November 2022

Ecological Impact Assessment

Proposed Housing Development

On behalf of
Haven Falls Ltd.

Knockgriffin, Midleton, Co. Cork

MALONE O'REGAN ENVIRONMENTAL

QUALITY
I.S. EN ISO 9001:2015
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MALONE O'REGAN

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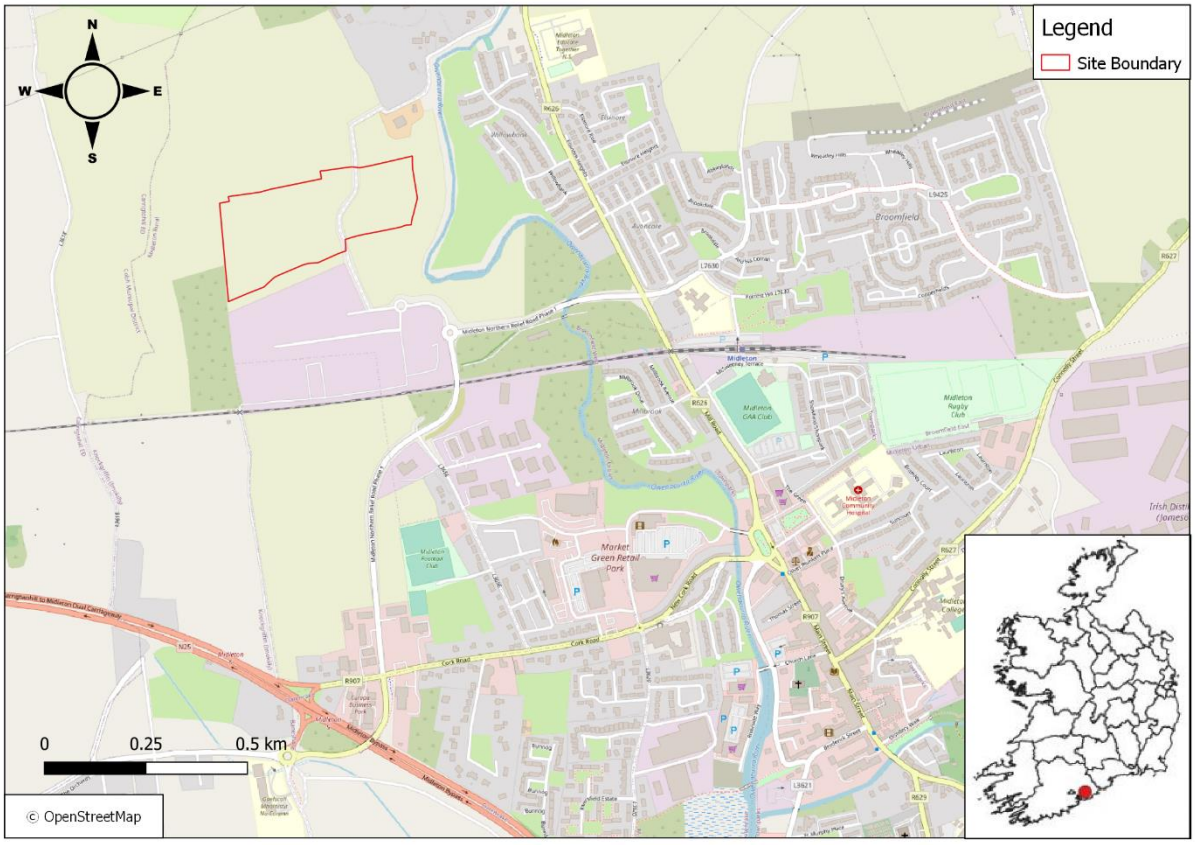
1 INTRODUCTION

1.1 Background and Purpose of Report

Malone O'Regan Environmental (MOR) were commissioned by Haven Falls Ltd. ('the Applicant') to undertake an Ecological Impact Assessment (EcIA) for the proposed housing development in support of a Large-scale Residential Development (LRD) on lands at Knockgriffin, Midleton, Co. Cork. (OS Reference W 86997 74666).

The Proposed Development will be located on a site that is ca.9.49 hectares (ha) in size and will be located within the townland of Knockgriffin, Midleton, Co. Cork ('the Site'). The Site is shown in Figure 1-1. A proposed Site Layout drawing is presented in Appendix A.

Figure 1-1: Site Location



1.2 Purpose of Report

The objective of this EcIA was to survey and assess the land within and adjacent to the Site for the presence of any habitats or species that could present a constraint on or an opportunity for enhancement due to the Proposed Development and assess the potential impact of the Proposed Development on identified ecological receptors. This report and accompanying application will assess the Proposed Development plan comprised of 330 units.

This report will be submitted as part of the overall LRD planning application for the Proposed Development to Cork County Council. A Natura Impact Statement (NIS) will also be submitted in support of the planning application.

Any future proposed developments will be subject to the required environmental assessments including Appropriate Assessment and the mandatory statutory consents.

1.3 Statement of Authority

The report was prepared by Mr. Henry Tennyson, Environmental Consultant. Henry is a qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and has a years' experience working in the ecological consultancy sector, including the preparation of Appropriate Assessments, habitat surveys and specialist protected species surveys.

The report was approved by Mr. Dyfrig Hubble, Associate Director - Ecologist. Dyfrig is a full member of the Chartered Institute of Ecology and Environmental Management. Dyfrig has over 15 years' experience working in the ecological consultancy sector, including habitat surveys and appraisals, and specialist protected species surveys.

1.4 Legislation and Planning Policy Context

1.4.1 Legislation Policy Context

Within Ireland, a number of sites of international or national importance to nature conservation, as well as many species of animal and plants are afforded a degree of legal protection, as set out in Box 1 below.

A study of biodiversity related planning policy at both national and local level has been undertaken for the Site and locality in order to highlight any potential conflicts with the relevant legislation and guidance documents.

Box 1 Designated Wildlife Sites and Protected and Otherwise Notable Habitats and Species

The National Parks and Wildlife Service (NPWS) notifies sites in Ireland that are of international or national importance for nature conservation (although some sites that are of national importance for certain species have not been so designated).

Internationally important sites may also be designated as:

- Special Areas of Conservation (SACs): the legal requirements relating to the designation and management of SACs in Ireland are set out in the European Communities (Natural Habitats) Regulations 1997 (as amended) (Habs Regs);
- Special Protection Areas (SPAs): strictly protected sites classified in accordance with Article 4 of the EC Directive on the Conservation of Wild Birds (79/409/EEC), also known as the Birds Directive; and,
- Ramsar sites: wetlands of international importance designated under the Ramsar Convention, to which Ireland is a signatory.

Other statutory site designations relating to nature conservation are:

- National Heritage Areas (NHAs): these represent examples of some of the most important natural and semi-natural terrestrial and coastal habitats in the country and are afforded protection under the Wildlife (Amendment) Act 2000. NHAs are legally protected from damage and receive protection from the date they are formally proposed for designation; and,
- Proposed Natural Heritage Areas (pNHAs): these sites are afforded the same protection as NHAs under the Wildlife (Amendment) Act 2000 from the date that they are formally proposed for designation.

Legally protected species

Many species of animal and plant receive some degree of legal protection. For the purposes of this study, legal protection refers to:

- Species included in the Wildlife (Amendment) Act 2000, excluding species that are only protected in relation to their sale, reflecting the fact that the site disposal will not include any proposals relating to the sale of species; and,
- Species afforded protection under the Flora Protection Order 1999.

Other notable habitat/species categories

- Biodiversity Action Plan (BAP) species: those targeted in local or national BAPs as being of particular conservation concern (priority species);
- Red and Amber List birds: those listed as being of high or medium conservation concern as listed by Birdwatch Ireland (Cummins, 2013); and,
- Other Irish Red Data Book species and Nationally/Regionally/Locally Notable species where appropriate.

1.4.2 National Planning Context

1.4.2.1 Planning Policy Statement

The National Planning Framework - Project Ireland 2040 (Ireland, 2018) states the following objectives, in relation to Biodiversity:

National Policy Objective 59:

'Enhance the conservation status and improve the management of protected areas and protected species by:

- *Implementing relevant EU Directives to protect Ireland's environment and wildlife;*
- *Integrating policies and objectives for the protection and restoration of biodiversity in statutory development plans;*
- *Developing and utilising licensing and consent systems to facilitate sustainable activities within Natura 2000 sites;*
- *Continued research, survey programmes and monitoring of habitats and species.'*

National Policy Objective 60:

'Conserve and enhance the rich qualities of natural and cultural heritage of Ireland in a manner appropriate to their significance.'

1.4.2.2 All-Ireland Pollinator Plan 2021-2025

Irish pollinators are in decline and in response, Ireland joined a small number of countries in Europe who have developed a strategy to address pollinator decline and protect pollination services.

The All-Ireland Pollination Plan (NBDC, 2021) was developed by a fifteen member All-Ireland steering group, with the aim to build a foundation to bring about a landscape where pollinators can flourish, revers pollinator losses, help restore populations to a healthy level and make Ireland pollinator friendly.

The plan identifies targets that can incorporated by actions undertaken voluntarily by both public and private landowners to make Ireland more pollinator friendly.

- Increase the area of Council land that is managed in a pollinator-friendly way;
- Make transport corridors more pollinator friendly;
- Organisations with site networks on public land to manage these in a pollinator-friendly way;
- Make local communities more pollinator friendly;
- Make protected land in a pollinator-friendly way where appropriate;
- Manage protected land in a pollinator-friendly way where appropriate;
- Complete policy investigations;
- Strengthen links between the AIPP and other national initiatives;
- Track changes in pollinations on public and private land;
- Increase the number of gardens that are pollinator friendly; and,
- Increase the network of AIPP business supporters.

1.4.3 Local Planning Context

1.4.3.1 Cork County Development Plan 2022 - 2028

Cork County Development Plan 2022 - 2028 (CCDP) contains a number of objectives that relate directly to the protection of biodiversity and natural heritage in the context of development (Cork County Council, 2022). These include objectives that involve compliance with the EU Habitats Directives and the Irish Wildlife Acts and that ensure the protection of ecological corridors and habitats (Cork County Council, 2022).

The objectives of the CCDP with regards to the natural environment that are relevant to the Proposed Development are as follows:

Objective BE 15-1: Support and comply with national biodiversity protection policies

a. Support and comply with the objectives of the National Biodiversity Plan 2017-2021 (and any future National Biodiversity Plan which may be adopted during the period of this Plan) as appropriate.

b. Implement the current County Biodiversity Action Plan and any future updated Plan.

c. Support and comply with biodiversity policy set out in other national and regional documents as appropriate.

Objective BE 15-2: Protect sites, habitats and species

a. Protect all natural heritage sites which are designated or proposed for designation under European legislation, National legislation and International Agreements. Maintain and where possible enhance appropriate ecological linkages between these. This includes Special Areas of Conservation, Special Protection Areas, Marine Protected Areas, Natural Heritage Areas, proposed Natural Heritage Areas, Statutory Nature Reserves, Refuges for Fauna and Ramsar Sites. These sites are listed in Volume 2 of the Plan.

b. Provide protection to species listed in the Flora Protection Order 2015, to Annexes of the Habitats and Birds Directives, and to animal species protected under the Wildlife Acts in accordance with relevant legal requirements. These species are listed in Volume 2 of the Plan.

c. Protect and where possible enhance areas of local biodiversity value, ecological corridors and habitats that are features of the County's ecological network. This includes rivers, lakes, streams and ponds, peatland and other wetland habitats, woodlands, hedgerows, tree lines, veteran trees, natural and semi-natural grasslands as well as coastal and marine habitats. It particularly includes habitats of special conservation significance in Cork as listed in Volume 2 of the Plan.

d. Recognise the value of protecting geological heritage sites of local and national interest, as they become notified to the local authority, and protect them from inappropriate development.

e. Encourage, pursuant to Article 10 of the Habitats Directive, the protection and enhancement of features of the landscape, such as traditional field boundaries, important for the ecological coherence of the Natura 2000 network and essential for the migration, dispersal and genetic exchange of wild species.

Objective 15-6: Biodiversity and New Development

'Provide for the protection and enhancement of biodiversity in the development management process and when licensing or permitting other activities by:

a. Providing ongoing support and guidance to developers on incorporating biodiversity considerations into new development through preplanning communications and the Council's guidance document 'Biodiversity and the Planning Process – guidance for developments on the management of biodiversity issues during the planning process' and any updated versions of this advice.

b. Encouraging the retention and integration of existing trees, hedgerows and other features of high natural value within new developments.

c. Requiring the incorporation of primarily native tree and other plant species, particularly pollinator friendly species in the landscaping of new development.

d. Fulfilling Appropriate Assessment and Environmental Impact Assessment obligations and carrying out Ecological Impact Assessment in relation to development and activities, as appropriate.

e. Ensuring that an appropriate level of assessment is completed in relation to wetland habitats subject to proposals which would involve drainage or reclamation. This includes lakes and ponds, watercourses, springs and swamps, marshes, heath, peatlands, some woodlands as well as some coastal and marine habitats.

f. Ensuring that the implementation of appropriate mitigation (including habitat enhancement, new planting or other habitat creation initiatives) is incorporated into new development, where the implementation of such development would result in unavoidable impacts on biodiversity – supporting the principle of biodiversity net gain.

Objective BE 15-7: Control of invasive Alien Species

'Implement best practice to minimise the risk of spread of invasive alien species, on Council owned or managed land, and require the development and implementation of Invasive Alien Species Management Plans for new developments where required.'

Objective BE 15-8: Trees and Woodlands

a. Protect tree the subject of Tree Preservation Orders

b. Make use of Tree Preservation Orders to protect important trees or groups of trees which may be at risk or any tree(s) that warrants an order given its important amenity or historic value

c. Encourage the provision of trees for urban shading and cooling in developments in urban environments and as an integral part of the public realm.

d. Preserve and enhance the general level of tree cover in both town and country. Ensure that development proposals do not compromise important trees and include an appropriate level of new tree planting.

e. Preserve and enhance the general level of tree cover in both town and country. Ensure that development proposals do not compromise important trees and include an appropriate level of new tree planting.

2 METHODOLOGY

2.1 Assessment Methodology for Prediction of Effects

The EcIA process was undertaken in parallel with the proposed development design with a view of minimising the adverse ecological effects of the proposed development and, where possible, delivering benefits for biodiversity. Desk study data collection and field survey work were carried out as part of the EcIA process, with the objective of ensuring that sufficient data was collected to identify the designated sites, habitat areas and species that could be significantly affected by the proposed development. This information then informed the assessment of effects on the potential biodiversity receptors.

The area for which biological data was collected was based on an assessment of the ecological zone of influence of the proposed development and associated activities. The ecological zone of influence is the area that could be affected by the proposed development, within which there is the potential for significant ecological effects. The starting point was that significant effects on designated nature conservation sites were unlikely to occur over 2km from the proposed Site boundary. However, adopting the precautionary principle, all SACs and SPAs within a 15km radius and all nationally designated sites for conservation within a 5km radius of the proposed development Site have been identified and impacts considered. Significant effects on priority habitats and species were considered unlikely at over 1km away. Desk study data were collected for this area (See Section 4.1), whilst field surveys focused on the site of the proposed development (See Section 4.2).

It should be noted that there was the potential for the zone of influence to be redefined during the assessment process in response to new design or environmental information, and / or for the geographical extent of field surveys to be extended to cover a greater extent of the desk study area (e.g. if the desk study identified species occurring off-site that could be significantly affected by the proposed development). In the end, such an increase in the study area was not required for this assessment.

The next stage of the assessment was to determine which, if any, of the sites, habitats, and species within the zone of influence (referred to in this report as 'potential biodiversity receptors') had the potential to be significantly affected by the proposed development (see Section 5). A high level 'scoping' assessment was then undertaken (see Section 5) to differentiate effects that were sufficiently likely to be significant as to merit more detailed assessment, from those that could be assessed at a less detailed level as they were classified as not likely to be significant (referred to as 'scoped-out' effects).

The assessment of how the potential biodiversity receptors would likely be affected by the environmental changes associated with the proposed development was based not only on the results of the desk study and field surveys, but also on published information on the potential biodiversity receptors' status, distribution, sensitivity to these changes, biology, and knowledge of ecological processes and functions, as appropriate.

2.2 Consultation

Cork County Council was contacted initially on the 23rd February 2021 for consultation. Follow up details were supplied to the Council on the 17th June 2022 and a LDR meeting was held on the 13th July 2022. Following this, Cork County Council issued an Opinion Letter dated 8th August 2022, in which the Council noted a number of items that needed to be addressed in the planning application, please see attached in Appendix B.

- Requirement for a Ecological Impact Assessment, which should assess:
    - The loss of trees and hedgerows;
    - Integration of ecological corridors for wildlife;
    - Bat surveys; and,
    - Bird breeding survey.
- The Proposal shall integrate provisions of Green Infrastructure Objectives GI 1401 and GI 14-3.

Following the consultation with Cork County Council, a phone conversation was held with Cork County Council Conservation Officer, Joy Barry, on the 14th of September 2022 to follow up on the Opinion Letter in regard to the ecological survey approach.

2.3 Desk Study

The following literature sources were checked for ecological information:

- The National Parks and Wildlife Service (NPWS) website was consulted with regard to the most up to date detail on conservation objectives for the Natura 2000 sites relevant to this assessment (NBDC, 2022);
- The National Biodiversity Data Centre (NBDC) website was consulted with regard to species distributions (NBDC, 2022);
- BirdWatch Ireland – The Irish Wetland Bird Survey (I-WeBS) data was reviewed with regard to wintering waterbird population within the vicinity (BirdWatch Ireland, 2022)
- Cork County Council ePlan Website (Cork County Council , 2022);
- The EPA Envision website was consulted to obtain details about watercourses in the vicinity of the Site (EPA, 2022); and,
- Historical information of the Site and anecdotal information of the onsite flora and fauna was provided by Paul Moore, the landowner, who has actively farmed the Site since ca.1970 and visits the Site on a regular basis. Mr. Moore previously held the position of Secretary of BirdWatch Ireland – Cork Branch and is currently an active committee member. Mr. Moore has also undertaken bird surveys on behalf of BirdWatch Ireland, including I-WeBS surveys in Cork Harbour SPA.

2.4 Field Survey

2.4.1 Habitat Survey

A habitat survey was undertaken using the Fossitt's *Guide to Habitats in Ireland* (Fossitt, 2000). The survey aimed to identify the extent and quality of habitats present on the Site. The initial survey was carried out by two (2No.) suitably qualified MOR Ecologists on the 4th of August 2021. Following this an additional walkover was completed on the 13th of October 2021 and an updated survey was completed on the 13th of September 2022.

The assessment was extended to also identify the potential for these habitats to support other features of nature conservation importance, such as species afforded legal protection under either Irish or European legislation.

Following consultation with Cork County Council, it was deemed appropriate to undertake bat surveys on the 18th August 2022 and 14th September 2022. Additionally, static monitoring was undertaken using a passive bat detector from 18th of August 2022 to 13th of September 2022. Furthermore, a breeding bird survey and breeding bird habitat assessment was undertaken on 18th of August 2022.

2.4.2 Protected / Notable Species

The methodologies used to establish the presence / potential presence of faunal species are summarised below. These relate to those species / biological taxa that the desk study and habitat types present indicated could occur on the Site.

2.4.2.1 Amphibians

The Site was assessed for its potential to provide sheltering, foraging and breeding habitat for amphibians. These included water bodies suitable for egg-laying, and terrestrial habitats comprising open areas with mixed-height vegetation, such as heathland, rough grassland, open scrub or water body margins. Suitable well drained and frost-free areas are needed to enable amphibians to survive the winter.

2.4.2.2 Badger

The survey aimed to identify and examine areas where badgers (*Meles meles*) might occur by noting any evidence of badger activity. This included:

- Mammal paths;
- Badger hairs caught in sett entrances / fences / vegetation;
- Paw prints;
- Evidence of foraging (usually in the form of 'snuffle holes');
- Latrines; and,
- Badger setts.

2.4.2.3 Bats

During the initial field survey, an assessment was carried out during the habitat survey for suitability of the habitats within the Site to support bats roosting, foraging and commuting. The inspection was undertaken using close-focusing binoculars. The following criteria was used to assess mature trees onsite:

- Presence of natural cavities, splits, cracks, loose bark and rot holes in the trunk or boughs of the trees;
- Presence of dense and woody ivy (*Hedera helix)* growth that could be used by bats roosting;
- Evidence of bat droppings, which may also be seen as black streaks beneath holes, cracks, branches, etc.; and
- Presence of smooth edges with dark marks and urine stains at potential entrances to roosts.

Dusk emergence and dawn bat surveys were undertaken on 18th August 2022 and 14th September 2022, respectively. Additionally, static monitoring was undertaken using a passive bat detector from 18th of August 2022 to 13th of September 2022.

All surveys were undertaken in accordance with recognised best practice. Full details of the survey methodology are provided in the Bat Report attached as Appendix C.

2.4.2.4 Birds

A breeding bird and habitat assessment was undertaken on 18th of August 2022 by a suitably qualified and experienced MOR ecologist.

Breeding Bird Survey

During this survey all the field boundaries located within the Site boundary were walked and all open areas were observed for the presence of birds. All birds were recorded using a standard BTO code through sight, sound and optical equipment, such as binoculars (to minimise disturbances to birds).

During the survey, the behavioural activity of the recorded birds was noted using the BTO breeding status codes (British Trust of Ornithology, 2022). Birds that displayed non-territorial behaviours were also recorded (i.e., birds that were foraging and not calling, birds that were loafing, etc.). Birds flying over the Site were not recorded unless the bird was clearly associated with the Site (i.e., had been flushed out by the surveyor).

Birds were classified as non-breeding, possibly breeding and confirmed breeding based on the behaviours exhibited. The criteria for each classification is described below:

- Non-breeding – Birds that were flying over the Site, birds that were foraging and not calling and birds that were loafing;
- Possibly Breeding – Birds observed in suitable nesting habitat and displaying either territorial and / or courtship behaviours, nest building behaviours or observed visiting a possible nest; and
- Confirmed Breeding – Birds observed either on nests or carrying faecal sac or food, sighting of a nest with eggs / chick, used nests, eggshells or recently fledged young.

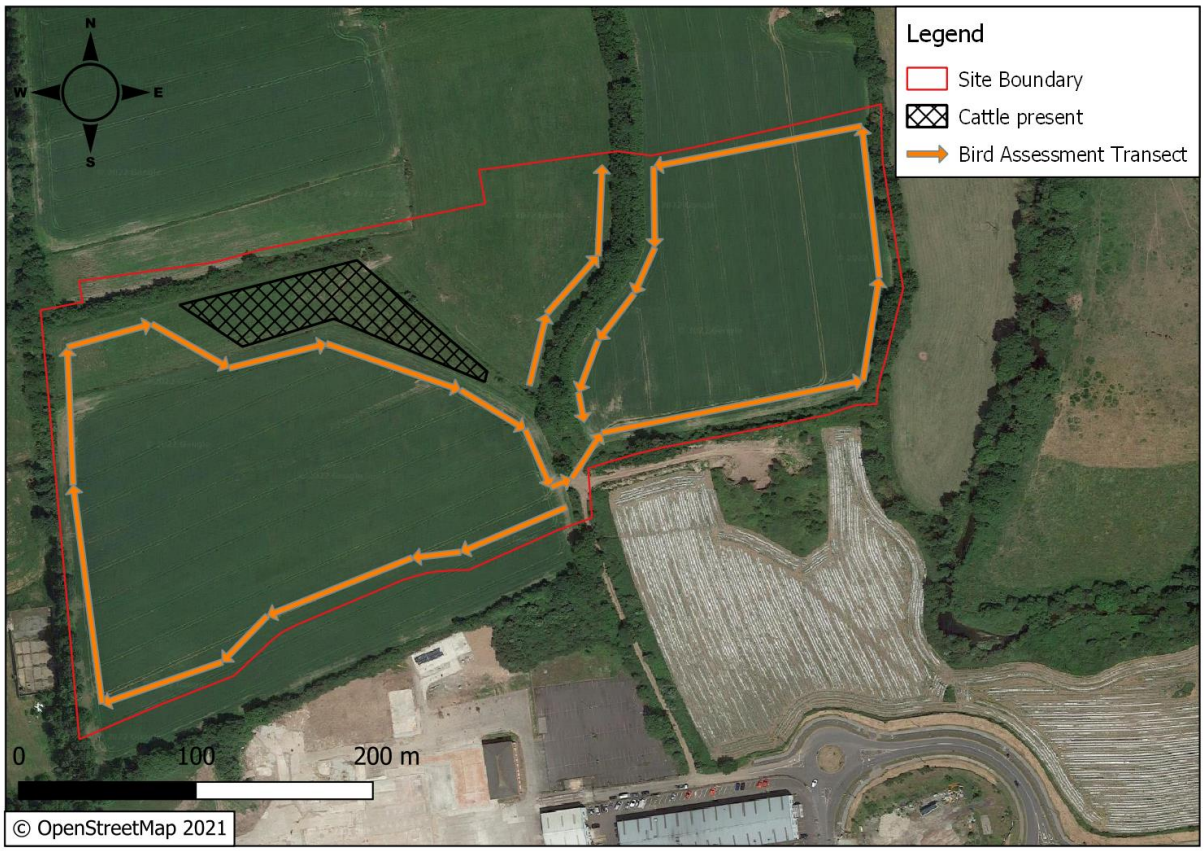
The survey assessed the Site for any evidence of active nests or trace nests to determine the presence of nesting birds that may have utilised the Site earlier in the breeding season. During this assessment, all hedgerows / treelines were surveyed using binoculars to determine if any nests were located within the higher reaches of the habitat, surveyors also manually assessed the hedgerows / treelines by going into the hedgerows and carefully looking through the foliage. Areas of tall grass / scrub were surveyed via transects across the area carefully looking for any remnants of ground nesting bird species.

