. An Ecological Clerk of Works (ECoW) will be appointed to ensure the mitigation measures are implemented correctly and to ensure no impacts will occur by monitoring the site, weather and nearby waterbodies.
2. Construction method statements will be submitted to the ECoW for agreement prior to site works commencing
3. The main site compound will be sited within the works site
4. Only plant and materials necessary for the construction of the works will be permitted to be stored at the compound location

5. All refuelling of vehicles will be carried off site where possible, or within the main site compound and only trained personnel will be permitted to operate fuel bowsers.

7.10.1 Site Compound

Before works commence the contractor is to provide a site layout plan identifying the exact location of the site compound and a site establishment plan.

Typical site establishment by the contractor will likely include the following:

- Access route to the site;
- Construction traffic alert signage approaching the site entrance;
- Site offices;
- Site facilities (canteen, toilets, drying rooms, etc.);
- Office for construction management team;
- Secure compound for the storage of all on-site machinery and materials;
- Temporary car parking facilities;
- Permanent and temporary fencing;
- Site Security to restrict unauthorized entry;
- Bunded storage of fuels and refuelling area.

1. Bunds shall be 110% capacity of the largest vessel contained within the bunded area.
2. A separate container will be located in the contractors' compound to store absorbents used to contain spillages of hazardous materials. The container will be clearly labelled, and the contents of the container will be disposed of by a licensed waste contractor at a licensed site. Records will be maintained of material taken off site for disposal.
3. The contents of any tank will be clearly marked on the tank, and a notice displayed requiring that valves and trigger guns be locked when not in use.
4. Drainage collection system for washing area to prevent runoff into surface water system.
5. All refuelling of vehicles will be carried out at the fuel stores within the main site compound and only appropriately trained personnel will be permitted to operate fuel bowsers.
6. A drainage plan will be issued to the ECoW before works commence.
7. A surface and foul water plan will be issued to the ECoW before works commence.
8. The site environmental manager will be responsible for maintaining all training records and weekly environmental inspections.
9. Drainage collection system for washing area to prevent run-off into surface water system.

7.10.2 Water Quality

The activities required for the proposed development's construction phase shall remain within the boundary of the proposed site. Construction activities will also strictly adhere to best practice environmental guidance including but not limited to the following:

- CIRIA (C512): Environmental Handbook for Building and Civil Engineering Projects.
- CIRIA (C532): Control of water pollution from construction sites. Guidance for consultants and contractors.
- PUB C811 Environmental Good Practice on Site, 5th Edition (CIRIA, 2023);
- CIRIA (C750D): Groundwater control: design and practice.
- CIRIA (C753): The SuDS Manual.
- Road Drainage and the Water Environment DN-DNG-03065 (TII, 2015).

In order to safeguard the local surface water network, and in turn the local groundwater network, from surface water-based pollution events, the following must be strictly adhered to:

- The contractor will ensure compliance with environmental quality standards specified in the relevant legislation, namely European Communities (Environmental Objectives (Surface Waters)) Regulations, 2009 (S.I. No. 272 of 2009 and amendments);
- Management of silt-laden water on-site, including procedures for accidental leaks / spills to ground, as well as water quality monitoring to ensure compliance with environmental quality standards specified above;
- At no point during the construction phase will untreated-water be discharged to local surface water drainage network without the water quality meeting the statutory limits as set under the environmental quality standards specified above, or limits imposed by a relevant authority;
- Fail-safe site drainage and bunding, e.g. drip trays on plant and machinery will be provided to prevent discharge of chemical spillage from the sites to surface water; and
- Temporary stockpiles will be monitored for leachate generation. These stockpiles will be placed within designated areas (C649 – CIRIA, 2006b).

7.10.3 Pollution Control and Spill Prevention

Spill kits containing absorbent pads, granules and booms will be stored in the site compound with easy access for delivery to site in the case of an emergency. A minimum stock of spill kits will be maintained at all times and site foreman vehicle will carry large spill kits at all times. Absorbent material will be used with pumps and generators at all times and used material disposed of in accordance with the Waste Management Plan. All used spill materials e.g. absorbent pads will be placed in a bunded container in the

contractors' compound. The material will be disposed of by a licensed waste contractor at a licensed facility.

Regular inspections and maintenance of plant and machinery checking for leaks, damage or vandalism will be made on all plant and equipment.

In the event of a spill the Contractor will ensure that the following procedures are in place:

- Emergency response awareness training for all project personnel on-site works.
- Appropriate and sufficient spill control materials will be installed at strategic locations within the site. Spill kits for immediate use will be kept in the cab of mobile equipment.
- Spill kits will be stored in the site compound with easy access for delivery to site in the case of an emergency. A minimum stock of spill kits will be maintained at all times and site vehicles will carry spill kits at all times. Spill kits must include suitable spill control materials to deal with the type of spillage that may occur and where it may occur. Typical contents of an on-site spill kit will include the following as a minimum;
    - Absorbent granules;
    - Absorbent mats/cushions;
    - Absorbent booms.
- Spill kits will contain gloves to handle contaminated materials and sealable disposal sacks.
- Track mats, drain covers and geotextile material.
- All potentially polluting substances such as oils and chemicals used during construction will be stored in containers clearly labelled and stored with suitable precautionary measures, such as bunding, within the site compound.
- All tank and drum storage areas on the site will, as a minimum, be bunded to a volume not less than the following;
- 110% of the capacity of the largest tank or drum within the bunded area, or
- 25% of the total volume of substances which could be stored within the bunded area.
- The site compound fuel storage areas and cleaning areas will be rendered impervious and will be constructed to ensure no discharges will cause pollution to surface or ground waters.
- Designated locations for refuelling are within the Site Compound.

- Potentially contaminated run-off from plant and machinery maintenance areas will be managed within the site compound surface water collection system.
- Damaged or leaking containers will be removed from use and replaced immediately.

