Ecological Impact Assessment

Ballydehob, Co. Cork

May 2022

Prepared for:
Cork County Council

Comhairle Contae Chorcaí
Cork County Council

CIEEM
REGISTERED
PRACTICE 2022-2023

O'DONNELL
ENVIRONMENTAL

Summary

Project: Residential development at Greenmount Road, Ballydehob, Co. Cork.

Coordinates: V 98778 35138 (IG); 498737 535181 (ITM).

Report by: Tom O'Donnell BSc (Hons) MSc CEnv MCIEEM.

Company Profile: O'Donnell Environmental is an independent environmental consultancy established by Tom O'Donnell in 2019. O'Donnell Environmental is a Chartered Institute of Ecology and Environmental Management (CIEEM) 'Registered Practice' which demonstrates our commitment to high professional standards, accountability and the delivery of the best outcomes for biodiversity and our Clients.

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1	Final Issue	TO'D	31.05.2022

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Appendices

1 Introduction

O'Donnell Environmental was commissioned by Cork County Council to undertake an Ecological Impact Assessment (EcIA) and Appropriate Assessment (AA) Screening Report in relation to a proposed housing development at Greenmount Road, Ballydehob, Co. Cork.

Cork County Council (CCC) intends to develop a residential apartment complex at Greenmount Road, Ballydehob which includes the following elements:

- Site preparation (e.g. earthworks, excavation etc.)
- The construction of a 12-unit apartment complex (8 one-bed apartments and 4 two-bed apartments).
- Removal of portions of hedgerows and ditches to create pedestrian access paths and gates.
- Re-alignment of existing road-edge and ditches and repositioning of road signage.
- The construction of concrete boundary walls and steel mesh fencing.
- Associated ancillary infrastructure including lighting, parking, refuse storage etc.

The proposed site is a 0.358ha greenfield site at Greenmount Road, outside the village of Ballydehob, Co. Cork. A site location map is presented in **Figure 1.1**.

The site was previously used for livestock grazing, and grazing had ceased in recent years allowing encroachment of scrub. The site was cleared of vegetation in the winter of 2021 / 2022 and is currently mostly comprised of disturbed bare soil that was recently cleared out vegetation. Adjoining land uses include agricultural and residential land uses. The site is in close proximity to a number of domestic residences and a school.

This report has been prepared with cognisance of the following best practice guidance:

- Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater, Coastal and Marine' (CIEEM, 2018)
- Guidelines on the Information to be contained in Environmental Impact Assessment Report (EIAR) (EPA, 2022)

This report is informed by the following documents which are submitted as part of the current planning application:

- Proposed Site Layout (Cork Co. Co., 17/05/2022) (see **Appendix A**).
- Services & infrastructure Report (Crocon Engineers, June 2022) (see **Appendix B**)
- Preliminary Construction and Environmental Management Plan (pCEMP) (Crocon Engineers, May 2022) (see **Appendix C**)
- Outdoor Lighting Report (Healy Consulting Engineers Ltd., April 2022).

This report should be read in conjunction with an 'Appropriate Assessment' (AA) Screening Report which was prepared by O'Donnell Environmental (May 2022), in relation to the current application.

1.1 STATEMENT OF AUTHORITY

O'Donnell Environmental is an independent environmental consultancy established by Tom O'Donnell BSc (Hons) MSc CEnv MCIEEM in 2019. Since then, O'Donnell Environmental has established itself as a provider of quality, Client-focused ecological and environmental services to public and private sector

Clients nationwide. O'Donnell Environmental is a Chartered Institute of Ecology and Environmental Management (CIEEM) 'Registered Practice' which demonstrates our commitment to high professional standards and accountability. Tom O'Donnell is a Chartered Environmentalist and a full member of the Chartered Institute of Ecology and Environmental Management. He was awarded a BSc in Environmental and Earth System Science [Applied Ecology] in 2007 and an MSc in Ecological Assessment in 2009, both from UCC. Tom has 15 years professional experience in the environmental industry, including working on projects such as windfarms, overhead power lines, roads, cycleways and residential developments. Tom is licensed by NPWS for roost disturbance (Ref: DER/BAT 2021-128) and to capture bats (C217/2021).

John Deasy was awarded a BSc in Environmental and Earth Systems Science from University College Cork in 2006, an MSc in Applied Marine Science from University of Plymouth in 2007 and an MSc in Ecological Assessment from University College Cork in 2014. John is an experienced Ecologist with over seven years of consultancy experience in botanical and habitat assessments.

1.2 DESCRIPTION OF THE PROPOSAL

The proposed project involves the construction of a 12-unit apartment complex comprising the recontouring and alteration of the lands site levels (to include the importation of inert soil and stone material in order to improve site drainage characteristics), the realignment of existing road and ditches, removal of hedgerows and ditches for the construction of boundary walls and steel mesh fencing, all with associated site development works and ancillary infrastructure including outdoor lighting at a site of approximately 0.358ha. The current proposal is for 32 occupants 8no. 1 bed apartments, 4no. 2 bed apartments.

The proposed site will be accessed via newly constructed pedestrian and vehicle access points from the Greenmount Road which borders the site to the east (**Appendix A**)

Connection will be made with existing Irish Water foul and surface sewers which are proximal to the proposed site site via proposed pipelines in existing roadway and hardstanding. No other 'off-site' works such as temporary storage or local road upgrades are required to facilitate access and therefore all other works associated with the proposed project will occur within the red line planning boundary.

A detailed description of the proposal is provided in the preliminary Construction Environmental Management Plan (pCEMP) which accompanies this application (see **Appendix C**).

Elements of the design of particular relevance to the current assessment are explored in greater detail below. **Appendix A** shows the proposed development layout. **Appendix A** and **Appendix B** present information on the proposed design and the services and infrastructure, respectively.

1.2.1 Wastewater Management

It is understood that Irish Water have confirmed that a proposed connection to the Irish Water foul and surface water networks from the current site can be facilitated. These are discussed separately below.

1.2.1.1 Foul Wastewater

Wastewater from the proposed development will be conveyed to Ballydehob Wastewater Treatment Plant (D0467-01). The plant capacity is 700 PE and the wastewater receives primary treatment prior to discharge to Ballydehob Bay. The proposed development is designed to accommodate 32 occupants

(i.e. a population equivalent (PE) value of 32. The foul sewage from the development will discharge via a new manhole by gravity to an existing foul sewer on Greenmount Road to the east of the site.
The foul drainage network has been designed as follows:

- Wastewater flow per unit is 2.7 PE @ 150L/day per capita is 405 litres
- Flow velocities shall be in the range of 0.75m/sec to 3m/sec, when pipes are flowing half full
- Design flow is calculated as 6 x Dry Weather Flow (DWF).

Prior to the connection to the existing municipal foul sewer, welfare facilities will be provided on site and foul wastewater will be removed from site for appropriate treatment.

1.2.1.2 Surface Wastewater

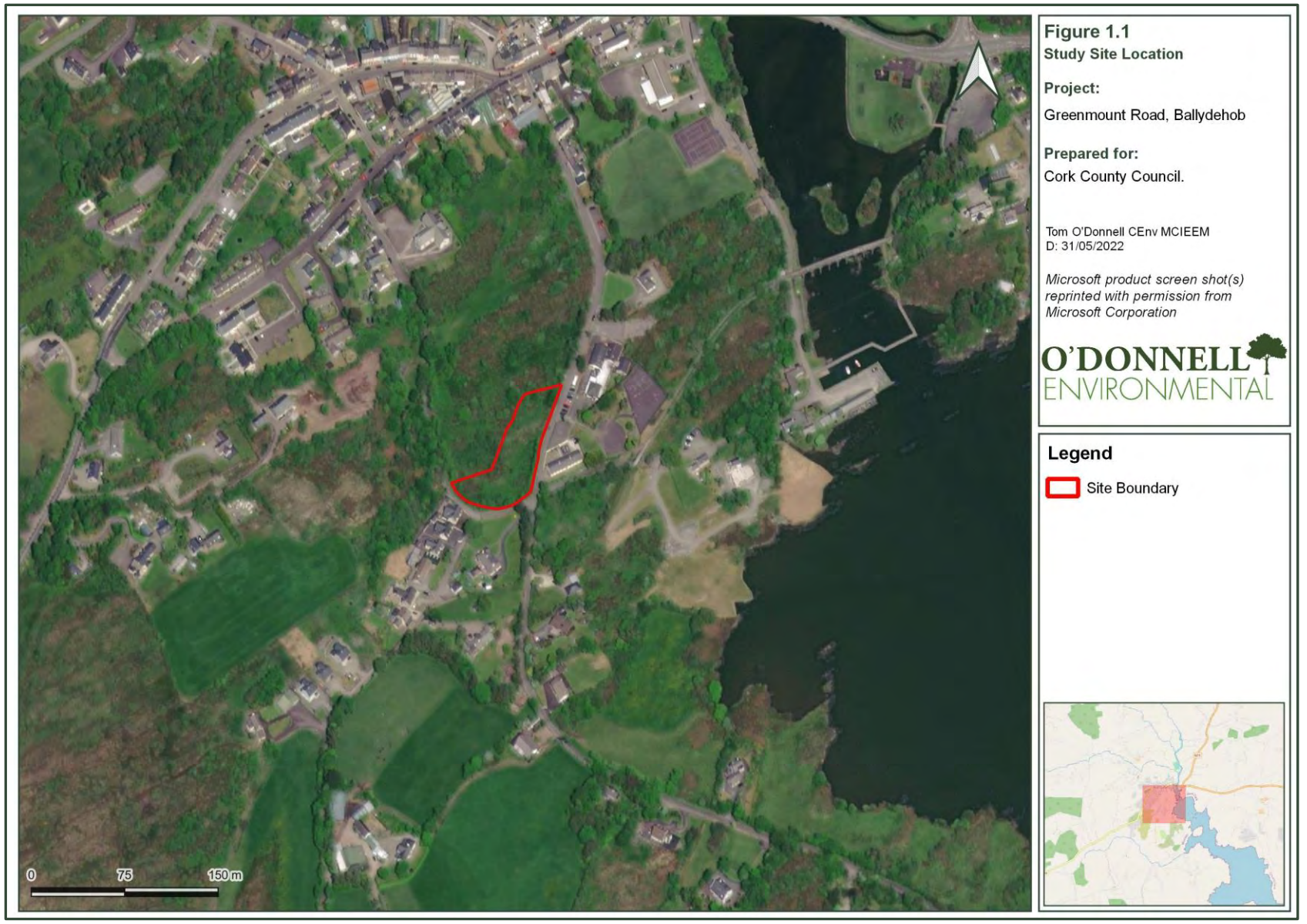
Surface-water runoff will be collected by a network of gravity sewers and discharged to an existing storm outfall drain approximately 60m to the north-east of the site and both the connection point and off-site route are within existing roads and hardstanding. The discharge from the development will not be attenuated as the outfall pipe terminates at the foreshore. During the construction phase (prior to connection to the existing municipal surface water sewer), surface water will continue to follow the existing drainage pattern but with the addition of silt fences and other mitigation measures designed to minimise downstream transportation of silt.

1.2.2 Lighting

External operational-phase lighting will be provided as outlined in Healy Consulting Engineers Report dated 4th April 2022. The specification includes for the provision of seven luminaires. Ecological advice provided by O'Donnell Environmental was considered in the design of lighting.

1.2.3 Hedgerow and Treeline Loss

Approximately 105 meters of hedgerow and treelines will be removed as part of the proposed works. Removal of portions of hedgerows, treelines and earth banks located along the southern boundaries of the site will be carried out in order to improve sight-lines by the re-alignment of the road edge and ditches. Removal of these habitat types at the eastern boundaries within the site will be undertaken to facilitate pedestrian and vehicular access to the site via pathways and gates.


0
75
150 m
Figure 1.1
Study Site Location
Project:
Greenmount Road, Ballydehob
Prepared for:
Cork County Council.
Tom O'Donnell CEnv MCIEEM
D: 31/05/2022
Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation
O'DONNELL ENVIRONMENTAL
Legend
Site Boundary

2 Methodology

This ecological assessment has been prepared for the proposed development following a thorough desktop review of available ecological information and field surveys carried out between November 2021 and February 2022.

The aims of this EcIA are to:

- Establish the ecological baseline.
- Determine the ecological value of the relevant ecological features.
- Assess the predicted impact of the proposed development on relevant ecological features.
- Identify avoidance and mitigation measures where available.
- Assess any residual impacts of the development.

The methodology employed in the carrying out of this ecological assessment is outlined below.

2.1 DESKTOP REVIEW

A detailed desktop review of relevant data available for the study area was undertaken. National Parks and Wildlife Service (NPWS) and National Biodiversity Data Centre (NBDC) online databases were consulted on 29th November 2021 to identify any relevant rare or protected species records located within the relevant national grid squares encompassing and surrounding the site. The Environmental Protection Agency (EPA) website was reviewed for relevant hydrological or environmental information.

Bat Conservation Ireland (BCI) conducted a search of their records database at the request of O'Donnell Environmental on 15th November 2021. The relevant search area included a 10km radius from a central point within the proposed site. Known roost locations in the target area as well as results from BCI Volunteer based surveys and records submitted by Ecological Consultants were provided. Where roost locations occur in private dwellings the location provided refers to the central point in the relevant 1km grid square.

2.1.1 Designated Conservation Sites

Designated nature conservation sites within the wider hinterland of the proposed redevelopment were identified through a desktop review. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) form part of a European Conservation network known as Natura 2000 sites. SACs are designated under the EU Habitats Directive [1] while SPAs designated under the EU Birds Directive[2].

2.2 BOTANICAL & HABITAT ASSESSMENT

The site was surveyed on 18th November 2021 by John Deasy BSc (Hons), MSc and a Phase I habitat and flora assessment was carried out in accordance with the Heritage Council's

[1] Council Directive 92/43/EEC on the conservation of natural habitats and wild flora and fauna, as amended by Council Directive 97/62/EC.
[2] Directive 2009/147/EC (Birds Directive) on the conservation of wild birds (the codified version of Council Directive 79/409/EEC as amended).

guidelines (Smith *et al*. 2011). This involved a walkover of the proposed development site where the habitats present were classified to level three using the classification scheme presented in *A Guide to Habitats of Ireland* (Fossitt, 2000). The extent of habitats was recorded on a field map along with notes of species present and their relative abundance described using the DAFOR scale. In addition, any other observations of interest (e.g. invasive plant species, etc.) were recorded using a Garmin eTrex10 GPS handheld unit. Evaluation of the habitats present in terms of their ecological value was assessed using the Biodiversity Evaluation Scheme (amended National Roads Authority 2009 scheme to include watercourse/aquatic evaluation elements from Nairn and Fossitt, 2004).

The conservation status of habitats and botanical species was also considered. The conservation status of habitats and botanical species within Ireland and Europe is indicated by inclusion in one or more of the following: Irish Red Data Book for Vascular Plants (Wyse Jackson *et al.,* 2016); Flora (Protection) Order 2015 and the EU Habitats Directive (92/43/EEC).

2.3 MAMMAL ASSESSMENT

This assessment considers both non-volant and volant mammals, which are addressed separately below.

2.3.1 Non-volant Mammals

Survey for non-volant mammals was undertaken by Donnachadh Powell BSc (Hons) of O'Donnell Environmental on 15th December 2021. Donnachadh Powell and Tom carried out further ecological survey on 23rd February 2022. Surveys involved a walkover of the site to identify any mammal species present or signs of mammal activity such as droppings, tracks, burrows etc. Observations were recorded using field notes and/or handheld GPS units. Techniques used to identify mammal activity followed recognised guidelines (e.g. Bang & Dahlstrom 2004, JNCC 2004 and Muir *et. al,* 2013).

The conservation status of mammal species was considered. The conservation status of mammals within Ireland and Europe is indicated by inclusion in one or more of the following: Irish Wildlife Acts (1976 - 2010); Red List of Terrestrial Mammals (Marnell *et al*. 2009); EU Habitats Directive.

2.3.2 Bats

As part of an initial desk-top review, the model of Bat Landscapes, available on the NBDC website was consulted. This model is based on the relative importance of landscape and habitat associations for bat species in Ireland and the index ranges from 0 to 100, where 100 is the most suitable for bats (Lundy *et al*. 2011).

Daytime visual assessments were carried out on 23rd February 2022 to identify any bat roosting potential which may exist within the site boundary and adjoining habitats. Winter is the optimal time for 'preliminary ground roost assessments' of trees (Collins, 2016), due to greater visibility as a result of leaf fall and die back of ground level vegetation. The assessment followed guidance set out in Collins (2016), the survey was non-destructive, and relevant Potential Roost Features (PRFs) were visually inspected from ground level to identify any evidence of bat roosting. Where accessible, potential roosting features were investigated using an endoscope. Signs of bat use include bat droppings, feeding remains, potential bat access points identified

by characteristic staining and scratches, noise made by bats etc. Potential Roost Features (PRFs) are described according to the scheme outlined in **Table 2.2**, below.