Breeding Bird Habitat Assessment

During the survey, all field boundaries were walked and the habitats onsite were fully assessed for their potential to provide suitable nesting habitat. Areas of dense hedging, scrub habitat, wet grassland habitat, tall grassland habitat and onsite water features were noted. The flora species composition of the onsite habitats was noted to determine suitable species for nesting and foraging bird species.

Any active or trace nests identified onsite were noted and the habitat in which they were located was deemed suitable for nesting bird species.

Figure 2-1: Bird Habitat Assessment Transect



2.4.2.5 Otter

The initial survey aimed to identify and examine areas where otter might occur by noting any evidence of otter observed. Evidence of otter searched for included:

- Holts (features log piles, caves and cavities);
- Slides (flattered areas of mud or vegetation);
- Paw prints;
- Evidence of foraging (usually in the form of feeding remains such as fish scales, shellfish, etc.); and,
- Spraints.

2.4.2.6 Invasive species

The Site was assessed for the presence of any noxious / invasive species such as Japanese knotweed (*Fallopia japonica*) and any other invasive species.

2.4.2.7 Other Species

In addition, an assessment was carried out of the potential for the Site to support any other species considered to be of value for biodiversity.

2.4.3 Survey Limitations

There were no survey limitations that would materially alter the findings of the assessment.

2.5 Methodology

The current assessment Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2016) recognise that an ecological assessment cannot consider in detail every individual species or habitat that may potentially be affected by a proposed development. The EcIA process aims to identify those ecological receptors that could be significantly affected by the Proposed Development i.e. where the effects on the receptor are of sufficient concern that they could influence the planning decision, or for which the development could result in the breach of relevant legislation. The effects of the Proposed Development on these receptors are then assessed, taking into account the sensitive design measures (avoidance measures) and where necessary the mitigation measures incorporated as part of the Proposed Development. The scope of the EcIA is determined iteratively.

2.5.1 Significance Evaluation Methodology

As part of the high-level assessment reported in Section 5.1, the conclusion about whether effects are sufficiently likely to be significant as to merit more detailed assessment is informed by a judgement about whether:

- The Site, habitat or species population is of sufficient quality or size that an effect upon it could be significant; and,
- The environmental changes associated with the development are such that there is the potential for a significant effect to occur (i.e. for the integrity of a site or for the conservation status of a habitat area or species population to be affected).

If the answer to both of these questions is yes, the relevant receptor would be subject to more detailed assessment and the significance of effects would be evaluated based on the methodology that is outlined below.

2.5.1.1 Negative Effects

For biodiversity receptors, an effect is assessed as being significant if the favourable conservation status of the specified biodiversity receptor is compromised by the Proposed Development. Conservation status is defined by CIEEM (2016) as follows:

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

The decision as to whether the conservation status of the specified biodiversity receptor has been compromised has been made using professional judgement, drawing upon the results of the assessment of how each receptor will be affected by the Proposed Development.

A similar procedure has been used for designated sites that are affected by the Proposed Development, except that the focus is on the effects on the integrity of each site, defined as "the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and / or the levels of populations of the species for which it was designated."

2.5.1.2 Positive Effects

A positive effect is assessed as being 'significant' if development activities are predicted to cause:

- An improvement in the condition of a habitat / species population from unfavourable to favourable – condition data are only available for some Natura sites, but professional judgement and a review of available literature has been used to apply the same principle to habitats / species elsewhere; or,
- Partial or total restoration of a site's favourable condition.

If a species population, habitat or site is already in favourable condition, it is still possible for there to be a significant positive effect. There is however no simple formula for determining when such effects are significant, given the complexities of assessing these types of effects. In such cases, decisions about significance have therefore been made on a case by case basis.

2.6 Identification of Potential Biodiversity Receptors

The assessment of the ecological zone of influence of the Proposed Development concluded that the development would be likely to result in changes in the extent and / or condition of the existing land cover on the Site, with potential effects on habitats and species on the Site. There is also the potential for effects on any areas that adjoin the Site, where fauna might make use of the land cover onsite.

The potential for off-site changes in noise and dust deposition was also assessed. It was concluded that, with the dust and noise control measures that have been built into the Proposed Development proposals, which are important for avoiding significant effects on people as well as biodiversity, there is no likelihood of significant effects associated with either dust or noise.

In summary, therefore, the ecological zone of influence of the Proposed Development is defined as:

- The Site of the Proposed Development (fauna and flora); and,
- Habitats adjoining the Site (fauna).

In the case of designated sites, a precautionary approach has been taken and the search area extended to identify sites outside of the zone of ecological influence. This information was used to further inform the assessment process and to ensure that the onsite habitats are not of importance for either habitats or species for which these sites have been designated.

As a basis for determining which biodiversity receptors need to be assessed within the zone of influence of the development, CIEEM's guidelines on EcIA recommend that consideration be given to the biodiversity conservation value of the sites, habitats and species that occur within the zone (as appropriate). The guidelines also refer to the need to consider the legal status that is afforded to some species and habitats (See Box 1).

Legal status needs to be considered because all developments must comply with the requirements of the law. By implication, therefore, there cannot be significant effects as a result of non-compliance with the law. However, it should be noted that, notwithstanding legal requirements, there is the potential for some legally protected species to be significantly affected in relation to their biodiversity conservation value.

In relation to biodiversity conservation value, only those designated sites, habitat types and species that fall within one or more of the categories defined in Box 1 are of sufficient importance that they could be significantly affected by the Proposed Development.

Drawing upon the biological data assembled for the purposes of this EcIA (Section 4), the potential receptors in relation to the Proposed Development are discussed in Section 5.

3 DESCRIPTION OF THE PROJECT

3.1 Site Context and Description

The Site is ca.9.49 hectares (ha) and located within the townland of Knockgriffin, Midleton, Co. Cork. The Site is accessed off a local tertiary road via the Midleton Northern Relief Road and the R626 Mill Road. The Site is characterised by hedgerows / treelines which bound the Site to the south, east and west. There is an additional ca.190m of hedgerow along the northern boundary of the Site which adjoins the western field boundary. A lane enclosed by a mature hedgerow / treeline runs through the central region of the Site bisecting two (2No.) agricultural fields being utilised for arable crops. To the northwest of this laneway lies an additional two (2No.) improved agricultural grassland fields divided by a drainage ditch. The drainage ditch onsite runs along the northern hedgerow before traversing diagonally to the southeast corner of the grassland, diverting under the laneway, and emerging along the southern boundary of the eastern arable field.

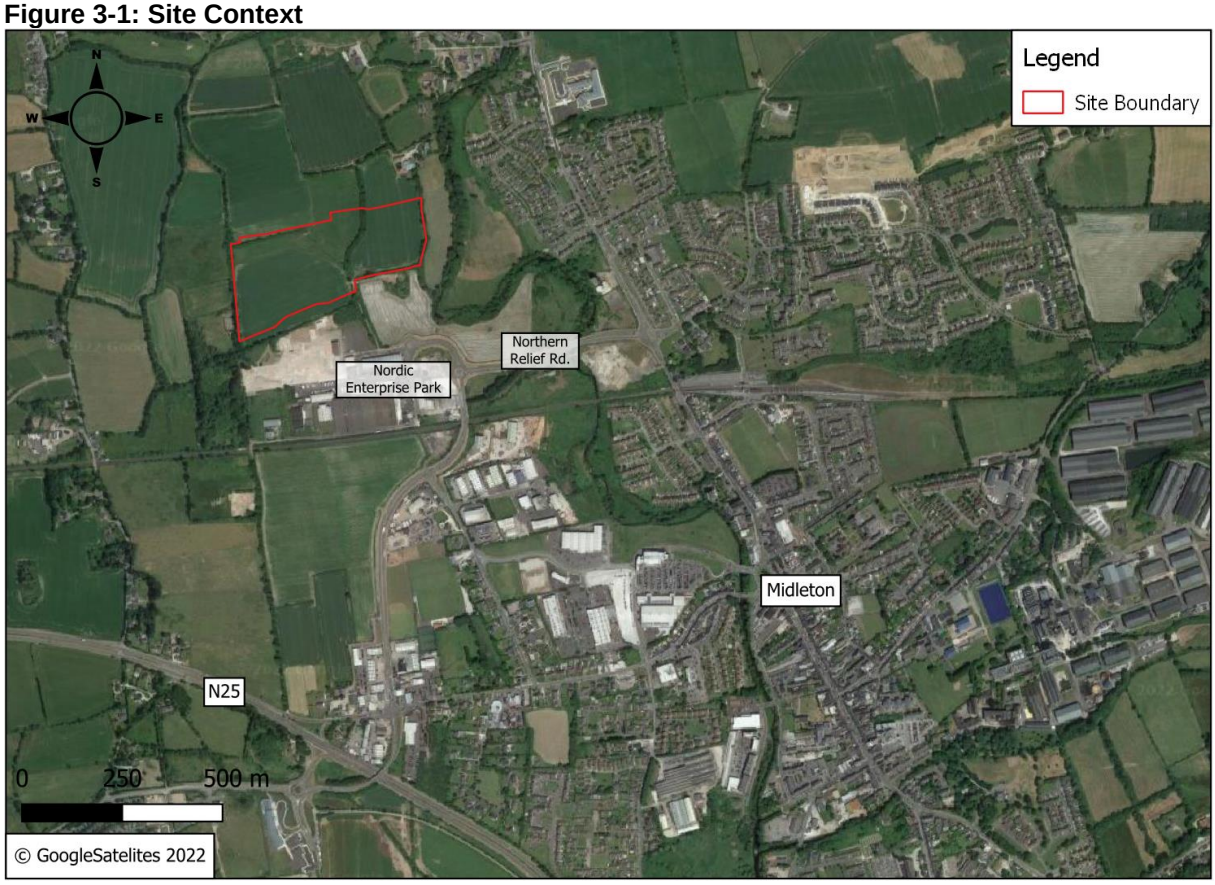
The immediate area surrounding the Site is dominated by agricultural fields with the exception of an industrial / commercial area to the south of the Site which is part of the Nordic Enterprise Park. The wider area surrounding the Site is characterised by urban and residential areas, agricultural fields and the Owenacurra River which flows to the east of the Site boundary. Midleton Railway station is also located across the river, approximately 800m southeast of the Site. The railway line runs directly south of the boundary, parallel to Nordic Enterprise Park.

The Site is located in the northwest region of Midleton town on lands zoned for '*residential purposes'* under the Cork County Development Plan 2022-2028 (Cork County Council, 2022). A very small area along the northern boundary of the Site is zoned for *'community'* (Cork County Council, 2022). The wider area surrounding the Site is zoned as "*Residential, Community"* and *"Green Infrastructure*". Refer to Table 3-1 below for a breakdown of adjacent land uses and Figure 3-1 for Site context.

Table 3-1: Adjacent Land Use

Boundary/Direction	Land Use
North	Agricultural Land
South	Commercial premises (Nordic Enterprise Park)
West	Agriculture and some Residential Properties
East	Owenacurra River, some Agricultural Land and Residential Properties

Figure 3-1: Site Context



3.2 Watercourses within the Vicinity of the Site

The Site is located within the Lee, Cork Harbour and Youghal Bay catchment [Catchment_ID: 19] and the Owenacurra_SC_010 subcatchment [Subcatchment_ID: 19_13] (EPA, 2022).

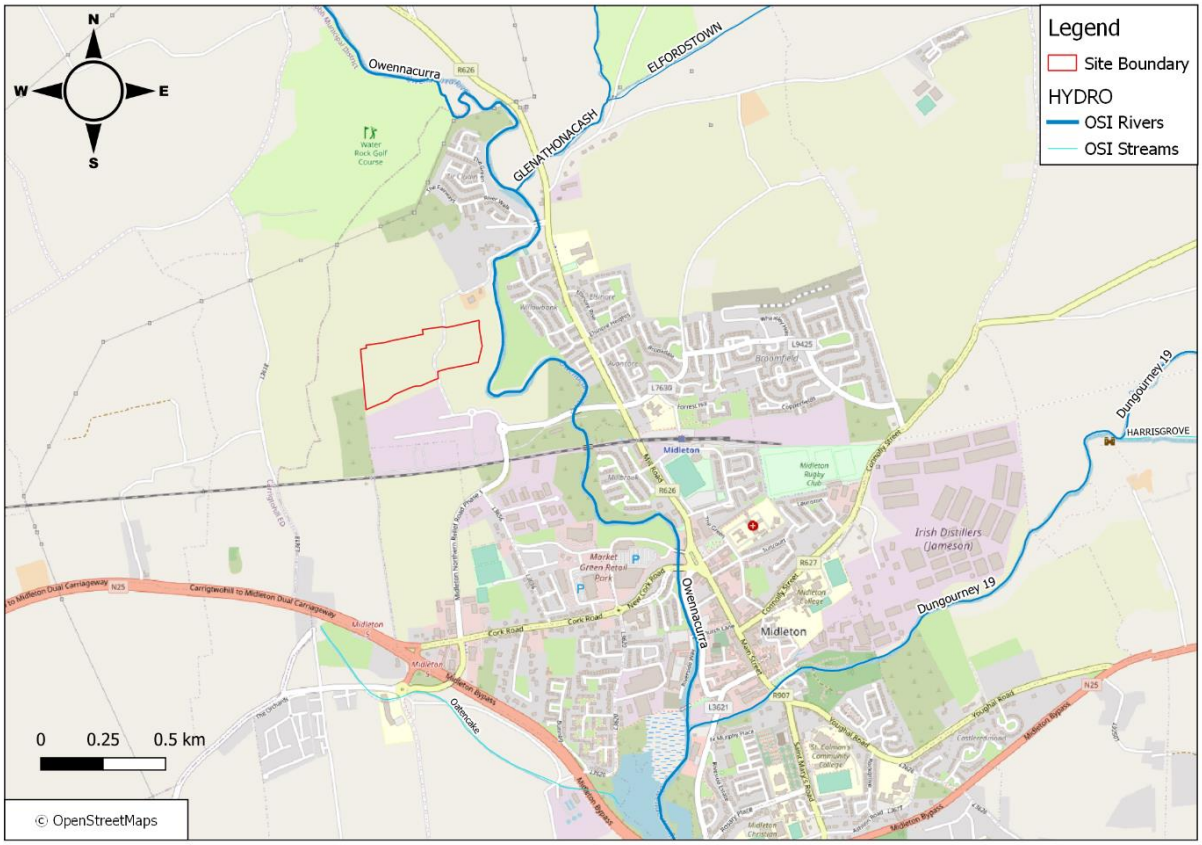
The nearest hydrological feature to the Site is the Owennacurra River, which is located ca.80m east of the Site at its closest point. The Owennacurra River flows in a southern direction for ca.2.3km before discharging into the Owennacurra Estuary, where it flows a further ca.3.5km into the North Channel and Great Island Estuary. The North Channel and Great Island Estuary continues for a further 3.7km before discharging into Cork Harbour.

Under the Water Framework Directive (WFD) 2000/60/EC, the EPA classifies the status and the risk of not achieving a good water quality status for all waterbodies in Ireland. According to the WFD Status 2013-2018, the most up-to-date data at the time of writing this report, the Owennacurra Estuary, the North Channel and Great Island Estuary and Cork Harbour, all have a '*moderate*' water quality status, and are considered to be '*at risk*' of not achieving good water quality status (EPA, 2022).

It should be noted that the immediate tributaries draining into these waterbodies are also considered to be '*at risk'* and have either been unassigned a water quality status or are classified as having '*moderate*' water quality (EPA, 2022).

The location of the key surface water features in the vicinity of the Site are illustrated in Figure 3-2 below.

Figure 3-2: Watercourses in the Vicinity



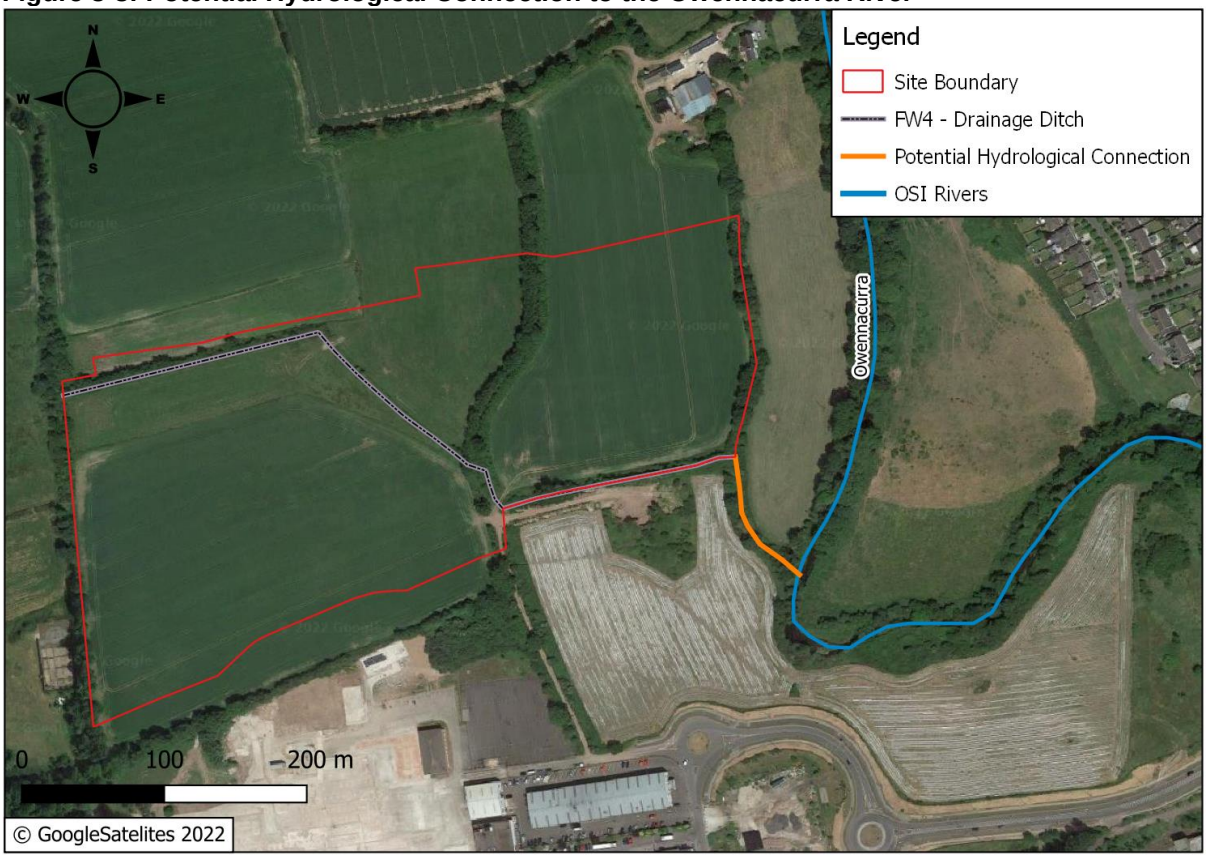
3.2.1 Drainage

The Site is bordered by a drainage ditch along the northern boundary of the Site and bisects the Site through the central region. At the time of the first survey the drainage ditch was dry, however, during the second survey the drainage ditch was wet with a small amount of water but there was no flow of water and the water appeared stagnant. Therefore, it can be concluded that the water level within the drainage ditch likely seasonally fluctuates.

Given the topography of the Site and following a review of aerial imagery of the drainage ditch network within the surrounding area of the Site, it is considered likely that this ditch connects to the Owennacurra River to the east which discharges to the Owennacurra Estuary.

The location of the onsite drainage ditches is illustrated in Figure 3-3 below.

Figure 3-3: Potential Hydrological Connection to the Owennacurra River



3.3 Proposed Development

The Proposed Development will comprise the following components;

- The construction of 330No. residential units;
- A neighbourhood centre to include creche, medical centre, pharmacy and café;
- The provision of landscaping and amenity areas and all associated infrastructure; and,
- Services including a new vehicular and pedestrian/cycle access point on to the permitted Services Link Corridor, landscaping, roads, parking, lighting and drainage at Knockgriffin, Midleton, Co. Cork.

The proposed Site Layout is presented in Appendix A.

3.3.1 Drainage

This section sets out a description of both the surface water and foul water drainage from the Proposed Development. It is proposed to connect to existing public infrastructure adjacent to the Site. Further details can be found in the Engineering Report prepared by O'Shea Leader Consulting Engineers and submitted with this application.

3.3.1.1 Surface Water

The surface water drainage design for the Proposed Development has been carried out in accordance with SuDS and the Department of the Environment's '*Recommendations for Site Development Works for Housing Areas*,' refer to the OSL Engineering Report for further details. During the operational phase, surface water from the Site will be collected and

attenuated onsite, with a peak discharge rate of 2l/s/ha for the 1 in 100 year rainfall event including an allowance for climate change. The existing drainage ditch onsite, running in a NW-SE direction will be culverted to the same flow rate, using a 600mm pipe. This drainage ditch out-falls at Owenacurra River and will eventually flow into Cork Harbour.

Surface water will pass through a grit sump and class 1 hydrocarbon interceptor before entering an attenuation tank, which is located to the north of the Site. The attenuation tank will discharge to the existing surface water sewer network which eventually discharges into Cork Harbour.

The remainder of the Site will be attenuated through permeable asphalt parking spaces with a permeable stone base which has also been designed for a 100-year rainfall event with a 20% allowance for climate change.

A swale will be constructed along the southern border of the Site (See Appendix D&E).

Further information can be found in the Engineering Report prepared by O'Shea Leader Consulting Engineers and submitted with this application. Refer to Appendix D for drainage layout drawings

3.3.1.2 Foul Drainage

A Pre-Connection Enquiry was submitted to Irish Water (Ref: CDS20001567). In response, Irish Water confirmed that, subject to a valid connection agreement being put in place, the proposed connection to the Irish Water Network could be facilitated following the completion of the network extension project to Carrigtwohill Wastewater Treatment Plant (WWTP) which is anticipated to be completed in 2023 (subject to change). This network extension project will involve the construction of a pump station and rising main to Carrigtwohill WWTP.

Further details can be found in the Engineering Report prepared by O'Shea Leader Consulting Engineers and submitted with this application.

3.3.2 Site Access

The Site will be accessed from the existing Nordic Enterprise Park via the Midleton Northern Relief Road. Future access to the Site will be via a new permitted link road in line with the Waterrock LIHAF initiative, as outlined in the Construction Environment & Waste Management Plan prepared by O'Shea Leader Consulting Engineers and submitted with this application

3.3.3 Landscaping

A Landscape Plan has been prepared by Derek Howlin Landscape Architect as part of the overall planning application. The landscape plan will include:

- The retention of existing trees and hedgerows where their future is sustainable. Where it is not possible to retain trees and hedgerows, mitigation planting will take place, as outlined in the Landscape Plan;
- A sensitive lighting strategy will be implemented as part of the Proposed Development to avoid disturbance to nocturnal species;
- Proposed new tree and hedgerow planting to compliment existing planting types throughout the area and make a positive contribution to the existing landscape character of the area; and,
- The protection and enhance of existing trees and hedgerows that are to be retained from unnecessary damage.

As outlined in the Landscape Plan there will be a net gain of 666No. trees planted as part of the proposed development and a net gain of 86m of hedgerow planted.

Full details can be found in the Landscape Plan accompanying this application.

3.4 Construction Procedures

During the construction phase, the methods of working will comply with all relevant legislation and best practice guidelines in reducing the environmental adverse effects of the works. Although construction phase adverse effects are generally of a short-term duration and are localised in nature, the adverse effects will be reduced as far as practicable through compliance with current construction industry guidelines.

A detailed Construction Environmental Management Plan (CEMP) will be prepared and submitted to Cork County Council for approval in advance of the works. The following Construction Industry Research and Information Association (CIRIA) guidance will be referred to and will be adhered to during the construction phase of the project to prevent water pollution:

- C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors (CIRIA, 2001);
- CIRIA C741- Environmental Good Practice on Site (4th edition) (CIRIA , 2015);
- Guidance for the Treatment of Badgers Prior to the Construction of National Road Schemes (NRA, 2006);
- Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes (National Roads Authority, 2006);
- Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (NRA, 2010); and,
- All works will be undertaken in accordance with the 'Requirements for the Protection of Fisheries Habitat during Construction and Development' (IFI, 2016).

Refer to the Construction & Environmental Management Plan prepared by O'Shea Leader Consulting Engineers which has been submitted with this application for further details.

3.4.1 Duration of Works

It is envisaged that construction works will take approximately four (4No.) years to complete. Working hours will generally be restricted to between 07:00 to 19:00 Monday to Friday and between 07:00 and 16:00 on Saturdays.