7.10.4 Specific mitigation for concrete control

Mitigation measures during construction will include placing an impermeable membrane (i.e. reinforced radon barrier sheeting or similar approved) on a levelled area with a smooth surface under the lean concrete mix. The impermeable membrane will protrude from under the foundations so it can be raised along the edges to construct a basin. This is to prevent any contaminated runoff from flowing into the ground which may occur during the pouring of structural concrete. If contaminated water accumulates it will be pumped / directed into settlement pond(s) lined with an impermeable membrane or similar approved. After the works have finalised the impermeable membrane from the settlement ponds and other locations will be removed from site and treated as waste. Similar water management will be implemented during the excavation of topsoil / ground. The water will be directed / pumped to a settlement pond to prevent it from entering groundwater bodies and connected surface waterbodies.

The following measures will be implemented to prevent liquid concrete/ cement-based dust entering the adjacent habitats of ecological value.

- Wherever reasonably possible, pre-cast concrete features should be utilised to minimise the risk of a concrete-based pollution event.
- Concrete delivery, concrete pours and related construction methodologies will be part of the procedure agreed with the contractor to mitigate any possibility of spillage or contamination of the local environment. Particular attention will be paid during the pouring process in order to avoid leakages or spills of concrete.
- Washout of concrete plant will occur off site at a designated impermeable area with waste control facilities.
- Raw, uncured or waste concrete will be stored appropriately prior to disposal by licenced contractor.
- The contractor's construction methodology will require the use of precast elements where practical; the use of secondary protection shuttering for concrete pours; all pours to be carried out in dry weather conditions; and that all trucks be cleaned prior to leaving respective depots.
- The contractor will be required to use experienced operators for the work; provide an appropriate level of continuous monitoring during any concrete pours by experienced management; and have method statements approved by the client prior to commencing works. Works will be carried out using recommendations from current guidance and relevant codes of practise as outlined in EA (2011) **-** *Managing concrete wash waters on construction sites: good practice and temporary discharges to ground or to surface waters*.

7.11 Invasive Species Management

Red Osier Dogwood was recorded on site. This species is naturalised in Ireland and is considered as an invasive species particularly in wetland and woodland habitats. An invasive species report and management plan in provided for the site in Appendix B.

No First Schedule species (S.I. No. 374/2024 - European Union (Invasive Alien Species) Regulations 2024, 2024) or Third Schedule species (S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011, 2011) were recorded during the site surveys. However, standard mitigation measures should be implemented to ensure that none are introduced to site, and appropriate biosecurity measures should be put in place.

8 Residual Impact

Residual ecological impacts are those that remain once the development proposals have been implemented. The main aim of ecological mitigation, compensation and enhancement is to minimise or eliminate residual impacts.

8.1 Construction Phase

Preparatory and construction works will result in disturbance to and loss of foraging and commuting habitat for protected species such as ground-dwelling mammals, bats and birds.

Implementation of mitigation measures during the construction works phase, along with good site management and construction practices will help to minimise any significant and/or permanent impact on the environment. Included in this will be best practice measures to prevent disturbance, and accidental injury, as well as control of pollution, which will minimise any impact on local habitats and the species reliant on them.

With the proposed mitigation implemented the residual impact during the construction phase is assessed to be of temporary negative impact on account of the disturbance locally important protected species.

8.2 Operational Phase

The proposed lighting plan will have a slight impact of disrupting foraging and commuting activity of local bat species. Mitigation in the form of light cowling and orientation, will prevent the site from experiencing large scale light pollution and allow the site to continue experiencing light levels in line with existing conditions. Overall, the works will have a negligible residual impact on the biodiversity within and adjacent to the site.

9 Summary of Impact Assessment

9.1 EcIA Table

The table below presents a summary of the EcIA assessment when mitigation approaches are considered and included. Residual impacts are also described.

Table 9-1: Summary of impacts

Ecological Features	Importance of Feature	Impact and Significance of Impact	Mitigation	Residual Significance of Impacts
GS2 Dry meadows and grassy verges	Local Higher	Loss of habitat Disturbance Slight negative	Wildflower meadow area included in landscape plan	Negligible
WL1 Hedgerows	Local Higher	Disturbance Temporary slight negative	Avoid erecting fencing/concrete walls along existing hedgerow. Provision of gaps for commuting mammals if walls are to be built General avoidance measures (i.e., no lighting at night, limit works to daylight hours) Bat-sensitive lighting plan with minimal light spill	Negligible
WS1 Scrub	Local Higher	Loss of habitat Disturbance Slight negative	ECOW present during vegetation removal to check for mammals and remove to safe habitat if necessary	Negligible
Mammals	Local Higher	Loss of commuting and foraging habitat Disturbance from construction and increased lighting during operational phase Slight negative	ECOW present during vegetation removal to check for mammals and remove to safe habitat if necessary Avoid erecting fencing/concrete walls along existing hedgerow. Provision of gaps for commuting mammals if walls are to be built	Negligible

Ecological Features	Importance of Feature	Impact and Significance of Impact	Mitigation	Residual Significance of Impacts
Bats	Local Higher	Disturbance during operational phase with increased lighting along commuting corridors Temporary moderate negative	No lighting along existing hedgerow Provision of dark corridor included Bat-sensitive lighting plan with minimal light spill	Negligible
Birds	Local Higher	Loss of breeding habitat for locally important populations Disturbance Slight negative	Scrub to be removed outside of bird nesting season, unless ECOW is present to check vegetation prior to removal.	Negligible
Invertebrates	Local Higher	Loss of locally important habitat Slight negative	Wildflower meadows and reduced mowing in some areas of amenity grassland included in landscape plan	Negligible

9.1.1 Cumulative Impacts

As there are no significant residual impacts on ecological features (following mitigation measures) from this development, there is therefore no potential for other plans or projects identified in Section 5 to act in combination with it. Therefore, **significant cumulative impacts are not expected to occur on the ecological features within the proposed site.**

10 Concluding Statement

This EcIA examines the potential impacts from the proposed housing development in the Gort Mhaoilir estate in Athenry, Co. Galway.

The site is not in proximity to any Natura 2000 sites or designated/proposed sites.