Table 2.2. Scheme for describing the potential suitability of features for bats.

Suitability	Description
Negligible	Negligible features which are likely to be used by roosting bats.
Low	A feature with one or more potential roost sites that could be used by individual bats opportunistically. Potential roost sites which do not provide appropriate conditions and / or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to characteristics and surrounding habitat but unlikely to support a roost of high conservation status.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

After 'Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition)', Collins (2016).

2.4 BIRD ASSESSMENT

During the course of walkover surveys on 18th November 2021 and 23rd February 2022, birds seen and heard were recorded to characterise the general bird community.

2.5 OTHER TAXA ASSESSMENT

Other taxa encountered during the overall ecology field assessment were casually recorded during walkover surveys.

2.6 LIMITATIONS

The habitat survey was undertaken outside the optimum survey period for botanical and habitat surveys (April to September). However, due to the nature of the habitats recorded within the proposed development site, the timing is habitat survey is not considered to be a limitation in this instance.

2.7 EVALUATION & IMPACT ASSESSMENT

Evaluation of ecological features follows the NRA (now TII) publication 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (2009). The following ecological evaluation scheme is utilised:

- International importance
- National importance
- County importance
- Local importance (higher value)
- Local importance (lower value).

Impact assessment follows 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' published by the EPA (2022) (see **Appendix D**).

3 Results

The site is currently a greenfield site and adjoining land uses include agriculture and residential land uses and the site adjoins a national school. The site is bordered on the east and south by a local road. The site is bordered on the east and south by treelines, hedgerows and earth banks. Vegetation removal works had been carried out prior to ecological survey.

3.1 DESKTOP SURVEY

3.1.1 Sites of International Importance

European sites, Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) have been designated under the EU Habitats Directive (92/43/EEC) and the EU Birds Directive (2009/147/EC) respectively. SACs and SPAs form part of a network of sites designated across Europe in order to protect biodiversity within the community, known as Natura 2000 sites and are legally protected by Irish law.

The development site is not located within a Natura 2000 site. Six Natura 2000 sites are located within 15km of the proposed site (see **Table 3.1**). Roaringwater Bay and Islands SAC (000101) is the most proximal to the proposed site as shown in (**Figure 3.1**). The qualifying interests/special conservation interests and conservation objectives of the Natura 2000 sites in the 15km hinterland are summarised in **Table 3.2**.

The proposed site does not contain habitats or botanical communities linked with the qualifying interests of any of the other Natura 2000 sites in the wider area. The potential for indirect impacts and ex-situ impacts on birds associated with Roaringwater Bay and Islands SAC and Sheep's Head to Toe Head SPA is considered in **Chapter 4**.

No further sites, beyond the standard 15km search area, are considered to be relevant to the current assessment.

Table 3.1 - Nature conservation sites surrounding the proposed development site.

Site Name	Site Code	Distance (km)
Natura 2000 sites within 15km		
Roaringwater Bay and Islands SAC	000101	0.18
Dunbeacon Shingle SAC	002280	7.9
Reen Point Shingle SAC	002281	10.9
Lough Hyne Nature Reserve and Environs SAC	000097	11.4
Sheep's Head SAC	000102	12.1
Sheep's Head to Toe Head SPA	004156	10.6
Nationally designated sites within 5km		
Roaringwater Bay and Islands pNHA	000101	0.18
Derreennatra Bog NHA	002105	3.1

An AA Screening has been prepared by O'Donnell Environmental in relation to Natura 2000 sites and accompanies this report.

Table 3.2 - Natura 2000 Site Details.

Site Name & Code	Conservation Objectives and Qualifying Interests	Minimum Distance from Site (km)
Roaringwater Bay And Islands SAC (000101)	The conservation objective of this site is to restore the favourable conservation condition of the followings qualifying interests: • Large shallow inlets and bays [1160] • Reefs [1170] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • European dry heaths [4030] • Submerged or partially submerged sea caves [8330] • Harbour Porpoise (*Phocoena phocoena*) [1351] • Otter (*Lutra lutra*) [1355] • Grey Seal (*Halichoerus grypus*) [1364]	0.18
Dunbeacon Shingle SAC (002280)	• Perennial vegetation of stony banks [1220]	7.9
Reen Point Shingle SAC (002281)	• Perennial vegetation of stony banks [1220]	10.9
Lough Hyne Nature Reserve And Environs SAC (000097)	• Large shallow inlets and bays [1160] • Reefs [1170] • Submerged or partially submerged sea caves [8330]	11.4
Sheep's Head SAC (000102)	• Northern Atlantic wet heaths with *Erica tetralix* [4010] • European dry heaths [4030] • Kerry Slug (*Geomalacus maculosus*) [1024]	12.1
Sheep's Head to Toe Head SPA (004156)	• Chough (Pyrrhocorax pyrrhocorax) [A346] • Peregrine (*Falco peregrinus*) [A103]	10.6

3.1.2 Sites of National Importance

Nature Reserves and Refuges for Fauna are protected under the Irish Wildlife Acts (1976 - 2010). Designated conservation sites include national sites, Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs). NHAs are designated to protect habitats, flora, fauna and geological sites of national importance. While NHAs are legally protected by the Irish Wildlife Acts (1976 - 2010), pNHAs are not. Many designated sites overlap, e.g. a site can be designated as both a SAC and NHA.

One NHA site is located within a 5km distance from the proposed site: Derreennatra Bog NHA (002105, 3.1km). This site has been designated as nationally important as it supports regenerating lowland blanket bog. The bog is host to a population of Slender Cottongrass (*Eriophorum gracile*) which is legally protected under the Flora Protection Order of 1999.

There is one pNHA site located within the 5km hinterland surrounding the proposed site (**Table 3.1**, **Figure 3.1**), namely the Roaringwater Bay and Islands pNHA (000101; 0.18km). No information is published regarding reasons this site is under consideration for designation but its is assumed to align

with the reasons for selection as an SAC and the potential for impacts on the SAC site are addressed in the accompanying AA Screening Report (O'Donnell Environmental, 2022).

There is no viable source-receptor pathway between the proposed site and any other NHA or pNHA sites.

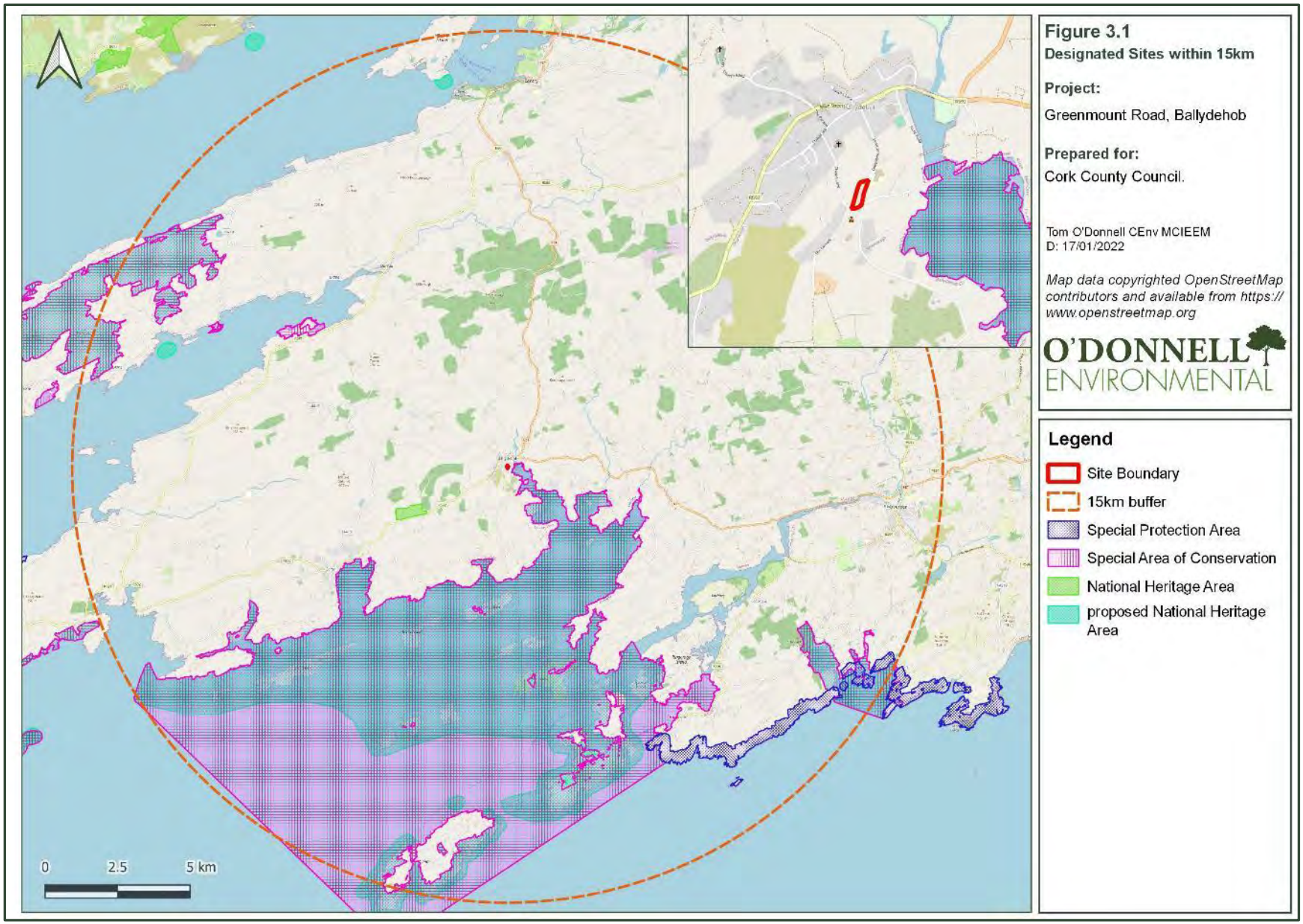


Figure 3.1
Designated Sites within 15km
Project:
Greenmount Road, Ballydehob
Prepared for:
Cork County Council.
Tom O'Donnell CEnv MCIEEM
D: 17/01/2022
Map data copyrighted OpenStreetMap contributors and available from https://www.openstreetmap.org
O'DONNELL ENVIRONMENTAL
Legend
Site Boundary
15km buffer
Special Protection Area
Special Area of Conservation
National Heritage Area
proposed National Heritage Area
0
2.5
5 km

3.2 HYDROLOGICAL CONTEXT

The proposed site is located in the Bandon-Ilen Catchment, Catchment ID 20, sub-catchment EntrepriseCentreSkull_SC_010. The EPA undertakes survey of the water quality of estuaries and near shore coastal waters and based on this they categorise the water quality of the coastal area east of the proposed site known as Roaring Water Bay (IE_SW_140_0000) as having "Good" status (Coastal Waterbody WFD Status 2018-2020).

The site is not directly bordered by any watercourses. Two rivers are situated within close proximity from the site and both flow into Ballydehob Bay. The Shanavagh River (IE_SW_20S360700) located approximately 840 meters to the south of the proposed site. Four watercourses flow to the north of the proposed development which are classified under the same code: IE_SW_20K050700 (referred to as Knockroe River on the www.catchments.ie website), which are situated approximately 430meters northwest of the proposed site at its closest point. The WFD risk status of Shanavagh River is currently 'Unassigned' and under 'Review', while the Knockroe River is 'Not at risk' (River Waterbody WFD Status 2013-2018). Based on topography mapping from NPWS the project site drains away from these rivers and does not appear to be hydrologically connected to either watercourse.

The ground waterbody at the site location (Skibbereen-Clonakilty, IE_SW_G_085) has an overall groundwater status of 'Good' (Ground Waterbody WFD Status 2013-2018).

3.3 HABITATS & BOTANICAL

3.3.1 Desk Study

No legally protected plant species have been previously recorded in the NBDC[3] or BSBI[4] databases for the 2-km grid squares (V93X) within which the proposed development is located. No existing records for species classified as threatened (Critical, Endangered and Vulnerable) and so included on the Ireland red list of vascular plants (Wyse Jackson *et al*, 2016) have been recorded in the 2 km grid square (V93X) on the NBDC database within which the proposed development is located.

The BSBI database holds records for the following species listed on the Flora (Protection) Order, 2015 in the V93 10-km grid square. Four previous records are held for Lesser Centaury (*Centaurium pulchellum*) with the most recent being from 1987-1999 for the 2-km grid square V93V which is located c. 3 km south of the proposed development site. There are 6 records of Slender Cottongrass (*Eriophorum gracile*) with 5 from 2-km grid square V93L (NE of Schull). The most recent records were from the 2010-2019 period. There are 3 previous historic records of Wood Cudweed (*Gnaphalium sylvaticum*) from the V93 10-km grid square from the pre-1930's period.

No records for bryophyte species listed on the Flora (Protection) Order, 2015 were found on the NPWS webmapping facility for legally protected bryophytes[5] around the proposed development site and the Ballydehob area. The FPO bryophyte species *Cephaloziella nicholsonii* has previously been recorded at Cappaghglass on mine spoil, c. 2.5 km south of the proposed development site. The most recent records were made in 2008.

[3] https://maps.biodiversityireland.ie/Map (accessed 18/11/2021)
[4] https://database.bsbi.org/maps/ (accessed 18/11/2021)
[5] https://www.npws.ie/sites/default/files/fpo/taxon/Cephaloziella_nicholsonii_02_Cappaghglass.pdf (accessed 18/11/2021)

Alien invasive plant species, including Japanese Knotweed (*Fallopia japonica*), Giant Rhubarb (*Gunnera tinctoria*), Himalayan Balsam (*Impatiens glandulifera*), Rhododendron (*Rhododendron ponticum*) and Butterfly Bush (*Buddleja davidii*) have been recorded historically in the 10km grid square in which the site is located but not within the 2km grid square (V93X) in which the proposed site is located.

3.3.2 Habitat Survey

No Annex I habitats listed under the EU Habitats Directive are present within the study site and the dominant habitats present are of low ecological value. No botanical species protected under the Flora (Protection) Order 2015, listed in Annex II or IV of the EU Habitats Directive (92/43/EEC), or Red listed in Ireland were recorded. All species recorded during the botanical survey are considered common for similar habitats.

Botanical species protected under the Flora (Protection) Order 2015, listed in Annex II or IV of the EU Habitats Directive (92/43/EEC), or Red listed in Ireland (Wyse Jackson *et al*, 2016) were not recorded during the site visits.

The habitats within the proposed development site consisted mostly of 'Spoil and Bare Ground' (ED2) where the existing vegetation had been cleared recently prior to the initial site visit. A network of shallow 'Drainage Ditches' (FW4) had been dug in the cleared area which connected into a historic underground field drain network and flowed to the north via underground drain. The boundary of the proposed development site consisted of an existing 'Hedgerow' (WL1), 'Treeline' (WL2) and grassy 'Earth Bank' (BL2) which separates the proposed development site from the public road.

The following habitats (with Fossitt codes, as outlined in Section 2.2 above) were recorded within the proposed development site (see **Figure 3.2**):

- Spoil and Bare Ground (ED2)
- Drainage Ditch (FW4)
- Hedgerow (WL1)
- Treeline (WL2)
- Earth Bank (BL2).

An overview of the site is presented in **Plate 3.1** to **Plate 3.5** below. The habitats present within the boundary of the proposed site are described below.

3.3.2.1 Spoil and Bare Ground (ED2)

The site is dominated by Spoil and Bare Ground (ED2, Fossitt (2000)) (see **Figure 3.2**). The area had been recently cleared of vegetation using an excavator and the bare soil was exposed. No vegetation was growing on the soil. Piles of the former vegetation and soil were located across the habitat. The ecological valuation of the spoil and bare ground habitat is considered to be of negligible importance.

Plate 3.1 – Spoil and Bare Ground (ED2) within the proposed development site.

3.3.2.2 Hedgerows (WL1)

This habitat was recorded along the eastern boundary of the proposed development site and consisted of frequent Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*). Elm (*Ulmus* sp.) was recorded occasionally. Bramble (*Rubus fructicosus* agg.), Ivy (*Hedera hibernica*) and Nettle (*Urtica dioica*) were recorded frequently. Harts-tongue fern (*Asplenium scolopendrium*), Soft shield fern (*Polystichum setiferum*), Lesser celandine (*Ficaria verna*) were recorded occasionally. Foxglove (*Digitalis purpurea*) and Polypody fern (*Polypodium* sp.) were recorded rarely. A single mature Sycamore (*Acer pseudoplatanus*) tree was recorded growing in the hedgerow habitat. The core of the hedgerow consisted of a c. 1.2 m high stone and earth bank. The ecological valuation of the hedgerow habitat is considered to be of **Local Importance (Higher Value)**

Plate 3.2 - Hedgerow (WL1) within the proposed development site.