No construction work will take place on Sundays or Bank Holidays. In addition, no construction work will take place at night-time except where safety concerns necessitate it or if agreed in advance with the Planning Authority.

Refer to the Construction & Environmental Management Plan prepared by O'Shea Leader Consulting Engineers which has been submitted with this application for further details.

3.4.2 Earthworks

Earthworks will include the excavation of level platforms and foundations for each residential building and the importation of stone material for access roads etc. The design of road levels and finished floor levels has been carried out in such a way as to minimize cut/fill type earthworks operations.

3.5 Monitoring

An ecological clerk of works (ECoW) will inspect the Site in advance of construction works commencing and will undertake site inspections as required during the works, to ensure that they will be completed in line with the mitigation measures detailed within this EcIA, the NIS and the CEMP.

In addition, the ECoW will either deliver or provide the resident engineer with sufficient environmental information to deliver a Site induction to all personnel working onsite.

4 STUDY RESULTS

4.1 Desk Based Study

Prior to conducting any Site surveys, a desk-based review of information sources was completed. This baseline information provided a valuable insight into the types of flora and fauna that may occur onsite and allowed for the identification of features / habitats located off-site that may require further assessment.

4.1.1 Statutory Nature Conservation Sites

In accordance with the European Commission Methodological Guidance (European Commission, 2002) and Objective HE 2-1, HE 2-2 and HE 2-3 of the CCDP (Cork County Council, 2022), a list of European sites that could be potentially impacted by the Proposed Development has been compiled. Guidance for Planning Authorities prepared by the Department of Environment Heritage and Local Government (DoEHLG, 2009) states that defining the likely zone of impact for the screening and the approach used will depend on the nature, size, location and the likely effects of the project. The key variables determining whether or not a particular Natura 2000 site is likely to be negatively affected by a project are: the physical distance from the project to the site; the presence of impact pathways; the sensitivities of the ecological receptors; and the potential for in-combination effects.

Adopting the precautionary principle, all SACs and SPA sites within a 15km radius of the Site have been considered.

Four (4No.) Natura 2000 designated sites were identified within 15km of the Site (Table 4-1, Figure 4-1).

Figure 4-1: European Designated Sites within 15km

Table 4-1: Designated Natura 2000 Sites within 15km of the Site

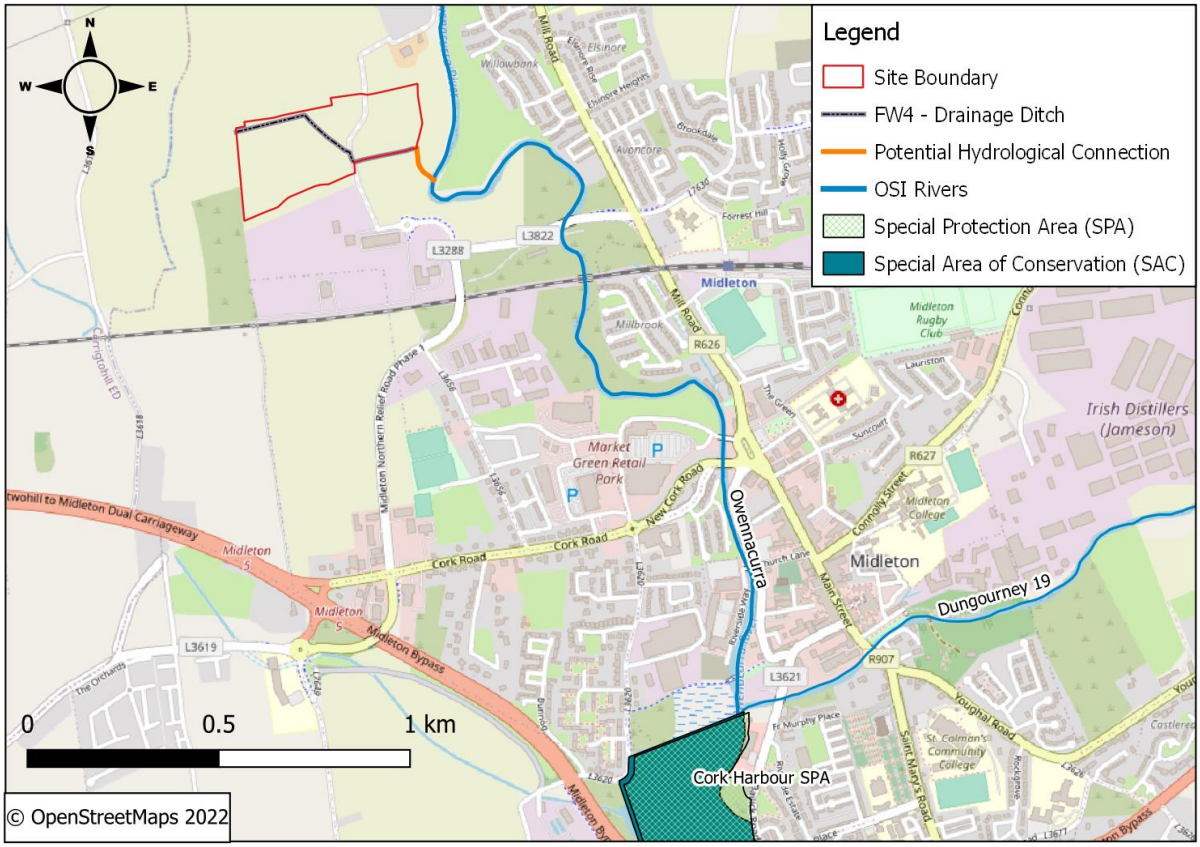
Site Name	Site Code	Distance (km)	Direction from the Site
Special Area of Conservation (SAC)			
Great Island Channel	001058	1.7km	SW
Blackwater River (Cork / Waterford) SAC	002170	12.1km	NW
Special Protected Areas (SPA)			
Cork Harbour	004030	1.7km	S
Ballycotton Bay	004022	13.9km	SE

The Site is not located within or directly adjacent to any Natura 2000 sites, however, the boundaries of two (2No.) SACs and two (2No.) SPAs are located within 15km from the Site.

Given the distance, intervening lands and lack of impact pathways between the Site and Blackwater River (Cork / Waterford) SAC and Ballycotton Bay SPA, these Natura 2000 sites have been screened out from further consideration.

However, the Site is located less than 100m west of the Owennacurra River, which is hydrologically connected to the Great Island Channel SAC and Cork Harbour SPA. As discussed in Section 3.2, the onsite drainage ditches are potentially connected to the Owennacurra River and this hydrological connection would mean that these Natura 2000 sites are only ca.2.4km downstream of the Site, refer to Figure 4-2 for context. Due to the potential impact pathway, via the onsite drainage ditches, further consideration has been given to assess potential impacts from the resulting from the Proposed Development within the NIS submitted alongside this report.

Figure 4-2 Potential Hydrological Connection between the Site and Designated Natura 2000 sites



4.1.2 Nationally Designated Conservation Sites

Nationally designated conservation sites within 5km of the Site were investigated as per Objective HE 2-1, HE 2-2 and HE 2-3 of the CCDP (Cork County Council, 2022). No Natural Heritage Areas (NHA) are located within 5km of the Site. However, four (4No.) proposed Natural Heritage Areas (pNHA) are located within 5km of the Site, refer to Figure 4-3 for context.

Figure 4-3: Proposed Natural Heritage Areas (pNHA) within 5km of the Site

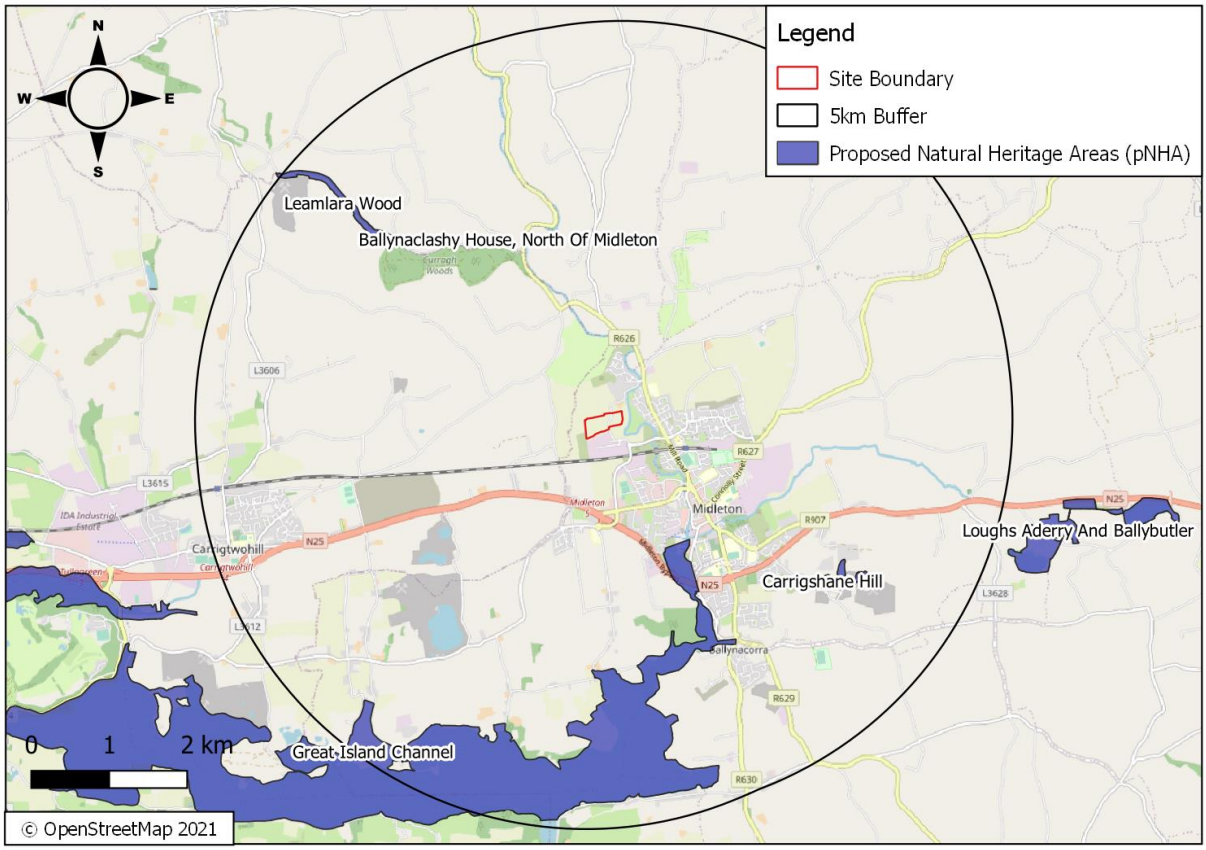


Table 4-2: Proposed Natural Heritage Areas (pNHA) within 5km of the Site

Site Name	Code	Distance & Direction	Qualifying Interests
Proposed Natural Heritage Areas			
Great Island Channel	001058	1.7km S	The pNHA covers the same area as the Great Island Channel SAC.
Ballynaclashy House, North of Midelton	000099	2.5km N	A nursery colony of the Whiskered Bat (*Myotis mystacinus)* was recorded in the attic of Ballynaclashy House in 1987. There were ca. 30 bats recorded roosting between the felt and the slates in the attic of the house.
Carrigshane Hill	001042	3.2km SE	This pNHA is located to the southeast of Midelton. The underlying geology of the site is limestone, and it is frequently outcropping. The site hosts a range of calcicole flora including thick-leaved stonecrop (*Sedum dasphyllum*) making this site one of the few locations for this plant in its native county.
Leamlara Wood	001064	3.3km NW	Leamlara Wood is located northwest of Midleton. The wood is dominated by Oak (*Quercus spp.*) but is also rich in Hazel (*Corylus avellana),* birch (*Betula spp.*) and willow (*Salix spp.)*. The primary use of this wooded area is shooting; however, it is also of local importance given the absence of many semi-natural oak woodlands in east Cork.

4.1.3 Protected Species

Table 4-3 provides a summary of records of legally protected or otherwise notable species that occur within a 2km grid square of the Site boundary (Grid Squares utilised in this study: W87S) (NBDC, 2022).

Table 4-3: Protected Species within 2km of the Site

Common Name	***Scientific Name***	**Date of last record**	**Designation**
Bird Species			
Arctic Tern	*Sterna paradisaea*	05/12/2017	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex I Bird Species Birds of Conservation Concern Amber List
Bar-tailed Godwit	*Limosa lapponica*	05/12/2017	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex I Bird Species Birds of Conservation Concern Amber List
Black-tailed Godwit	*Limosa limosa*	05/12/2017	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Common Greenshank	*Tringa nebularia*	05/12/2017	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Common Redshank	*Tringa totanus*	05/12/2017	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Red List
Common Shelduck	*Tadorna tadorna*	05/12/2017	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Common Starling	*Sturnus vulgaris*	22/05/2015	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Common Swift	*Apus apus*	22/05/2015	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Common Wood Pigeon	*Columba palumbus*	05/12/2017	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section I and Annex III Section I Bird Species

Common Name	***Scientific Name***	**Date of last record**	**Designation**
Dunlin	*Calidris alpina*	05/12/2017	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex I Bird Species Birds of Conservation Concern Amber List
Eurasian Curlew	*Numenius arquata*	05/12/2017	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section II Bird Species Birds of Conservation Concern Red List
Eurasian Oystercatcher	*Haematopus ostralegus*	05/12/2017	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Eurasian Teal	*Anas crecca*	05/12/2017	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section I and Annex III Section II Bird Species Birds of Conservation Concern Amber List
Eurasian Wigeon	*Anas penelope*	05/12/2017	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section I and Annex III and Section II Bird Species Birds of Conservation Concern Amber List
Great Cormorant	*Phalacrocorax carbo*	05/12/2017	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Great Crested Grebe	*Podiceps cristatus*	05/12/2017	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Herring Gull	*Larus argentatus*	05/12/2017	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Red List
House Sparrow	*Passer domesticus*	28/05/2016	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Little Egret	*Egretta garzetta*	05/12/2017	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex I Bird Species

Common Name	***Scientific Name***	**Date of last record**	**Designation**
Little Grebe	*Tachybaptus ruficollis*	05/12/2017	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Mallard	*Anas platyrhynchos*	05/12/2017	Wildlife Acts 1976 / 2000 EU Birds Directive Annex II Section I and Annex III and Section I Bird Species
Mew Gull	*Larus canus*	16/11/2016	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Northern Lapwing	*Vanellus vanellus*	05/12/2017	Wildlife Acts 1976 / 2000 EU Birds Directive Annex II Section II Bird Species Birds of Conservation Concern Red List
Rock Pigeon	*Columba livia*	22/05/2015	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section I Bird Species
Stock Pigeon	*Columba oenas*	21/04/2016	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Yellowhammer	*Emberiza citrinella*	14/04/2020	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Red List
Invasive species			
Indian Balsam	*Impatiens glandulifera*	23/05/2020	Invasive Species: High Impact Invasive Species
Japanese Knotweed	*Fallopia japonica*	12/07/2015	Invasive Species: High Impact Invasive Species
Nuttall's Waterweed	*Elodea nuttallii*	11/10/2018	Invasive Species: High Impact Invasive Species
Three-cornered Garlic	*Allium triquetrum*	28/06/2016	Invasive Species: Medium Impact Invasive Species
Amphibians			
Common Frog	*Rana temporaria*	27/08/2019	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex V

Common Name	***Scientific Name***	**Date of last record**	**Designation**
Terrestrial			
Eurasian Red Squirrel	*Sciurus vulgaris*	20/12/2015	Wildlife Acts 1976 / 2000
European Otter	*Lutra lutra*	23/11/2017	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II and IV

Note: Table includes records of protected species recorded within the last 10 years.

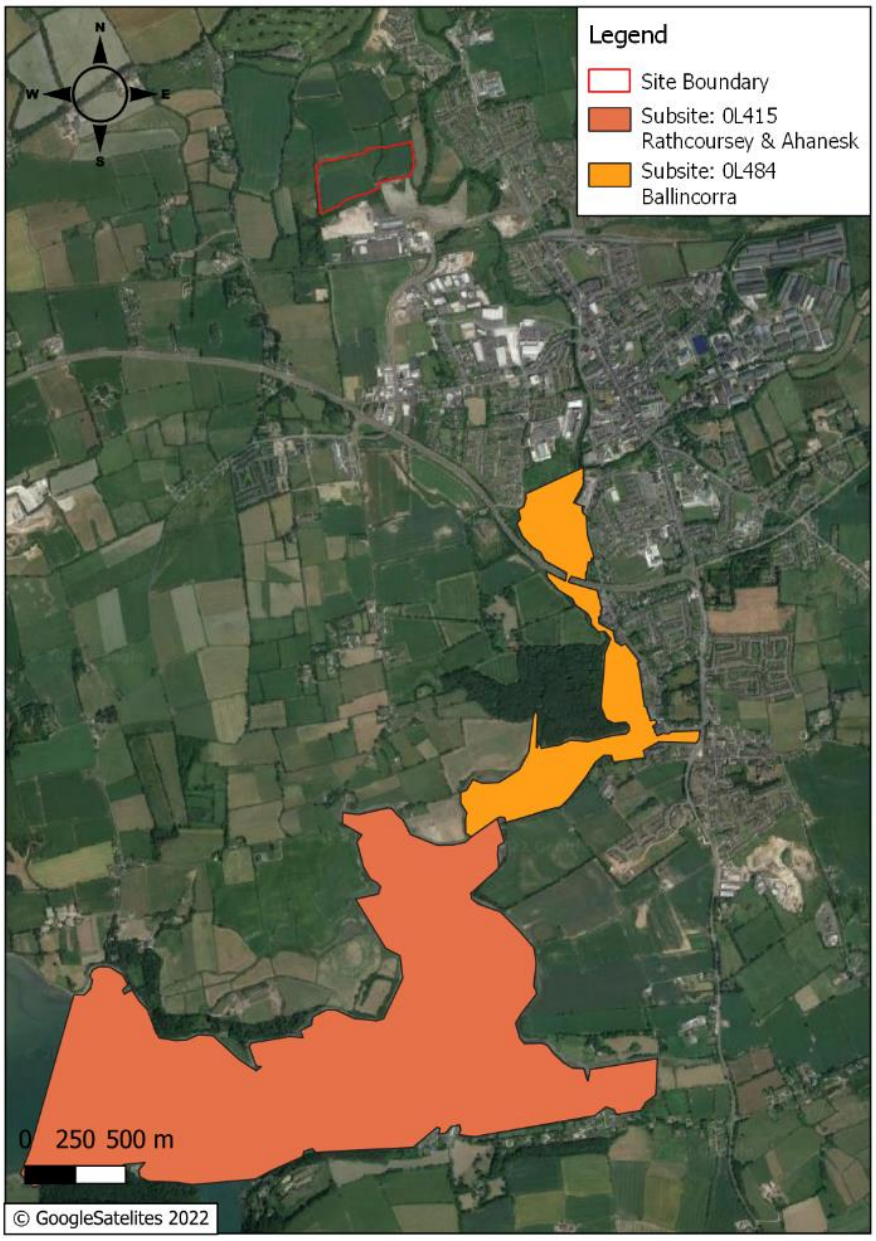
4.1.4 Desk Based Bird Information

A number of desk based resources and anecdotal evidence was compiled and reviewed in order to understand the baseline conditions of the Site in relation to wintering and breeding bird species.

4.1.4.1 I-WeBS Data – Wintering Bird Information

In order to understand the potential assemblages of wintering bird populations that tend to occur within the vicinity of the Site, a data request was submitted to the Irish Wetland Bird Survey (I-WeBS), which is coordinated by BirdWatch Ireland and under contract to the NPWS. The data request was for available data from the nearest two (2No.) subsites of Cork Harbour: The Ballynacorra (Subsite Code: 0L484), located ca.1.7km southeast of the Site, and the Rathcoursey & Ahanesk (Subsite Code: 0L415), located ca.2.9km south of the Site, as shown in Figure 4-4.

Figure 4-4: I-WeBS Subsites in the vicinity of the Site



The I-WeBS data for wintering seasons between 2009/2010 to 2019/2020 was provided by BirdWatch Ireland. The 5-year average of species, for the period 2015/2016 to 2019/2020 was assessed. A total of forty-six (46No.) species of birds were recorded. According to the Bird of conservation Concern in Ireland (BoCCI) (Gilbert, Stanbury, & Lewis, 2021), of these species:

- Twelve (12No.) species were green-listed – great black-backed gull, green sandpiper, greenshank, grey heron, Iceland gull, little egret, little grebe, little stint, moorhen, ring-billed gull, whimbrel, and yellow-legged gull;
- Twenty-two (22No.) were amber-listed - black-headed gull, common gull, common sandpiper, cormorant, great crested grebe, great northern diver, herring gull, kingfisher, lesser black-backed gull, light-bellied Brent goose, mallard, Mediterranean gull, mute swan, pintail, red-breasted merganser, ringed plover, shag, shelduck, spotted redshank, teal, turnstone and wigeon; and,

- Twelve (12No.) were red-listed - bar-tailed godwit, black-tailed godwit, curlew, dunlin, golden plover, goldeneye, grey plover, lapwing, oystercatcher, redshank, shoveler and snipe.

The 5-year mean (2015/2016 to 2019/2020) of these species at each subsite was reviewed and compared to the threshold levels of national and international importance. It was found that eleven (11No.) of these species have a 5-year average of less than one (<1), which included – common sandpiper, spotted redshank, green sandpiper, goldeneye, golden plover, Iceland gull, ring-billed gull, kingfisher, light-bellied Brent goose, shag and yellow-legged gull. The remaining species all had a 5-year mean of greater than one (>1); however, none of the bird species recorded in these subsites had populations that past the threshold levels of national or international importance.

4.1.4.2 Nearby Planning Permissions - Cork County ePlan

Cork County Council ePlan website was consulted for nearby planning permissions that undertook bird surveys in recent years (Cork County Council , 2022). Two (2No.) nearby developments for a mixed-use scheme (Planning Ref.: 217264 & 217265) received grant of permission by Cork County Council in September 2022, however, these are subject to appeals to An Bord Pleanála. These are located to the west of the Site boundary. A review of the planning documents shows that these developments undertook wintering and breeding bird surveys in 2021.

The winter bird surveys recorded only one (1No.) red-listed species – redwing, a none of the designated species of interest for the Cork Harbour SPA were recorded onsite. The breeding bird surveys recorded three (3No.) red-listed species – grey wagtail, swift and yellowhammer, and three (3No.) amber-listed species – sand martin starling and swallow. However, none of these species were recorded in significant numbers. The report concluded that '*the field surveys did not identify habitats that support important assemblages or significant populations of breeding or wintering birds.'* (KPMG, 2021).

4.1.4.3 Anecdotal Information from the Landowner on Habitats and Species

Mr. Paul Moore, the landowner and a committee member of BirdWatch Ireland, was consulted for information on former habitat use within the Site and on the avian species utilising the Site.

Prior to 2007, the fields were utilised as agricultural grassland and at this time Mr. Moore noted small numbers of curlew and black-tailed godwits foraging within the fields during the winter season. However, following the conversion of land from agricultural grassland to arable, the landowner has not seen these species utilising the Site.

Mr. Moore also noted a pair yellowhammer and a pair greenfinch have been seen nesting along the southern boundary of the Site.

4.2 Field Survey

4.2.1 Habitats

<u>Arable Crops (BC1)</u>

There are two (2No.) arable fields located within the Site boundary. The eastern field had previously been cultivated for the production of barley (*Hordeum vulgare)*; however, at the time of the most recent Site visit, this field was being cultivated and managed for the production of radishes (*Raphanus raphanistrum),* a catch crop. The western arable field was also previously cultivated for barley; however, there was no evidence that would suggest it was planted with a catch crop

In between the hedgerows / treelines and the crop, the understory and narrow field margins contained species such as bramble (*Rubus fruticosus),* bull thistle (*Cirsium vulgare*), prickly

sow thistle (*Sonchus asper*), bird-eye speedwell (*Vernoica persica*), stinging nettle (*Urtica dioica*), silverweed (*Argentina anserina*), field pansy (*Viola biocolor*), hogweed (*Heracleum sphondylium*), ladysthumb (*Persicaria masculosa*), hart's tongue (*Asplenium scolopendrium*), dog rose (*Rosa canina*), meadow buttercup (*Ranunculus acris*), and burdock (*Arctium* spp.).

Improved Agricultural Grassland (GA1)

There are two (2No.) fields of improved agricultural grassland in the north-western section of the Site. These fields are separated by a drainage ditch and connected via a section filled drainage ditch acting as a bridging point. Both fields have a mixture of common grass species present throughout the field which are actively grazed by cattle. Other species found during the Site walkover were creeping thistle (*Cirsium arvense*), hart's tongue (*Asplenium scolopendrium*), common rush (*Juncus effusus*), and creeping buttercup (*Ranunculus repens*).