Additionally, a range of mitigation and avoidance measures will be implemented to protect important ecological features within the footprint of the site itself. These measures include:

- General avoidance measures
- Pollution control and spill prevention (standard controls)
- Provision of wildflower meadow and tree planting in landscape plan
- Bat-sensitive lighting plan, retention of dark areas on site

No additional operational impacts are anticipated from the project, as: no additional surface water will be created and no additional significant emissions from the project will be generated.

Based upon the information supplied and provided the works are carried out in accordance with the mitigation measures outlined above, there will be no significant impact, alone or in-combination with other plans and projects, as a result of the works on mammals, bats, birds, or the ecology of protected areas in the surrounding environs.

Appendices

A Site Layout

SITE INFORMATION	
SITE AREA	18,435m² / 1.8435 ha
GFA	3,688m²
PLOT RATIO	0.20 : 1
UNITS PER HECTARE	23
SITE COVERAGE	14.3%
CAR PARKING SPACES	57no.
VISITOR BICYLE PARKING	36no.
GREEN SPACE	0.5065 ha / 27%

UNIT TYPE SCHEDULE

APARTMENT UNIT MIX

UNIT TYPE A	2B / 3P	74.5m²	6 no.
UNIT TYPE B	1B / 2P	60.8m²	6 no.

HOUSING UNIT MIX

UNIT TYPE C	2B / 4P	81.4m²	14 no.
UNIT TYPE D1	3B / 5P	100m²	8 no.
UNIT TYPE D2	3B / 5P	100m²	3 no.
UNIT TYPE E	3B / 4P	89m²	4 no.
UNIT TYPE F	3B / 6P	118.9m²	1 no.
UNIT TYPE G	5B / 9P	162m²	1 no.
TOTAL NUMBER OF UNITS			43 no.

DRAFT

REVISIONS		STATUS		DRAWN	CHECKED
A	07/04/2025	FA	ISSUED FOR APPROVAL	KMS	PK

STATUS : PR - PRELIMINARY ISSUE; FI - FOR INFORMATION; FA - FOR APPROVAL; FP - FOR PRICING; FC - FOR CONSTRUCTION

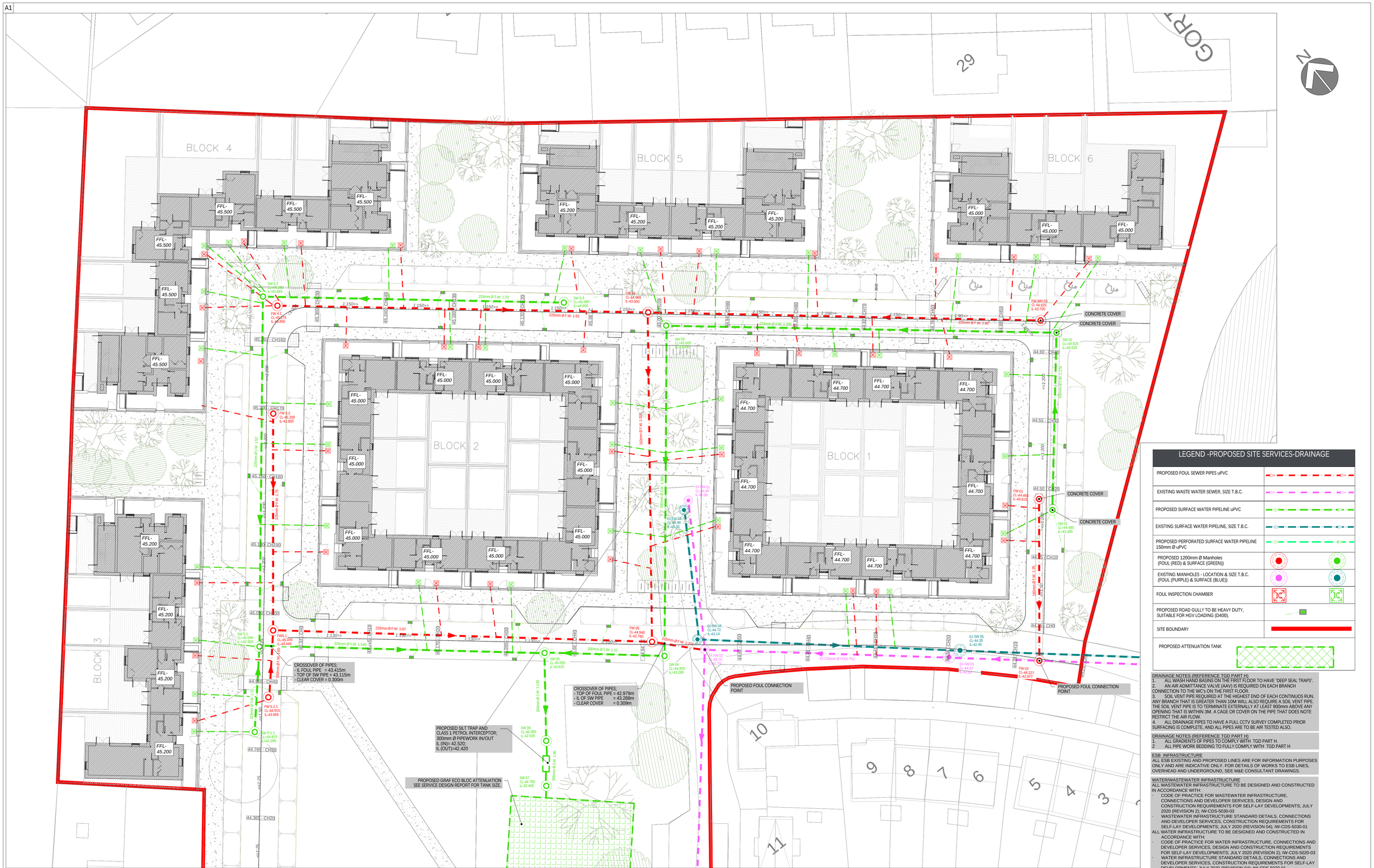
PROJECT: Social Housing Development Athenry
DRAWING: Proposed Site Plan - Ground Floor
JOB NO: 2429 CLIENT: Galway County Council
DATE: JAN '24 SCALE: 1:500 @ A1 / 1:1000 @ A3