3.3.2.3 Treelines (WL2)

This habitat was also recorded along the eastern boundary with the public road and consisted of frequent Elm along with Sycamore which was rarely recorded. Hawthorn was frequent and showed evidence of past management with cutting and subsequent regeneration. A c. 1 m high stone wall/bank was located under the treeline and consisted of frequent Ivy, Nettle and Yorkshire Fog (*Holcus lanatus*). Herb Robert (*Geranium robertianum*), Harts-tongue fern and Salad Burnet (*Sanguisorba minor*) were occasionally recorded. Dandelion (*Taraxacum* sp.), Bittersweet (*Solanum dulcamara*), Maidenhair Spleenwort (*Asplenium trichomanes*) and Black Spleenwort (*Asplenium adiantum-nigrum*) were rarely recorded. The ecological valuation of the treeline habitat is considered to be of **Local Importance (Higher Value)**.

Plate 3.3 - Treeline (WL2) within the proposed development site.

3.3.2.4 Earth Mound (BL2)

This habitat was recorded along the eastern and southern boundary with the public road and consisted of an earth and stone core bank which was c. 1 - 1.5 m high. The species present included frequent Ivy , Yorkshire Fog, Common Bent (*Agrostis capillaris*), Dandelion, Creeping Buttercup (*Ranunculus repens*) and Nettle. Creeping thistle (*Cirsium arvense*), Bramble, Red Clover (*Trifolium pratense*) and Common couch (*Elymus repens*) were recorded occasionally. Germander speedwell (*Veronica chamaedrys*), Foxglove, Cocksfoot (*Dactylis glomerata*), Ribwort plantain (*Plantago lanceolata*), Maidenhair spleenwort, Herb Robert, Bush Vetch (*Vicia sepium*), Soft Rush (*Juncus effusus*), False Oat Grass (*Arrhenatherum elatius*), Broad-leaved Dock (*Rumex obtusifolius*), Greater Mullein (*Verbascum thapsus*), Lesser Burdock (*Arctium minus*), Yarrow (*Achillea millefolium*), Broadleaf Plantain (*Plantago major*), Common Figwort (*Scrophularia nodosa*) and Columbine (*Aquilegia* sp.) were rarely recorded. An existing gateway was located on one stretch of earth bank. The ecological valuation of the Earth Bank habitat is considered to be of **Local Importance (Lower Value).**

Plate 3.4 – Earth Bank (BL2) within the proposed development site.

3.3.2.5 Drainage Ditch (FW4)

This habitat was recorded within the recently cleared area and consisted of shallow (c. 30 cm) deep trenches which contained a steady flow of water moving from the south to the north. The drains connected into existing historic underground field drains constructed of stone. These habitats are considered to be of **Local Importance (Lower Value).**

Plate 3.5 - Drainage Ditch within the proposed development site (FW4).

Plate 3.6 - Remnant Drainage Ditch within the proposed development site (FW4).

3.3.2.6 Off-Site Works

Connections to surface and foul water mains are within existing roadways. The value of habits affected by off-site works is considered to be negligible.

3.3.2.7 Non-native Invasive Species

Butterfly bush (*Buddleja davidii*) was recorded at two locations along the boundary of proposed development site with the public road. This species was evaluated as being a 'risk of medium impact' invasive species (Kelly, J. *et al*, 2013).

Montbretia (*Crocosmia x crocosmiiflora*) was recorded at two locations along the boundary of proposed development site with the public road. This species has not been risk assessed but has the potential to spread into grasslands, roadsides, forests and riparian areas, where it can compete with native understory or ground vegetation. The dense colonies prevent the regeneration of native vegetation as they smother seedlings.

3.3.2.8 Notable Species

Salad Burnet was recorded along the boundary of proposed development site with the public road. This species has previously been recorded in the NBDC database in 2017 at two locations in Ballydehob. The plants were located at V987351 on the wall opposite Garda Station and further north at V988353. These records represent the south-western most records for the species in Ireland with closest records being from
Cork City. The species has a mainly mid-western and central distribution in Ireland the species preferring "dry grassland and gravelly banks, locally frequent on limestone in the South" (Webb, D.A. *et al*, 1996). It is a very scarce species in Co. Cork with only a handful of sites with recent records, mainly on the limestones of Cork Harbour and east Cork.

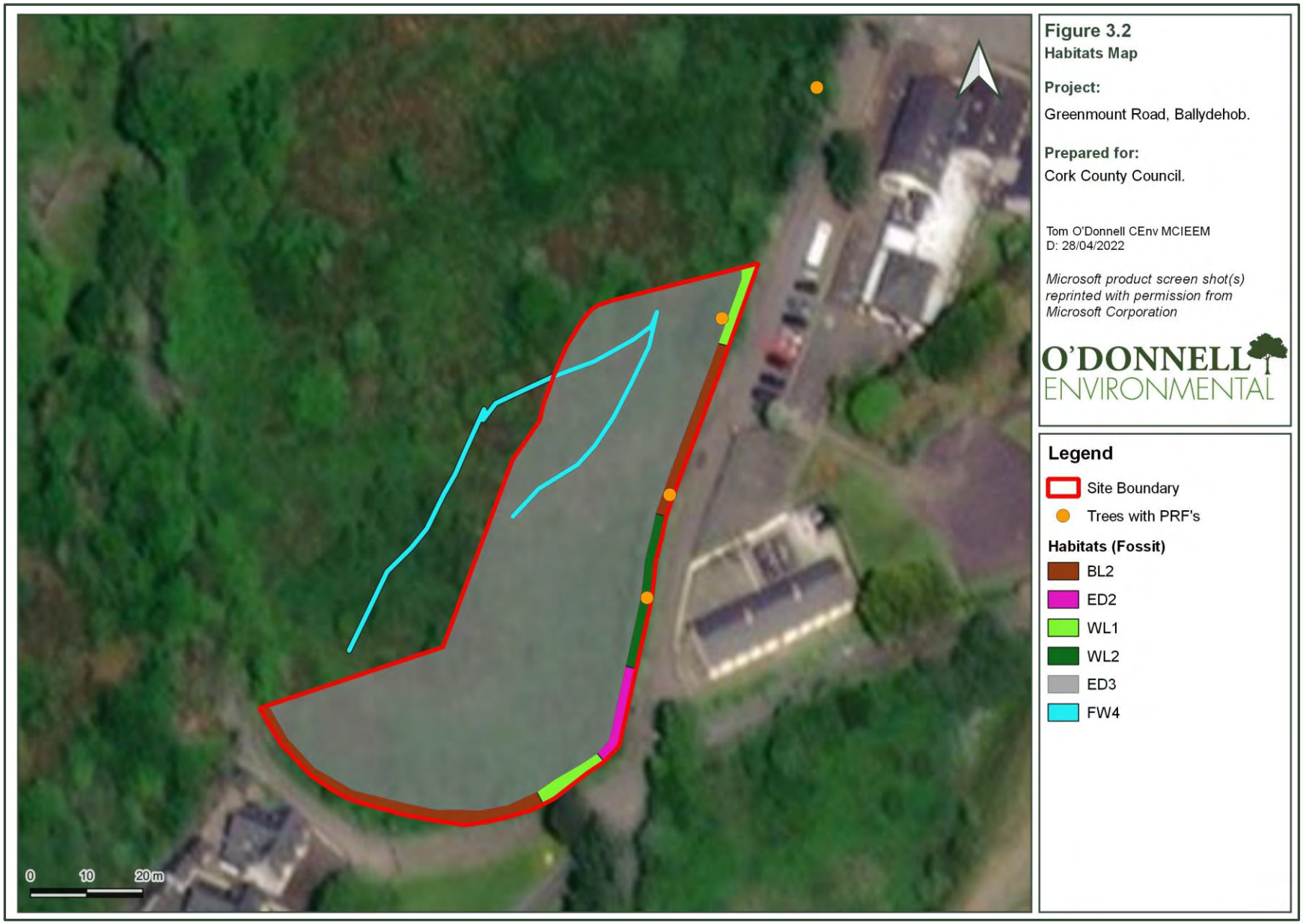


Figure 3.2
Habitats Map
Project:
Greenmount Road, Ballydehob.
Prepared for:
Cork County Council.
Tom O'Donnell CEnv MCIEEM
D: 28/04/2022
Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation
O'DONNELL ENVIRONMENTAL
Legend
Site Boundary
Trees with PRF's
Habitats (Fossit)
BL2
ED2
WL1
WL2
ED3
FW4
0
10
20 m

3.4 MAMMAL ASSESSMENT

The results of surveys carried out for non-volant mammals and bats are outlined below.

3.4.1 Non-volant Mammals

Within the 10km grid square in which the proposed development site is located (V93; NBDC) there are historic records for a total of 14 mammal species (see **Table 3.3**). Red Squirrel, Badger and Otter have previously been recorded in the 1km grid square in which the proposed development site is located (V9835; NBDC).

Table 3.3 - Mammal species previously recorded within the 10km grid square (V93) in which the site is located (NBDC).

Common name	Species name	Legal Protection*	Conservation Status*
American Mink	*Mustela vison*	-	AIS
Bank Vole	*Myodes glareolus*	-	AIS
Brown Rat	*Rattus norvegicus*	-	AIS
Eurasian Badger	*Meles meles*	WA	LC
Eurasian Red Squirrel	*Sciurus vulgaris*	WA	LC
European Otter	*Lutra lutra*	Annex II/IV, WA	LC
European Rabbit	*Oryctolagus cuniculus*	-	LC
House Mouse	*Mus musculus*	-	LC
Irish Hare	*Lepus timidus* subsp. *hibernicus*	Annex V, WA	LC
Irish Stoat	*Mustela erminea* subsp. *hibernica*	WA	LC
Red Fox	*Vulpes vulpes*	-	LC
Sika Deer	*Cervus nippon*	-	AIS
European Hedgehog	*Erinaceus europaeus*	WA	LC
Wood Mouse	*Apodemus sylvaticus*	-	LC

Source: https://maps.biodiversityireland.ie/Map. Accessed 01/12/2021.
* Annex status (EU Habitats Directive), WA (Protected under Wildlife Acts 1976 and 2000).
** LC – Least Concern (Marnell *et al*., 2019); AIS - Alien Invasive Species.

Areas of soft mud within the site were examined for the presence of prints during the survey, and Red Fox was confirmed to be present (**Plate 3.7**). No burrows or other underground dwellings were found to be present within the site boundary or in its immediate environs. Domestic cat and dog prints were also observed during the survey. Though not recorded during the survey, it is likely that other mammal species are occasionally present in the area.

Plate 3.7 – Red Fox print.

Based upon the results of non-volant mammal assessment and considering the scale and local context of the proposed site, the study site is considered to be of **Local Importance (Lower Value)** for non-volant mammals.

3.4.2 Bats

All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Act (2000). All Irish bats are listed in Annex IV of the Habitats Directive and the Lesser horseshoe bat is further listed under Annex II.

3.4.2.1 Data Search

The following bat species have previously been recorded in the 10km grid square (V93) in which the site is located:

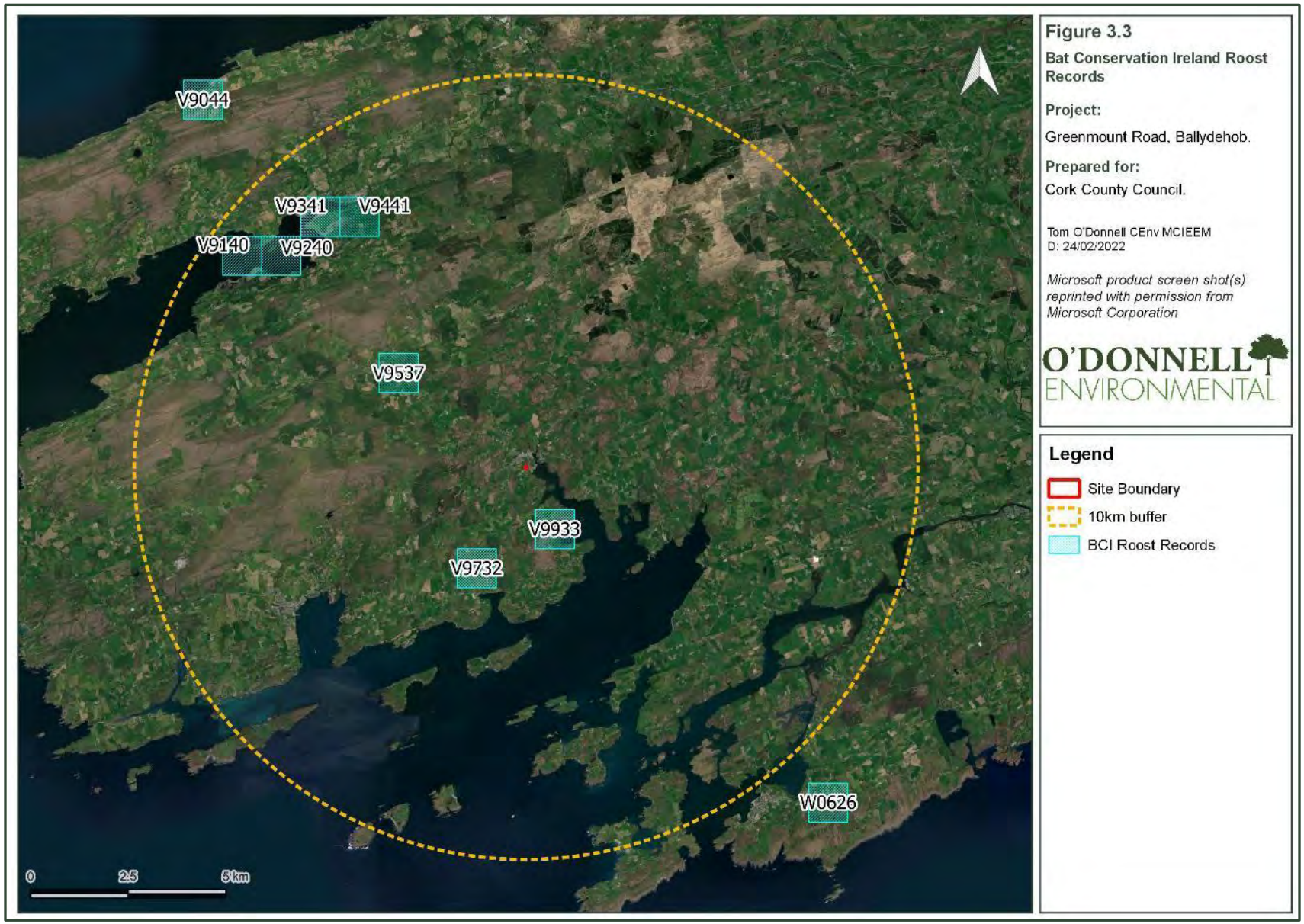
- Brown Long-eared Bat (*Plecotus auritus*)
- Leisler's Bat (*Nyctalus leisleri*)
- Lesser Horseshoe Bat (*Rhinolophus hipposideros*)
- Natterer's Bat (*Myotis nattereri*)
- Common Pipistrelle (*Pipistrellus pipistrellus*)
- Soprano Pipistrelle (*Pipistrellus pygmaeus*).

Bat Conservation Ireland conducted a search of available bat records within 10km of the study area on 15th November 2021 at the request of O'Donnell Environmental, and a number of roost records were provided and these are described in **Table 3.4**. The locations are shown in **Figure 3.3** and refer to the 1km grid square in which the roost was recorded. There are previous records for a Brown Long-eared roost and a Natterer's Bat roost at Foilnamuck, Co. Cork (Irish Grid Reference: V9933) approximately 1.5km south of boundary of the proposed site.

Table 3.4 – Bat Conservation Ireland records for bat roosts within 10km of the study area.

Grid Reference	Species	Address
V9044	Brown Long-eared Bat	Gerahies, Fahane, Bantry, Co. Cork.
V9140	*Pipistrellus* spp. (45kHz/55kHz)	Dunbeacon, Durras, Co. Cork.
V9240	Brown Long-eared Bat	Durrus, Bantry, Co. Cork.
V9341	Natterer's Bat, Brown Long-eared Bat	Duras, Co. Kerry
V9441	Brown Long-eared Bat	Durrus, Bantry, Co. Cork.
V9537	Brown Long-eared Bat	Ratheenroe, Co. Cork
V9732	Brown Long-eared Bat	Rossbrin, Co. Cork
V9933	Natterer's Bat, Brown Long-eared Bat	Foilnamuck, Co. Cork
W0626	Brown Long-eared Bat	Baltimore, Co. Cork

Note: *Pipistrellus* spp. (45kHz/55kHz) denotes a Pipistrelle bat roost which may be either Common or Soprano Pipistrelle.