Hedgerows (WL2) / Treelines (WL1)

The hedgerows and treelines form the majority of the Site perimeter and also transect the Site forming natural / semi-natural boundaries between the arable field. The eastern arable field is surrounded by a mature hedgerow and treeline containing common species such as hawthorn (*rataegus monogyna),* gorse (*Ulex europaeus),* elm (*Ulmus* spp.), common ash (*Fraxinus excelsior*), blackthorn (*Prunus spinosa*), sycamore (*Acer pseudoplatanus)*, and beech (*Fagus sylvatica*). The understory and narrow field margins around the arable crop contained species such as bramble*,* bull thistle, prickly sow thistle, bird-eye speedwell, stinging nettle, silverweed, field pansy, hogweed, ladysthumb, hart's tongue, dog rose, meadow buttercup, and burdock.

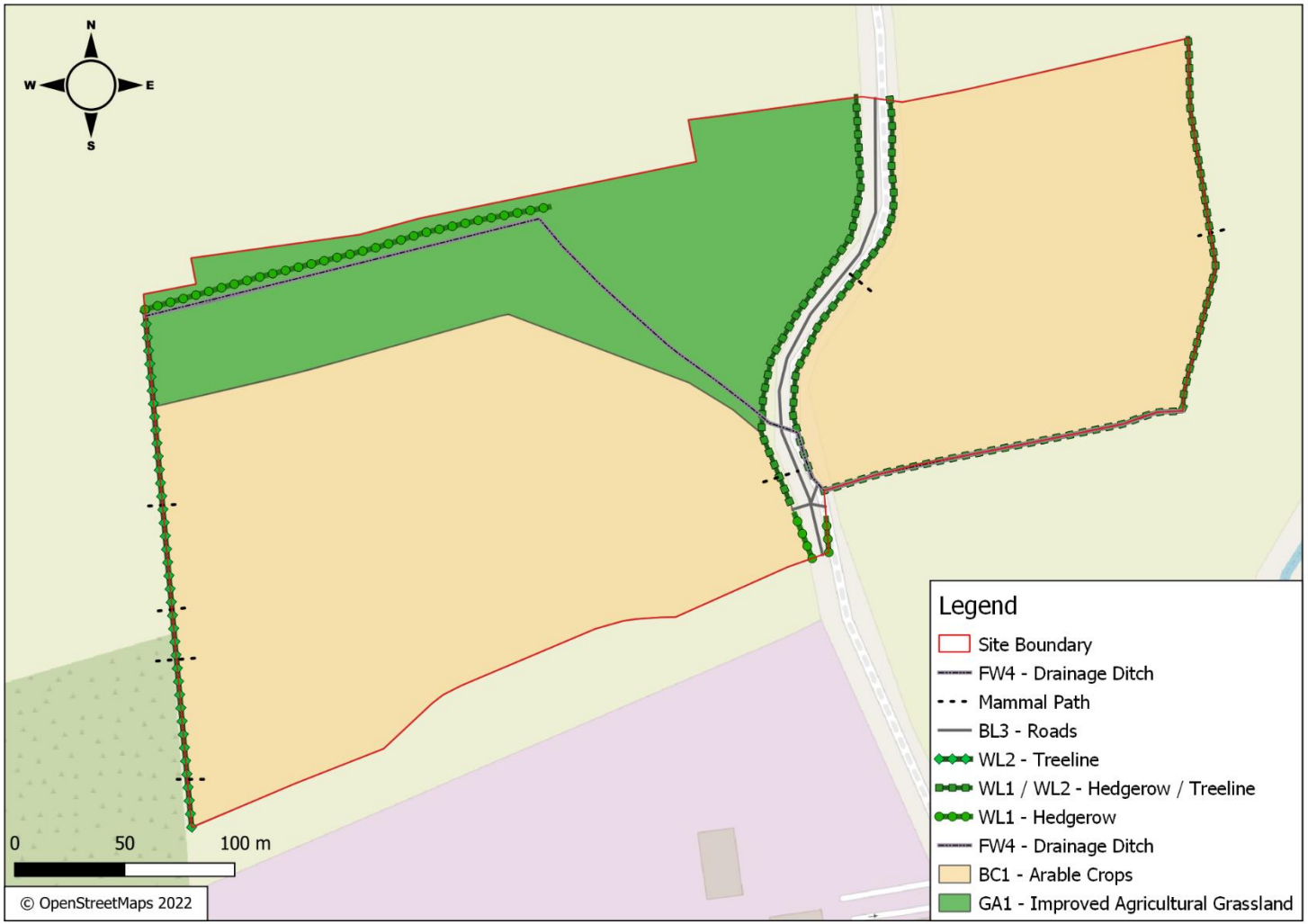
The common species found in the hedgerows and treelines of the western arable field consist of the same species as the eastern arable field; however, additional species such as alder (*Alnus glutinosa*) and grey willow (*Salix cinerea*) were identified in the treeline and black nightshade (*Solanum nigrum*), willowherb (*Epilobium* spp.), and hemlock (*Conium maculatum*) were found in the understorey of the hedgerows and treelines, and along the margins of the field.

A mature treeline encloses the lane which divides the Site in the central region. This treeline consists of species such as common ash, hawthorn, sycamore, gorse, and nettle. This treeline was recently cut back, and the tops of some immature trees have been cut.

Drainage Ditches (FW4)

A drainage ditch runs along the northern boundary of the Site and bisects the Site through the central region. The majority of this drainage ditch is fenced off except for a region where the two fields connect where there is evidence of cattle poaching. At the time of the first survey the drainage ditch was dry, however, during the second survey the drainage ditch was wet with a small amount of water but there was no flow of water and the water appeared stagnant. Furthermore, the drainage ditch was overgrown with common rushes (*Juncus effusus)* and European marshwort (*Helosciadium nodiflorum*).

Figure 4-55: Habitat Map



4.2.2 Notable Species

4.2.2.1 Amphibians

The NBDC contains records for common frog within 2km of the Site (NBDC, 2022). The only waterbody located onsite is the drainage ditch. The drainage ditch is however not considered to be suitable for breeding amphibian species, given the shallow depth of the water and the fact that the drainage ditch was overgrown with vegetation. The arable cropland is also considered suboptimal for foraging and sheltering amphibians during the terrestrial phase of their lifecycle.

4.2.2.2 Badgers

The NBDC holds no records for badger within 2km of the Site (NBDC, 2022). Furthermore, no evidence of badgers, in the form of feeding remains, scat, snuffle holes or sett entrances, was recorded during the habitat survey. Mammal paths were identified onsite, which are represented in Figure 4-4, however, it is considered that these paths were utilised by smaller mammals given their size and shape.

Nevertheless, it is reasonable to assume that as badgers are widespread across Ireland, they may utilise the Site for commuting and foraging purposes given the suitable coverage from mature trees, hedgerows and treelines onsite.

It should be noted that surveys completed west of the Site (Planning Ref: 217265) found low levels of badger activity, only finding one paw print onsite, and no badger holts were identified within the boundary of the study area (KPMG, 2021).

4.2.2.3 Bats

The NBDC does not hold records for any of the nine (9No.) species of bats present in Ireland within 2km of the Site over the past 10 years (NBDC, 2022). However, as per the NBDC landscape suitability metric, the eastern half of the Site and surrounding area is considered to be of moderate-high suitability for bats (Landscape Suitability Metric Scire: 28-36). The western half of the Site and the surrounding area is considered an area of moderate suitability for bats (Landscape Suitability Metric Scire: 21-28) (NBDC, 2022).

Bats are known to follow linear features as they commute through the landscape. Therefore, the hedgerows / treelines bordering and transecting the Site are suitable for this purpose. The arable field and improved grassland are also suitable habitats for foraging bat species.

During the bat surveys undertaken at the Site, five (5No.) of bat species were recorded onsite. These species were identified commuting and foraging onsite. Three (3No.) trees were identified as having potential bat roost features (PBFs); however, no bat roosts identified on the Site. The overall bat activity onsite was considered to be low-moderate.

Full details of the bat surveys completed can be found in Appendix C.

4.2.2.4 Birds

Breeding Bird Survey

During the breeding bird survey, a total of twelve (12No.) avian species were recorded onsite.

- Two (2No.) species were amber-listed - swallow and goldcrest;
- Ten (10No.) species were green-listed - blackbird, blue tit, buzzard, chaffinch, goldfinch, robin, rock pipit, rook, wren and woodpigeon; and,
- No red-listed species were identified onsite.

The species recorded are considered to be common within the Irish countryside and none of these species were present in significant numbers. No bird species were confirmed as breeding on the Site, however, species such as blackbirds, robins and wrens displayed territorial traits which may indicate that these species are possibly breeding in the locality. All other species were not considered to be breeding onsite at the time of the survey.

Bird Habitat Assessment

Breeding Bird Habitat Assessment

The majority of the Site is comprised of agricultural and arable fields. There are no areas of tall grassland / scrub that would be considered suitable for ground nesting bird species. Furthermore, the agricultural grassland field is currently utilised for grazing cattle, which would further reduce the suitability of the habitat for ground nesting bird species. However, the agricultural field and arable fields are considered to be suitable for foraging breeding bird species. The onsite drainage ditch was overgrown at the time of the survey and the water level was very shallow, therefore this drainage ditch is not considered suitable for breeding wetland and waterbird species. The hedgerows / treelines are considered suitable for a range of common nesting bird species. However, no nests were observed within these hedgerows / treelines during the bird habitat assessment.

Overall, the Site is considered to provide limited breeding bird habitat through treelines / hedgerows, however, the Site does provide suitable foraging habitat for common bird species. However, given the presence of similar habitat within the wider area, the Site is not considered to be a site of importance for any breeding bird species.

Winter Bird Habitat Assessment

As previously mentioned, the Site is currently comprised primarily of arable fields and agricultural grassland. The arable fields were planted with radish in the winder and with barley in the summer. These fields are considered to provide limited foraging potential to most wetland and waterbirds during the winter given the fact that the fields remain cultivated with catch crops during the winter season. However, the agricultural grassland does have the potential to provide suitable foraging habitat to wintering bird species.

Anecdotal evidence provided by Mr. Moore has shown that while bird species utilised the Site in the past, no species have been identified onsite since the conversion from agricultural grassland to arable crop production. Furthermore, the adjacent planning permissions (Planning Ref: 217264 & 217265) did not identify any wetland or waterbirds within their sites. The only species of note that was recorded during their surveys was redwing. The Site does provide suitable foraging habitat for redwing, however, based on a review of aerial imagery and a windshield survey of the surrounding area it can be concluded that there is suitable habitat for foraging redwing within the vicinity of the Site and the wider area.

Based on a review of the BirdWatch Ireland I-WeBS data, there are a number of species that utilise the Cork Harbour SPA; however, none of the species have a 5-year mean (2015/2016-2019/2020) that would indicate that the populations are nationally or internationally important. None of these species were recorded onsite during the October 2021 survey and none of these species were recorded in the winter bird surveys undertaken at the adjacent planning permissions (Planning Ref: 217264 & 217265). It should also be noted that the Site is separated from the Cork Harbour SPA by infrastructure and built land that is part of Midleton town.

Overall, the Site is considered to provide limited foraging potential to winter bird species and given the presence of similar habitat within the wider area the Site is not considered to be a site of importance for any wintering bird species.

4.2.2.5 Otter

The NBDC holds records for otters within 2km of the Site (NBDC, 2022). During the Site walkover the only watercourse identified onsite was a drainage ditch; however, given the low flow of water through the ditch and the high cover of vegetation and the absence of suitable prey species with the drainage ditch, the drainage ditch is unlikely to be utilised by otters.

Furthermore, no evidence of otter was identified onsite during the surveys. Therefore, the Site is not considered to be of value to otters.

4.2.2.6 Invasive Species

Although the NBDC holds records of high impact invasive species such as brown rat, Indian balsam and Japanese knotweed and medium impact invasive such as butterfly bush (NBDC, 2022), no invasive species were recorded onsite during the surveys.

4.2.2.7 Other Species

There were multiple mammal paths traversing the western boundary of the Site and multiple burrow entrances utilised by rabbits. It is considered that the hedgerows / treelines bounding the Site provide suitable foraging habitat for a range of commonly occurring species such as fox and hare. However, no other notable or protected species were identified or are considered likely to occur given the nature of the habitats and agricultural activities onsite and in the wider surrounding area.

5 CHARACTERISTICS AND POTENTIAL IMPACTS OF THE PROPOSED WORKS AND MITIGATION MEASURES

5.1 Sensitive Design

Specialist ecological input was a key element of the proposed design, to ensure that the design of the proposed works was extremely sensitive to valued ecological features that occur or may occur within the Site and the surrounding landscape. This is in line with policies Objective HE 2-3 and HE 2-5 of the CCDP (Cork County Council, 2022).

In order to minimise the potential for adverse effects on biodiversity as a result of the Proposed Development, the following measures have been incorporated into the project:

- All boundary hedgerows and hedgerows / treelines that are to be retained will be protected from unnecessary damage; and,
- A sensitive lighting strategy will be implemented as part of the Proposed Development to avoid potential disturbance to nocturnal species, refer to Section 5.3.2.2.

5.2 Potential Impacts

Based on the methodology that is set out in Section 2, Table 5-1 sets out the findings of the evaluation of important and legally protected receptors. Each receptor is assessed and a scoping justification for each receptor is provided for the construction and operational phases of the Proposed Development.

Table 5-1: Valuation of Potential Ecological Receptors

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
Protected Sites				
Natura 2000 Sites	European Communities (Natural Habitats) Regulations 1997 (as amended)	Internationally designated sites for conservation.	A Natura Impact Statement (NIS) has been prepared as part of the overall planning application in line with Objective BE 15-1 of the CCDP (Cork County Council, 2022). The NIS concluded that the Proposed Development would not cause any adverse effects on any European designated sites or any of their designated features of interest provided the mitigation measures incorporated within the NIS for the protection of water quality are adhered to (see Section 5.3.1.1) and that progression to Stage 3 of the Appropriate Assessment process (i.e. Assessment of Alternatives Solutions) was not considered necessary.	Natura 2000 sites have been scoped out from further consideration in the EcIA

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
Nationally Designated Sites	Wildlife Act 2000 (as amended)	Nationally designated sites for conservation.	There are no NHAs within 5km of the Site but there are four (4No.) pNHAs. Impacts on pNHAs can be discounted given the intervening urban and agricultural land and distances separating these sites from the Proposed Development. Additionally, the mitigation measures, to be implemented for the protection of Natura 2000 sites connected to the Proposed Development through the drainage ditch network onsite (as outlined in the NIS) will similarly protect any pNHAs hydrologically connected to the Site.	Natural Heritage Areas have been scoped out from further consideration.
Habitats				
Arable Crop (BC1)	N/A	Low Local Value	This is a common habitat type throughout Ireland and provides limited ecological value. This habitat is one of the principal habitats that will be lost. This habitat is not of significant conservation value and its loss is not considered to be significant.	This habitat has been scoped out from further consideration.
Improved Agricultural Grassland	N/A	Low Local Value	This a common and widespread habitat across Ireland that provides limited ecological value due to agricultural practices. This habitat is one of the main habitats that will be lost. The loss of this habitat is not considered to be significant.	This habitat has been scoped out from further consideration.
Hedgerows (WL2) / Treelines (WL1)	Wildlife Act 2000 (as amended)	Low Local Value	As part of the sensitive design for the Site layout, the majority of treelines / hedgerows bordering the Site are to be maintained and protected as part of the proposed works in line with Objective BE 15-6 of the CCDP (Cork County Council, 2022). Subsequently, mitigation measures are required to protect the retained vegetation onsite, refer to Section 5.3.1.2 below. Approximately 349m of hedgerow and eight (8No.) trees will be removed as part of clearance works along the northern boundary of the Site as well as the treeline enclosing the laneway which runs through the central region of the Site, refer to the Tree Survey Report submitted as part of the overall planning application for more details on the trees to be removed. It should be noted that the Landscape Plan, shows details of additional tree planting which will compensate for the loss of treeline to be removed, which will include the planting of 674No. trees and ca.435m of hedgerow. There will be an overall net gain of 666No. trees planted and ca.86m of hedgerow.	This habitat has been scoped in for further assessment.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
Drainage Ditch (FW4)	N/A	Low Local Value	This drainage ditch is considered to be of low ecological value, due to the fact that the water level within this drain was low and stagnant, the drain was overgrown by dense vegetation and there is evidence of cattle entering the drain. However, given the potential hydrological connection between the drainage ditch and the Owennacurra River, water mitigation measures will be implemented to prevent any impacts on water quality within the local watercourses downstream of the Site. Refer to Section 5.2.1.1 and 5.2.2.1 below. In addition, a swale has been included within the landscape design to maintain a biodiversity corridor for species that may have utilized the drainage ditch.	This habitat has been scoped in for further assessment.
Flora and Fauna				
Flora	N/A	N/A	No plant species protected under the Flora Protection Order were noted onsite. Overall, the impact of the Proposed Development on both habitats and flora is considered unlikely to be significant.	Flora has been scoped out from further consideration.
Bats	Wildlife Act 2000 (as amended) EU Habitats Directive Annex IV	Low Local Value	The bat surveys undertaken did not identify any bat roosts onsite within the hedgerow / treeline. The overall bat activity recorded onsite was considered to be low-moderate. Full details of the bat activity onsite can be found in Appendix C. The habitats onsite are considered suitable for foraging and commuting bats and bats were recorded to be commuting and foraging within the survey area. Therefore, a sensitive lighting strategy will be implemented as part of the Proposed Development ensuring that there will be no adverse effects to bats or other nocturnal fauna in the area. These mitigation measures will ensure that effects on potential bats that may utilise the retained hedgerows / treelines for commuting and foraging purposes are minimised. Refer to Section 5.3.1.2 below. Furthermore, vagrant nature of bats, mitigation measures will be implemented to ensure that no impacts occur to bats during the construction phase or operational phase, see Sections 5.3.1.4 and 5.3.2.2, respectively.	Bats have been scoped in for further consideration.
Badgers	Wildlife Act 2000 (as amended)	Low Local Value	No clear signs of badger activity or setts were noted during the field survey. Additionally, surveys carried out in west of Site (Planning Ref: 217265) found low levels of levels of activity present in the surveyed area, only one mammal print was found. However, given the presence of mammal paths onsite and the potential for the Site to be utilised by foraging and commuting badger, appropriate measures to prevent or minimise impacts on badger and other terrestrial mammals are required. Therefore, taking a	Badgers have been scoped in for further consideration.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
			precautionary approach, measures will be implemented during the construction works, refer to Section 5.3.1.5 below. This is in line with Objective BE 15-2 of the CCDP (Cork County Council, 2022). It should be noted that the lack of evidence of badgers utilising this Site indicates that the loss of habitats onsite will not have a significant effect on the species.	
Otter	Wildlife Act 2000 (as amended)	Low Local Value	The NBDC holds records of otter within 2km of the Site (NBDC, 2022); however, no signs of otters were noted during the field survey. The Site is not considered to be of value for otter given the absence of any suitable waterbodies for commuting or foraging purposes. Given the vegetation within and the stagnant nature of the drainage ditch onsite, it is reasonable to conclude that otters will not utilise the Site. It should be noted that the general mitigation measures that will be implemented onsite in relation to water quality, will ensure that there are no potential impacts on otters that may be utilising the wider river network. No species-specific mitigation is required.	Otters have been scoped out from further consideration.
Birds	<u>Nesting Birds</u> Wildlife Act 2000 (as amended)	Low Local Value	<u>Breeding Birds</u> The onsite trees, treelines and hedgerows are considered to provide suitable nesting habitat for breeding bird species, and the agricultural and arable fields are considered to have the potential to provide suitable foraging habitat for most common countryside bird species. Although, ca. 349m of hedgerow and eight (8No.) trees are being removed as part of the works, ca. 435m of hedgerow and 674No. trees of compensatory planting will be included as part of the Proposed Development. This detailed landscape plan will be implemented as part of the development and will provide suitable nesting habitats for bird species, in line with Objective BE 15-2 of the CCDP (Cork County Council, 2022). Although birds may be subject to some temporary disturbance during construction, this is not considered likely to be significant. Overall, is it is not considered that the Proposed Development will have a significant impact on nesting birds given the abundance of suitable habitat within the Site which will be protected as part of the works, and within the wider area. Furthermore, mitigation measures will be implemented in order to ensure no impacts occur to this species during the site clearance stage (see Section 5.2.1.3). This is in line with Objective BE 15-2 of the CCDP (Cork County Council, 2022). <u>Wintering Birds</u> As discussed in Section 4, the Site is not considered to be a site of importance for wintering bird species. Whilst the onsite habitats have the potential to support foraging winter bird species, given the presence of similar habitat within the wider area, the loss of habitat onsite will not result in any impacts to wintering bird species.	Breeding birds have been scoped in for further consideration.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
Amphibians	Wildlife Act 2000 (as amended) EU Habitats Directive Annex V	Low Local Value	The NBDC hold records for common frog within 2km of the Site. The onsite habitats are considered suboptimal for these species ad is s not considered that the Proposed Development will result in the loss of any habitat that is of value to these species. If any amphibians are discovered onsite during the construction works, all works within the affected area will cease and the project ECoW will be consulted in line with Objective HE 2-2 of the CCDP (Cork County Council, 2022). However, given the sub-optimal nature of the habitats onsite for amphibians, pre-construction surveys and specific mitigation regarding amphibians was not considered necessary.	This receptor has therefore been scoped out from further consideration.
Other Species	N/A	N/A	Given the presence of suitable habitats onsite and within the wider area for terrestrial mammals, standard protection measures for these species will be incorporated into the construction works in compliance with Objective BE 15-2 of the CCDP (Cork County Council, 2022), refer to Section 5.3.1.5. As outlined in Table 4-3, the NBDC does not contain any records of notable or protected aquatic species within 2km of the Site (NBDC, 2022). However, as there is a potential hydrological connection between the Site and the Owennacurra River via the drainage ditches onsite, there is potential for species within the river network or along its margins to be affected by water quality impairment without the implementation of appropriate mitigation measures (see Section 5.3.1.1 and Section 5.3.2.1). Taking the above into account, mitigation measures will be implemented during the construction and operational phase of the Proposed Development to ensure no adverse effects on water quality arise, refer to Section 5.3.1 and 5.3.2. This is in line with Objective BE 15-2 and 15-6 of the CCDP (Cork County Council, 2022). It is considered that the Proposed Development will not give rise to any significant impacts to other fauna, given the nature of the habitats that will be impacted by the proposed development. In addition, that the majority of trees / hedgerows onsite will be retained, and the proposed open areas incorporated within the landscape plan will ensure that areas for foraging and commuting fauna remain alongside connectivity to the wider landscape.	This receptor has been scoped in for further consideration

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
Invasive Species	N/A	N/A	No high impact invasive species or plant species listed on the Third Schedule of the 2011 European Communities (Birds and Natural Habitats) Regulations (i.e. species of which it is an offense to disperse, spread or otherwise cause to grow in any place) were noted onsite during the field surveys. The only medium impact invasive species identified onsite was sycamore, which are currently unregulated and do not require an invasive species management plan. However, in order to ensure no invasive species are introduced to the Site during the construction phase standard measures will be implemented (see Section 5.3.1.6). This is in compliance with Objective BE 15-7 of the CCDP (Cork County Council, 2022).	This receptor has been scoped in for further consideration.

5.3 Mitigation Measures

5.3.1 Construction Phase

During the construction phase, all works will comply with all relevant legislation and best practice to reduce any potential environmental impacts. A CEMP will be prepared by the appointed main contractor and will be submitted to the planning authority in advance of works commencing as detailed in Section 3.4.

The following mitigation measures will be incorporated and adhered to in order to ensure that the proposed works do not result in any contravention of wildlife legislation:

- All activities will comply with all relevant legislation and best practice to reduce any potential environmental impacts. The mitigation measures detailed within this EcIA and the NIS will be fully adhered to;
- The ECoW will either deliver or provide the resident engineer with sufficient environmental information to deliver a Site induction to all personnel working onsite. All personnel working onsite will be trained and made aware of the mitigation measures detailed within this EcIA and the NIS;
- An ECoW will inspect the Sites in advance of works commencing and will undertake Site inspections as required during the works to ensure that they will be completed in line with the mitigation measures detailed within this EcIA, the NIS and the CEMP, refer to Section 5.3.1 below; and,
- If protected or notable species are encountered during operations at the Site, the ECoW will be contacted for advice.

5.3.1.1 Protection of Water Quality during Construction

Suspended Solids, Cementitious Materials, Silt and Hydrocarbon Leaks / Spills

Potential pollutants resulting from the construction works include suspended solids, cementitious materials, silt and hydrocarbon leaks or spills.

Sediment and silt have the potential to clog fish gills, degrade spawning habitats and cover / smother aquatic vegetation and therefore, these pollutants could directly affect species within the Owennacurra River or downstream of the Site and indirectly affect aquatic, avian species within the estuary or along its margins by changing the populations of their food supply. In addition, hydrocarbons have the potential to change the chemical balance of a waterbody which can prove toxic to fish and other wildlife such as wetland and waterbirds. Wetland and estuarine habitats are also vulnerable to sediment mixing and contamination through these pollutants.