PAUL KEOGH ARCHITECTS, CATHEDRAL COURT, NEW ST. DUBLIN 8
TEL NO: 01 6791551 FAX NO: 01 6793476 E-MAIL: info@pka.ie

DRAWING NO.: 2429 / PA / 001 / A

B Drainage Plans

A1



LEGEND -PROPOSED SITE SERVICES-DRAINAGE

PROPOSED FOUL SEWER PIPES uPVC	
EXISTING WASTE WATER SEWER, SIZE T.B.C.	
PROPOSED SURFACE WATER PIPELINE uPVC	
EXISTING SURFACE WATER PIPELINE, SIZE T.B.C.	
PROPOSED PERFORATED SURFACE WATER PIPELINE 150mm Ø uPVC	
PROPOSED 1200mm Ø Manholes (FOUL (RED) & SURFACE (GREEN))	
EXISTING MANHOLES - LOCATION & SIZE T.B.C. (FOUL (PURPLE) & SURFACE (BLUE))	
FOUL INSPECTION CHAMBER	
PROPOSED ROAD GULLY TO BE HEAVY DUTY, SUITABLE FOR HGV LOADING (D400).	
SITE BOUNDARY	
PROPOSED ATTENUATION TANK	

DRAINAGE NOTES (REFERENCE TGD PART H)
1. ALL WASH HAND BASINS ON THE FIRST FLOOR TO HAVE 'DEEP SEAL TRAPS'.
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- WASTEWATER INFRASTRUCTURE STANDARD DETAILS, CONNECTIONS AND DEVELOPER SERVICES, CONSTRUCTION REQUIREMENTS FOR SELF-LAY DEVELOPMENTS; JULY 2020 (REVISION 04); IW-CDS-5030-01

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PL.2	11.04.2025	MW	UPDATED FROM COMMENTS
PL.1	31.01.2025	MW	ISSUED FOR PLANNING

Client: GALWAY COUNTY COUNCIL

Project Title: PROPOSED HOUSING DEVELOPMENT AT GORT MHAOLIR, ATHENRY, CO GALWAY

Drawing Title: SITE LAYOUT - SERVICES: WASTEWATER & SURFACE WATER. SHEET 1

Scales	Paper Size:	Status
1:250	A1	PLANNING
Drawn by	**Date**	**Checked**
MW	JANUARY 2025	CD

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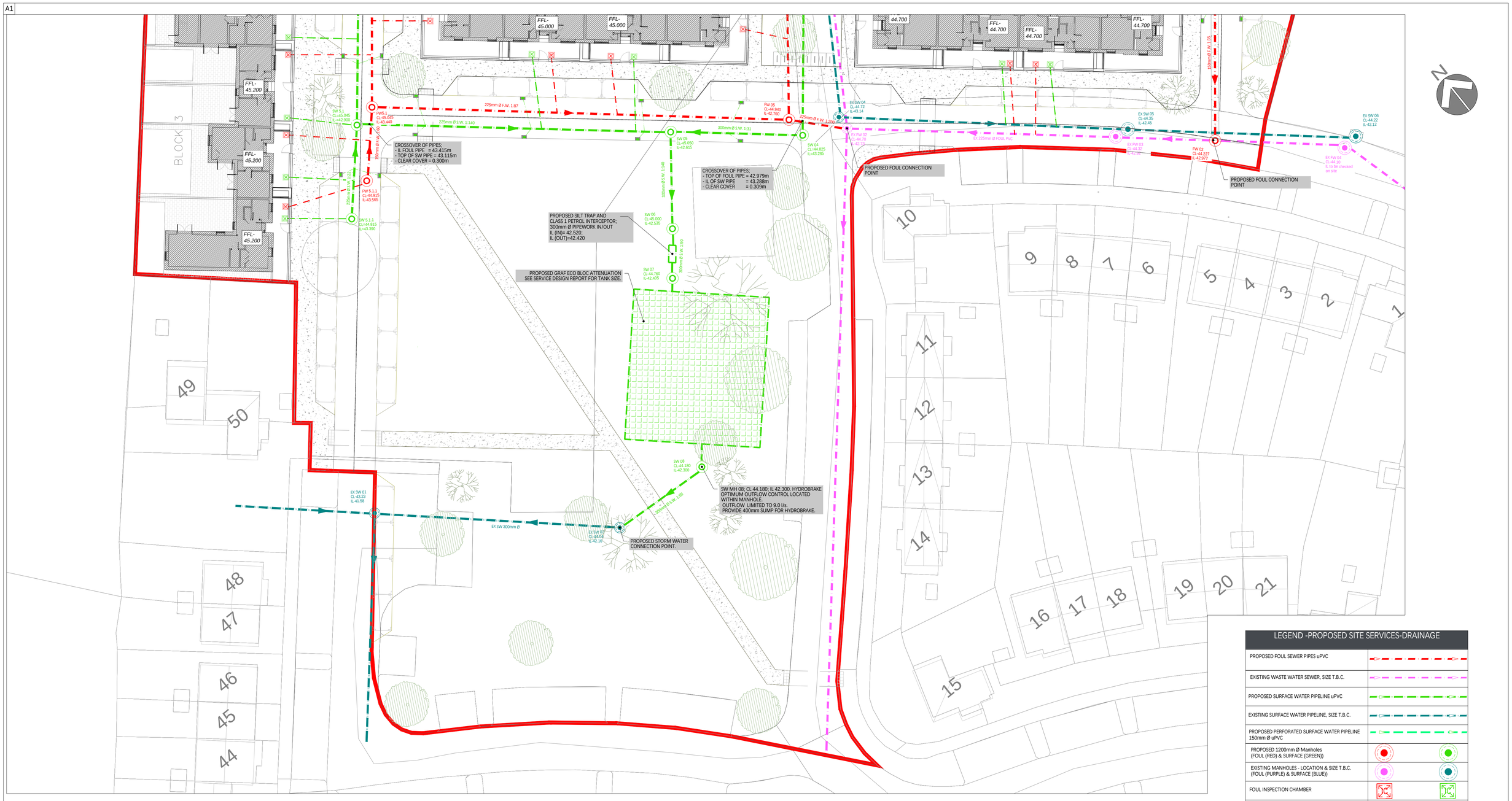
Project No.	Drawing No.	Revision
24181-A	3022	PL.2