V9044
V9341
V9441
V9140
V9240
V9537
V9933
V9732
W0626
0
2.5
5km
Figure 3.3
Bat Conservation Ireland Roost Records
Project:
Greenmount Road, Ballydehob.
Prepared for:
Cork County Council.
Tom O'Donnell CEnv MCIEEM
D: 24/02/2022
Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation
O'DONNELL ENVIRONMENTAL
Legend
Site Boundary
10km buffer
BCI Roost Records

The overall bat suitability index value (20.22) according to 'Model of Bat Landscapes for Ireland' (Lundy *et at.* 2011) suggests the landscape in which the proposed site is located is of low suitability for bats in general. Species specific scores are provided in **Table 3.5**. The Annex II (EU Habitats Directive) listed bat species, Lesser Horseshoe Bat, is assigned a score of 5.

Table 3.5 - Suitability of the study area for the bat species according to 'Model of Bat Landscapes for Ireland' (Lundy *et al.* 2011).

Common name	Scientific name	Suitability index
All bats		*20.22*
Soprano pipistrelle	*Pipistrellus pygmaeus*	34
Brown long-eared bat	*Plecotus auritus*	37
Common pipistrelle	*Pipistrellus pipistrellus*	31
Lesser horseshoe bat	*Rhinolophus hipposideros*	5
Leisler's bat	*Nyctalus leisleri*	19
Whiskered bat	*Myotis mystacinus*	6
Daubenton's bat	*Myotis daubentonii*	27
Nathusiius pipistrelle	*Pipistrellus nauthusii*	1
Natterer's bat	*Myotis nattererii*	22

3.4.2.2 Visual Roost Survey

The proposed project will involve works affecting or in close proximity potential roosting features (trees) such that disturbance to roosting bats would be caused should they be present. Ground level roost inspections were carried out in winter, which is the optimal time of year for such surveys.

No roosting bats were encountered during the current survey, and no unoccupied roosts which contained signs of bats were encountered. No 'moderate' or 'high' suitability tree roosts were identified. Maternity roosts are of considerable conservation importance to bats and there is no potential for a maternity roost of any bat species to occur at the proposed site.

The PRFs surveyed consisted of features present on trees growing on the site boundaries. Three trees had features which are considered to have 'low' potential to support roosting bats. The trees are categorised according to their potential suitability for roosting bats following Collins (2016) (see **Table 2.2**). This categorisation and the results of the assessment are detailed in **Table 3.8** below and the locations of relevant trees is shown in **Figure 3.2**.

Table 3.8 - Assessment of roosting potential of trees within and proximal to site boundary.

Tree	Suitability for Roosting Bats	Comment
T_01	Low	Semi-mature multi-stemmed Ash with minor rot holes visible. Located approximately 32m north of the site.
T_02	Low	Semi-mature Sycamore tree. Some small rot holes and bark tear-outs may support small numbers of individually roosting bats.
T_03	Low	Sycamore with dense ivy cover but no rot holes or other PRF's were visible.

Potential roosting features may be present but not visible during a ground level survey, particularly in ivy covered trees and larger specimens. A number of potential roosting features (described in **Table 3.8**) were identified, and these were considered to be of sub-optimal quality in general and not suitable for large numbers of bats or maternity roosts. It is possible that some of these features will be used at least occasionally by day-roosting bats. Most of Irelands bat species are known to exploit a wide variety of roosting opportunities with some being used infrequently. Over time, the value of many of these roosting features to bats may increase.

Based upon the results of habitat appraisal and daytime visual roost surveys, and considering the local context of the proposed site, the study site is considered to be of **Local Importance (Lower Value)** for bats.

3.5 BIRD ASSESSMENT

3.5.1 Field Survey

Note was made of birds seen and heard during ecological walkover surveys and many were recorded from adjacent habitats or overflying the site. 16 species of birds were noted as follows:

- Goldfinch (*Carduelis carduelis*)
- Robin (*Erithacus rubecula*)
- Woodpigeon (*Columba palumbus*)
- Rook (*Corvus frugilegus*)
- Blue Tit (*Cyanistes caeruleus*)
- Blackbird (*Turdus merula)*
- Chaffinch (*Fringilla coelebs*)
- Jackdaw (*Corvus monedula*)
- Common Gull (*Larus canus*)
- Dunnock (*Prunella modularis*)
- Goldcrest (*Regulus regulus*)
- Pied Wagtail (*Motacilla alba yarrellii*)
- Magpie (*Pica pica*)
- Wren (*Troglodytes troglodytes*)
- Grey Wagtail (*Motacilla cinerea*)
- Snipe (*Gallinago gallinago*).

The species recorded included Goldcrest and Common Gull which are amber-listed, and Grey Wagtail and Snipe which are red-listed in *Birds of Conservation Concern in Ireland 2020-2026* (BoCCI; Gilbert *et al.*, 2021). The bird species recorded during this survey represent a typical assemblage of hedgerow/woodland edge habitats in Ireland. While the surveys were limited to two walkover surveys carried out during winter, the scale of the proposed site, the nature of the habitats contained within and the species recorded during the survey do not indicate that the site is of high value for its bird assemblage. The site is considered to be of **Low Value, Local Importance,** for birds.

3.5.2 Overall Site Evaluation

Taking the above into consideration, the proposed development site is considered to be of **Low Value, Local Importance.**

4 Potential Impacts

Potential ecological impacts which could arise as a result of the proposed development are discussed below. Avoidance and mitigation measures in respect of identified potential impacts are discussed in Chapter 5 - Avoidance and Mitigation Measures. The predicted residual impact of identified potential impacts following application of avoidance and mitigation measures are discussed in Chapter 6 - Residual Impacts.

4.1 DO NOTHING IMPACT

If the proposed development does not proceed, the 'do nothing' scenario is that the existing environment within the site boundary is likely to remain as described herein in the short term at least, as vegetation regenerates following clearance. Existing surface water drainage patterns would continue as occurs currently.

4.2 POTENTIAL EFFECTS ON SURFACE WATER

The below sections discuss the potential effects of the proposed development on surface water in both the construction and operational phases.

Surface water runoff from the proposed site currently discharges to an old roadside drain on the northeast of the site and discharged via existing infrastructure to a foreshore outfall pipe. The potential for negative impacts on surface water is explored below. The potential for negative impacts on the qualifying interests of the relevant Natura 2000 sites as a result of indirect and ex-situ impacts is addressed in the accompanying AA Screening report produced by O'Donnell Environmental.

4.2.1 Construction Phase

Habitat loss or deterioration of the ecological status of surface water can occur from the indirect effects of contaminated run-off or discharge into the aquatic environment, through siltation, nutrient release and/or contamination.

The construction phase of the development will involve site preparation (e.g. earthworks, excavation etc.). In the absence of mitigation, the proposed construction phase works have the potential to result in sediment run-off during prolonged heavy rain where excavated areas and spoil heaps are unprotected. Similarly, the operation and refuelling of machinery during construction has the potential to result in leaks of hydrocarbons in the absence of mitigation.

It is understood that the site is not at risk of flooding (CroCon Engineers Ltd., 2022) but water may arise during construction works from groundwater sources and as a result of dewatering of excavations and rainfall.

Measures intended to manage and protect local surface water during the construction phase are detailed in the outline pCEMP and discussed in Chapter 5 - Mitigation measures.

4.2.1.1 Foul Water

The sources of foul drainage associated with the temporary welfare facilities in the construction phase include toilets and hand wash basins. In the absence of appropriate measures, mismanagement of wastewater at the proposed site would result in the discharge of pollutants from the site.

As outlined in the pCEMP, wastewater will be stored appropriately on-site and disposed of by removal from site to an appropriately licensed treatment facility. These standard measures avoid the potential for impacts associated with foul water during the construction phase.

4.2.2 Operational Phase

The operational phase of the proposed development will generate both surface runoff and foul wastewater. In the absence of appropriate measures, this water has the potential to result in negative environmental impacts on downstream receptors.

Proposed methodologies to appropriately manage and dispose of surface water are outlined in the pCEMP (CroCon, 2022). The surface water flow from the site will pass through a petrol interceptor and a silt-trap system before discharge into the existing municipal surface water drainage network via a newly installed pipe. The proposed connection point is located 65m northeast of the proposed site at an existing drain (see **Appendix B**).

Foul waste from the proposed development will be conveyed to Ballydehob WWTP for treatment. The plant capacity is 700 PE and the wastewater receives primary treatment prior to discharge to Ballydehob Bay. Irish Water's 2020 Annual Environmental Report (AER) for Ballydehob WWTP (Irish Water, 2021) states that in 2020 the plant received a weekly peak load of 405 PE. The Ballydehob WWTP is therefore under-capacity and currently operating at 58% of maximum capacity. The 2019 report stated that the plant received a weekly peak load of 400 PE and therefore was operating at 57% of maximum capacity (Irish Water, 2020).

Despite the fact that Ballydehob WWTP is operating well within its design capacity, the final effluent is non-compliant with relevant Emission Limit Values (ELVs) (Irish Water 2020 & 2021). The 2020 AER for example states that the relevant ELVs were exceeded for Biological Oxygen Demand (BOD) and suspended solids based on six samples taken in 2020.

4.3 POTENTIAL EFFECTS ON HABITATS AND FLORA

The below sections discuss the potential effects of the proposed development on habitats and flora in both the construction and operational phases.

4.3.1 Construction Phase Impacts

No Annex I habitats listed under the EU Habitats Directive are present within the study site. No high-impact alien invasive plant species (e.g. Japanese Knotweed) are present on the proposed site but Butterfly Bush was recorded at the site boundaries. Butterfly Bush is classified as a medium-impact invasive plant species. This species has the potential to exclude neighbouring native plant species from the site through competition for resources.

Elements of the project involve the loss of hedgerows (WL1), which is considered to be of high ecological value at a local level. All species recorded during the botanical survey are considered common for similar habitats in the general area. Widening of the roadside access and removal of treeline to facilitate access to parking spaces will result in the loss of approximately 60m of treeline. Realignment of the existing roadway will result in additional loss of approximately 40m of hedgerow, treelline and earthbank habitats, which will be reinstated at a revised realignment.

Habitats lost will be replaced with 'Buildings and Artificial Surfaces' (BL3) (see **Appendix A**).

The importation of material to a site gives rise to the potential for contamination by an alien invasive plant species such as Japanese Knotweed. The introduction of such a species would represent a negative ecological impact.

The presence of Salad Burnet was confirmed at the southern boundary of the site. Although this plant is not legally protected, it is locally rare and the presence of this species at this site represents the south-westernmost recording of this plant in Ireland. Removal of boundary habitats will likely result in the local extinction of this plant, particularly within the site boundaries.

4.3.2 Operational Phase Impacts

There will be no additional removal of existing habitat during the operational phase of the proposed development. Trees planted at construction stage will continue to mature and increase in ecological value over time. Species rich grassland will continue to be protected and maintained appropriately.

The overall impact on local habitats and flora as a result of the operation of the proposed development is considered to be a not significant negative impact.

4.4 POTENTIAL EFFECTS ON MAMMALS

Impacts on non-volant and volant mammals are discussed separately below.

4.4.1 Non-Volant Mammals

The below sections discuss the potential effects of the proposed development on non-volant mammals in both the construction and operational phases.

4.4.1.1 Construction Phase

Following site clearance, little evidence of mammal usage was found (with the exception of fox footprint visible in mud). Prior to site clearance, the scrub habitat which previously occupied the site would likely have been used by mammals including Badger, Fox, Hedgehog etc., at least occasionally. No evidence of underground dwellings were visible following site clearance. The Annex II listed species Otter were not recorded on the site and is unlikely to occur due to remoteness to watercourses.

Construction works will cause some local displacement of terrestrial mammals (including Red Fox and possibly Badger) during site clearance and construction as a result of noise. Deep excavations can potentially entrap mammals commuting across the site. Should there be pooled water in these excavations there is potential for drowning. Inappropriate or excessive

lighting during the construction phase can cause disturbance to mammals at night. The inappropriate disposal of food wastes during the construction phase can encourage scavenging by mammals (and birds) at the site.

Localised increases in noise and dust levels are likely to occur during the construction phase. In the absence of mitigation, these impacts could give rise to indirect negative impacts on some bat and bird species present in the local environment. Noise will occur through the operation of machinery (excavation, pile driving, etc.). Dust may arise during construction works if dry soil or other material is allowed to become windborne.

The pCEMP outlines measures which will avoid or reduce the potential for negative effects on non-volant mammals during the construction stage. Proposed avoidance and mitigation measures are discussed further in Section 5, and the residual impact is discussed in Section 6.

4.4.1.2 Operational Phase

No additional habitat loss will occur during the operational phase. The site is likely to be visited by foraging local mammals by night when the site is unlit and vacant.

Relative to the condition of the site prior to vegetation clearance, the proposed amenity grassland areas and other proposed habitats post-construction are likely to lead to a reduction in foraging opportunities for mammals such as Badger and Hedgehog. Alternative foraging opportunities for these species are widely available locally. The proposed residential development will result in increased anthropogenic disturbance relative to the current situation.

External lighting is proposed as discussed in **Section 1.2.2**. Predicted light spill associated with this access related lighting is shown as 'lux contours' in **Figure 4.1**. The disturbance due to light spill associated with access lighting is predicted to be highly localised (largely contained within the redline boundary) and adjoining roadway and of minimal significance. The mammals regularly present at the proposed site are habituated to the general noise, light and traffic-related disturbance given proximity to the surrounding residences, roadway and nearby residential areas.

The overall effect on non-volant mammals at the site and surrounding locality during the operational phase is considered to be a slight negative effect.

4.4.2 Bats

The below sections discuss the potential effects of the proposed development on bats in both the construction and operational phases.

4.4.2.1 Construction Phase

The construction phase will result in the loss of an area of hedgerow and treelines (WL1 and WL2). An ecological assessment of those trees which will be removed as a result of the proposed development was carried out, and no evidence was recorded of the use of the trees by bats although some potential roosting features were identified. The removal of trees will be required to facilitate roadside access and realignment of local roadway bordering the site. No other proposed works will have a direct impact on a potential bat roost. Should bat(s) be roosting within trees during tree felling (i.e. in the absence of appropriate mitigation measures)

a slight negative impact on local bat populations is likely to occur. Additionally, this may result in an offence under the Wildlife Act 1976 (as amended).

Vegetation removal and illumination of retained vegetation will impact foraging and commuting bats that use treelines, hedgerows and other similar features. Treelines/hedgerows maintain landscape connectivity and provide commuting bats with waypoints and corridors through which they commute to and from roosts/foraging areas. The loss of these treeline and hedgerow features on site will reduce landscape connectivity and therefore possibly reduce landscape connectivity for bats.

Three trees of 'low' suitability potential roosting opportunities were identified in trees surrounding the site. Some of the identified roosting features may be used by individual or small numbers of bats, at least occasionally. Indirect impacts on bats could arise as a result of noise and vibration should these bats roosts be occupied. Construction can result in noise and air emissions through the use of heavy machinery for example. Of particular relevance to bats is the use of generators which create noise and vibration and are often left running at night. In this instance, generators will not be required at night, and therefore this potential impact is avoided.

Inappropriate or excessive illumination of treelines or hedgerow areas at night can cause disturbance to roosting, commuting and foraging bats. Artificial lighting is thought to increase the chances of bats being predated upon by avian predators (e.g. owls), and therefore bats may modify their behaviour to avoid illuminated areas.

The use of heavy machinery in the root zone of trees can cause damage, resulting in increased tree morbidity and mortality. Equally, the use of machinery in proximity to trees can result in accidental damage to the trunk and branches of trees. In the medium and long terms this could result in the death of trees which provide bat roosting opportunities. The pCEMP sets out measures to prevent this adverse ecological impact.

Construction works will involve the permanent loss of former scrub habitat which will not be offset by proposed landscaping works.

Irish bat species such as Common and Soprano Pipistrelle favour woodland edge and aquatic habitats for foraging which will be minimally affected by the loss of hedgerows and ditches. The proposed site layout plan (**Appendix A**) allows for areas of tree planting and wildflower meadow. This will have the effect of providing some additional, high-quality, foraging opportunities for such bats locally.