In order to ensure that the works do not have an impact on the Owennacurra Estuary and the wider river network in line with Objective BE 15-2 and 15-6 of the CCDP (Cork County Council, 2022), the following surface water mitigation measures will be implemented during the construction phase of the Proposed Development:

- Where the drainage ditch is crossed, the release of sediment over baseline conditions will be prevented by the use of silt traps, check dams and / or bunds. These will be put in place in advance of construction works and monitored on a regular basis;
- The temporary construction compound will not be constructed within 10m of the onsite drainage ditch and all materials shall be stored at the construction compound and transported to the works zone immediately prior to construction;

- Weather conditions will be considered when planning construction activities to minimise risk of run off the Site and any pouring of concrete will be carried in dry weather. Washout of concrete trucks will not be permitted on the Site;
- All storm water discharge during the construction works will be directed through hydrocarbon interceptors and grit sumps prior to reaching the storm water attenuation tank;
- All construction works associated with the storm drainage infrastructure onsite will be completed, cleaned and inspected in advance of connecting into the existing stream network;
- The proposed storm drainage system will be inspected following construction to ensure no cross connection exists between the proposed foul and surface water networks;
- Prior to any works commencing, all equipment required for construction will be checked to ensure that they are mechanically sound, to avoid leaks of oil, fuel, hydraulic fluids and grease;
- Fuels, lubricants and hydraulic fluids for equipment used on the construction site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to current best practice;
- Diesel tanks, used to store fuel for the various items of machinery, will be self-contained and double-walled;
- Refuelling will be carried out offsite or within a designated hardstanding area and will not be left unattended. All pumps, hoses etc will be checked regularly;
- Adequate spill kits including absorbent booms and other absorbent material will be maintained onsite;
- All contractor workers will be appropriately trained in the use of spill kits;
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the Site and properly disposed of;
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the Site for disposal or recycling;
- Any spillage of cementitious materials will be cleaned up immediately;
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the Site and properly disposed of; and,
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the Site for disposal or recycling.

Dust Impacts on Water Quality

The proposed works have the potential to temporarily elevate dust levels which could have an impact on local water quality should the dust be displaced to Owennacurra River or enter the runoff discharging to this waterbody. Therefore, to ensure dust emissions will have no significant impacts on water quality during the construction phase, the following mitigation measures will be adhered to:

- Any temporary Site roads will be surface dressed with crushed rock;

- In the event that the public road becomes soiled, the contractor will have available a sweeper to remove soil and debris promptly;
- Work areas and stockpiles will be sprayed during periods of dry weather in order to suppress dust mitigation from the Site;
- Wheel washing facilities will be installed close to the Site entrance to prevent mud from construction operations being transported on to adjacent public roads during major earthworks;
- Dusty materials will be transported appropriately e.g. sheeting of vehicles carrying spoil and other dusty materials;
- Material handling systems and Site stockpiling of materials will be designed and laid out to minimise exposure to wind; and,
- Loading and unloading will only be permitted in designated hard standing areas.

5.3.1.2 Protection for Trees, Hedgerows and Treelines

A number of individual trees and hedgerow / treelines onsite are to be retained and protected from unnecessary damage in line with Objective BE 15-8 of the CCDP (Cork County Council, 2022). During construction, care will be required to protect trees from both direct and indirect disturbance. The following protection measures will be adhered to during the works:

- All trees, hedgerows and treelines to be retained onsite will be enclosed by a 2.3m high protective barrier. These barriers will cover an area larger than the branch spread of the protected tree, with a radius of half the tree's height, measured from the trunk. These barriers will be clearly identified onsite by the attachment of all weather signs stating, 'construction exclusion zone – no access,' and will remain in place for the duration of the works to prevent accidental disturbance and define the limits for construction vehicles and other construction staff;
- Once the protective barrier has been erected onsite and prior to any works commencing, the consulting arboriculturist shall inspect the Site to ensure the root protection zone has been established correctly;
- If it is deemed appropriate to trim back retained trees to provide adequate access to approved construction works, all tree works should be undertaken by a competent and suitably qualified tree surgeon;
- Care will be required to prevent disturbance to root systems – if required, excavation within the protected area will be done by hand and backfilled as soon as possible. No roots exceeding 25mm will be cut / damaged;
- Where machinery access has to encroach areas within close proximity to the retained hedgerows / treelines, a Root Protection Area (RPA) will be established, and suitable ground protection will be put in place to prevent any significant soil compaction or root damage. This should take the form of suitable strength ground protection mats or cellular confinement system capable of supporting the appropriate weight;
- When tree removal is required in close proximity to retained trees, felling must be carried out in small sections to avoid damage to adjacent trees;
- Trench digging or other excavation works for services etc. will not be permitted within close proximity to retained trees and hedgerows unless approved and supervised using methods outlined in NJUG Volume 4: Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees;

- No materials, equipment or machinery will be stored within close proximity to retained hedgerows and trees. No discharge of potential contaminants should occur within 10m of any tree onsite or where there is a risk of run off into a Root Protection Area (RPA);
- In order for treeline protection measures to work effectively, all personnel associated with the operation of heavy plant machinery must be familiar with the above principles for the protection of treelines;
- Care will be taken when planning site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible. Proposed locations and routes on and off the Site should be supplied to the project arboriculturist;
- Notice boards, wires, etc. will not be attached to any trees. Site offices, materials and contractor parking will all be outside the Construction Exclusion Zone; and,
- The retained trees will be assessed following the completion of the construction works.

For more information regarding tree protection measures, refer to the Arboricultural Impact Assessment undertaken by County Tree Care Ltd. that has been submitted as part of the overall application.

A Landscape Plan has been designed and submitted as part of the overall application by Derek Howlin Landscape Architect to maintain a degree of connectivity to the wider landscape (where possible) through the retention of hedgerows / treelines onsite and additional planting. The ca. 549m of additional hedgerow and 674No. tree planting will be introduced onsite to compensate for the removal of ca. 349m of hedgerow and eight (8No.) trees onsite during the Site clearance works. The trees to be introduced throughout the Site include Lime (*Tilia cordata),* Foxglove Tree (*Paulownia tomentosa),* Bird Cherry (*Prunus padus),* Scots Pine (*Pinus sylverstris),* Snowny Mespill (*Amelanchier x grandiflora),* Callery Pear (*Pyrus calleryana)*, Hawthorn and Mountain Ash (*Sorbus aucuparia)*. Native hedgerows will also be retained and introduced in certain areas of the Site, the hedgerow species mix will comprise a mix of Mountain Ash, Whitebeam (*Sorbus aria),* Hawthorn, Blackthorn, Honeysuckle (*Lonicera periclymenum),* Hazel (*Corylus avellana),* Guelder Rose (*Viburnum opulus),* Yew (*Taxus baccata)* and Box Leaved Honeysuckle (*Lonicera pileate)*. The Landscape Plan is in line with the All-Ireland Pollinator Plan (2021-2025) and Objectives BE 15-1 of the CCDP (Cork County Council, 2022).

5.3.1.3 Measures for Breeding Birds

In order to ensure no impacts, occur to breeding birds as a result of the Proposed Development, the following mitigation measures will be put in place:

- Any vegetation clearance required will take place outside of the nesting bird season (1st March to 31st August), as per Section 40 of the Wildlife Act 1976, as amended by Section 46 of the Wildlife (Amendment) Act 2000;
- In the event that works need to be undertaken within the main breeding season, this would be undertaken in consultation with NPWS and under the supervision of the project ECoW;
- Prior to the vegetation removal the ECoW will inspect the Site and the management and removal of vegetation at the Site will be undertaken under the direction of the project ECoW in a systematic way to ensure that retained areas of vegetation are not damaged by the works; and,

- Should birds nest within the active working area during the construction phase, works within the area will stop within the area and the project ECoW will be consulted.

It should be noted that birds may be subject to some temporary minor disturbances during construction. However, as birds are a highly mobile species, should any birds be impacted, these birds will move away from the disturbance to a more suitable area, therefore, this is not considered likely to be significant.

It should be noted that the Proposed Development provides opportunities to enhance the local area for common breeding bird species. The following measures will be included:

- The Proposed Development will include the establishment of vegetation for breeding and foraging birds, as outlined in the Landscape Report;
- Birds boxes will be placed on suitably mature trees throughout the Site. The number and locations of birds boxes will be determined on the advice of the project ECoW; and,
- Swallow boxes will be installed on all buildings greater than three (3No.) storeys. The location and number of these will be determined on the advice of the project ECoW.

5.3.1.4 Measures for Bats

In order to ensure that the works in relation to the Proposed Development do not have significant impacts on bats, the following construction procedures and mitigation measures should be implemented. These measures are in line with the NRA (now TII) Guidance for Bats:

- No bats were confirmed to be roosting in the three (3no.) trees with Potential Roost Features (PRF) to be removed. Due to the vagrant nature of bats, it is required to confirm that no bats have since began roosting within the trees since the 2022 summer surveys took place. Therefore, prior to their removal, an updated tree inspection, and if deemed necessary updated emergence / re-entry surveys, will be required to confirm the presence / absence of roosting bats within the 3no. trees. If bats were found to be roosting within the trees after updated surveys, then further measures may need to be considered in order to protect bats against any disturbance. The NPWS will be consulted for advice and a derogation licence will be obtained if required;
- In the unlikely case that individual bats would use these 3no. trees as day or night roosts throughout the year, the 6no. PRF trees will be supervised by the ECoW and will be felled using hand tools only. The ECoW will visually inspect the trees following felling for the presence of bats. Should bats be found, the NPWS will be consulted;
- The findings of any required updated bat surveys will be submitted to the planning authority prior to the commencement of the clearance works; and,
- Where possible, the PRF trees which are to be removed, should be felled on mild days during the autumn months of October – November or during spring months of February-March (felling during the spring or autumn avoids the periods when bats are most active and without young).

5.3.1.5 Measures for Terrestrial Non-volant Mammals

Given the presence of onsite habitats with features that have the potential to support sheltering, foraging and commuting mammals, and in order to ensure that the works in relation to the Proposed Development will not have significant impacts on mammals, general

construction procedures and mitigation measures which are in line with the NRA (now TT) guidance for Badgers, will be undertaken:

- Should construction works be required outside of daylight hours, the appointed project ECoW will be consulted as required;
- Where deep excavations will be required onsite, appropriate measures to protect mammals from ingress will be installed; and,
- If unidentified burrows are identified within the works area during construction, the project ECoW will be contacted for advice.

5.3.1.6 Biosecurity Measures for Invasive Species

To mitigate against the unintentional introduction of invasive species during construction, the following biosecurity measures will be implemented. These measures are in line with NRA (now TII) Guidance for the Management of Noxious Weeds and Non-Native Invasive Plant Species (NRA, 2010):

- All vehicles, machinery and any other equipment used for the works will be washed prior to its use at the Site to prevent the import of plant material or seeds;
- Before machinery or equipment is unloaded at the Site, equipment will be visually inspected to ensure that all adherent material and debris has been removed;
- Any vehicles and machinery that are not clean will not be permitted entry to the Site;
- All materials to be imported to the Site including additional planting will be sourced from a reputable supplier and records of all material and supplies will be maintained; and,
- In advance of works, all site personnel will receive a toolbox talk with regards to invasive species.

5.3.2 Operational Phase

Operational phase impacts for the Proposed Development relate only to water quality and nocturnal species (i.e. bats and nocturnal mammals).

5.3.2.1 Protection of Water Quality during Operation

Due to the additional infrastructure onsite, there will be increased areas of hardstanding with the potential to generate increased storm water runoff. The design of the drainage system described in Appendix D will ensure that storm water flows will be restricted to greenfield runoff rates in the northern portion of the Site and there will be no potential for the impairment of water quality due to increased storm water runoff through the instalment of an attenuation tank and hydrocarbon interceptors with silt collection features. Furthermore, the storm drainage system will be cleaned and maintained on an on-going basis throughout its lifetime in a manner and frequency that is in line with best practice guidelines.

In addition, as outlined in Section 3.3, all foul and other wastewater will be discharged to the Carrigtwohill WWTP which following the completion of a network extension will have the capacity to facilitate the Proposed Development. The network extension, which involves the construction of a pumping station and rising main, is anticipated to be completed by 2023, however this is subject to change. This is in compliance with Objective BE 15-2 and 15-6 of the CCDP (Cork County Council, 2022)

5.3.2.2 Sensitive Lighting Plan for Nocturnal Species

Nocturnal mammals are impacted by lighting. Therefore, it is important that lighting installed within the Site is completed with sensitivity for local wildlife in mind while still providing the necessary lighting for human usage.

The lighting strategy has been designed to mitigate against any potential impacts on nocturnal species in line with the Bat Conservation Trust (BCT) Guidelines on 'Bats and Artificial Lighting in the UK (BCT, 2018). An Outdoor Lighting Report prepared by MHL & Associates Ltd. will be submitted as part of the overall planning application. This Outdoor Lighting Report includes a lux level assessment and layout design which involves avoiding excessive lighting. Where lighting is essential for safety and security reasons, the following measures have been taken into consideration during the lighting layout design:

- Avoidance of excessive lighting;
- The use of bat sensitive warm white 3000k luminaires;
- LED lantern shielding in the form of hoods/cowling is proposed to be installed along the areas, outlined in the lighting plan;
- Lighting will be dimmable from 12:00 midnight to 06:00 along the main spine road;
- Lighting will be aimed only where it is needed, with no upward lighting;
- Lighting will be directed away from landscaped areas and retained sections of hedgerows and trees;
- Lighting will be turned down / off when not required;
- The height of lighting columns should be reduced as much as possible, as lighting at a low level further reduces ecological impact; and,
- Following the installation of the lighting for the Proposed Development, the project ECoW will undertake a further Site inspection in order to check the lighting patterns and lux levels along the Site boundaries.

5.4 Analysis of 'In-Combination' Effects

The Habitats Directive requires competent authorities to make an appropriate assessment of any plan or project which is likely to have a significant effect alone or in-combination with other plans and projects.

The Habitats Directive requires that an appropriate assessment of any plan or project takes into consideration effect alone or in-combination with other plans and projects.

The Proposed Development will be completed in three separated phases and is comprised of ca.330 units, as outlined in Section 1.1. As outlined above, the Proposed Development is unlikely to have any direct or indirect significant adverse ecological effects with the implementation of specific mitigation measures.

Dawn Meats (Planning reference: 217265) and EMR Projects Ltd. (Planning reference: 217264) have submitted separate planning applications for residential developments to the east and the south of the Site during December 2021 Cork County Council granted planning permission for both of developments in September 2022. These residential developments are located less than 100m from the Proposed Development. It should be noted that these applications were accompanied by a joint Appropriate Assessment Screening (AA) and a composite Environmental Impact Assessment Report (EIAR). These developments were assessed for their potential for adverse effects on ecological receptors and the accompanying

reports concluded that the proposed residential developments will not have a significant effect on any ecological receptors within the vicinity of the Site.

The loss of the onsite habitats is not considered to be significant given the abundance of similar or better habitats in the vicinity of the Site. The lands surrounding Midleton are predominately made up of tillage and improved agricultural grassland, unlike the Site these areas are not bound by industrial estates and Midleton town meaning they receive less anthropogenic disturbances. The reports for the above developments (Dawn Meats & EMR) also reached a similar conclusion.

Taking the above into account and considering the nature of the Proposed Development within a zoned residential environment adherence to best practice guidance and the implementation of the mitigation measures outlined within this EcIA during both the construction and operational phase of the Proposed Development, it can be concluded there will not be any significant in-combination contribution by the project to possible adverse effects on ecological receptors

6 CONCLUSIONS

Based on the findings of a detailed desk-based study, a review of all the ecological information available for the Site and wider area and a field survey by MOR Ecologists, it is considered reasonable to conclude the following:

- The Site itself is currently considered to be of low local ecological value;
- The Site is currently zoned as '*residential'* with a small area along the northern boundary of the Site zoned for *'community'*. The Site is located in an area predominantly made up of arable cropland and improved agricultural grassland.
- The Site is not considered to be of high suitability or a site of importance for any Annex I or Annex II species or Red listed birds; and,
- The Proposed Development will not result in any significant impacts on ecological receptors identified both onsite and in the surrounding area following the implementation of appropriate mitigation measures.

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APPENDICES

APPENDIX A

DO NOT SCALE FROM THIS DRAWING. USE FIGURED DIMENSIONS IN ALL CASES.
VERIFY DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECTS IMMEDIATELELY.
THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTS SPECIFICATION.
THIS DRAWING IS COPYRIGHT AND MAY ONLY BE REPRODUCED WITH THE ARCHITECTS PERMISSION.

NOTES

SITE SUMMARY DETAILS:

RED-LINE AREA : 9.49 ha
NO. OF UNITS : 330
NETT DENSITY (UNITS/ha) : 35.7 appx.

LEGEND:

DWELLINGS
- House Type A, 'ACHILL'
- House Type B, 'ARAN'
- House Type C, 'GARNISH'
- House Type D, 'INISHEER'
- House Type E, 'LAMBAY'
- House Type F, 'VALENCIA'

OTHER ACCOMODATION
- Type J, 'BOFFIN', Maisonette
- APARTMENT BLOCK TYPE 'A'
- APARTMENT BLOCK TYPE 'B'

SITE FACILITIES
- A Playground
- A1 MUGA, Courts
- B Bin Store
- C Bicycle Parking
- D Communal Recycling Facility
- Street Light

LEGEND: LANDSCAPE
- Active Open Space
- Passive Open Space
- Private Rear Gardens
- Proposed Tree
- Proposed Hedgrows

DRG. SERIES

REV	DATE	DRN	NOTES

Gittens Murray Architects Ltd

JOB
WATERROCK HOUSING,
MIDLETON, CO.CORK.

CLIENT
HAVEN FALLS LTD.

TITLE
PROPOSED
SITE LAYOUT PLAN

DATE 06.10.2022	SCALE 1:500 @A0
DRN SH	CHECKED MG

GMA
ARCHITECTS
INTERIOR DESIGNERS
5 William St.
Kilkenny,
TEL: (056) 7753933
FAX: (056) 7753909
email: gdarch1@eircom.net

DETAIL NAME
DETAIL SCALE

JOB NUMBER	DRWG NUMBER	REVISION
20/033-LRD-S-001		

APPENDIX B

Comhairle Contae Chorcaí
Cork County Council

Pleanáil agus Forbairt,
Halla an Chontae,
Bóthar Charraig Ruacháin,
Corcaigh T12 R2NC.
Fón: (021) 4276891 • Faics: (021) 4276321
R-phost: planninginfo@corkcoco.ie
Suíomh Gréasáin: www.corkcoco.ie
Planning & Development,
County Hall,
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Haven Falls Ltd
c/o Tom Halley
McCutheon Halley
6 Joyce House
Barrack Square
Ballincollig
Cork
P31 YX97

8th August 2022

Further to the details received on the 17th June 2022 and the recent LRD Meeting of the 13th July 2022, the Planning Authority's Opinion under Section 32D of the Act on the proposed large scale residential development at Water Rock, Midleton is set out below.

In accordance with Section 32D of the Planning & Development (Large-scale Residential Development) Act 2021 it is considered that the following issues need to be addressed in the documents submitted in order to result in them constituting a reasonable basis for an application:

Appropriate Assessment

With regard to the NIS it is noted that no survey work has taken place in respect of presence of Qualifying interest birds of the SPA on site or within the upper reaches of the Owenacurra. Further consideration of same should be carried out having regard to available information including surveys carried out in respect of other schemes in the area such as Midleton FRS and NPWS data. This information shall be used to inform the assessment.

The NIS should consider potential impacts associated with silts and pollutants to enter the on-site drain which is hydrologically connected to the Owenacurra. Details in relation to the location of the contractors compound and building materials should also be submitted and assessed as part of the NIS.

Ecology

The loss of so many trees and hedgerows and an established drainage ditch is a concern to the Planning Authority and should be addressed.

Revised proposals are required in the applications details to integrate these features of the landscape into the scheme in so far as possible as they are important ecological corridors for wildlife and link into the Owenacurra corridor to the east.

Having regard to the extensive tree loss and habitat loss on site revised documents should include a detailed bat survey and bird breeding survey (as limited assessment of same has been carried out as part of EcIA). The Bat Survey shall follow guidelines for Professional Ecologists Good Practice Guidelines 3rd edition and detailed methodology and results shall be presented in this assessment. Survey results shall also be submitted including maps illustrating any potential roost sites, foraging areas and commuting corridors and associated numbers.

Where tree / hedgerow loss is unavoidable, this shall be identified on the landscaping plan and shall also be fully assessed as part of the Ecological Impact Assessment. Any tree/hedgerow loss will need to be adequately ameliorated in line with CDP Objective BE 15 – 6 supporting the principle of biodiversity net gain. The revised EcIA should include a detailed assessment of biodiversity loss / gains and shall be quantified within the assessment.

Proposals shall integrate provisions of Green Infrastructure Objectives GI 14 – 1 and GI 14 – 3 of the County Development Plan whereby a Green Infrastructure Strategy shall be submitted. These objectives require that new development proposals contribute to the protection, management and enhancement of the existing green and blue infrastructure connections with the wider environment. The green infrastructure strategy should tie in with the Landscaping Plan, and Ecological Impact Assessment including biodiversity enhancement proposals to ensure that proposals supporting the principle of biodiversity net gain (CDP Objective BE 15 – 6).

Cork CDP 2022 Objectives that require further consideration

Applicant requested to update EcIA and NIS to have regard to new Cork County CDP 2022 having particular regard to the following Objectives.

- Objectives GI 14 – 1 and GI 14 – 3 includes a requirement for new developments to prepare a **Green Infrastructure strategy**.
- Objective BE 15 – 6 to ensure that proposals support the principle of **biodiversity net gain**.
- Objectives BE 15 – 8 seek **protection of mature tree groups and mature hedgerows.**
- Objective GI 14 – 9 discourages proposals necessitating **removal of extensive amounts of trees, hedgerows**.
- Objective BE 15 – 2 seeks to **protect and enhance areas of local biodiversity value, ecological** corridors and features of the county's ecological network including **hedgerows and treelines**.

Archaeology

In relation to archaeological impacts, the documents submitted do not constitute a reasonable basis on which to make an application. In order to address this, the applicant is required to engage the services of a suitably qualified archaeologist licensed under the National Monuments Acts 1930–2004) to carry out an Archaeological Impact Assessment. This archaeological assessment shall:

- examine the known and predicted archaeological environment
- examine the proposed development
- evaluate the proposed development in terms of the impact (direct and indirect) of the proposed works on existing or predicted archaeology
- carryout a geophysical survey followed by a program of archaeological testing
- propose a strategy to mitigate the adverse effects of the development on the archaeological heritage

No subsurface work should be undertaken in the absence of the archaeologist without his/her express consent.

The archaeologist should carry out any relevant documentary research and inspect the site for archaeology including post medieval archaeology. A geophysical survey across the proposed development site shall be carried out by a suitably qualified Geophysical archaeologist. The results of the Geophysical survey and field survey shall be submitted to County Archaeologist to review with a program for archaeological testing for written approval prior to submitting for the licence. The archaeological shall carried out the agreed program of archaeological testing (under licence). If significant archaeology is identified during the testing program the County Archaeologist shall be immediately contacted. The results of the testing shall be submitted to the County Archaeologist to agree a mitigation program. If significant archaeological is identified, mitigation measures will be required such as preservation in situ/redesign, testing, archaeological monitoring.

The Archaeological Assessment report shall contain the above information, with clearly labelled drawings (including a plan of monument /archaeological features identified (if any) overlaid with the proposed development with agreed buffer zone) and relevant photographs. Relevant experience of the consultant archaeologist should be cited within the Assessment.

In addition to the matters above, the following additional details should accompany the planning application:

Design/Layout Considerations

Submit fully detailed drawings of all proposed structures in accordance with the Planning & Development Regulations. Detailed drawings of housing which demonstrate adequate amenity standards are required. Representative site sections will be required to fully illustrate the relationship between residences.

With regard to the layout presented, it is considered that consideration be given to the following suggested amendments:

- the location of apartment blocks 1 & 2 and the adjoining maisonette in the South Western corner of the site remain too close to the site boundary with not enough separation distances to the boundaries.

-Vehicular traffic to serve these apartments (blocks 1 & 2) and adjoining maisonette block has to travel through the featured courtyards where development of home-zone play areas should be developed.

-All ground floor apartments should ideally have their own independent front door (to facilitate aged community / step down) with landscaped buffer separation. It would seem difficult to achieve same to the best advantage in the current layout in this location.

- Developed designs should endeavour to draw inspiration from the rich building heritage present in nearby Midleton Town with regard to character setting and creating a sense of place and avoidance of an urban corporate image. Revised documentation is required to demonstrate same.

-Submit detailed boundary treatment proposals.

-Greater consider should be given to the provision of bicycle parking.

Movement /connectivity

Revised drawings are required to include cross sections showing connection points to the proposed URDF park to the East taking account of the level differential. Levels on site shall be modified to assist the tie in with same. The tie-in point should be at 12.270m to suit existing levels on the side of the proposed housing development to the west of Water-Rock Linear Park. This is following CCC final design of the linear park due for imminent submission to Part 8 planning.

The site access road running north-south within the development from the new proposed LIHAF infrastructure road should include a similar cross section as the LIHAF infrastructure.

The pedestrian/cycle route seems to terminate at creche on the East side. This issue should be rectified as it is crucial this element fully links to the greenway.