A1



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Drawing Title: SITE LAYOUT - SERVICES: WASTEWATER & SURFACE WATER. SHEET 2

Scales	Paper Size:	Status
1:250	A1	PLANNING
Drawn by: MW	Date: JANUARY 2025	Checked: CD

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Project No.	Drawing No.	Revision
24181-A	3023	PL.2

C Landscape Plan

GENERAL NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED AND LEVELS ARE IN METRES ABOVE ORDNANCE DATUM.
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE.
3. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO JBA CONSULTING IMMEDIATELY.
4. THE LOCATIONS OF ANY KNOWN SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE AND FOR GUIDANCE ONLY. THE TRUE LOCATIONS OF ALL SERVICES SHALL BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORKS.
5. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

LEGEND

Site Boundary

PROPOSED SOFT LANDSCAPE

Proposed Street Tree Planting
Proposed Open Space Tree Planting
Proposed Small Ornamental Tree Planting
Proposed Formal Hedging
Proposed Wildflower Meadow
Proposed Ornamental Planting
Proposed Mowed Grass
Proposed Reduced Mowed Grass
Proposed Rear Garden Grass
Proposed Root Barrier

PROPOSED HARD LANDSCAPE

Proposed Resin Bound Path
Barley Butter Finish
(supplied by https://www.sureset.co.uk/ or similar approved)

Proposed Resin Bound Finish to Street Trees
Pearl Jam Finish
(supplied by https://www.sureset.co.uk/ or similar approved)

Proposed Concrete Block paving to patios
Newgrange Block Paving 60mm depth, dim. 240 x 160mm, Buff Granite
(supplied by https://www.Kilsaran.co.uk or similar approved)

Proposed Brushed Concrete Footpath
Refer to Engineer Specification

Proposed Concrete Brick Pavers to Parking
Refer to Engineer Specification

Proposed Asphalt Road
Refer to Engineer Specification

PROPOSED STREET FURNITURE

Proposed Seat - powder coated stainless steel & hardwood or composite timber with back support and side armrests-
(supplied by https://www.hartecast.com/all-products/seats-and-benches/timber-composite-range/age-friendly-seats/)

Proposed Bike Stands

PROPOSED LIGHTING

Proposed Lighting Column
Refer to Engineer's Drawings

PROPOSED BOUNDARY TREATMENTS

Proposed concrete block wall between back gardens

Proposed rendered blockwork wall adjacent to housing

Proposed vernacular stonework wall to front gardens
(blue limestone or similar approved)

Proposed vernacular stonework wall to front gardens
with galvanized steel railings
(blue limestone or similar approved)

Proposed masonry blockwork wall
Refer to Engineer's Specification for Details.

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JBA consulting

Project Title
HOUSING AT GORT MHAOILIR, ATHENRY

Drawing Title
LANDSCAPE MASTERPLAN

Client
PAUL KEOGH ARCHITECT

Parent Model					
OHZ-JBAI-XX-XX-M2-L-0001-S0.P01.02-LANDSCAPE_MASTERPLAN_Gort Mhaoilir.dwg					
Security Classification			Scale		
OFFICIAL			1:500		
Author	Designer	Checker	Approver		
LK	LK	ES	COF		
Suitability			Status	Revision	
PUBLISHED DEFINITION			A3	P01	
Information Container				A1 Sheet Size	
OHZ-JBAI-XX-XX-DR-L-0001					

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5. THE ELECTRONIC VERSION OF THIS DRAWING IS NOT TO BE USED FOR SETTING OUT.

LEGEND

- Site Boundary

PROPOSED SOFT LANDSCAPE

- Proposed Street Tree Planting with resin bound finish:
  Pp'F' - Prunus padus 'Fastigiata'
- Proposed Native Tree Planting:
  Qr - Quercus robur
  Bp - *Betula pendula*
  Pa - *Prunus avium*
  Sa - *Sorbus aucuparia*
- Proposed Open Space Tree Planting:
  Qp - Quercus pubescens
- Proposed Formal Hedging
- Proposed Wildflower Meadow
- Proposed Ornamental Planting
- Proposed Mowed Grass
- Proposed Reduced Mowed Grass
- Proposed Rear Garden Grass
- Proposed Root Barrier

PROPOSED LIGHTING

- Proposed Lighting Column
  Refer to Engineer's Drawings

PROPOSED BOUNDARY TREATMENTS

- Proposed concrete block wall between back gardens
- Proposed rendered blockwork wall adjacent to housing
- Proposed vernacular stonework wall to front gardens (blue limestone or similar approved)
- Proposed vernacular stonework wall to front gardens with galvanized steel railings (blue limestone or similar approved)
- Proposed masonry blockwork wall
  Refer to Engineer's Specification for Details.

PLANTING SCHEDULE - TO BE READ IN CONJUCTION WITH LANDSCAPE PLAN & PLANTING PLAN

Proposed Street Tree Planting

CODES	Species	Girth / Form / Height	Density	No.	Comments	Establishment Maintenance Period 18 months	Management year 1.5 -5
PpF	*Prunus padus* 'Fastigiata'	10-12cm (Standard Tree), minimum 2-3m in height	As shown on plan	5	Preference for a mixed provenance locations south of the site. Irish provenance to be selected for native planting. To be planted in positions shown on drawing. To be double staked.	Defective (dead or dying) plants to be repaced after year 1 Monthly tasks: -Trees stakes/ties to be checked, loosened and removed as necessary -Water weekly to soil saturation during dry weather -Check weeds at 0.5m radius around the base of tree -Fertilise at base of tree	Every 3 years: -Trees to be pruned as necessary to be kept away from overhead lines. -Tree ties and staking to be removed at start of management period. -Fertilise at base as required.
			Total	5			