The pCEMP sets out measures in relation to noise, dust and lighting and during construction works which will avoid or reduce adverse ecological impacts.

4.4.2.2 Operational Phase

Relative to the construction stage, no additional habitat loss will occur during the operational phase. The establishment and maturation of proposed habitats will increase the value of the site relative to the construction phase for bat species. The overall impact on the value of the site to foraging bats is likely to be slightly diminished when comparing the pre-construction to operational phases.

As discussed above, artificial illumination can cause disturbance to roosting, commuting and foraging bats. While all bat species have a low tolerance for light levels, the following bat species are particularly sensitive to elevated light levels: Brown Long-eared Bat, Whiskered Bat, Natterer's Bat, Daubenton's Bat and Lesser Horse-shoe Bat (BCI, 2010). Leisler's Bat and Pipistrelles can be attracted to sources of light to feed on the insects which congregate there, and this could have the effect of disturbing existing foraging patterns can introduce competitive advantages to the detriment of more light sensitive species.

Advice was provided by O'Donnell Environmental during the design of the proposed outdoor lighting, in order to mitigate by design. Following best practice guidance light fittings with minimum (0 to <5%) upwards light will be used. While no definitive information on the acceptable level of artificial lighting on bats is available, 2 lux is considered to be a reasonable level of illuminance below which significant negative impacts on bats are unlikely to occur, at least for the least light-sensitive bat species. For comparison, summer sunshine measures approximately 50,000 lux and typical roadside lighting measures 5 lux (Bat Conservation Trust, 2018). Light spillage of greater than 2 lux is likely to be contained entirely within the redline boundary and light spillage beyond the redline boundary is likely to be minimal in extent and significance (see **Figure 4.1**).

Slight disturbance is likely to occur to bats foraging and commuting within the proposed site and its immediate environs when the operation lighting is illuminated.

The overall effect on bats at the site and surrounding locality during the operational phase is considered to be a slight negative effect.

4.5 POTENTIAL EFFECTS ON BIRDS

The below sections discuss the potential effects of the proposed development on birds in both the construction and operational phases.

4.5.1 Construction Phase

The assemblage of bird species recorded at the proposed site is typical of hedgerow / woodland edge habitats in Ireland. The nature of the habitats present at the site, and the species recorded during the survey, do not indicate that the site is of high value for its bird assemblage. Relevant bird species associated with the Sheep's Head to Toe Head SPA are unlikely to breed at or adjacent to the proposed site.

Site clearance will see the permanent loss of a small area of hedgerow (WL1) and some treeline habitat (WL2) at the proposed site. Otherwise, boundary vegetation will not be directly impacted.

Construction activity is likely to cause localised disturbance to the birds present in or close to the development footprint. Should works be carried out in spring or summer there is potential to indirectly impact upon nesting birds occurring at the site through noise and light disturbance.

If edible wastes are not disposed of appropriately during construction this has the potential to attract avian scavengers to the site.

Avoidance and mitigation measures are outlined below to address the potential for disturbance to breeding birds during the site clearance and construction phases.

4.5.2 Operational Phase

The operational phase of the proposed works will not result in any additional habitat loss relative to the construction phase.

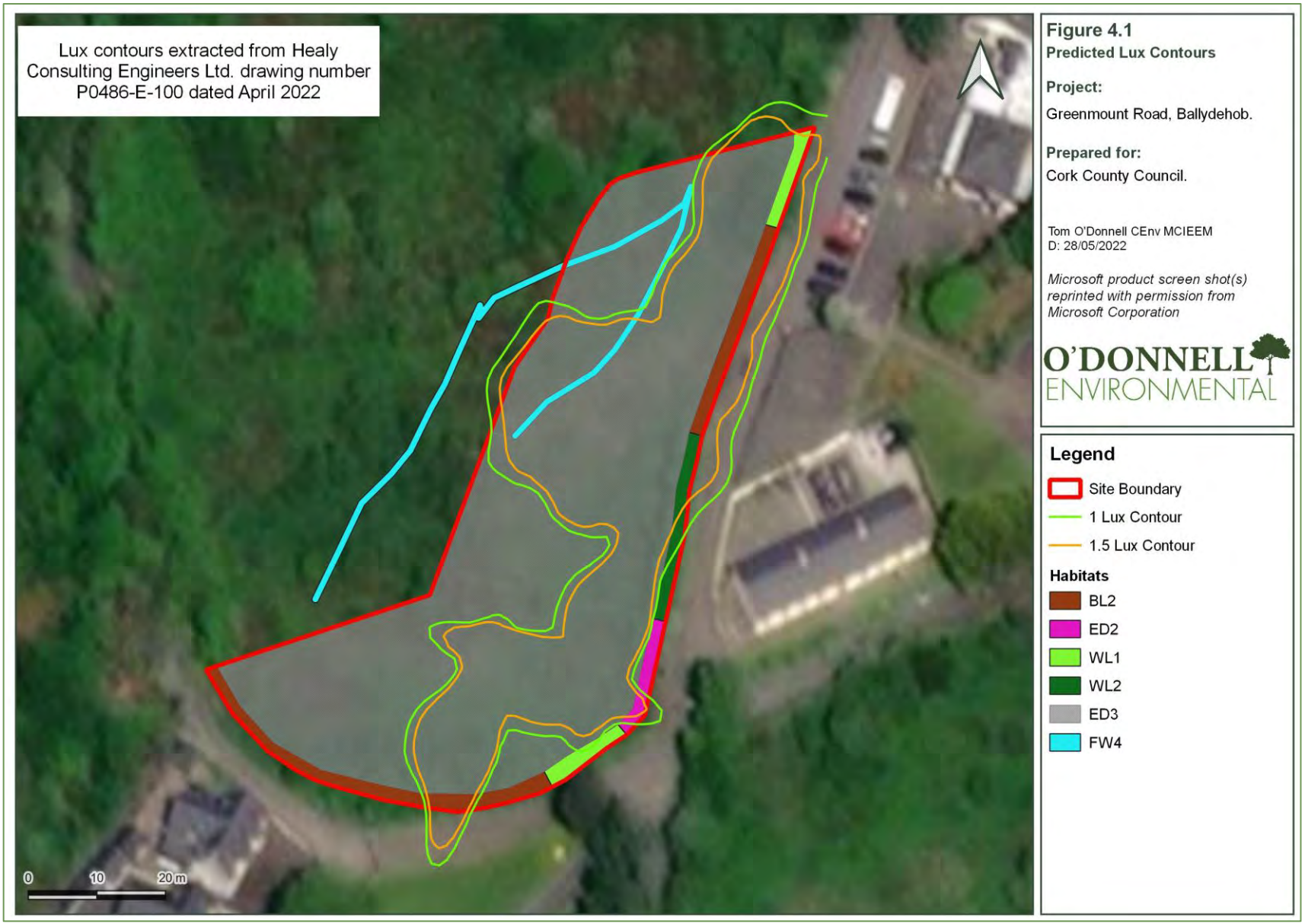
Relative to the current situation the operational phase of the proposed development will result in increased disturbance effects due to human activity and lighting.

It is likely that light spillage will reduce the value of boundary habitats to bats, as well as nesting and roosting birds, particularly in winter when the screening effect of trees is reduced, and artificial lighting is in use more frequently. Following best practice guidance light fittings with minimum (0 to <5%) upwards light will be used which will minimise impacts on night flying birds and bats.

The overall impact on birds as a result of the operational phase of the proposed development is considered to be slight negative.

4.6 CUMULATIVE IMPACTS

A review was undertaken of significant planning applications proximal to the study area and no planning applications which are relevant to the assessment of in-combination effects were found.


Lux contours extracted from Healy Consulting Engineers Ltd. drawing number P0486-E-100 dated April 2022
0
10
20 m
Figure 4.1
Predicted Lux Contours
Project:
Greenmount Road, Ballydehob.
Prepared for:
Cork County Council.
Tom O'Donnell CEnv MCIEEM
D: 28/05/2022
Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation
O'DONNELL ENVIRONMENTAL
Legend
Site Boundary
1 Lux Contour
1.5 Lux Contour
Habitats
BL2
ED2
WL1
WL2
ED3
FW4

5 Avoidance and Mitigation Measures

Avoidance and mitigation measures in relation to potential impacts identified above are discussed below.

5.1 MEASURES FOR LOCAL SURFACE WATER

Measures for the protection of local surface water during the construction and operational phases are outlined below.

5.1.1 Construction Phase

Measures intended to manage and protect local surface water during the construction phase are detailed in the outline pCEMP and include the following commitments:

- All machinery will be regularly inspected and maintained, and all vehicles will carry mobile spill kits. Staff will be instructed in the proper use and disposal of spill kits.
- Through all stages of the construction phase the contractor will ensure that good housekeeping is maintained at all times and that all site personnel are made aware of the importance of the nearby aquatic environments and the requirement to avoid pollution of all types.
- Sufficient on-site cleaning of vehicles prior to arrival at, and upon leaving the site and on nearby roads, will be carried out, particularly during groundworks and works in vicinity of drains and watercourses.
- The Construction Manager will fulfil the Environmental Manager role and will be responsible for the pollution prevention programme and will ensure that checks are carried out to ensure compliance. A record of these checks will be maintained.
- An Ecological Clerk of Works will be engaged to carry out regular site audits.

5.1.2 Operational Phase

Sustainable Drainage System (SuDS) protocols will be implemented to ensure a high standard of surface water runoff from the proposed development. The surface water flow from the site will pass through a petrol interceptor and a silt-trap before discharge into the existing municipal surface water drainage network (CroCon Engineers Ltd., 2022).

5.2 MEASURES FOR HABITATS AND FLORA

Avoidance and mitigation measures to address identified potential negative effects on habitats and flora during the construction and operational phase of the proposed development are detailed below.

5.2.1 Construction Phase

Boundary habitats which are to be retained will be fenced off prior to the commencement of works as described in the pCEMP to protect these habitats from accidental ingress. The pCEMP sets out specific measures in relation to tree root protection which are considered sufficient to prevent this adverse ecological impact.

Salad Burnet plants that are established in areas that are designated for removal (hedgerows, earth banks etc.) will be translocated to similar habitats that are to be retained. The new habitat should provide the plants with similar resources (light, soil type etc.) to the original habitat. A suitably qualified Ecologist/Botanist will be engaged to carry out the translocation works.

5.2.2 Operational Phase

The use of fertilisers, herbicides and pesticides will be avoided where possible during the operational phase. If required, such products will be used in accordance with manufacturer's instructions.

Butterfly Bush and Montbretia have been identified growing in boundary habitats. An invasive species control programme will be undertaken prior to construction at the site in line with best available methods of control and eradication (e.g. Maguire *et al.*, 2008; NRA Guidelines (2010); Fennell *et al*. (2018) to ensure that non-native, potentially invasive plant species are not spread across the site during development and/or to surrounding areas due to construction activities.

Regarding the proposed wildflower meadow area, this area will be established by selection of appropriate nutrient poor topsoil and natural regeneration the soil's existing seed bank, following guidance provided by the All-Ireland Pollinator Plan. An Ecologist will be consulted regarding the sourcing of soil and the establishment of wildflower meadow. Commercial wildflower seed mixes will not be used as they can contain non-native and potentially invasive species which displace native flora if sown in the wild. Furthermore, they run the risk of introducing pests, diseases and new genetic strains which may displace or compromise the local, naturally occurring flora.

It is understood that tree planting on lands adjoining the proposed site to the west (see **Appendix A**) may be carried out in the future but does not form part of the current proposal and therefore is not considered in the current report.

5.3 MEASURES FOR MAMMALS

Measures for non-volant and volant mammals are discussed separately below.

5.3.1 Non-Volant Mammals

Avoidance and mitigation measures to address identified potential negative effects on non-volant mammals during the construction and operational phase of the proposed development are detailed below.

5.3.1.1 Construction Phase

A pre-construction mammal survey will be carried out by a suitably qualified Ecologist immediately before the commencement of vegetation clearance. This will identify any change in the usage of the site, particularly regarding the presence of any protected breeding or resting sites, in the period between the submission of the planning application and the commencement of associated site works. The Ecologist will advise on the need for any additional requirements in the event the ecological context of the site has changed.

Suitable fencing will be used if relevant to exclude mammals from hazardous areas including deep excavations.
Some lighting is required during the construction phase for security and safety reasons. The pCEMP sets out measures in relation to artificial light and which are considered sufficient to minimise any adverse ecological impacts on non-volant mammals. The following measures will be applied:

- Lighting will be positioned and directed as to direct away from adjacent buildings and residences, ecological receptors etc.
- Lights will be cowled/louvered and angled downwards to minimise light spillage to unintended receptors.
- Lighting will be provided with the minimum luminosity sufficient for safety and security purposes.
- Motion sensor lighting and low energy consumption fittings will be installed to reduce usage and energy consumption.

The pCEMP sets out measures in relation to housekeeping and which are considered sufficient to prevent any significant adverse ecological impacts related to attraction of scavengers. These measures include the proper use and daily emptying of bins.

5.3.1.2 Operational Phase

N/A

5.3.2 Bats

Avoidance and mitigation measures to address identified potential negative effects on bats during the construction and operational phase of the proposed development are detailed below.

5.3.2.1 Construction Phase

Trees with potential to be used by roosting bats are proposed to be removed to facilitate construction. These trees will be subject to survey by an Ecologist who is licensed to carry out bat disturbance and handling. The survey will confirm that no bats are present prior to felling of the tree. If bats are found a derogation license will be secured from NPWS prior to works.

The pCEMP sets out other measures in relation to noise and dust and which are considered sufficient to avoid any significant adverse ecological impacts.

During construction, works will generally take place during daylight hours only, and the site will not be lit during the hours of darkness. If some lighting is required for health, safety or security reasons, lighting shall be directed away from sensitive ecological features. As outlined in the pCEMP, night-time security lighting will be motion activated and not permanently illuminated. The pCEMP sets out further measures in relation to artificial light and these are summarised in **Section 5.3.1.1.** These measures are considered sufficient to prevent any adverse impacts on roosting, commuting and foraging bats.
While no confirmed bat roosts will be lost as a result of the proposed project, an artificial bat roost will be incorporated into the southern facade of 'Block B' as an ecological enhancement measure. The roost will be placed at 4 to 5 meters above ground level and proposed trees planted adjacent the building wall will provide screening and connective habitat for emerging

bats. External lighting will be directed away from the roost entrance. A Schwegler 'Bat Tube 1FR' [6] (or similar) is recommended (see **Appendix E**).

Surface mounted or tree mounted bat boxes (or bird boxes) are not recommended as they would be vulnerable to vandalism.

5.3.2.2 Operational Phase

Boundary vegetation (treelines and hedgerows) that are to be retained will be allowed to develop naturally and shall be preserved during the operational phase of the proposed project. Any arboricultural or horticultural intervention shall be the minimised as much as possible to preserve the botanical communities present.

The lighting design process seeks to minimise light pollution on nearby trees and semi-natural habitats, however light spillage will occur onto these features. In order to reduce the ecological disturbance of light spillage the proposed design complies with the following Bat Conservation Trust (2018) recommendations:

- LEDs will be used, as these emit minimal ultra-violet light.
- White and blue wavelengths will be avoided; wavelength will be <2,700 kelvin.
- Lights will peak higher than 550nm.

Subsequent replacements will comply with the above specifications also.

5.3.3 Potential Effects on Birds

The below sections discuss the potential effects of the proposed development on birds in both the construction and operational phases.

5.3.4 Construction Phase

Due to the overriding priority of commencing works in dry conditions, it may not be possible to avoid tree clearance during the bird breeding season (March to August inclusive). Section 40 of the Wildlife Act 1976 (as amended) makes provision for the clearance of vegetation (e.g. hedgerows) within the bird breeding season (defined as 1st March to 31st August inclusive) where the works are required to facilitate permitted construction activity.

It is an offence under Section 22 of the Wildlife Act 1976 (as amended) to wilfully destroy, injure, or mutilate the eggs or nest of a wild bird or to wilfully disturb a wild bird on or near a nest containing eggs or un-flown young birds at any time of the year. Where felling or habitat clearance works are required during the bird breeding season, these features will be inspected in advance by a suitably experienced Ecologist to identify if active bird nests are present. If a nest is discovered an exclusion zone will be installed at a distance appropriate to the species concerned. The Environmental Manager will ensure that no active nests are removed until the conclusion of the particular nesting attempt.

5.3.5 Operational Phase

N/A

[6] https://www.schwegler-natur.de/portfolio_1395072079/fledermaus-fassadenroehre-1fr/?lang=en

5.4 MEASURES FOR OTHER TAXA

Any ponding water will be inspected regularly by the Environmental Manager for the presence of frogspawn during the relevant season. If found to be present it will be removed to a suitable location locally.