Along the greenway which runs east-west through the site, revised documentation needs to demonstrate the creation of a safe environment to encourage walking/cycling over car use within the proposed development. At the Greenway adjacent to Road 12 and Road 16 there are concerns regarding the number of driveways that interact with the greenway. There is a likely conflict with vehicles reversing from driveway and cyclists, especially children. Note the relationship of this route with the park and the proposed primary school adjoining to the west.

More detail is required on how vehicles will interact with greenway with road 3 and 4 demonstrating how cyclists will be protected. This east-west route is important for connection to adjacent developments, schools, recreation areas and for access to Inter Urban Route 1.

In relation to cycle parking, lockable secure facilities should be provided to serve the apartment buildings and have regard to County Development Plan requirements and emphasis on sheltered parking.

Bike parking should be provided at Rock Square and other amenity zones.

Traffic and Transport

Traffic counts were carried out on 11th of January 2022. There is a concern that this does not accurately represent traffic as Covid restrictions were still in place. This element may require a comprehensive survey over a number of days for more detail, necessitating revisions to the Traffic and Transport Assessment. (Please note Mott McDonald carried out a 7 day survey in March for Irish Rail for comparison purposes).

Community/Education

Further justification is necessary to ensure that the documentation submitted in respect of childcare provision responds appropriately to national guidance and that the drawings and details submitted reflect the proposal.

Infrastructure

Submit a statement to demonstrate compatibility with Part 8 infrastructure upgrades for the wider Water rock area.

Public Lighting

The applicant must ensure that the design, materials, and installation comply with the Cork County Council Public Lighting Manual and Product Specification 2021, which is available on the CCC web site, www.corkcoco.ie. (Please note the section on design and in particular all the items in Appendix H and especially Figure 4.). The developer must design, install, and use materials that comply with this document.

The following Items as contained in Appendix H, Figure 4, of the Cork County Council Public Lighting Manual and Product Specification 2021 shall apply to this development: - M1, M2, M3, M4, M5, M6, M9, M14, M19, M22, M23, M25, M27 and M28.

The applicant is to ensure that the columns being installed are in accordance with the CCC Public Lighting manual 2021. Plain tubular stepped columns are not acceptable.

All lighting points shall be accessible by means of a hydraulic hoist, for maintenance purposes. Such a hoist requires a minimum paved vehicular access of 3.5 metres. In exceptional circumstances, if such access is not available special arrangements shall be made such as the use of hinged columns. These should be clearly identified on the public lighting drawings.

There are some clashes between the location of lights and trees throughout this development. The Applicant needs to carry out a cross check between the location of the lights and trees so as to ensure that no light is **within 10m of a tree** so that the lights can operate effectively. This needs to be reflected in a re-design of both the lights and the landscaping. As part of the design process, the location of the columns will have to be cross referenced with the location of landscaping items, especially trees, so that the effective operation of the public lighting will not be interfered with when the when the trees mature in 20 / 30 years time.

The Horizontal Illuminance (lux) for "Internal Estate LHS" within Lighting Report "Design A" is not achieving P3 Class lighting standards. The lighting associated with this development is not achieving these standards and needs to be revised. The applicant is responsible for the design and in ensuring that the lux levels are achieved on site.

The Horizontal Illuminance (lux) for "Isolated Paths LHS" within Lighting Report "Design A" is not achieving P4 Class lighting standards. The lighting associated with this development is not achieving these standards and needs to be revised. The applicant is responsible for the design and in ensuring that the lux levels are achieved on site.

The Horizontal Illuminance (lux) for "Isolated Paths RHS" within Lighting Report "Design B" does not have the correct Grid image. Applicant to revise.

The Horizontal Illuminance (lux) for "Spine Road" within Lighting Report "Design C" is not achieving P2 Class lighting standards. The lighting associated with this development is not achieving these standards and needs to be revised. The applicant is responsible for the design and in ensuring that the lux levels are achieved on site.

The applicant shall aim to site public lighting columns generally at the back of the footpath in public ground, and where appropriate, columns shall be located on the boundaries between properties and not in locations where could affect the potential to extend driveways in the future.

The Applicant shall provide a separate power source for public lighting related to the Crèche/Apartments/Commercial premises. This power source shall be from the private development and not from the housing estate public lighting system

The applicant must demonstrate and ensure that there is no light pollution (obtrusive light – as per ILP Guidance note GN10:2011) outside their property that would affect third party properties and members of the public, including drivers travelling on the public road.

The Applicant shall show within the Public Lighting Report, "Conflict Zone" at the entrance to the proposed development. Applicant shall design for conflict zone and install a public light opposite the T-junction entrance to this development and shall forward a design report along with lux levels plot for the entrance.

Other Issues

Consistency is required across all documents and drawings/particulars submitted.

Include a map of areas to be taken in charge.

In relation to obligations under Part V of the Planning & Development Act 2000 (as amended) in respect of social/affordable housing, submit evidence to support the requirement for 10% relating to the date of purchase of the land. In addition, a schedule of unit types being allocated and indicative costs being provided for each unit type will be required.

A Flood Risk Assessment has been referenced in the submitted documents however same was not received. Please include this detail.

Update the Construction and Environmental Management Plan to ensure it accounts for the length of permission required. In this regard, the documents shall clarify the duration of the proposed permission, with a phasing proposal.

EV charging points should be placed in various locations throughout.

A SuDS approach to stormwater management is to be adopted. Recharge measures should be used where possible (not just attenuation).

Given the karst nature of the aquifer, any proposed attenuation would need to utilise robust structures.

Please note that neither the taking place of an LRD meeting nor the provision of an LRD opinion shall prejudice the performance by the planning authority of its functions under the legislation and cannot be relied upon in the formal planning process or in legal proceedings.

Noel Sheridan
S/Senior Planner
9th August 2022

APPENDIX C

October 2022

Bat Survey Report

Proposed Housing Development

On behalf of
Haven Falls Ltd.

Knockgriffin Midleton, Co. Cork

MALONE O'REGAN ENVIRONMENTAL

QUALITY
I.S. EN ISO 9001:2015
NSAI Certified

MALONE O'REGAN

Form ES - 04

MALONE O'REGAN ENVIRONMENTAL

Ground Floor – Unit 3
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Tel: +353- 1- 567 76 55
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Title: Bat Survey Report, Proposed Housing Development, Haven Falls Ltd., Knockgriffin Midleton, Co. Cork

Job Number: E1860

Prepared By: Henry Tennyson **Signed:**_____

Checked By: Dyfrig Hubble **Signed:**_____

Approved By: Dyfrig Hubble **Signed:**_____

Revision Record

Issue No.	Date	Description	Remark	Prepared	Checked	Approved
01	27/10/'22	Report	FINAL	HT	DH	DH

Bat Survey Report

Proposed Housing Development

Haven Falls Ltd.

Knockgriffin Midleton, Co. Cork

Contents

FIGURES

TABLES

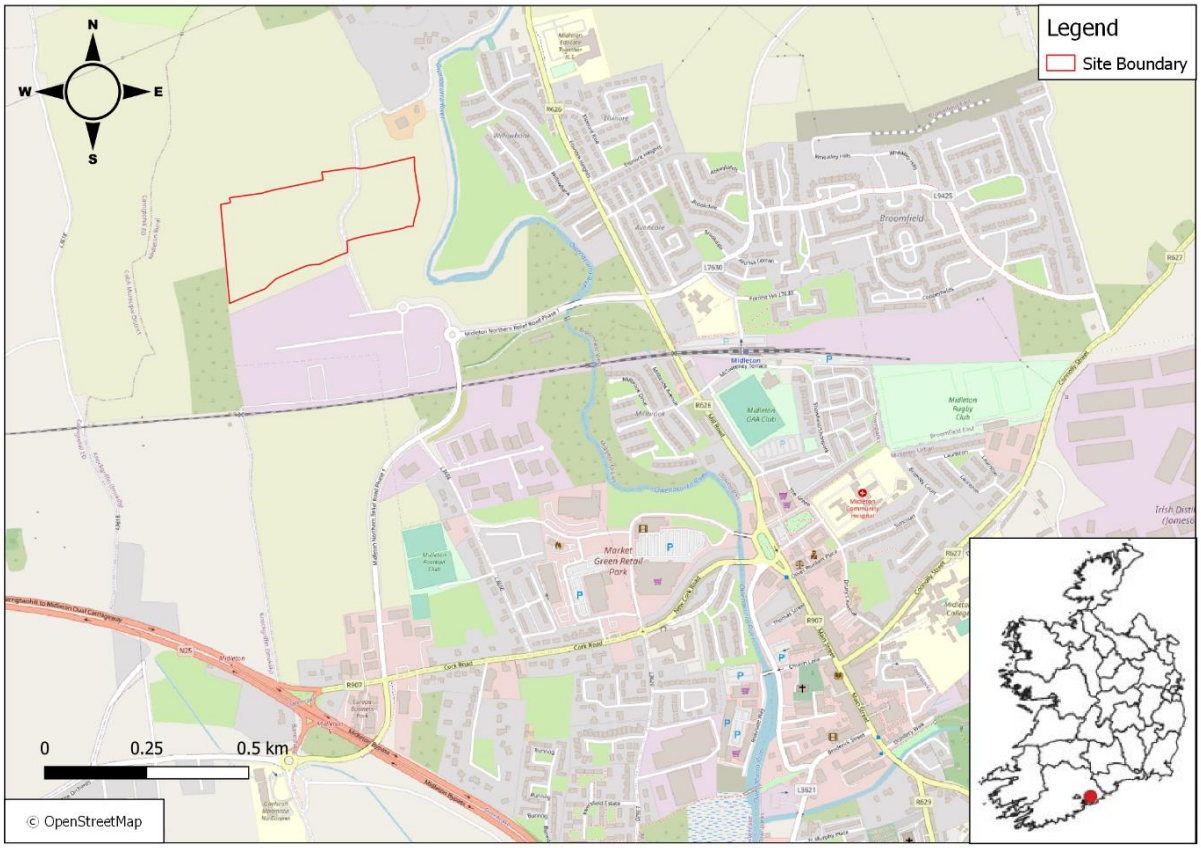
1 INTRODUCTION

1.1 Background

This Bat Survey Report has been prepared by Malone O'Regan Environmental (MOR) on behalf of Haven Falls Ltd. ('the Applicant'), to present the findings of bat surveys undertaken at the site for a planning application to Cork County Council for proposed housing development (Proposed Development) at Knockgriffin, Midleton, Co. Cork (OS Reference W 86997 74666.

The Site is ca.9.49 hectares (ha) and located within the townlands of Waterrock and Knockgriffin, Midleton, Co. Cork. The Site is located in the northwest region of Midleton town on lands zoned for 'residential purposes' under the Cork County Development Plan 2022-2028 (CCC, 2022). A very small area along the northern boundary of the Site is zoned for 'community' (CCC, 2022).

Figure 1-1: Site Location



1.2 Relevant Legislation

All Irish bat species are protected by law under the Wildlife Act 1976 and its subsequent amendments. They are afforded full protection under this act, which makes it a criminal offence for anyone without a licence to:

- Kill, injure or handle a bat;
- Possess a bat (whether alive or dead);
- Disturb a roosting bat; and,
- Damage, destroy or obstruct access to any place used by bats for shelter, whether they are present or not.

In addition to domestic legislation, bats are also protected under the EU Habitats Directive (92/43/EEC). All Irish bats are listed in Annex IV of the Habitats Directive and the lesser horseshoe bat is further listed under Annex II, which make it an offence to:

- Deliberately capture, injure or kill any bat; or,
- Deliberately disturb a bat, in particular any disturbance which is likely;
    (a) To impair their ability:
        (i) To survive, to breed or reproduce, or to rear or nurture their young; or,
        (ii) To hibernate or migrate.
    (b) To affect significantly the local distribution or abundance of the bat species; or,
- Damage or destroy a breeding site or resting place of a bat.

Therefore, the destruction, alteration or evacuation of a known bat roost is a notifiable action under current legislation and a derogation license must be obtained from the National Parks and Wildlife Service (NPWS) before works can commence.

Furthermore, it should also be noted that any works interfering with bats and especially their roosts, including for instance, the installation of lighting in the vicinity of the latter, may only be carried out under a license to derogate from Regulation 23 of the Habitats Regulations 1997, (which transposed the EU Habitats Directive into Irish law) issued by NPWS.

1.3 Statement of Authority

The bat inspection survey and subsequent report were undertaken and prepared by the following MOR personnel, Mr. Dyfrig Hubble and Mr. Henry Tennyson.

This report was prepared by Henry Tennyson, Environmental Consultant. Henry has a B.Agr.Sc. in Agri-Environmental Sciences and a M.Sc. in Marine Biology. Henry is a qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Henry has experience undertaking bat surveys and assessments within his role at MOR, including undertaking training run by Wildlife Acoustics for training in Kaleidoscope Pro Software.

This report was checked and approved by Dyfrig Hubble, Associate Director - Ecologist, has a B.Sc. (Hons) in Tropical Environmental Science and an M.Sc. Environmental Forestry. Dyfrig is a full member of the Chartered Institute of Ecology and Environmental Management. Dyfrig has over 15 years' experience working in the ecological consultancy sector including habitat appraisals and specialist species specific surveys. Dyfrig has extensive experience in undertaking surveys for bats and in the preparation of survey reports for various projects within both the UK and Ireland.

1.4 Species Background

There are eleven recorded bat species in Ireland, nine (9No.) of which are considered resident and two (2No.) which are considered vagrants (Please see Table 1-1 below).

Table 1-1: Status of Irish Bat Species

Bat Species		**Irish status**	**European Status**
Common Name	**Scientific Name**		
Resident Bat Species			
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Least Concern	Least Concern

Brown Long-eared Bat	*Plecotus auritus*	Least Concern	Least Concern
Common Pipistrelle	*Pipistrellus pipistrellus*	Least Concern	Least Concern
Lesser Horseshoe Bat	*Rhinolophus hipposideros*	Least Concern	Least Concern
Whiskered Bat	*Myotis mystacinus*	Least Concern	Least Concern
Daubenton's Bat	*Myotis daubentonii*	Least Concern	Least Concern
Lesser Noctule	*Nyctalus leisleri*	Least Concern	Least Concern
Nathusius' Pipistrelle	*Pipistrellus nathusii*	Least Concern	Least Concern
Natterer's Bat	*Myotis nattereri*	Least Concern	Least Concern
Vagrants			
Brandt's bat	*Myotis brandtii*	Data Deficient	Least Concern
Greater Horseshoe Bat	Rhinolophus ferrumequinum	Data Deficient	Near Threatened

1.4.1 Types of Bat Roosts

Bats were originally cave and tree dwelling animals, but many now use buildings to roost within. Buildings are highly important as roosting sites for all Irish bat species as they use buildings for all roost types. Most significant in terms of roosts in buildings are maternity roosts, but cellars and attics can serve as hibernation sites for bats. Roosts within buildings can far exceed the numbers encountered in trees, bridges, caves or cliffs and roosts of over 1,000 bats have been recorded in buildings (National Roads Authority, 2006).

Bats are social animals, and most species congregate in large colonies during the later spring / summer. These colonies consist mostly of females, with some juvenile males from the previous year. Male bats normally roost individually or in small groups meeting up with the females in the late autumn, when it is time to mate. In summer, bats seek warm dry buildings in which they can give birth and suckle their young. In winter, they seek out places with a constant low temperature and high humidity where they can become torpid and hibernate during adverse weather conditions. However, bats do not hibernate continuously during winter and will awake and hunt during mild nights when there are insects available and it is energetically advantageous to forage (Collins, 2016).

One purpose of daytime tree or building inspections is to determine the potential of bat roosts within the survey area. Due to the transient nature of bats and their seasonal life cycle, there are a number of different type of bat roosts. Where possible, one of the objectives of the surveys is to be able to identify the types of roosts present, if any.

Table 1-2 below defines the various types of bat roosts and which time of year they are utilised.

Table 1-2: Types of Bat Roosts (Collins, 2016)

Roost Type	Definition	Time of Survey
Day Roost	A place where individual bats or small groups of males, rest or shelter in the daytime but are rarely found by night in the summer.	Anytime of the year
Night Roost	These are roosts which are used as resting places for bats between foraging bouts. They also provide retreats for bats from	Anytime of the year

	predators or during inclement weather conditions. They also function as feeding perches and may be important for socialising. May be used by a single bat on occasion or it could be used regularly by the whole colony.	
Feeding Roost	A place where individual bats or a few bats rest or feed during the night but are rarely present by day.	Anytime of the year
Transitional Roost	A place used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.	Outside the main maternity and hibernation periods.
Mating Site	Most bat species mate in late summer / autumn but pregnancy does not occur until the following spring. During this time males will take possession of a cavity in a building, tree, bridge, cave or mine and attract females to these sites to establish a harem. Male bats call both from a perch and in flight in much the same manner that male birds sing.	Late Summer into Autumn
Maternity Site	Maternity roosts are the most significant roosts and they are predominantly all female aggregations that are formed from late May onwards and remain as a relatively cohesive unit until late August. Not all female bats give birth annually. These females that do bear young in a given year avail of a suitable roosting site within a building, tree and sometimes cave (or equivalent). The young are flightless for several weeks and hence are vulnerable to dangers such as tree felling and restoration, reinforcement or demolition of structures such as buildings and bridges.	Summer Months
Hibernation Site	Bats have a high metabolic rate and in temperate countries, such as Ireland, flying insects are not available in sufficient numbers during winter to sustain bats. Therefore, bats 'hibernate' during winter. In hibernation sites, bats are often completely inactive for several days and are extremely vulnerable to disturbance by human activities due to the time taken for them to become sufficiently active to allow escape. Hibernation may extend from November to the end of March, during which time bat activity will take place sporadically.	Winter Months in cold weather conditions
Satellite Roost	An alternative roost found in close proximity to the main nursery colony and is used by a few individuals throughout the breeding season.	Summer Months

1.5 Purpose of Survey Work

The implication of these legislative policies is that the Proposed Development needs to take account of the potential effects on bats. Survey work is necessary to establish whether the species are currently present in areas where suitable habitat exists and in areas where bats have previously been recorded. Survey work also enables appropriate mitigation measures to be incorporated into the design of the project and ensures that there are no adverse effects on the conservation status of the species.

Survey work was deemed necessary based on desktop surveys and suitable habitat being identified during the initial walkover of the site.

2 METHODOLOGY

The methodologies used to establish the presence / potential presence of bats are summarised below.

2.1 Desk-Based Studies

A desk-based study was undertaken to identify records of bats within the survey area. The following sources of information were reviewed:

- The National Parks and Wildlife Service (NPWS) website was consulted to obtain the most up to date detail on conservation objectives for the Natura 2000 sites relevant to this assessment (National Parks and Wildlife Service, 2022);
- Aerial mapping was reviewed to identify any habitats and features likely to be used by bats. Maps and images of the Study Area and general landscape were examined for suitable foraging or commuting habitats including woodlands and forestry, hedgerows, treelines and watercourses;
- The National Biodiversity Data Centre (NBDC) website was consulted with regard to bat species distributions and bat habitat suitability index (NBDC, 2022); and,
- An Arboricultural Impact Assessment Report by County Tree Care Ltd. (Earle, 2021)

2.2 Field Based Studies

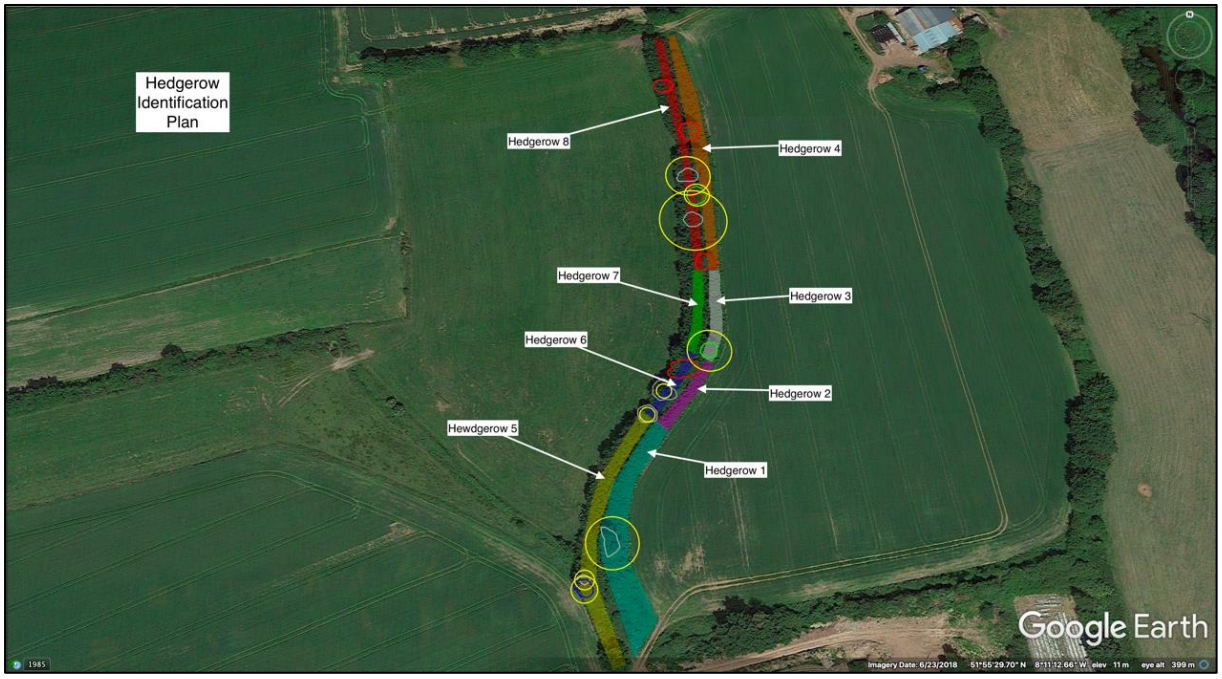
The survey design was informed by previous experience and the following publications:

- *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (National Roads Authority, 2006);
- *A Conservation Plan for Irish Vesper Bats* Irish Wildlife Manual No. 20 (McAney, K. et al., 2006);
- *Bat Mitigation Guidelines for Ireland*. Irish Wildlife Manuals, No. 25 (Kelleher, C. & Marnell, F. , 2006) a publication by the NPWS; and,
- *Bat Surveys for Professional Ecologists - Good Practice Guidelines* (3rd ed.). London: The Bat Conservation Trust (Collins, 2016).

2.2.1 Tree Inspection

An arboricultural assessment of the trees within the Site was undertaken in September 2021 by qualified arboriculturist George Earle of County Tree Care Ltd. (Earle, 2021). The arboriculturist inspection was carried out from ground level and observations noted.

Figure 2-1: Excerpt of Tree Survey Drawing



A tree inspection for potential roost features of the trees to be removed within the Site was undertaken by 2no. MOR Ecologists on 18th of August 2022 (See Figure 2-1).

The tree inspection aimed to identity potential ecological constraints in relation to bats from the proposed development design. As part of the walkover, the trees to be removed within the Site were assessed for the presence of features that could be utilised by roosting bats, using close-focusing binoculars. The following criteria were used:

- Presence of natural cavities, splits, cracks, loose bark and rot holes in the trunk or boughs of the tree;
- Presence of dense and woody ivy (*Hedera helix*) growth that could be used by bats for roosting;
- Evidence of bat droppings, which may also be seen as a black streak beneath holes, cracks, branches, etc;
- Presence of smooth edges with dark marks and urine stains at potential entrances to roosts;
- Adjoining habitat which are likely to be important to bats, including the river corridor, and hedge / treelines within the survey area that offer a variety of potential foraging, roosting and commuting opportunities for bats; and,
- Adjoining potential roosts / known roosts identified. This raises the likelihood of a tree being of benefit as bats may move roosts if the roost becomes too hot or cold during roosting and a nearby alternative roost is highly desirable.

2.2.2 Dusk Emergence Survey

The dusk emergence survey was undertaken on 18th August 2022 by three (3no.) MOR Ecologists.

The surveyors were positioned at VP1 to VP3 to capture the areas within the Site that were determined to have bat roosting potential during the tree inspection survey (See Figure 2-1).

These surveys commenced 15 minutes before sunset and ended 2 hours after sunset, therefore encompassing the typical emergence times of Irish bat species. The surveys were designed to incorporate all trees identified as having bat roosting potential during the tree inspections and that would be removed as part of the proposed works. In addition. The trees were surveyed so that they could be monitored for bat emergence.