Proposed Native Tree Planting

CODES	Standard Trees Species	Girth / Form / Height	Density	No.	Comments	Management year 1-5	Management year 5-10
Bp	*Betula pendula*	14-16cm, RB,Extra Heavy, minimum 3m in height	As shown on plan	24	Irish provenance to be selected for native planting. Trees to be planted 2.5m apart. To be double staked.	Defective (dead or dying) plants to be replaced after year 1 Monthly tasks: -Water weekly during dry weather -Weed removal at base of tree -Fertilise at base of tree -After 3 years tree ties and staking to be removed	Every 3 years: -Trees to be thinned and pruned. -If over crowding of tree crown has occurred then alternate trees to be coppices to a height of 1m above ground level. -Tree ties and staking to be removed
Pa	*Prunus avium*	14-16cm, RB,Extra Heavy, minimum 3m in height		33			
Sa	*Sorbus aucuparia*	14-16cm, RB,Extra Heavy, minimum 3m in height		13			
Qr	*Quercus robur*	16-18cm, RB,Extra Heavy, minimum 4m in height		6			
			Total	76			

Proposed Open Space Tree Planting

CODES	Species	Height/ Form	Planting Density m2	No.	Comments	Establishment Maintenance Period 18 months	Management year 1.5 -5
Qp	*Quercus pubescens*	16-18cm, RB,Extra Heavy, minimum 4m in height	As shown on plan	8	Preference for a mixed provenance. To be planted in front and rear gardens, in positions shown on drawing. Syringa species not to be planted at rear gardens. To be double staked.	As above.	As above.
			Total	8			

Proposed Formal Hedge

	Species	Height	% in mix	Planting Density/lin.m	Length (m)	Total No.	Comments	Management year 1-5	Management year 5-10
FH	*Photinia x fraseri* 'Red Robin'	60-90cm/BR	100	5	113	567	Hedge species to be planted at 0.5m centres. Temporary support/ protention might be required. Preference for biodegradable options.	Defective (dead or dying) plants to be replaced after year 1. Monthly tasks: -Water weekly to soil saturation during dry weather -Check weeds at base of whip/shrub -Fertilise at base of whip/shrub	To be kept trimmed to final height and width.

Proposed Wildflower Meadow

	Mix	Sowing Rate (g/m2)			Total Area (m2)	Total No. (kg)	Comments	Establishment Maintenance Period 18 months	Management year 1.5 -5
WM	**Basic General Purpose Meadow Mixture EM1** by Emorsgate or similar (20-80)	5			1187	6	To be sown on weed free, Stone free, firm but not compacted, ground rotavate to a min. depth of 300mm before sowing.	To be rolled with Cambridge roller after sow cut 2-3 time in year 1 Follow all Ireland pollinator plant guidelines to achieve full grown covering sward	Cut 1-2 times per year as required. Less frequent cutting cycles can be implemented where vegetational succession is desirable.

Proposed Ornamental Planting

	Species	Height	% in mix	Planting Density	Total Area	No.	Comments	Establishment Maintenance Period 18 months	Management year 1.5 -5
OP	*Narcissus*	Standard bulb size	30	10	63	189	Bulbs to be planted within their own groups at a depths equal to 2.5x their length and between the new plants.	Do not mow the areas that include bulbs. Only cut back when the foliage of bulbs has turned yellow. If foliage is cut while green, the bulbs will need to be replanted.	Do not cut bulb foliage while it is still green, but only when after it has fully bloomed.
	Cyclamen coum	9cm pot	20			126			
	Hyacinthoides Non Scripta	Standard bulb size	20			126	Plant crocosmia and agapanthus in separate groups. Plant cyclemens closely to trees.		
	Agapanthus Brilliant Blue	9cm pot	15			95			
		Total:	85			536			

Proposed Mown Grass

	Mix	Sowing Rate (g/m2)			Total Area (m2)	Total No. (kg)	Comments	Establishment Maintenance Period 18 months	Management year 1.5 -5
MG	**Basic General Purpose Meadow Mixture EM1** by Emorsgate or similar (20-80), for both frequent and intermittent mowing in areas (as identified in landscape plan), or similar and approved	5			2078	10	To be sown on weed free, Stone free, firm but not compacted, ground rotavate to a min. depth of 300mm before sowing. Differenciate frequency as required by the use of the area.	To be rolled with Cambridge roller after sow cut 2-3 time in year 1 Follow all Ireland pollinator plant guidelines to achieve full grown covering sward	-Cut as frequently as required for the use purpose of the area. Less frequent cutting cycles can be implemented where vegetational succession is desirable.

Proposed Reduced Mown Grass

	Mix	Sowing Rate (g/m2)			Total Area (m2)	Total No. (kg)	Comments	Establishment Maintenance Period 18 months	Management year 1.5 -5
RMG	**Basic General Purpose Meadow Mixture EM1** by Emorsgate or similar (20-80), for both frequent and intermittent mowing in areas (as identified in landscape plan), or similar and approved	5			798	4	To be sown on weed free, Stone free, firm but not compacted, ground rotavate to a min. depth of 300mm before sowing. Differenciate frequency as required by the use of the area.	To be rolled with Cambridge roller after sow cut 2-3 time in year 1 Follow all Ireland pollinator plant guidelines to achieve full grown covering sward	-Cut as frequently as required for the use purpose of the area. Less frequent cutting cycles can be implemented where vegetational succession is desirable.