6 Residual Impacts and Conclusion

The significance of the potential impacts identified in Chapter 4, considering the avoidance and mitigation measures outlined in Chapter 5, is considered below. The description of effects follows EPA (2022). Effects are judged relative to the current or 'do-nothing' scenario (see **Section 4.1**).

6.1 RESIDUAL IMPACTS ON SURFACE WATER

It is considered that with the implementation of measures outlined herein there will be a minor localised impact on surface water quality during the construction phase and a neutral impact during the operation phase.

6.2 RESIDUAL IMPACTS ON HABITATS AND FLORA

There will be a minor localised impact on habitats as well as localised impacts on the diversity of flora during the construction phase. With the application of the proposed mitigation the overall residual effect of the proposed development on habitats and flora will be neutral.

6.3 RESIDUAL IMPACTS ON MAMMALS

Considering the application of the proposed mitigation measures the overall residual effect of the proposed development on mammals will be slight negative at a local level. Should the artificial bat roost become regularly occupied by roosting bats, there is potential for a neutral or slight positive effect overall.

6.4 RESIDUAL IMPACTS ON BIRDS

Considering the application of the proposed mitigation measures the overall residual effect of the proposed development on birds will be neutral or imperceptible negative at a local level.

6.5 MEASURES FOR OTHER TAXA

Considering the application of the proposed mitigation measures the overall residual effect of the proposed development on other taxa will be neutral at a local level.

6.6 CONCLUSION

A comprehensive ecological impact assessment has been carried out and the proposed site is considered to be '**Low Value (Locally Important)**' from an ecological perspective as it has limited areas of semi-natural habitat and is not of special importance for any high conservation priority species or habitats.

Disturbance impacts will occur during the construction and operation phases which cannot be avoided or fully mitigated, and these will have a slight negative impact on the relevant receptors at a local level.

With the implementation of the avoidance and mitigation measures outlined herein, the overall ecological impact of the proposed project (relative to the 'do-nothing' scenario) is considered to be imperceptible negative at a local level in the short term. In the medium and long term, the ecological effect of the proposed development is considered to be neutral.

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Appendix A -
Proposed Layout


Existing sod + stone boundary ditch
Site Boundary Line
Chapel Lane
Proposed Area for Reforestation
Existing Open Area
Remove portion of existing ditch, Form new pedestrian site access with gated entrance
NOTE
Non paved path here must slope up from Apt. no.11/12 to road gradient to suit contours.
Existing water pump
Existing Road
Block B
Block A
Existing steep, heavily overgrown area
Boundary Wall part retaining - Refer to Eng Drawing
Site Boundary Line
SET DOWN ONLY
Existing road edge and ditch to be re-aligned to improve sight-lines. Existing signage to be re-positioned all to local area engineer's satisfaction
Dash to show new hedging
Wider Road
Existing Road
Existing sod + stone boundary ditch to be cut back to improve sight-lines
Greenmount Road
ITM Co-ordinates
E:498723
N:535143
Unit Types
Apt. Type A = 2 Bed over 2 Bed, 4 Person (x 4)
Apt. Type B = 1 Bed over 1 Bed, 2 Person (x 8)
Total Units: 12 No. Apartments
Site Outlined in Red
Site Area - 3,587m² (0.3589ha/ 0.884Acres)
Density 33 units per Hectare
LANDSCAPING KEY
Trees
Raised Planted Areas
Meadow Planting To Public Areas
Grassed Open Areas
Private Grassed Gardens
Concrete Foot Path
Asphalt Road
Parking Areas
Coloured Asphalt To Disabled Car Space
BOUNDARY KEY
A New 1.8m High Boundary Wall, faced in stone on public side.
B New 1.8m Concrete Wall, Rendered on Outer (Public) Side Only.
C New 1.8m High Rendered Concrete Block 'Gossip' Wall (Both Sides).
D New 1.8m High Concrete Post/ Concrete Panel Fence.
E Existing Ditch / Hedging (No Change)
F New Ditch / Hedging (to match existing)
G New 1.8m High Steel Mesh Fencing.
H New 1.8m Concrete Block Boundary Wall- part retaining. Refer to Engineers Specification
I 1.2m High retaining wall.
Project Title: CWMF Housing Development Greenmount Road, Ballydehob
Drawing Title: Proposed Site Layout
Comhairle Contae Chorcaí
Cork County Council
County Hall, Cork
Job Reference: WT9022-DR-CCC-A-PL
Dwg. No. 120
Date: 17/05/22
Scale: 1:200
Issue for: INFORMATION
Sheet: A1

Appendix B -

Services & Infrastructure Report

Crocon Engineers Ltd.

Services & Infrastructure Report

Proposed 12 No Apartments
At
Greenmount Rd., Ballydehob
For
Cork County Council

Unit 18, Airport East Business & Technology Park, Co. Cork. 021 4310709

4 Main St., Bantry, Co. Cork. 027 50123

www.CroCon.ie **info@crocon.ie**

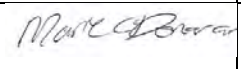
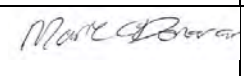
Document Verification				
	Filename	21164-CRO-RP-CE-00001		
Rev	Date	Prepared By:	Checked By:	Approved By:
Issue 1	24/04/2022	Ciarán Cronin BEng CEng MIEI	Marie O'Donovan BEng MIEI	G Hayes BE CEng MIEI
				
Issue 2	01/06/2022			

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Table of Figures

1 Introduction.

This report has been prepared as part of a Part 8 Application by Cork County Council for a proposed housing scheme at Greenmount Road, Ballydehob Co. Cork. The report describes the design strategy for surface water and foul water drainage design along with water supply, roads, parking and flooding.

The proposed development at consists of site cutting and filling to form firm ground for the construction of 12 no. dwellings (a range of 1 bed and 2 bed duplex apartments). It is proposed to retain as much site won material on adjacent Council owned lands as possible.

Pre-planning discussions have already been held with members of Cork County Council.

A pre- connection enquiry form and associated location map and calculations have been submitted to Irish Water in respect of proposed connections to existing water and drainage networks.

1.1 Administrative Jurisdiction

The site is located within the administrative jurisdiction of Cork County Council, whose offices are located at County Hall, Carrigrohane Road, Cork.

1.2 Site Location

The subject site is located on the south side of the village of Ballydehob, refer to Figure 1 below for details of the site location.

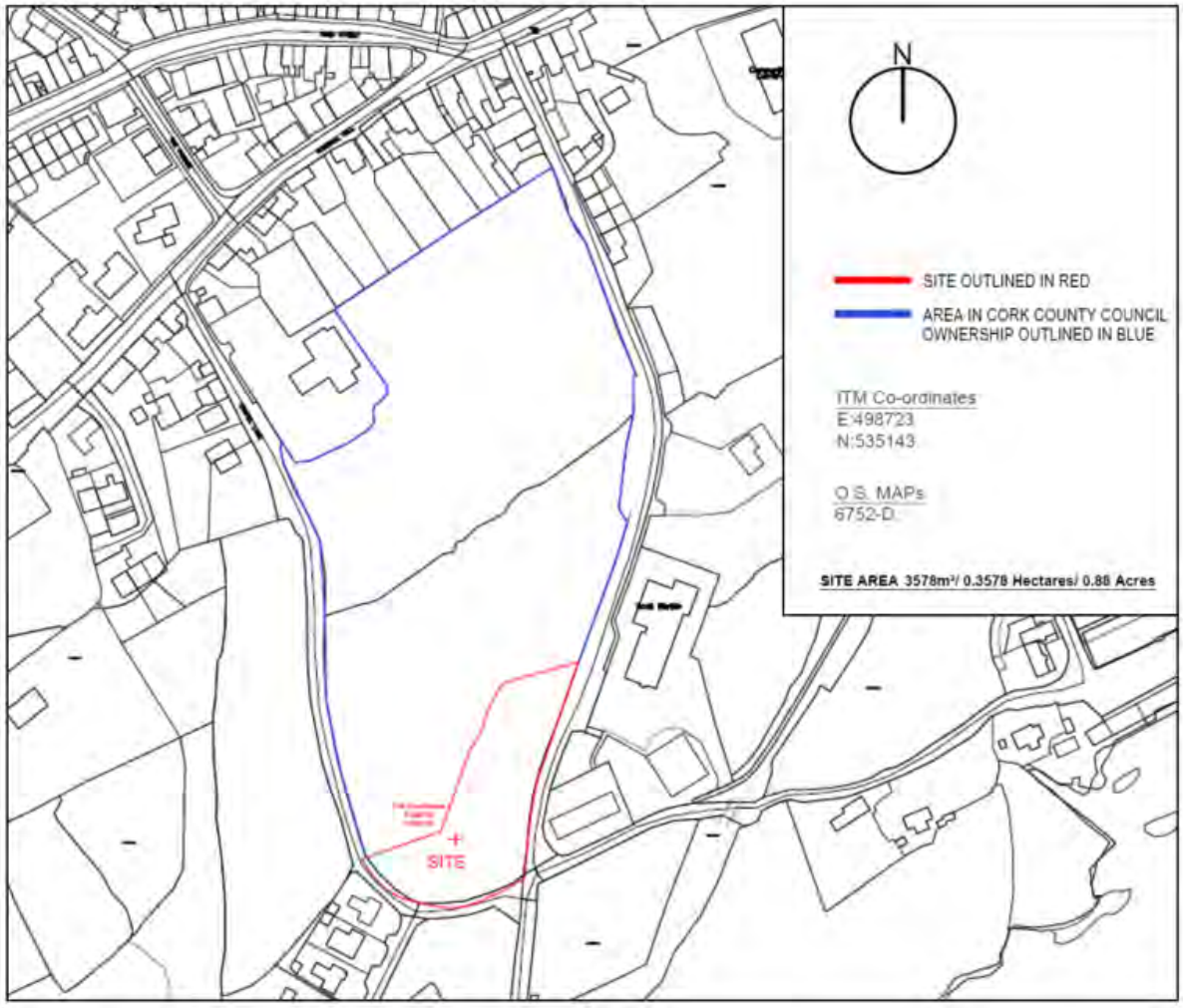


Figure 1 Site location.

The site is approximately 25m in width and 90m in length. The total site is 0.358 ha in area. The site is bounded by the Scoil Bhríde National School to East and private houses, to the south. Undeveloped land separates the site from Chapel Road and Ballydehob village. The surrounding area is predominantly residential in nature.

2 Foul Water Drainage Design

2.1 Existing Foul Water Drainage

The drainage record drawings show that the existing drainage infrastructure in the vicinity of the proposed development site consists of foul and storm sewers. There is a 150mm diameter mainline foul sewer flowing along Greenmount Rd flowing towards Ballydehob village.

Please refer to Geodata Survey Drawing nos. 21723-400 for details of the existing foul water drainage.

2.2 Proposed Foul Water Drainage

2.2.1 Discussion

As part of the initial scheme design, Irish Water were contacted to establish the existing Foul Water sewer network in the vicinity of the proposed development and a below ground utility survey was undertaken on the grounds of the site taking in the portion of Greenmount Road running along the curtilage of the site.

It has been established that an existing Irish Water Foul Sewer exists within Greenmount Road to the East of the site, running with the fall of the existing ground levels from South to North. Refer to Figure 2 below for details (foul water sewer indicated in red).

Figure 2 Location of Foul Line.

It is proposed to service the site with a 150mm diameter foul sewer Please refer to CROCON Drawing No's. 21164-CRO-X-XXX-DR-CE-03200 & 03250 for details of the proposed foul water drainage.

A pre-connection enquiry form has been completed and confirmation of feasibility has been received from Irish Water. A copy of this confirmation of feasibility is included in Appendix A.

2.2.2 Foul sewer design criteria.

The foul water sewers have been designed using in accordance with IS EN 752, The Building Regulations Part H and the Irish Water Code of Practice for Wastewater. Detailed calculations are enclosed in Appendix A.

The foul drainage network has been designed as follows:

- Wastewater flow per unit is 2.7 PE @ 150l/day per capita is 405l;
- The minimum diameter of main line foul water sewers shall be 150mm;
- The minimum gradient of main line foul water sewers shall be 1:60 up to 10 dwellings – 1:150 min thereafter;
- Flow velocities shall be in the range of 0.75m/sec to 3m/sec, when pipes are flowing half full;
- Design flow is calculated as 6 x Dry Weather Flow (DWF).

2.2.3 Foul Loading

A new foul drainage network will be required for the development and will be in accordance with IS EN 752, The Building Regulations Part H and the Irish Water Code of Practice for Wastewater. It is proposed to provide a gravity sewer from the site to the existing sewer network. Due to the levels of the existing site and the inverts of the existing sewer network, the proposed sewer will exit the site to the North East at an existing manhole adjacent the school grounds. All gravity sewers will be uPVC and will range in size from 100mm (private) to 150mm diameter.

The development will generate a dry weather flow of 0.056 l/sec and a peak flow of 0.34l/sec. This is based upon the guidance given in section 3.6 of The Irish Water Code of Practice for Wastewater.

- 12 No. Units @ 405l/dwelling/day = 4880 l / day = 0.056 l / sec (DWF)
- Sewer Designed For (6*DWF) = 0.341 / sec (6DWF)

The outfall pipe from the development is a 150mm diameter pipe laid at a gradient of approximately 1:100, which gives a capacity of 17.73 litres/second. Therefore, there is adequate capacity within the foul sewer network.

A Pre-Connection Enquiry Form has been submitted to Irish Water for the proposed development and a Confirmation of Feasibility Letter has been received. Irish Water have confirmed that based upon the capacity available within the network at the time of the enquiry the proposed connection to the Irish Water network can be facilitated, subject to a valid connection agreement being put in place.

The Foul Water drainage layout is provided on drawings 21164-CRO-X-XXX-DR-CE-03200 & 03250 with Foul Water Sewer calculations provided in Appendix B.

3 STORM WATER DRAINAGE

3.1 Overview

The storm water drainage elements of the planning permission sought on the subject lands is designed in accordance with IS EN 752 & The Building Regulations Part H.

The site connects directly to a storm water foreshore outfall pipe, therefore storm water will not be attenuated on site. There will be SuDS protocols by way of silt traps and a hydrocarbon interceptor located at the end of the site storm run is to increase the overall water quality of surface water runoff before it enters into the public sewer, which ultimately discharges to a water body. This is to ensure the highest possible standard of storm water quality and to prevent degradation of the water body resource by contamination.

3.2 Design Criteria

The proposed storm water drainage network has been designed and modelled in accordance with the "Recommendations for site development works for Housing Areas" design guide and the Greater Dublin Strategic Drainage Study (GDSDS). Detailed calculations are enclosed in Appendix C for your consideration.

The storm drainage network has been designed as follows:

- The minimum diameter of main line storm water sewers shall be 225mm;
- The minimum gradient of main line storm water sewers shall be 1:250;
- Flow velocities shall be in the range of 0.8m/sec to 3m/sec, when pipes are flowing half full;
- The storm return period for the design of drainage pipework shall be 1:5 years;
- A rainfall intensity of 60mm/hr has been adopted;
- Green areas or park land have been assumed to be 100% permeable;
- Climate change of 10% has been accounted for as per the GDSDS;
- The expected depth of rainfall to occur from a storm with a return period of 5 years lasting a duration of 60 minutes (M5-60) is 18.3mm;
- The ratio (R) between the M5-60 and the expected depth of rainfall to occur from a storm with a return period of 5 years lasting a duration of 2 days (M5-2day) is 0.23

Please refer to CroCon Drawing Nos. 21164-CRO-X-XXX-DR-CE-03200 & 03250 for details of proposed storm water drainage. Please refer to Appendix C for detailed calculations of the proposed storm water drainage infrastructure.

3.3 Proposed Surface Water Design

All surface water drainage is proposed to discharge to the existing public drainage network. It is required to discharge to an existing manhole off Greenmount Road approximately 65m northeast of the site.

An existing stone stormwater culvert runs through the site and will need to be diverted, a new 450mm diameter storm sewer / filter drain will be constructed to the rear of the site and continue as a 450mm diameter mainline storm sewer from the development and along Greenmount Road, running from the position of this new manhole to the existing storm sewer North of the National School. The proposed filter drain will allow the land at the rear of the site (North) to be drained in a way commensurate with the existing hydraulic conditions as the runoff rate is reduced, and runoff storage is also provided.

The proposed surface water network for the development will consist of a new gravity feed sewer system designed in accordance with IS EN 752. The pipes will be uPVC and will be 225mm in diameter.