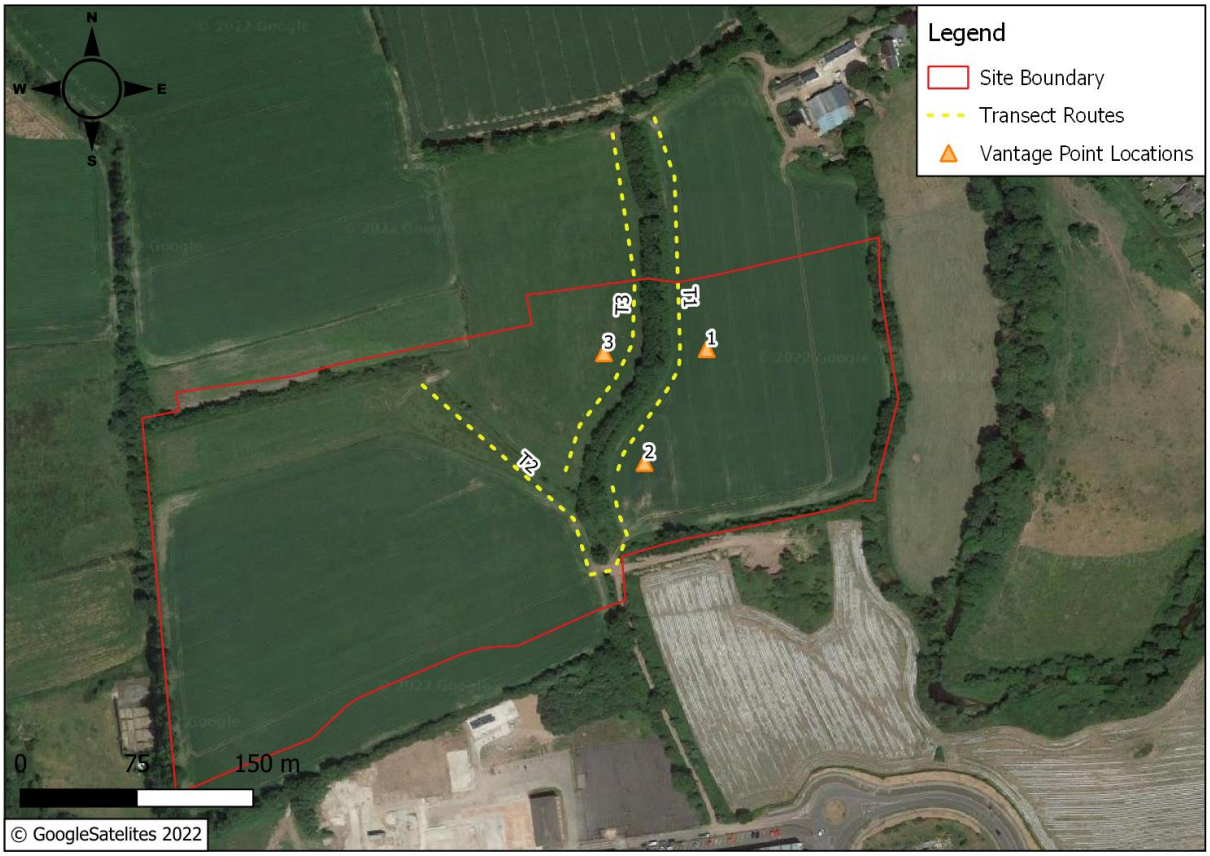
A combination of visual observation and listening to ultrasonic bat calls using frequency division bat detector (Batbox Duet) and Echo Meter Touch2 Pro (Apple IOS) were used throughout the emergence survey. Bat calls were recorded digitally using Edirol Roland R-05 recorder and Echo Meter Tough2 Pro and analysed using appropriate software (KaleidoscopePro) to aid the identification of bat species present.

Vantage point surveys were conducted for the first hour and fifteen minutes and then pre-designated transects were walked within the study area for the second hour (See Figure 2-1).

2.2.3 Dawn Re-Entry Survey

The dawn re-entry surveys took place on 14th September 2022. The dawn surveys commenced 2 hours before sunrise and finished 15 minutes after sunrise. The dawn surveys were conducted using a similar methodology as the dusk emergence surveys, however, in accordance with the guidelines, the transect surveys were conducted for the first hour and then the vantage point surveys were conducted for the last hour and fifteen minutes. The locations of the surveying vantage points and transect locations were the same as the 2022 emergence survey (See Figure 2-2).

Figure 2-2: Survey Locations



2.2.4 Static Monitoring (SM4)

One (1no.) passive bat detector, Wildlife Acoustics Song Meter 4 (SM4), were put out on the treeline / hedgerow to be removed due to the proposed development.

The SM4 was placed within pre-determined location to track bat activity for a period of static monitoring from 18th of August – 13th of September 2022.

The passive static bat monitors are equipped with ultrasonic microphones and were left in specific locations for a specified period of time. The SM4 is effectively used as a bat activity data logger as there is no surveyor physically present. Bats which pass near enough to the SM4 unit are recorded and their calls are stored for analysis post monitoring period. This results in a far greater sampling effort over a shorter period of time.

The SM4 unit was placed in an area within and adjacent to the foraging and commuting habitats identified onsite. This location was selected in order to record a representative sample of bat activity within / adjacent to the areas subject to tree removal along the Proposed Route.

The SM4 and the ultrasonic microphone was positioned away from any close objects or thick vegetation so there would be no interference during the monitoring period. The SM4 bat logger utilises real time recording as a technique to record bat echolocation calls. The sonograms of these bat calls (2-D sound graphs) are digitally stored in the SD card within the SM4. Post monitoring, these sonograms are downloaded for analysis by a specific software (Kaleidoscope Pro) which can aid in the identification the recorded bat calls.

These results are depicted in a table showing the number of bat passes per species / per hour / night. Each bat pass does not correlate to an individual bat but is representative of the bat activity levels within the area. For example, some species of bats such as pipistrelles will continuously fly around a habitat and therefore it is likely that a series of bat passes within a similar timeframe could be the same pipistrelle bat. However other bat species, such as lesser noctules, tend to travel through an area quickly and therefore an individual bat pass is more indicative of the actual number of individual bats.

All sound file data downloaded from the SM4 is analysed using Kaleidoscope Pro Software. This software can automatically sort sound files that contain only noise (non-bat) from sound files that contain bat passes. The software can also auto i.d. each call with a potential species identification. This approach allows identification of bats to genus level for Myotis species, and to species level for other bats found in Ireland. Separation of Myotis species is complicated by the high degree of overlap between call characteristics and therefore species level identification is not possible.

Figure 2-3: SM4 Location at the Site

2.3 Survey Conditions

Bat surveys are a snapshot of the bat activity within an area at the time of surveying. It is therefore important that a number of surveys are utilised to provide as much information on the bat usage of the area in question. Therefore, a combination of surveys was used to determine the importance of the survey area on local bat populations.

All survey work was conducted in accordance with current best practice guidelines. All of the surveys were undertaken when there was no rain or wind, and the temperature was above 10°C. In these weather conditions, bats will not have been deterred from flying and no survey limitations were encountered.

Table 2-1: Bat Survey Metadata

Date	Survey Type	Sunset / Sunrise	Survey Times (Start-End)	Weather	Temperature (°C) Start - End
18/08/22	Dusk	20:50	20:35 – 22:50	Light breeze, clear sky, no rain	14°C - 14°C
14/09/22	Dawn	07:05	05:05 – 7:20	Light breeze, clear sky, heavy dew but no rain	10.5°C - 11°C

2.4 Survey Limitations

No survey limitations were encountered.

3 RESULTS

3.1 Desk-Based Results

Prior to conducting the field surveys and following completion of surveys, a desk-based review of information sources was completed.

None of the nine bats species present in Ireland have been recorded within a 2km radius of the Proposed Development area within the past 10 years based on records from the NBDC (NBDC, 2022).

Table 3-1 provides details of the habitat suitability index for the study area (NBDC, 2022). The habitat suitability index identifies the geographical areas that are suitable for individual species. The index ranges from 0 to 100, with 100 being the most favourable to bats. The index presented is for all species combined, in addition to the individual species indices within the study area.

From the indices, it can be established that the study area has an overall moderate to high habitat suitability index range of 28.11 to 36.44. All of the Irish bat species have high or moderate habitat suitability index for the area, with the exception of the Lesser Horseshoe and Nathusius' pipistrelle, and therefore all of the other listed species are likely to occur within the area.

Table 3-1: Habitat Suitability Index

Bat Species	Suitability Index Range	Suitability Index Level
All Bat Species	28.11 – 36.44	Moderate to High
Soprano Pipistrelle *(Pipistrellus pygmaeus)*	46 – 64	High
Brown Long-eared Bat (*Plecotus auritus)*	39 - 49	Moderate to High
Common Pipistrelle (*Pipistrellus pipistrellus)*	39 - 47	Moderate to High
Lesser Horseshoe Bat (*Rhinolophus hipposideros)*	0 – 4	Very Low
Whiskered Bat *(Myotis mystacinus)*	32 – 44	Moderate to High
Daubenton's Bat *(Myotis daubentonii)*	30 – 38	Moderate to High
Lesser Noctule *(Nyctalus leisleri)*	38 – 46	Moderate to High
Nathusius' Pipistrelle *(Pipistrellus nathusii)*	6 – 15	Low
Natterer's Bat *(Myotis nattereri)*	37 - 48	Moderate to High

3.2 Field Based Results

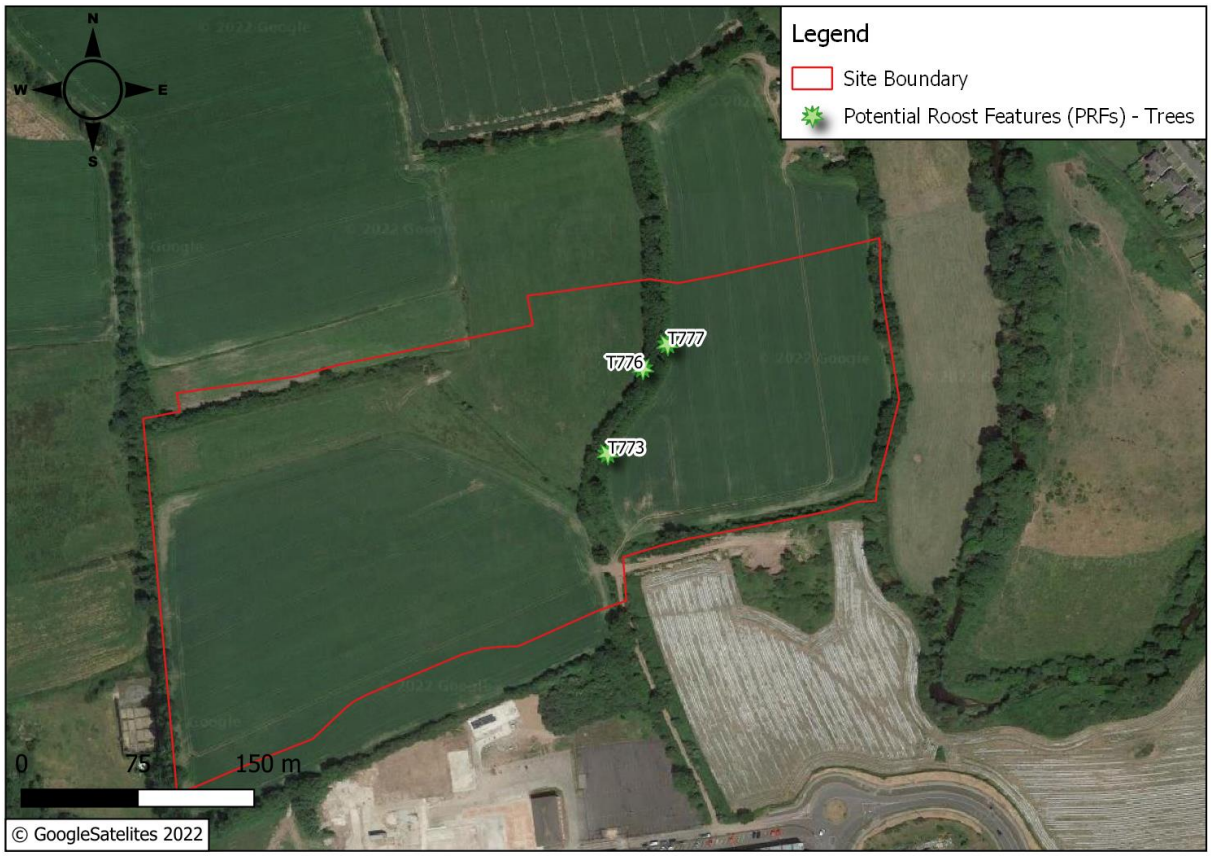
3.2.1 Tree Inspection

The field survey identified three (3No.) trees within the survey area that have features that are suitable for roosting bats (refer to Figure 2-4). Table 3-2 provides details of the assessments of the trees, which are due to be removed by the proposed works.

Table 3-2: Tree Survey Results

Tree No. from Arborist Survey	Tree Species	Ivy	Knotholes	Loose Bark	Cracks and Crevices	Bat Roost Suitability
T773	Ash (*Fraxinus excelsior)*	✓			✓	Moderate
T776	Ash (*Fraxinus excelsior)*	✓		✓	✓	Moderate
T777	Small leaved lime (*Tilia cordata)*	✓			✓	Low

Figure 3-1: Trees Identified with Features Suitable for Roosting Bats



3.2.2 Dusk Emergence and Dawn Re-entry Survey Results

No bats were observed emerging from or re-entering any of the trees surveyed. The survey identified bats commuting along treelines / hedgerows and streams within the survey area. (See Figure 3-3). Low levels of bat activity was recorded within the Site during dusk emergence survey. Very low levels of bat activity were also recorded during the dawn survey.

The following bats were recorded as a result of the dusk emergence and dawn re-entry surveys:

- Common pipistrelle, soprano pipistrelle, lesser noctule and a single myotis spp. bats were recorded foraging and commuting within the survey area using echometers. The

most frequently encountered species of these were common pipistrelle and soprano pipistrelle. These species are relatively wide-spread and the most commonly encountered species within Ireland;

- No bats were identified to be roosting within the trees in the survey area; and,
- Bats were recorded 17 minutes after sunset during the dusk emergence survey, indicating that bat roosts are likely to be present within the local area. The survey recorded bats commuting and foraging along hedgerows / treelines and above grassland / scrub areas within the survey area (Figure 3-3).

3.2.2.1 Dusk Emergence

All trees with bat roost potential to be removed due to the Proposed Development were covered. The dusk emergence survey in August 2022 did not identify any bats to be roosting within the trees surveyed.

18th of August 2022

Sunset was at 20:50. During the dusk survey, the first bat recorded was a soprano pipistrelle at 21:07 from VP2. This bat was not seen and one pass was recorded, indicating the bat was commuting overhead. This same soprano pipistrelle was then recorded at VP1 and was seen flying from VP2 area at 21:09 A lesser noctule was then seen foraging above all the VPs at 21:15 before flying out of Site. A soprano pipistrelle was foraging along the treeline near VP3 from 21:15-21:19 before being joined by a second pipistrelle and flying north out of sight. At least two soprano pipistrelles were observed foraging along the treeline from VP1 & 2 from 21:20 to about 21:30. During this same time, VP3 was also recording foraging soprano pipistrelles, with a visual at 21:21 of three pipistrelle bats. Soprano pipistrelles were observed foraging / commuting along the treeline from all VPs until 21:45. One common pipistrelle was recorded foraging from 21:34 – 21:38 before flying out of Site. A common pipistrelle (presumably the same bat) was recorded at 21:38 from VP1 and 2. A few more soprano pipistrelle calls and one lesser noctule was picked up by VPs until end of vantage points at 21:50.

The activity slowed down during the transects. Dominantly soprano pipistrelles but also a few common pipistrelles and lesser noctules were recorded foraging and commuting along and above the treeline from all the transects but less frequently than during the VPs. The last bat recorded during the survey was a common pipistrelle at 21:52 from VP3. Soprano pipistrelle were the most recorded species during the survey.

A single recording of a myotis spp. was recorded at 21:52 from VP3. This was the only myotis *spp.* call recorded during the survey from all surveyor locations. Overall bat activity recorded during the survey was very low during the vantage points and low during the transects, with infrequent recordings at all surveyor locations.

3.2.2.2 Dawn Re-entry

All trees with bat potential to be removed due to the Proposed Development were covered. The dawn re-entry survey in September 2022 did not identify any bats to be roosting within the trees surveyed.

There was very low activity recorded at all of the surveyor locations during the dawn re-entry survey.

14th of September 2022

Sunrise was at 7:05. During the transect portion of the survey, bat activity was very low at all surveyor locations. The first bat recorded during the survey was a soprano pipistrelle at 5:00 along T1. A lesser noctule was then picked up at 5:02 commuting along T1, and then very

infrequent calls by soprano pipistrelle and lesser noctule were recorded. A single lesser noctule was recorded from T2 during the transects. T3 also had low activity with nine calls recorded in total during the transects from lesser noctules and pipistrelles.

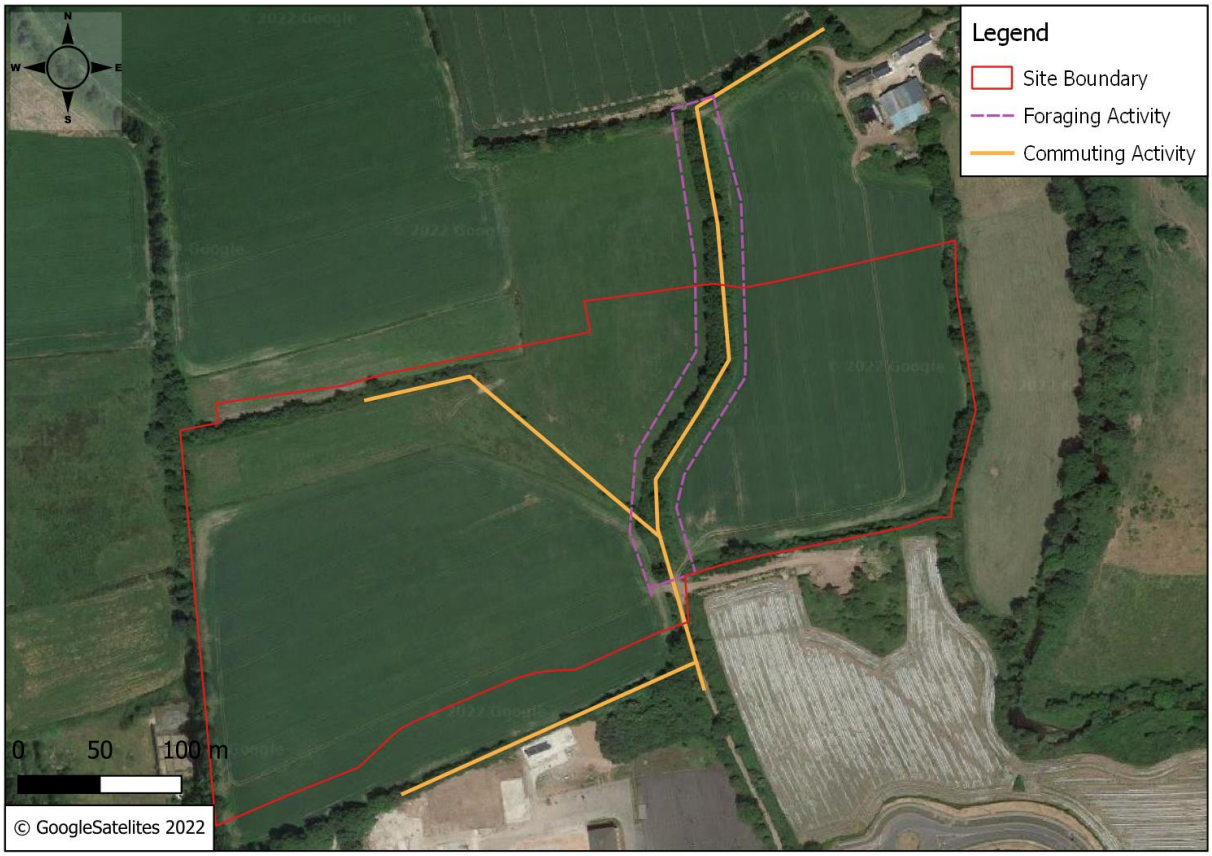
There was very low bat activity recorded during the vantage points at all the surveyor locations. VP1 had the most activity recorded during the transects, with a total of six bat recordings by common pipistrelle, soprano pipistrelle and single myotis spp. VP2 recorded two bats a common pipistrelle and lesser noctule, but both bats were not seen. A few recordings for soprano and common pipistrelle were recorded from VP3. No bats were recorded past 6:36 from any of the surveyor locations until the end of the survey at 7:20.

3.2.2.3 Conclusions

No bats were found to be roosting within any of the trees on Site that were identified as having bat roosting potential.

Based on the levels of activity and movement of the bats recorded during the dusk and dawn surveys in 2022, it is considered that the Site is of low-moderate value for foraging and commuting habitats for bats, in particular soprano pipistrelles, in the local area. Very low numbers of myotis spp. were recorded during the surveys, but due to the presence of this species utilising the Site, potential impacts for them should be considered.

Figure 3-2: Bat Activity Map within the Survey Area



3.2.3 SM4 Analysis

The following Table 3-3 summarise the results recorded on the SM4 units deployed in within the survey area.

The total number of bat passes recorded per night and divided by the number of hours of recording provides a figure for this analysis. The bat activity levels were determined as follows:

- None – 0 passes
- Low = 1 - <10 passes per hour
- Moderate = >10 - < 50 passes per hour
- High = > 50 passes per hour

Please note the following abbreviations relate to Table 3-3 below: SP = Soprano Pipistrelle, CP = Common Pipistrelle, LN = Lesser Noctule, BLE = Brown Long Eared Bat, and MYO = Myotis *spp*.

N = None (White), L = Low (Green), M = Moderate (Yellow), H = High (Pink), - = None

Table 3-3: Results of Static Bat Detectors deployed within the Survey Area from August 18th 2022 – September 13th 2022

Night	CP	SP	LN	BLE	MYO
18/08/22	Low	Moderate	Low	-	Low
19/08/22	Low	Moderate	Low	-	Low
20/08/22	Moderate	Moderate	Low	-	Low
21/08/22	Low	Low	Low	Low	Low
22/08/22	Low	Low	Low	Low	Low
23/08/22	Low	Moderate	Low	Low	Low
24/08/22	Low	Moderate	Low	Low	Low
25/08/22	Low	Low	Low	Low	Low
26/08/22	Moderate	High	Low	-	Low
27/08/22	Low	Moderate	Low	Low	Low
28/08/22	Low	Moderate	Low	Low	Low
29/08/22	Low	Moderate	Low	-	Low
30/08/22	Low	Low	Low	-	Low
31/08/22	Low	Low	Low	Low	Low
01/09/22	Low	Low	Low	-	Low
02/09/22	Low	Moderate	Low	-	Low
03/09/22	Low	Low	Low	-	-
04/09/22	Low	Low	Low	-	-
05/09/22	Low	Low	Low	Low	Low
06/09/22	Low	Low	-	-	-
07/09/22	Low	Low	Low	-	-

08/09/22	Low	Low	Low	-	Low
09/09/22	Low	Moderate	Low	-	Low
10/09/22	Low	Low	Low	-	Low
11/09/22	Low	Low	Low	-	Low
12/09/22	Low	Low	Low	-	Low
13/09/22	Low	Low	Low	-	-

3.2.3.1 SM4 Results

High levels of activity were recorded for soprano pipistrelle on one night (26/08/22) across the survey period. Common pipistrelle and soprano pipistrelle were the only species recorded with moderate levels of activity on this SM4 unit. Soprano pipistrelle were the species with the highest numbers recorded. There were low levels of lesser noctule, common pipistrelle, and soprano pipistrelle recorded consistently across the two weeks of static monitoring in August and September. The SM4 unit also picked up the following species at very low levels: brown long eared and Myotis *spp*. These species have confirmed utilising the survey area, albeit at very low numbers.

The SM4 picked up foraging and commuting activity. The SM4 located is located along the hedgerow/treeline to be removed. This indicates that this hedge / treeline is consistently being used by common pipistrelle, soprano pipistrelle and lesser noctule as a commuting and foraging route.

3.2.3.2 Conclusions

The most frequently occurring species for both static recording periods on the SM4 Units were soprano pipistrelle followed by common pipistrelle and then by lesser noctules. The lowest recorded species were Myotis *spp* and coming in the lowest recordings were for brown long eared bats. Both pipistrelle species were recorded at moderate levels on the SM4s. Soprano pipistrelles had the highest overall passes/hr. It should also be noted that pipistrelles will continuously fly around a habitat and therefore it is likely that a series of bat passes within a similar timeframe could have been the same pipistrelle bat.

This indicates that moderate numbers of common pipistrelle and soprano pipistrelle and low numbers lesser noctule bats and myotis spp. are utilising the survey area for repeated foraging and commuting purposes.

Soprano pipistrelles were the most frequently recorded species during both the dusk, dawn and static monitoring surveys.

4 IMPACT ASSESSMENT AND MITIGATION

The following bat species have been recorded during the bat surveys and static monitors: common pipistrelle, soprano pipistrelle, lesser noctule, myotis spp. and brown long eared bat. All bat species recorded during the bat surveys are Annex IV species under the EU Habitats Directive and all have a favourable status in Ireland.

Bat species within the survey area will be affected by both the construction phase and operational phase of the proposed development. The impact assessment and mitigation will be undertaken in relation to all the bat species recorded within the survey area.

4.1 Potential Impacts on Bats

Principal impacts of the proposed development, in general, on bat fauna may be summarised as follows:

4.1.1 Loss of Habitat

The surveys did not identify any bat roosts within the survey area. However, there are commuting and foraging habitats within the Site that will be removed due to the proposed development. Therefore it is considered that without the appropriate consideration of foraging and commuting bats in close vicinity to the Site, that the proposed development could have a Negative Impact on bat species.