Proposed Rear Garden Grass

	General Purpose Grass Mix	Sowing Rate (g/m2)			Total Area (m2)	Total No. (kg)	Comments	Establishment Maintenance Period 18 months	Management year 1.5 -5
RGG	**No. 3 Lawn Seed – Hard Wearing** 50% Creeping Red Fescue , 50% Dwarf Ryegrass, https://mcguinnessseeds.com/, or similar and approved	40			1491.7	60	To be sown on weed free, Stone free, firm but not compacted, ground rotavate to a min. depth of 300mm and level before sowing	Keep soil moist during establishment.	Cut as required

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Project Title

HOUSING AT GORT MHAOILIR, ATHENRY

Drawing Title

PLANTING PLAN & SCHEDULE

Client

PAUL KEOGH ARCHITECTS

Parent Model			
OHZ-JBAI-XX-XX-M2-L-0002-S0.P01-PLANTING_PLAN_&_SCHEDULE_Gort Mhaoilir.dwg			
Security Classification		Scale	
OFFICIAL		1:500	
Author	Designer	Checker	Approver
LK	LK	ES	COF
Suitability		Status	Revision
PUBLISHED DEFINITION		A3	P01
Information Container			A1 Sheet Size
OHZ-JBAI-XX-XX-DR-L-0002			

D Lighting Plan

	Luminaire A	Luminaire B
Supplier		
Type	AXIA 3 EVO 1 5266 Integrated lenses 16 OSLON SQUARE GIAN...	AXIA 3 EVO 1 5267 Integrated lenses 16 OSLON SQUARE GIAN...
Lamp(s)	16 OSLON SQUARE GIANT@500mA WW 730 230V 01-11-814	16 OSLON SQUARE GIANT@500mA WW 730 230V 01-11-814
Lamp Flux (klm)	3.67	3.67
Maintenance Factor	0.87	0.87
No. in Project	8	19

PROJECT NAME:	**Housing at Gort Mhaoilir**
PROJECT No:	**R01**
SCALE: **1:700**	DATE: **21 March 2025**
CALCULATION:	**Horizontal Illuminance (lux)**
DESIGNER:	**ESL & CBS**
PREPARED BY:	CBS Consulting Engineers Ltd

9750503411

E Relevant Policy and Legislation

The legislation discussed below is intended as a guide only and does not replace formal legal advice.

E.1 Biodiversity Policy Guidance

'Biodiversity: The National Biodiversity Action Plan 2023-2030' (NPWS, 2024) sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'vision for Biodiversity' and has been developed in response to the Earth Summit, held in Rio de Janeiro in 1992 (UN Convention on Biological Diversity) and subsequent EU and International biodiversity strategies and policies.

As part of the action plan process Local Authorities (LA) must produce Biodiversity Action Plans (BAP). BAPs highlight local biodiversity issues and set out a series of objectives and action plans for the conservation of priority species and habitats where they occur in each district or county.

E.2 Designated Sites and Nature Conservation

E.2.1 Statutory Designated Nature Conservation Sites

Sites with statutory designations receive varying degrees of legal protection under Irish statute (i.e. Wildlife Act 1976 and Wildlife (Amendment) Act (2000) and European Directives (i.e. the EC Birds Directive (2009/147/EC) and EC Habitats Directive (92/43/EC). The EU directives were transposed into Irish national law and subsequent amendments were revised and consolidated in the European Communities (Birds and Natural Habitats) Regulations 2011 and Irish Statutory Instrument 477/2011.

There are a number of statutory designations used for sites of high nature conservation value in Ireland, which are applied depending upon the importance of the site in a local, regional, national, or international context. These include:

National

- Natural Heritage Area (NHA)
- Wildfowl Sanctuary
- Statutory Nature Reserve
- Refuge for Fauna

European

- Special Protection Area (SPA)
- Special Areas of Conservation (SAC)

International

- UNESCO Biosphere Reserve
- Ramsar Convention Site

- National Park (Category II) Sites

E.2.2 Non-Statutory Designations

Non-statutory sites are afforded no statutory legal protection, but are normally recognised by local planning authorities and statutory agencies as being of local nature conservation value.

A proposed National Heritage Area (pNHA) is an area deemed to be of special interest containing important wildlife habitat and often containing rare or threatened species. They may also be selected on the basis of geology or geomorphology.

E.2.3 Protected and Notable Species

A number of species are protected under Irish and international legislation. In Ireland, primary protection is provided under the 1976 Wildlife Act and Wildlife (Amendment) Acts 2000 & 2010 and revision 2018. Species of European importance receive additional protection in Ireland under the Birds and Natural Habitats Regulations 2011.

The Flora (Protection) Order 2015 makes it illegal to cut, uproot or damage a listed species in any way. It is illegal to alter, damage or interfere in any way with their habitats.

E.2.4 Birds

Almost all resident wild birds are protected under the 1976 Wildlife Act (and amendments). This makes it an offence to:

- Intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built;
- Take, destroy or possess the egg of any wild bird.

E.2.5 Badger

Badgers are protected under the 1976 Wildlife Act (and amendments), and it is illegal to intentionally kill, capture, injure or ill-threat any Badger. It is also an offence to obstruct, destroy or damage a Badger sett or disturb Badgers within a sett. Disturbance is defined, for development purposes, as any activity that could damage a sett or be a greater than what Badgers commonly tolerate.

E.2.6 Bats

All Irish bat species are European Protected Species (EPS), protected under the Wildlife Act (and amendments) and the Conservation of Habitat and Species Regulations 2017 (as amended). This makes it an offence to:

- Deliberately capture, injure or kill a bat,
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats,

- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time),
- Intentionally or recklessly obstruct access to any bat roost,
- It is also an offence to obstruct access to any bat roost, or to disturb a bat using such a place. Any identified roost(s) are, therefore, protected and any potentially disturbing or destructive works affecting a roost site will require a European Protected Species Licence (EPSL) from Natural England to avoid committing an offence.

E.2.7 Otter

The European Otter is an EPS protected under the Conservation of Habitats and Species Regulations 2017 (as amended), making it an offence to:

- Deliberately capture, injure or kill and Otter,
- Deliberately disturb an Otter such as to affect local populations or breeding success, damage or destroy an Otter holt,
- Possess or transport an Otter or any part of an Otter, sell or exchange an Otter.

Otters also receive protection under the Wildlife Act (and amendments), this makes it an offence to:

- Intentionally or recklessly disturb any Otter whilst within a holt, or
- Intentionally or recklessly obstruct access to a holt.

E.2.8 Reptiles and Amphibians

Common Frog, Natterjack Toad, Smooth Newt, and Common Lizard are all protected under the Wildlife Act 1976 (and amendments).