3.3.1 Specific SuDS measures proposed.

It is proposed that, as a minimum, the following mechanisms will be considered and incorporated into the SuDS surface water management regime.

- Gully traps to surface water collection.
- A By-pass Separator will be provided as the second level of treatment for surface water runoff from car park areas. In this instance, the entirety of the collected surface water from the car park areas and internal roads will pass through, and be treated by the separator. A Klargester NSBP004 (2500sqm) or equivalent is specified.

Details of the proposed SuDS systems can be found in Appendix D to the rear of this report.

3.4 Run off (Construction Stage)

As the site is generally pervious to rain water, run off will be controlled by a temporary open drain leading to an existing stream at the north-east corner of the site. Monitoring will be required to ensure that soil and vegetated turves are managed within the required sequence and that no silt laden surface water run-off will discharge into watercourses. To this end the contractor will nominate a site staff member (the site foreman) to oversee at all times day-to-

day site monitoring and the identification of measures to avoid and minimise impacts on sensitive ecological receptors.

Check-dams and silt fences will be put in place at 15m intervals, in-drain check-dams made of stone filter and geotextile (silt fences) will be installed to remove silt. The stone used will be 32-40mm washed stone. The check-dams and silt fences will remove silt and also reduce flow velocities and erosion potential.

4 WATER SUPPLY.

4.1 Existing Watermain Layout

All proposed potable water design has been carried out in accordance with Irish Water's Code of Practice for Water Infrastructure. As noted earlier in section 2.2 a Pre-Connection Enquiry Form was submitted to Irish Water and a Confirmation of Feasibility Letter was received. Irish Water have confirmed via the Confirmation of Feasibility Letter that a connection to the public water network can be facilitated subject to a valid connection agreement. Refer to Appendix A for details.

In addition to the Pre-connection Enquiry to Irish Water, a below ground utility survey was undertaken to establish the water infrastructure serving the site. An existing Watermain is located within Greenmount Road to the north of the site, please refer to Figure 3 for further details.

Additional fire hydrants have been included in the design to ensure that all proposed dwellings have a fire hydrant within 46m as per the Irish Water standard detail requirements.

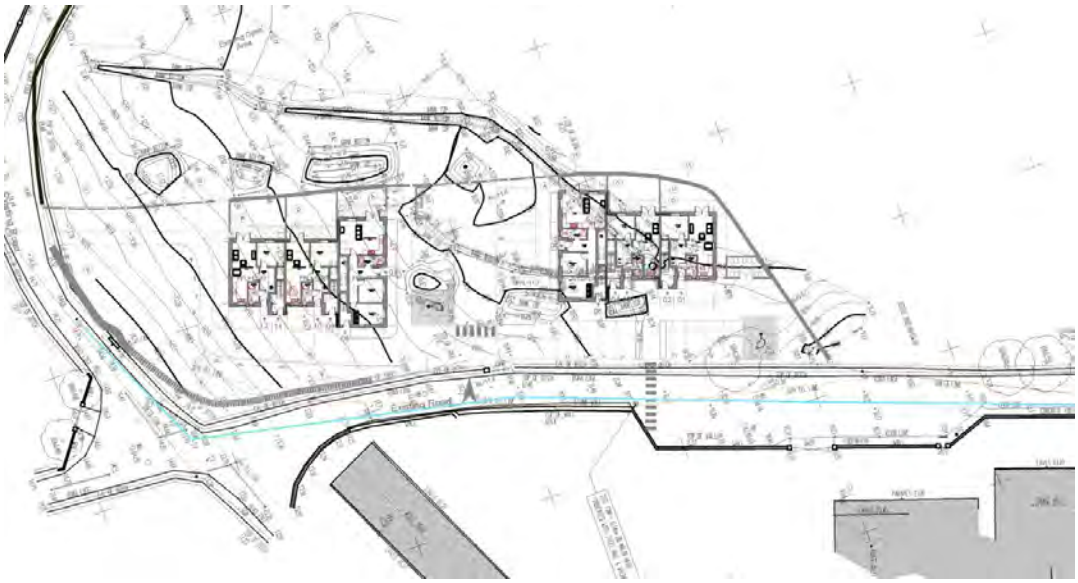


Figure 3 Existing Watermain.

4.2 Proposed Watermain Layout.

It is proposed to take a connection from the existing 4" AC watermain and provide a 100mm diameter HDPE looped water main to the perimeter of the proposed dwellings. A water meter will be provided where the watermain enters the development and individual properties will be fitted with an approved meter box located as required for water metering purposes in accordance with Irish Water specifications.

5 FLOODING.

As part of the preliminary design process, we have carried out a preliminary Flood Risk review for the proposed development. An investigation was undertaken to determine the susceptibility of the site to flooding as part of the scheme design. From examination of the Office of Public Works (OPW) Fluvial & Tidal flood maps

We have overlaid the existing OPW CFRAM flood inundation map in context to the proposed building and note that the inundation line is remote from the site boundary. We do not perceive the flood level or inundation boundary affecting the proposed development and conversely we do not expect the proposed development to have any impact on the surrounding area in relation to flooding. Based on our desktop study we do not think any further reports are required in relation to this. The Fluvial & Tidal flood maps for the proposed site is included in Appendix E.

6 ROAD NETWORK

6.1 Site Access

It is proposed to provide an access road from Greenmount Road to serve the proposed development, with a new entrance at the east side of the site boundary.

The existing site falls from the south to north and from west to east, It is proposed to match the existing ground levels as much as possible to minimise the quantity of cut/fill required across the site, although bulk excavation is required due to poor ground conditions.

6.2 Proposed Road & Footpath Design

Roads have been designed with the aid of the "Design Manual for Urban Roads and Streets" (DMURS) published by Department of Transport, Tourism and Sport. The DMURS aims to aid the design of safer, more attractive and vibrant streets which will generate and sustain communities and neighbourhoods. As well as cars and other vehicles this encompasses pedestrians, cyclists and those using public transport.

6.3 Internal Arrangements

A 6m wide road with a 2m wide footpath is proposed for the internal road layout. The internal road layout and levels are detailed on drawings 21164-CRO-X-XXX-DR-CE-03400, with road sections detailed on 21164-CRO-X-XXX-DR-CE-03902.

6.3.1 Swept path analyses

A swept path analysis of the entrance and internal circulatory road has been undertaken, demonstrating the viability of the entrance for wheelie bin pick up, by reversing into the entrance from Greenmount Road. It is proposed to locate the bin within 25m of the entrance pick up point. The proposed entrance layout is adequate for car, refuse truck and fire tender turning as detailed on drawings 21164-CRO-X-XXX-DR-CE-03400.

6.4 Parking

21 no. parking spaces, including 2 no. accessible spaces are provided for the development.

7 Other Services

7.1 General

Detailed discussions have not yet taken place with the other service providers, but preliminary enquiries confirm that no significant servicing difficulties will arise.

These other services will generally be laid underground and will not impact visually on the development. When the development proposals are approved detailed designs for each of these service networks will be agreed.

In respect to broadband fibre optics, a fibre optic cable link will be brought into the overall project. Utility locations shall be concentrated in footpaths to minimise any possible road excavations.

8 Summary.

This report sets out the design principles adopted for the servicing of the proposed development. These servicing proposals are prepared in the context of the status of the existing services infrastructure external to the site.

The foul sewage from the development will discharge via a new manhole by gravity to an existing foul sewer on the public Rd to the east of the development.

Surface-water runoff will be collected by a network of gravity sewers and discharge to an existing storm outfall drain 65m to the north east of the site. The discharge from the development will not be attenuated as the outfall pipe terminates at the foreshore.

Water supply will be taken from the existing public water main to serve the development.

The report confirms that the proposed development can be properly and sustainable serviced by connections with existing public services infrastructure.

This report (and its appendices) should be read in conjunction with the planning application drawings and submissions from all other members of the design team.

9 Appendix A – Irish Water COF.

Maeve Mansfield
County Hall
Carrigrohane Road
Cork, Co. Cork T12R2NC

4 June 2020

Dear Maeve Mansfield,

Re: Connection Reference No CDS20002712 pre-connection enquiry -
Subject to contract | Contract denied

Connection for Housing Development of 13 unit(s) at Chapel Lane, Ballydehob, Co. Cork.

Irish Water has reviewed your pre-connection enquiry in relation to a water connection at Chapel Lane, Ballydehob, Co. Cork.

Based upon the details that you have provided with your pre-connection enquiry and on the capacity currently available in the network(s), as assessed by Irish Water, we wish to advise you that, subject to a valid connection agreement being put in place, your proposed connection to the Irish Water network(s) can be facilitated.

All infrastructure should be designed and installed in accordance with the Irish Water Codes of Practice and Standard Details. A design proposal for the water and/or wastewater infrastructure should be submitted to Irish Water for assessment. Prior to submitting your planning application, you are required to submit these detailed design proposals to Irish Water for review.

You are advised that this correspondence does not constitute an offer in whole or in part to provide a connection to any Irish Water infrastructure and is provided subject to a connection agreement being signed at a later date.

A connection agreement can be applied for by completing the connection application form available at **www.water.ie/connections**. Irish Water's current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Regulation of Utilities.

If you have any further questions, please contact Brian O'Mahony from the design team on 022 52205 or email bomahony@water.ie. For further information, visit www.water.ie/connections.

Yours sincerely,

Maria O'Dwyer

Connections and Developer Services

10 Appendix B. Foul Sewer Calculations.

Job Name: Greenmount Rd Ballydehob	Job No 21164	Date 21/01/2022	Pipe KS: 1.5
Title: Foul Sewer	Calcs by: CC	Checked by MOD	House: 12

Unit 18, Airport East Business & Technology Park, Co. Cork. 021 4310709
4 Main St., Bantry, Co. Cork. 027 50123
www.CroCon.ie
info@crocon.ie
Crocon Engineers Ltd.

Pipe Section			Residential			Commercial											
			Pop	DWF (l/s) (150l/h/d)	Design Flow (6xDWF)	Pop	DWF (l/s)(30 l/h/d)	Design Flow (6xDWF)	Total DWF (l/s)	Pipe Diameter (mm)	U/S IL (m)	D/S IL (m)	Length (m)	Slope (1:X)	Pipe Capacity (l/s)	Adequate Capacity?	Prop Velocity (m/s)
1	to	2	5.4	0.009	0.06	0	0.000	0.000	0.06	150	10.51	10.31	11.5	58	23.455	✓	1.327
2	to	3	10.8	0.019	0.11	0	0.000	0.000	0.11	150	10.31	10.04	16	59	23.101	✓	1.307
3	to	4	32.4	0.056	0.34	0	0.000	0.000	0.34	150	10.04	9.7	20	59	23.187	✓	1.312
4	to	5	32.4	0.056	0.34	0	0.000	0.000	0.34	150	9.7	9.33	22	59	23.061	✓	1.305
5	to	6	32.4	0.056	0.34	0	0.000	0.000	0.34	150	9.33	9.23	10	100	17.726	✓	1.003

Note:
Self cleansing is considered to be satisfied by a 150mm diameter sewer having a gradient not flatter than 1 in 150 and a flow rate greater than 0.46 l/s (equivalent of 10 dwellings). Where the sewer is 100mm in diameter the minimum acceptable gradient is 1 in 80 where at least 1 WC is connected.

11 Appendix C - Storm Sewer Calculations.

w

Crocon Engineers Ltd.

Project N° 21164
Date: 03-Mar-22
By: MOD
Chkd.: CC

Project Description
Greenmount Rd Ballydehob, Co.Cork

Notes

Manholes		Contributing Area		Pipe			Full		Time (mins)			Rainfall Intensity	Total Runoff	Comments
From	To	Area (ha)	Cum. Area (ha)	Dia (mm)	Length (m)	Gradient (1in X)	Velocity (m/s)	Capacity (l/s)	Entry	Flow	Conc.	(mm/hr)	(l/s)	Ref Calc Sheets
S01	S02	1.0000	1.0000	450	55.000	92	2.118	336.918	4.00	0.43	4.43	60	216.840	Infiltration Drain
S02	S03	0.1000	1.1000	450	35.000	93	2.107	335.089	5.00	0.28	5.28	60	238.524	Infiltration Drain
S03	S04	0.1000	1.2000	450	17.000	35	3.444	547.692	6.00	0.08	6.08	60	260.208	Infiltration Drain
S04	S05	0.1000	1.3000	450	10.000	16	5.100	811.185	7.00	0.03	7.03	60	281.892	Infiltration Drain
S05	S06	0.2872	1.5872	450	5.000	100	2.031	323.066	8.00	0.04	8.04	60	344.168	
S06	S07	0.0267	1.6139	450	56.000	47	2.970	472.308	9.00	0.31	9.31	60	349.958	
S07	S08	0.0817	1.6956	450	6.000	300	1.167	185.567	10.00	0.09	10.09	60	367.674	Short length Crossing under sewer
S05.4	S05.3	0.0850	0.0850	225	11.000	92	1.362	54.148	4.00	0.13	4.13	50	15.360	
S05.3	S05.2	0.0155	0.1272	225	24.000	24	2.680	106.568	5.00	0.15	5.15	50	22.985	
S05.2	S05.1	0.0700	0.1972	225	15.000	23	2.750	109.351	6.00	0.09	6.09	50	35.634	
S05.1	S05	0.0900	0.2872	225	33.000	57	1.739	69.130	7.00	0.32	7.32	50	51.897	
S05.2.1	S05.2	0.0267	0.0267	225	24.000	30	2.396	95.255	4.00	0.17	4.17	50	4.825	

12 Appendix D - SUDS Measures.

Bypass NSB RANGE

APPLICATION

Bypass separators are used when it is considered an acceptable risk not to provide full treatment, for very high flows, and are used, for example, where the risk of a large spillage and heavy rainfall occurring at the same time is small, e.g.

- Surface car parks.
- Roadways.
- Lightly contaminated commercial areas.

PERFORMANCE

Klargester were one of the first UK manufacturers to have separators tested to EN 858-1. Klargester have now added the NSB bypass range to their portfolio of certified and tested models. The NSB number denotes the maximum flow at which the separator treats liquids. The British Standards Institute (BSI) tested the required range of Kingspan Klargester Bypass separators and certified their performance in relation to their flow and process performance assessing the effluent qualities to the requirements of EN 858-1. Klargester bypass separator designs follow the parameters determined during the testing of the required range of bypass separators.

Each bypass separator design includes the necessary volume requirements for:

- Oil separation capacity.
- Silt storage capacity.
- Oil storage volume.
- Coalescer.

The unit is designed to treat 10% of peak flow. The calculated drainage areas served by each separator are indicated according to the formula given by PPG3 NSB = 0.0018A(m2). Flows generated by higher rainfall rates will pass through part of the separator and bypass the main separation chamber.

Class I separators are designed to achieve a concentration of 5mg/litre of oil under standard test conditions.

FEATURES

- Light and easy to install.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Vent points within necks.
- Oil alarm system available (required by EN 858-1 and PPG3).
- Extension access shafts for deep inverts.
- Maintenance from ground level.
- GRP or rotomoulded construction (subject to model).

To specify a nominal size bypass separator, the following information is needed:-

- The calculated flow rate for the drainage area served. Our designs are based on the assumption that any interconnecting pipework fitted elsewhere on site does not impede flow into or out of the separator and that the flow is not pumped.
- The drain invert inlet depth.
- Pipework type, size and orientation.

SIZES AND SPECIFICATIONS

UNIT NOMINAL SIZE	FLOW (l/s)	PEAK FLOW RATE (l/s)	DRAINAGE AREA (m²)	STORAGE CAPACITY (litres) SILT	OIL	UNIT LENGTH (mm)	UNIT DIA. (mm)	ACCESS SHAFT DIA. (mm)	BASE TO INLET INVERT (mm)	BASE TO OUTLET INVERT	STANDARD FALL ACROSS (mm)	MIN. INLET INVERT (mm)	STANDARD PIPEWORK DIA.
NSBP003	3	30	1670	300	45	1700	1350	600	1420	1320	100	500	160
NSBP004	4.5	45	2500	450	60	1700	1350	600	1420	1320	100	500	160
NSBP006	6	60	3335	600	90	1700	1350	600	1420	1320	100	500	160
NSBE010	10	100	5560	1000	150	2069	1220	750	1450	1350	100	700	315
NSBE015	15	150	8335	1500	225	2947	1220	750	1450	1350	100	700	315
NSBE020	20	200	11111	2000	300	3893	1220	750	1450	1350	100	700	375
NSBE025	25	250	13890	2500	375	3575	1420	750	1680	1580	100	700	375
NSBE030	30	300	16670	3000	450	4265	1420	750	1680	1580	100	700	450
NSBE040	40	400	22222	4000	600	3230	1920	600	2185	2035	150	1000	500
NSBE050	50	500	27778	5000	750	3960	1920	600	2185	2035	150	1000	600
NSBE075	75	750	41667	7500	1125	5841	1920	600	2235	2035	200	950	675
NSBE100	100	1000	55556	10000	1500	7661	1920	600	2235	2035	200	950	750
NSBE125	125	1250	69444	12500	1875	9548	1920	600	2235	2035	200	950	750

Rotomoulded chamber construction GRP chamber construction * Some units have more than one access shaft – diameter of largest shown.