The hedgerow / treeline that bisects the central portion of the Site and the hedgerow along the north-western boundary of the Site will be fully removed. Overall, there will be eight (8No.) trees and ca.349m of hedgerow removed as part of the Proposed Development. However, this will be compensated with the planting of 674No. trees and ca.435m of hedgerow, resulting in an overall net gain of 666No. trees and ca.86m of hedgerow.

The change of use from agriculture will also result in the loss of arable and grassland areas that are suitable foraging and commuting habitats for bats. However, linear features suitable for commuting bats will be incorporated in the landscape plan of the Proposed Development and the overall net gain of trees and hedgerows will provide suitable areas for foraging bats in the area.

4.1.2 Lighting of the General Area (street lighting, security lighting etc.)

Lighting for the proposed development will potentially impact on bat species in relation to commuting and foraging potential within Site and the wider area which is used primarily by lesser noctules and pipistrelles. Common pipistrelles and soprano pipistrelles will tolerate low levels of lighting, however excess lighting is likely to have an impact on bats.

In the absence of an appropriate lighting scheme, it is considered that the proposed development could have a Negative Impact on foraging and commuting bats.

4.2 Mitigation Measures

The following mitigation measures are recommended to reduce the potential impact of the proposed development on local bat populations:

4.2.1 Habitat Loss

In addition to the planting of trees and hedgerow planting outlined in Section 4.1.1 and the Landscape Plan, bat boxes will be fitted on buildings and trees around the Proposed development. The number, locations, heights and direction of the bat boxes will be fitted on the advice of the project ECoW.

4.2.2 Culverting of drainage ditch and Landscaping Plan

The drainage ditch runs west to east along the north-western hedgerows before changing course and travelling in a south-easterly direction and then runs along the south-eastern border before draining into the Owenacurra River.

The Landscaping Plan will be developed to replace *at the least*, any vegetation removed due to the proposed development.

The following landscape recommendations are also advised:

- Avoid the use of chemicals (weed killers, etc.) within the development zone; and,
- The plantings should comprise a mix of native woody shrubs and trees, including fruit-bearing or flowering species, which will provide cover and potential foraging opportunities for wildlife.

4.2.3 Lighting Plan

Bats are adverse to excessive lighting, subsequently, impacts could occur as a result of an inappropriate lighting strategy. Therefore, it is important that lighting installed for the proposed development will be completed with sensitivity for local wildlife while still providing the necessary lighting for human usage.

The lighting to be installed as part of the proposed development will be for safety and security. Nevertheless, the lighting strategy should be designed to mitigate against any potential impacts on nocturnal species in line with the Bat Conservation Trust (BCT) Guidelines on '*Bats and Artificial Lighting in the UK*' (BCT, 2018). The lighting strategy should involve avoiding excessive lighting. The following measures should be taken into consideration during the lighting layout design:

- Construction should be limited to daylight hours in order to minimise adverse effects on nocturnal fauna;
- Avoidance of excessive lighting;
- Light Emitting Diodes (LED's) should be used and the brightness will be set as low as possible;
- Lighting should be aimed only where it is needed, with no upward lighting;
- Lighting should be directed away from landscaped areas;
- Lighting should be turned down / off when not required; and,
- The height of lighting columns should be reduced as much as possible, as lighting at a low level further reduces ecological impact.

4.2.4 Monitoring

In order to ensure that the works in relation to the Proposed Development do not have significant impacts on bats, the following construction procedures and mitigation measures should be implemented. These measures are in line with the NRA (now TII) Guidance for Bats:

- No bats were confirmed to be roosting in the three (3no.) trees with Potential Roost Features (PRF) to be removed. Due to the vagrant nature of bats, it is required to confirm that no bats have since began roosting within the trees since the 2022 summer surveys took place. Therefore, prior to their removal, an updated tree inspection, and if deemed necessary updated emergence / re-entry surveys, will be required to confirm the presence / absence of roosting bats within the 3no. trees. If bats were found to be roosting within the trees after updated surveys, then further measures may need to be

considered in order to protect bats against any disturbance. The NPWS will be consulted for advice and a derogation licence will be obtained if required;

- In the unlikely case that individual bats would use these 3no. trees as day or night roosts throughout the year, the 6no. PRF trees will be supervised by the ECoW and will be felled using hand tools only. The ECoW will visually inspect the trees following felling for the presence of bats. Should bats be found, the NPWS will be consulted;
- The findings of any required updated bat surveys will be submitted to the planning authority prior to the commencement of the clearance works;
- Where possible, the PRF trees which are to be removed, should be felled on mild days during the autumn months of October – November or during spring months of February-March (felling during the spring or autumn avoids the periods when bats are most active and without young); and,
- Following the installation of the lighting for the Proposed Development, a suitably qualified Ecologist should undertake a further Site inspection in order to check the lighting patterns and lux levels along the Site boundaries and re-directed stream to ensure there are no impacts to bats or other nocturnal species.

5 CONCLUSIONS

The bat surveys undertaken for the Proposed Development included a walkover of the lands within the survey area, tree inspections, dusk emergence survey, a dawn re-entry surveys and static monitoring. The walkover and tree inspection identified three (3no.) trees with features suitable for roosting bats. These trees were subject to dusk emergence and dawn re-entry surveys; however, no bats were observed roosting within these trees.

Based on the bat activity within the survey area shortly after sunset and right before sunrise, it is considered likely that there are bats roosting within the locality of the Proposed Development. The surveys identified soprano pipistrelle, common pipistrelle, lesser noctules and Myotis *spp.* commuting and foraging along sections of the treelines / hedgerows and grassland areas within the survey area and within the wider area. There was low-moderate bat activity recorded for soprano pipistrelle during the dusk survey and static monitoring period. There were was low bat activity recorded for common pipistrelle and lesser noctule during both the dusk survey and SM4 monitoring period. Very low activity was recorded for Myotis spp. during the dusk survey and SM4 monitoring period. However, very low bat activity was recorded during the dawn survey for all bat species.

The Proposed Development will result in the loss of commuting / foraging habitats for bats by the removal of a hedgerow/treeline, agricultural grassland and the re-directing of the existing drainage ditch. However, the landscape plan will retain the majority of the important bat commuting / foraging linear habitat features within the survey area and new plantings and enhancement plantings will ensure connectivity to remain at existing levels.

Overall, the survey area is considered to be of low-moderate importance for commuting and foraging bats within the local area as the majority of the Site is dark at night and contains good commuting and foraging habitats for bats. However, it is considered that if the mitigation measures presented within this report are followed, the potential impacts on bats will be reduced and the overall impact from the Proposed Development on bats will be Low-Negligible.

6 REFERENCES

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APPENDIX D

① Proposed Surface Water Layout
Scale: 1:500

DRAINAGE GENERAL:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING OUT ALL DRAINAGE INFRASTRUCTURE TO ENSURE NO CLASHES OCCUR WITH SERVICE DUCTS, CHAMBERS ETC.
2. CARE SHOULD BE TAKEN BY THE CONTRACTOR WHEN HANDLING PIPES, PARTICULARLY WHEN UNLOADING AND STACKING, SO AS TO AVOID DAMAGING THEM.
3. ALL PIPE SEALS AND GASKETS SHOULD BE STORED INDOORS AWAY FORM DIRECT SUNLIGHT.
4. POLYETHYLENE TWINWALL ROAD DRAINAGE PIPES CONSISTING OF A DOUBLE WALL, WHICH HAVE A SMOOTH INTERIOR AND RIBBED EXTERIOR WITH A SMOOTH BORE INTEGRAL SOCKET. COUPLERS CONSIST OF A SINGLE WALL, WITH SMOOTH INTERIOR AND EXTERIOR SURFACES. SOIL-TIGHT AND WATERTIGHT JOINTS ARE MADE BY FITTING A RUBBER SEALING RING OVER THE PIPE SPIGOT END AND THEN ASSEMBLING IT INTO THE INTEGRATED PIPE SOCKET OR COUPLER. INSTALLATION IN ACCORDANCE WITH MANUFACTURERS GUIDELINES.
5. EXCAVATION SHOULD NOT BE CARRIED OUT TOO FAR IN ADVANCE OF PIPE INSTALLATION. ALL RELEVANT HEALTH & SAFETY REQUIREMENTS IN RESPECT OF EXCAVATION SHOULD BE OBSERVED BY THE CONTRACTOR DURING EXCAVATION WORKS.
6. BEFORE LAYING THE PIPES AND FITTINGS MUST BE CHECKED FOR DAMAGE THAT MAY HAVE OCCURRED IN TRANSIT OR STORAGE PRIOR TO INSTALLATION. DAMAGED PIPES OR FITTINGS MUST NOT BE INSTALLED. THE LAYING SHOULD BE COMMENCED AT THE LOWER END OR OUTFALL END OF THE PIPELINE RUN AND THE PIPES ARE PREFERABLY LAID SO THAT THE SOCKETS FACE TO THE TOP OF THE PIPELINE RUN. WHEN TWO PIPELINES ARE LAID SIDE BY SIDE APPROPRIATE SEPARATION SHOULD BE ALLOWED TO PERMIT THE APPROPRIATE COMPACTION OF THE MATERIAL BETWEEN THE TWO PIPE RUNS.
7. THE PIPES ARE INSTALLED USING TRADITIONAL DRAIN-LAYING METHODS IN ACCORDANCE WITH NRA SPECIFICATIONS AND IN ACCORDANCE WITH THE MCDRW, VOLUME 1, CLAUSES 503, 505, 518.7 AND 518.8.
8. MINIMUM COVER TO PIPES;
   a) 1200mm ROADWAYS
   b) 900mm OPEN SPACES & FOOTPATHS NOT ADJACENT TO ROADS
   c) 600mm GARDENS
7. THE CONTRACTOR SHOULD PLAN HIS WORK FOR CHAMBERS AND MANHOLES SO AS TO MINIMISE AS MUCH AS POSSIBLE WORKING REQUIRED IN CONFINED SPACES.
8. JOINT LUBRICANTS FOR SLIDING JOINTS SHALL HAVE NO DELETERIOUS EFFECT ON EITHER THE JOINT RINGS OR PIPES AND SHALL BE UNAFFECTED BY SEWAGE.
9. ALL ABANDONED SEWER PIPES TO BE FILLED WITH C12/15 CONCRETE. ABANDONED MANHOLES TO BE BROKEN OUT IF POSSIBLE. OTHERWISE THEY SHOULD BE FILLED WITH C12/15 CONCRETE.
10. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE RELEVANT SERVICE PROVIDERS IN ADVANCE OF ANY PLANNED EXCAVATION WORKS TO VERIFY THE LOCATION, DEPTH AND NATURE OF ANY UNDERGROUND SERVICES.
11. ROCKER PIPES;
   a) ROCKER PIPES SHOULD BE PROVIDED AT ALL LOCATIONS WHERE;
      i. A PIPE ENTERS OR LEAVES A MANHOLE, PUMPING STATION OR OTHER RIGID STRUCTURE.
      ii. A PIPE ENTERS OR LEAVES A CONCRETE ENCASEMENT.
      iii. ANY LOCATION AS DIRECTED BY THE ENGINEER.
   b) ROCKER PIPE JOINT TO BE LOCATED NO MORE THAN 150mm FROM THE OUTSIDE FACE OF THE STRUCTURE TO WHICH THE PIPEWORK IS SERVING. THE EFFECTIVE LENGTH OF THE ROCKER PIPE SHOULD BE;
      i. PIPE DIAMETER 150mm TO 600mm: 0.60m
      ii. PIPE DIAMETER 600mm TO 750mm: 1.00m
      iii. PIPE DIAMETER GREATER THAN 750mm: 1.25m
   c) ALL ROCKER PIPES ARE TO BE FORMED BY CUTTING AND TRIMMING A LENGTH OF SPIGOT & SOCKET PIPE TO FORM A SPIGOT AT THE CUT END, THEREBY FORMING SPIGOT & SOCKET JOINTS AT BOTH ENDS OF THE ROCKER PIPE.
12. PIPEWORK AND BENCHING TO A SINGLE MANHOLE CHAMBER SHOULD BE COMPLETED AND THE ENGINEER INVITED TO INSPECT SAME BEFORE ALL REMAINING CHAMBERS ARE COMPLETED.
13. ONLY PROPRIETARY CONNECTION PIECES TO BE USED FOR MAKING CONNECTIONS TO SEWERS.
14. WHEN INSTALLING FLEXIBLE PIPES (SINGLE\TWIN WALLED PVC OR SIMILAR) PARTICULAR CARE SHOULD BE TAKEN BY THE CONTRACTOR TO ENSURE THE PIPES ARE WELL BEDDED AND SURROUNDED IN GOOD QUALITY GRANULAR MATERIAL IN ACCORDANCE WITH THE SPECIFICATION.
15. THE CONTRACTOR MUST TAKE GREAT CARE WHEN COMPACTING MATERIAL OVER DRAINAGE PIPES SO AS NOT TO DISLODGE THEM FROM THEIR CORRECT LINE AND LEVEL.
16. TYPE E BEDDING TO BE USED WHERE MINIMUM COVER OR GREATER IS PROVIDED TO FLEXIBLE PIPES.
17. FOR PIPES IN ROADWAYS WHERE COVER IS LESS THAN 1200mm BUT GREATER THAN 800mm TYPE G BEDDING TO BE USED.
18. FOR PIPES IN ROADWAYS WHERE COVER IS LESS THAN 800mm TYPE X BEDDING TO BE USED.
19. FOR PIPES IN OPEN SPACES, FOOTPATHS NOT ADJACENT TO ROADS AND GARDENS WHERE MINIMUM COVER OR GREATER IS NOT ACHIEVED, TYPE G BEDDING TO BE USED.
20. ALL MANHOLES TO BE CONSTRUCTED WITH PRECAST CONCRETE RINGS IN ACCORDANCE WITH RELEVANT ENGINEERS DETAILS DRAWING.
21. PROPRIETARY CONNECTIONS TO BE USED THROUGHOUT.
22. ALL JOINTS TO BE WATERTIGHT TO CL 504 SUB CLAUSE 3 OF THE NRA SPECIFICATION FOR ROADWORKS.
23. MANHOLES WITHIN PAVING TO BE D400 AND RECESSED TO RECEIVE PAVIORS.
24. MANHOLES IN TARMACADAM/GRASSED AREAS TO BE NON ROCK D400 LOCKABLE MANHOLES.
25. TRENCHES IN EXISTING SURFACES TO BE SAW CUT.
26. IF CONSTRUCTING MANHOLE CHAMBERS USING PRECAST CONCRETE RINGS, THE CONTRACTOR SHOULD ENSURE THAT THE JOINTS IN THE PRECAST CONCRETE RINGS ARE STAGGERED WITH THE JOINTS IN THE CONCRETE SURROUND TO REDUCE THE POSSIBILITY OF GROUND WATER INGRESS.
27. WHERE A CONNECTION IS REQUIRED TO AN EXISTING PUBLIC SEWER SYSTEM, THE CONTRACTOR MUST MAKE A FORMAL APPLICATION TO THE LOCAL AUTHORITY TO DO SO.
28. A DETAILED METHOD STATEMENT MUST BE SUBMITTED TO THE LOCAL AUTHORITY FOR APPROVAL AT LEAST FOUR WEEKS IN ADVANCE OF THE PLANNED CONSTRUCTION WORKS.
29. WHERE NEW DRAINAGE INFRASTRUCTURE IS TO CROSS AN EXISTING ROAD, THE CONTRACTOR IS REQUIRED TO:
   a) CONTACT THE RELEVANT AUTHORITIES WELL IN ADVANCE OF THE PLANNED WORKS.
   b) MAKE AN APPLICATION AND PAY FOR A ROAD OPENING LICENCE IF APPLICABLE.
   c) MAKE GOOD THE EXISTING ROAD TO THE SATISFACTION OF THE ENGINEER & THE RELEVANT AUTHORITIES ON COMPLETION OF THE WORKS.
30. THE CONTRACTOR IS ADVISED TO COMPLETE AIR TESTING ON A DAILY BASIS DURING THE COURSE OF THE WORKS TO ENSURE ISOLATION OF ANY FAILED TESTS.
31. THE COMPLETE DRAINAGE WORKS SHOULD BE PROTECTED, WHERE NECESSARY, FROM LOADS IMPOSED BY CONSTRUCTION PLANT DURING CONSTRUCTION.
32. ON COMPLETION OF THE WORKS, THE CONTRACTOR MUST ENSURE ALL INTERNAL SURFACES OF THE NEW SEWERS ARE THOROUGHLY CLEANED TO REMOVE ALL DELETERIOUS MATERIAL. THIS MATERIAL MUST BE PREVENTED FROM ENTERING THE PUBLIC SEWER SYSTEM.
33. A CCTV SURVEY OF THE COMPLETED UNDERGROUND DRAINAGE NETWORK SHOULD BE CARRIED OUT BY THE CONTRACTOR ON COMPLETION OF THE WORKS. IT IS RECOMMENDED THAT THIS EXERCISE IS COMPLETED BEFORE FINAL SURFACE COURSES AND FINISHES ARE APPLIED IN CASE ANY REMEDIAL WORKS ARE REQUIRED TO THE DRAINAGE.
34. WHERE FOUL CONNECTIONS PASS OVER ATTENUATION TANKS, VERTICAL SEPARATION DISTANCE IS TO BE 300MM

Legend	Symbol
MANHOLE, ASSOCIATED ID AND PROPOSED SURFACE WATER PIPE (INCL. DIAMETER AND GRADIENT)	S4-0 (15.375) — 225mm 1/60>>
PERMEABLE PAVING WITH PERFORATED PIPE AND INSPECTION CHAMBERS TO EITHER SIDE	
PERMEABLE PAVING (ROAD)	
ATTENUATION TANK LOCATIONS RC ATTENUATION UNITS ARE TO BE CONSTRUCTED	Attenuation Tank
TREE PITS LOCATIONS INDICATIVE ONLY AND TO BE FULLY COORDINATED WITH LANDSCAPING LAYOUT & PUBLIC LIGHTING PLAN.	

REVISION	DATE	BY	DETAILS
06	10/22	EK	Issued for RFI(Updated Architects Layout Included)
05	09/22	EK	Issued for RFI DRAFT (Updated Architects Layout Included)
04	05/22	EK	Issued for Planning(Updated Architects Layout Included)
03	03/22	EK	Issued for Pre-Planning(Updated Architects Layout Included)
02	01/22	EK	Issued for Pre-Planning
01	12/21	EK	Issued for Discussion

Drawn By	Approved By	DWG Date	Issued for	Scale	Rev.
EK	--	13/12/21	Pre-Planning	1/500	06

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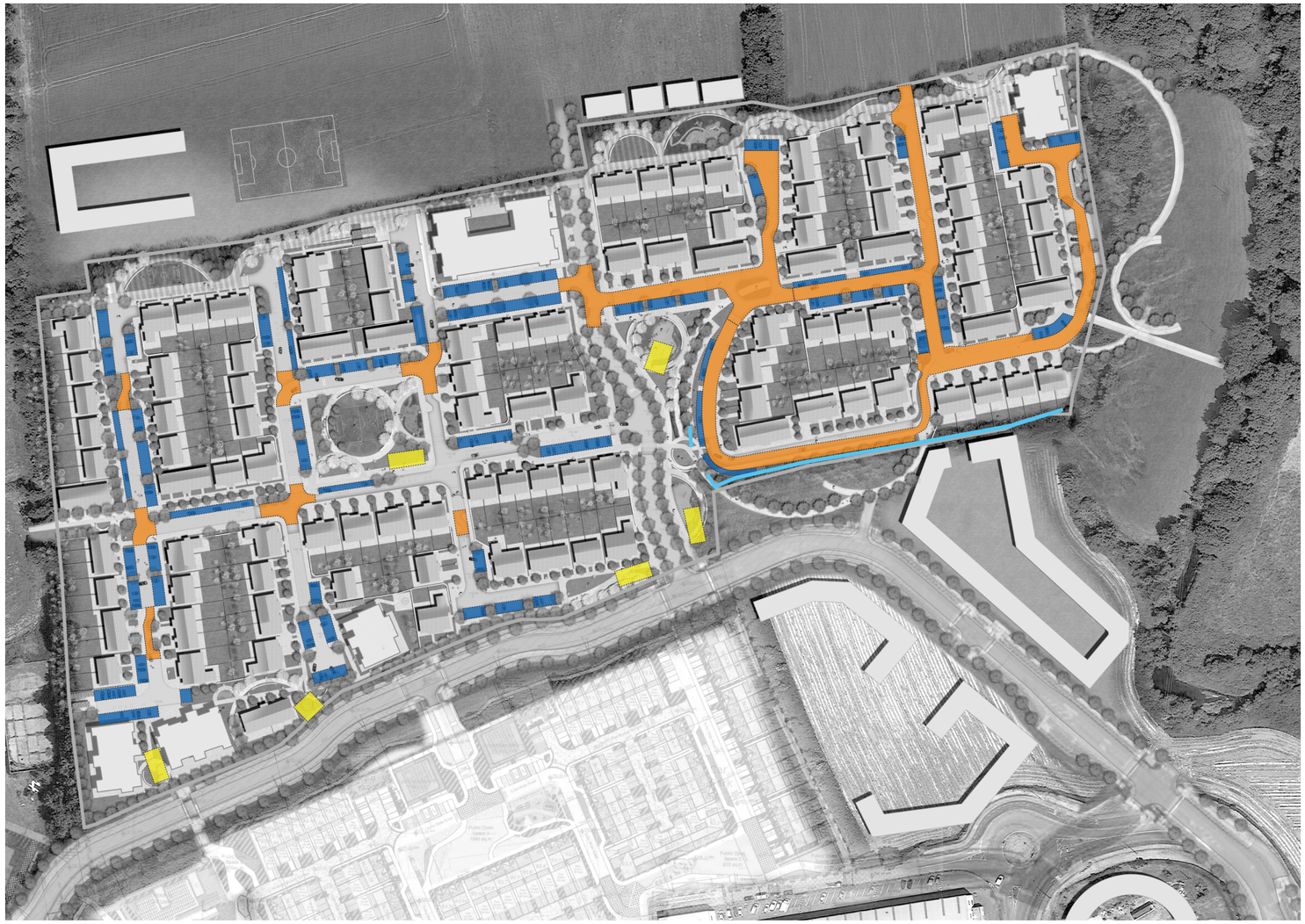
Project		Dwg Type		Number
21059	–	P	–	102

Title: Surface Water Layout
Waterrock Development
Midleton, Co. Cork for Havenfalls Ltd

APPENDIX E

18 WATERROCK MIDLETON
LANDSCAPE DESIGN DEVELOPMENT - GREEN INFRASTRUCTURE



Permeable paving

Permeable paving (Road)

Attenuation cell locations

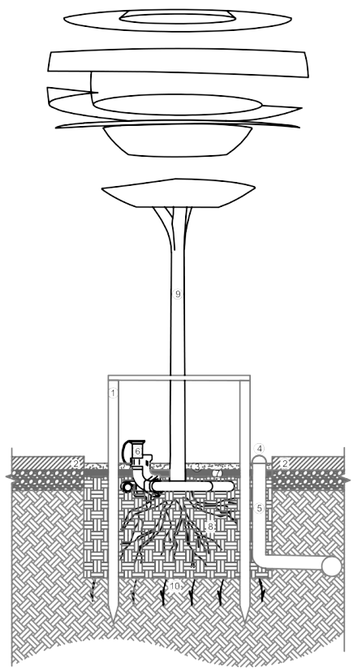
Swales

3. WATER MANAGEMENT:

The surface water drainage startegy has been deisgned by O'Shea Leader Consulting Engineers to ensure that storm water flows will be restricted to greenfield runoff rates in the northern portion of the site and there will be no potential for the impairment of water quality due to increased storm water run off through the instalment of attenuation cells and hydorcarbon interceptors with silt collection features.

These aims would be achieved by the following measures;

- protection of water quality during construction as per the recommendations contained in the Ecological Impact Assessment prepared by Malone O'Regan Environmental.



- the use of permeable paving where appropriate throughout the site, (see figure opposite & the Engineering report prepared by O'Shea Leader Consulting engineers for details).
- Bio-retention measures including tree pits, dry swales and on-line bio retention areas as per the Engineering Report prepared by O'Shea Leader Consulting Engineers.

1. Double stakes 75mm dia x 1.8m long with cross bar 75mm half round 900mm long, all pressure treated, with cushioned tie.
2. Surface water from adjacent hard surfaces to drain to the tree pit as per engineers detail design & specification.
3. Top of water level.
4. 100mm dia. overflow pipe with protective cowl 50mm max above soil level of tree pit.
5. 100mm dia perforated overflow stack & discharge pipe to storm sewer as per engineers specification.
6. 100mm dia perforated upvc drainage pipe wrapped around root area with irrigation cap.
7. 50mm layer of loose stone mulch to surface of tree pit.
8. Where possible backfill with nutrient rich, free draining in situ topsoil, min. 900mm depth. Topsoil to be free from, an excessive amount of weed seeds, roots of perennial weeds, subsoil and extraneous matter. Only use imported topsoil if suitable in situ soils are not available. Imported topsoil to be to BS 3882: 2015; general purpose grade.
9. Specified tree planting.
10. Subsoil at base of pit broken up, min depth 150mm.

BIO RETENTION TREE PIT DETAIL