E.2.9 Invasive Non-native Species

Certain invasive non-native animals and plants are listed under the Third Schedule of S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011. This makes it an offence to:

- Release, plant them in the wild, or
- Cause them to disperse, spread or otherwise cause them to grow.

If these species occur on a site proposed for development or other work which may disturb the ground, control of these species is likely to be required.

European Council's Regulation on the prevention and management of the introduction and spread of invasive alien species [1143/2014] sets out to prevent, minimise and mitigate the adverse impacts of the introduction and spread, both intentional and unintentional, of invasive alien species on biodiversity and the related ecosystem services as well as on human health and the economy.

E.2.10 Fisheries Legislation

The primary legislation governing Inland Fisheries Sector are the Fisheries Consolidation Act 1959 (No. 14 of 1959) and the Inland Fisheries Act 2010 (No. 10 of 2010).

Fisheries Consolidation Act, 1959-2007

The Fisheries Consolidation Act, 1959, has been amended and extended a number of times (1962, 1964, 1976, 1980, 1987, 1991, 1994, 1994, 1997 and 1999). The Fisheries Consolidation Act makes provisions for the licences for sea and freshwater fishing.

Under the Fisheries Consolidation Act 1959, it is an offence to disturb the bed of a river. Section 171 of the Act creates the offence of throwing, emptying, permitting or casing to fall onto any waters deleterious matter. Deleterious matter is defined as any substance that is liable to injure fish; to damage their spawning grounds; or the food of any fish; or injure fish in their value as human food; or to impair the usefulness of the bed and soil of any waters as spawning grounds or other capacity to produce the food or fish.

Inland Fisheries Act 2010

An Act to establish Inland Fisheries Ireland and to define its functions, to dissolve the Central Fisheries Board and Regional Fisheries Boards, which had been established under the Fisheries Act, 1980 (amended 1999). The Inland Fisheries Act, 2010, also provides for other matters connected with the foregoing and to amend and extend the Fisheries Acts 1959 to 2007).

E.2.11 Salmonid Regulations

For the protection of fisheries, Ireland supports a network of Salmonid Waters designated by the Department of Environment, Heritage and Local Government under the EU Freshwater Fish Directive (78/659/EEC), S.I. No. 293/1988 - European Communities (Quality of Salmonid Waters) Regulations, 1988. These rivers, and a number of other non-designated waters, are important for salmonids (salmon and trout) and, accordingly, their water quality and fish habitat must be maintained (NRA, 2009b). These rivers must ensure to meet certain water quality standards as outlined in Schedule 2 of the legislation.

The regulations list particular rivers/waters which are to be protected under these regulations.

F Invasive Species Report & Management Plan

F.1 Invasive Species Recorded

No First Schedule species (S.I. No. 374/2024 - European Union (Invasive Alien Species) Regulations 2024) or Third Schedule species (S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011) were recorded during the site surveys.

A non-native invasive species not listed under these regulations, Red Osier Dogwood *Cornus sericea*, was recorded in a stand along the northwestern site boundary. This stand was approximately 50m^2 in area and occurs within the scrub and hedgerow bordering the site.

Red Osier Dogwood is commonly planted for ornamental purposes and on roadsides throughout Ireland. This species is naturalized in many sites, and is mainly of concern as an invasive species in natural and semi-natural wetland habitats, particularly wet woodlands. The species expands its cover into dense thickets from a single plant via lateral spread by the rooting of decumbent branches; this reduces native species richness and tree regeneration through shading in the summer. Seed production and seedling establishment appear to be uncommon in Ireland, and natural dispersal is thought to potentially result from the rooting of detached fragments that have been transported via waterbodies. (Kelly, 1990; Higgins, 2005)

Figure 10-1: Red Osier Dogwood recorded along the site boundary

F.2 Removal Methods During Construction

Given the nature of the habitats recorded on site, and the lack of any waterbodies connected to the wider hydrological network allowing for spread of fragments, the most effective method of removal during construction will be cutting. Removal should also include the below-ground shoot system to prevent establishment from any shoot fragments after construction.

The establishment of Red Osier Dogwood via detached fragments is thought to be rare, but is possible; hence under the precautionary principle, it is recommended that all cut material of Red Osier Dogwood including the shoots be removed from the site and disposed of at a suitable waste facility. As this species is not subject to any regulations, it may be disposed of with other organic/plant matter from the site but should not be reused on site.

F.3 General Biosecurity Measures

As with most construction activities that require excavations and movement of plant and materials there is a risk of contamination to/from other sites if strict biosecurity measures are not implemented.

Under regulations S.I. No. 374/2024 - European Union (Invasive Alien Species) Regulations 2024 and S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011) it is an offence to:

- Plant, disperse, allow dispersal, or cause the spread of any species listed on the First and Third Schedules.
- Keep the plant in possession for the purpose of sale, breeding, reproduction, propagation, distribution, introduction, or release.
- Keep anything from which the plant can be reproduced or propagated from without a granted licence.
- Keep any vector material - including infested soil, seeds, or plant fragments from a contaminated site contaminated site, for the purposes of breeding, distribution, introduction, or release.

It is important to note that if an invasive species listed on these Schedules has been positively identified on works site it is not an option to do nothing i.e., action of some form must be taken to address the invasive species in order to comply with environmental legislation.

Although the site is considered to be of low risk for other invasive species there is potential for invasive species to be spread to the site during construction from other locations. The following biosecurity measures should be implemented:

- To prevent spread on and off site, vehicles, and equipment (including footwear worn by staff) will need to be cleaned and inspected before coming on and off site to prevent the introduction of any scheduled invasive species. Ensure PPE and equipment is clean of mud/debris prior to visiting the site.
- Ensure vehicles are kept clean and do not let mud and debris accumulate on wheels or under wheel arches. Virkon should be used to spray down any equipment leaving site, and all organic material will be removed from machinery with a Check-Clean-Dry approach.
- Keep vehicular access to a minimum. Try to park vehicles on hard standing ground.

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