4

13 Appendix E – Flood Maps.

Appendix C -

Preliminary Construction Environmental Management Plan

Crocon Engineers Ltd.

Preliminary Construction Environmental Management Plan

Cork County Council
Greenmount Rd.
Ballydehob
Co. Cork

Unit 18, Airport East Business & Technology Park, Co. Cork. 021 4310709

4 Main St., Bantry, Co. Cork. 027 50123

www.CroCon.ie **info@crocon.ie**

Document Verification				
	Filename	21164-CRO-RP-SE-00100_pCEMP_220531		
Rev	Date	Prepared By:	Checked By:	Approved By:
Issue 1	28/03/2022	Ciarán Cronin BEng CEng MIEI	Marie O'Donovan BEng MIEI	Ciarán Cronin BEng CEng MIEI
				
Issue 2	31/05/2022			

Contents

1 Introduction

This report has been prepared as part of a Part 8 Application by Cork County Council for a proposed housing scheme at Greenmount Road, Ballydehob Co. Cork.

The purpose of the preliminary CEMP is to identify potential environmental risks that may occur during the site clearance, enabling works and construction and outline mitigation measures that will be taken to reduce these risks.

2 Description of project

2.1 Project Outline and Site Context

The proposed development at consists of site cutting and filling to form firm ground for the construction of 12 no. dwellings (a range of 1 bed and 2 bed duplex apartments). It is proposed to retain as much site won material on adjacent Council owned lands as possible.

Pre-planning discussions have already been held with members of Cork County Council.

2.1.1 Site Location

The subject site is located on the south side of the village of Ballydehob, refer to Figure 1 below for details of the site location.

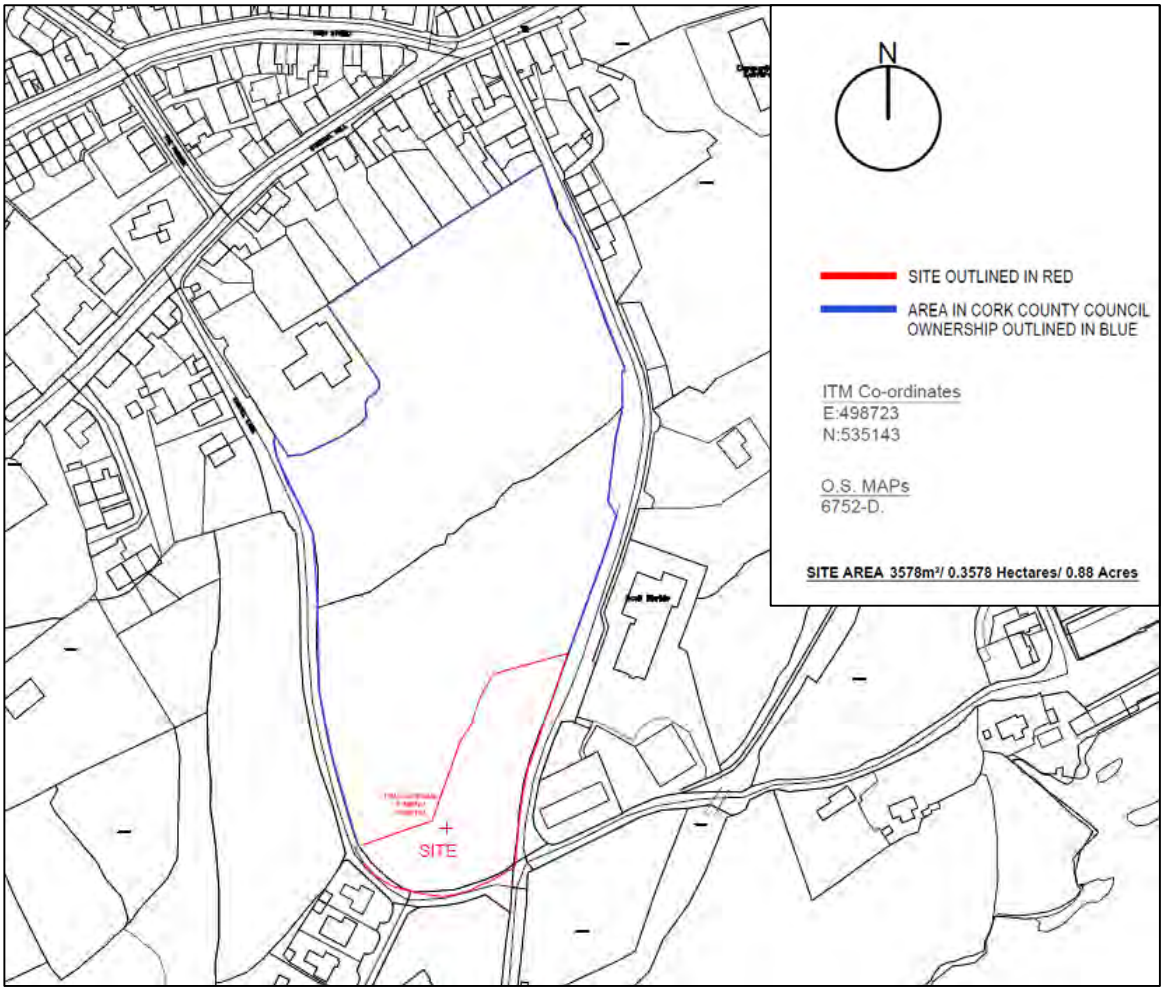


Figure 1 Site location.

The site is approximately 25m in width and 90m in length. The total site is 0.358 ha in area. The site is bounded by the Scoil Bhríde National School to East and private houses, to the south. Undeveloped land separates the site from Chapel Road and Ballydehob village. The surrounding area is predominantly residential in nature. The site of the works is located approximately 400m from the centre of Ballydehob and access will be via the public road (L-4415-75). The work will generally consist of bulk excavation and fill.

2.2 Site Management

2.2.1 Site Facilities

The following site facilities shall be provided and maintained by the contractor:

- temporary driveways, road crossovers and construction zone
- 24/7 emergency vehicle access to site during working hours
- on-site hardstand areas for vehicle loading and unloading
- storage sheds and compounds
- rubbish sorting areas
- site amenities with all required equipment and facilities
- construction worker accommodation
- first aid facilities

2.2.2 Site Traffic

Entrance and from the site shall take place from the Greenmount Rd. to the east of the site. The traffic entrance will be constructed so that a 70 m sightline in both direction is achieved for traffic exiting the site. Parking shall be made available on site to prevent parking resulting from construction activities to overspill onto public road.

2.2.3 Site Security

The construction compound will be enclosed by a security fence that will remain in place for the duration of the construction phase and will be removed by the contractor when construction is complete.

Access to the compound will be security controlled and all site visitors will be required to sign in on arrival and sign out on departure

3 Waste Management

In the course of the Project, it is estimated that the following quantities of C&D wastes/material surpluses will arise:

C&D Waste Material	**Quantity** (tonnes)
Clay and Stones	5000
Concrete	2
Masonry	2
Wood	1
Packaging	1
Hazardous Materials	0
Other Waste Materials	0
TOTAL Arising	5006

Table SF1: Estimated C&D Waste Arising on Site

Proposals for Minimisation, Reuse and Recycling of C&D Waste

C&D waste will arise on the Project mainly from excavation and unavoidable construction waste. The Purchasing Manager shall ensure that materials are ordered so that the quantity delivered, the timing of the delivery and the storage is not conducive to the creation of unnecessary waste. Excavated clay will be carefully stored in segregated piles on the site for subsequent re-use.

Local Authority	Name of Permit Holder	Address of Principal Place of Business.	Date of Issue	Review Date	Application / Ref. Number	Type of Waste to be Collected
Cork Co. Council	F & M Hurley Plant Hire	Main Street, Schull, Co. Cork		21-APR-20	WCP Permit - NWCPO-15-11556-01	17 05 04

Table 2: Waste Collection Detail

Hazardous wastes if encountered will be identified, removed and kept separate from other C&D waste materials in order to avoid further contamination. Other C&D waste materials will be collected in receptacles with mixed C&D waste materials, for subsequent separation and disposal at a remote facility.

Excavation clay and C&D waste-derived aggregates are considered suitable for certain on-site construction applications. It is proposed that the following quantities, corresponding to all C&D waste arising from the project, will be used within the works:

C& D Waste Type	Clay and Stones (t)	Concrete (t)	Masonry (t)	TOTALS
Earthworks	2500			2500
	2500			2500

General Fill/Hardcore				
Selected Trench Backfill	200			200
Fill to Structures	100			100
Beneath Paths Structure	50			50
Beneath Road Structure	50			50
Other Site Use A	50			50
Other Site Use B	50			50
PIPE BEDDING	50			50
Off-Site Use	5550			5550

Standard Form SF3: Proposals for Beneficial Use/Management of C&D Material Surpluses/Deficits and Waste Arising on and off the Project

It is anticipated that most construction waste/packaging materials will be moved off site. It is the intention to engage specialist waste service Contractors, who will possess the requisite authorisations, for the collection and movement of waste off-site, and to bring the material to a facility which currently holds a Waste Licence/Waste Permit. Accordingly, it will be necessary to arrange the following waste authorisations specifically for the Project:

Authorisation Type	Specific Need for Project (Yes/No?)
Waste Licence	No
Waste Permit	Yes
Waste Collection Permit	No
Transfrontier Shipment Notification	No
Movement of Hazardous Waste Form	No

Table SF4: Specific Waste Authorisations Necessary for the Scheme

Assignment of Responsibilities

A Site Engineer shall be designated as the C&D Waste Manager and have overall responsibility for the implementation of the Project C&D Waste Management Plan. The C&D Waste Manager will be assigned the authority to instruct all site personnel to comply with the specific provisions of the Plan. At the operational level, a foreman from the main contractor and appropriate personnel from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the discrete operations stated in the Project C&D Waste Management Plan are performed on an on-going basis.

Training

Copies of the Project C&D Waste Management Plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the Project C&D Waste Management Plan and informed of the responsibilities which fall upon them as a consequence of its provisions. Where source segregation, selective demolition and material reuse techniques apply, each member of staff will be given instructions on how to comply with the Project C&D Waste Management Plan. Posters will be designed to reinforce the key messages within the Project C&D Waste Management Plan and will be displayed prominently for the benefit of site staff.

Waste Auditing

The C&D Waste Manager shall arrange for full details of all arising, movements and treatment of construction and demolition waste discards to be recorded during the construction stage of the Project. Each consignment of C&D waste taken from the site will be subject to documentation, which will conform to Table SF5 and ensure full traceability of the material to its final destination.

Detail	E.g. Particulars
Name of Project of Origin	E.g. Housing Development
Material being Transported	e.g. Soil, Demolition etc.
Quantity of Material	e.g. 20.50 tonnes
Date of Material Movement	e.g. 01/01/2020
Name of Carrier	e.g. Authorised Carriers Ltd.
Destination of Material	e.g. **Schull**
Proposed Use	e.g. Use as landfill

Table SF5: Details to be Included within Transportation Dockets

Details of the inputs of materials to the construction site and the outputs of wastage arising from the Project will be investigated and recorded in a Waste Audit, which will identify the amount, nature and composition of the waste generated on the site. The Waste Audit will examine the manner in which the waste is produced and will provide a commentary highlighting how management policies and practices may inherently contribute to the production of construction and demolition waste. The measured waste quantities will be used to quantify the costs of management and disposal in a Waste Audit Report, which will also record lessons learned from these experiences, which can be applied to future projects. The total cost of C&D waste management will be measured and will take account of the purchase cost of materials (including imported soil), handling costs, storage costs, transportation costs, revenue from sales, disposal costs etc. Costs will be calculated for the management of a range of C&D waste materials, using the format shown in Table SF6 below:

Material	Estimated Quantities & Costs (tonnes & Euro)
Packaging	All TBC
Quantity of Waste (tonnes)	
Purchase Cost i.e. Import Costs (€)	
Materials Handling Costs (€)	
Material Storage Costs (€)	
Material Transportation Costs (€)	
Revenue from Material Sales (€)	
Material Disposal Costs (€)	
Material Treatment Costs (€)	
Total Waste Soil Management Costs (€)	
Unit Waste Soil Management Costs (€)	

Table SF6: Standard Record Form for Costs of C&D Waste Management (Sample relates to Packaging – separate record forms should be compiled in respect of each waste material)

Final details of the quantities and types of C&D Waste arising from the Project will be forwarded to Cork County Council & Environmental Protection Agency.

4 Environmental Risks

4.1 Risk Identification

4.1.1 Watercourses

The Site is proximal to surface water courses and upstream from Roaringwater Bay. The risks posed from clearing, re-profiling and building works to local surface water quality include pollution of surface water through accidental spillage or discharge of polluting substances, or via elevated suspended solids and siltation through run-off to watercourses.

4.1.2 Dust

The site is located in a residential area so dust generated on site could pose a risk to the health and comfort of the local population.

4.1.3 Noise

The site is located in a residential area so measures will be put in place to ensure that no unreasonable disruption is caused to local residents.

4.2 Mitigation and monitoring

4.2.1 Watercourse

The following measures will be taken to ensure the protection of surface water on site.

- The drainage stream which runs through the site shall be temporarily culverted for the duration of the site works.
- Water to be controlled during construction – no artificial drainage will be constructed which could lead to an accidental spillage reaching the watercourse
- Fuel, oil and chemicals to be ordered in manageable quantities and stored and used as outlined under the Safety Health and Welfare at Work Act 2005 as amended and associated regulations. They will be stored in a bunded area which must be 110% of the volume of storage containers. Fuels and other potentially harmful substances will be stored off site to prevent spillage e.g. during theft.
- During the operational phase of the project, surface water will be discharged from site in line with SUDS design principles. A By-pass Separator (Klargester NSBP004 (2500sqm) or equivalent) will be provided as the second level of treatment for surface

water runoff from car park areas. The entirety of the collected surface water from the car park areas and internal roads will pass through, and be treated by the separator

- Excavated material shall be kept well away from the watercourse
- Concrete and other potential harmful substances shall be stored in a designated area which will be kept under lock and key. No concrete wash-out is to be permitted on-site.
- Washout of trucks is to take place at the batching plant or other suitable off-site location.
- Pouring of concrete should not take place when heavy rain is forecast
- Wheel or plant washing shall not take place within 10 m of a watercourse
- Monitoring will be required to ensure that soil and vegetated turves are managed within the required sequence and that no silt laden surface water run-off will discharge into watercourses. To this end the contractor will nominate a site staff member (the site foreman) to oversee at all times day-to-day site monitoring and the identification of measures to avoid and minimise impacts on sensitive ecological receptors.
- All machinery will be regularly inspected and maintained, and all vehicles will carry mobile spill kits. Staff will be instructed in the proper use and disposal of spill kits.
- Through all stages of the construction phase the contractor will ensure that good housekeeping is maintained at all times and that all site personnel are made aware of the importance of the nearby aquatic environments and the requirement to avoid pollution of all types.
- Sufficient on-site cleaning of vehicles prior to arrival at, and upon leaving the site and on nearby roads, will be carried out, particularly during groundworks and works in vicinity of drains and watercourses. Waste water will be collected to be disposed of and recycled off-site.
- The Construction Manager will fulfil the Environmental Manager role and will be responsible for the pollution prevention programme and will ensure that checks are carried out to ensure compliance. A record of these checks will be maintained.
- An Ecological Clerk of Works will be engaged to carry out regular site audits.

4.2.2 Protected Species and Habitats

The Salad Burnett on the southern boundary is to be transplanted/translocated to a suitable location elsewhere in the locality.

The Construction Manager will fulfil the Environmental Manager role and will be responsible for the pollution prevention programme and will ensure that checks are carried out to ensure compliance. A record of these checks will be maintained.

An Ecological Clerk of Works will be engaged to carry out regular site audits.

4.2.3 Dust

Dust prevention measures shall be included for control of any site airborne particulate pollution. The Contractor shall put in place and monitor dust levels in the vicinity using a Bergerhoff gauge instrument. The minimum criteria to be maintained shall be the limit for Environmental Protection Agency (EPA) specification for licensed facilities in Ireland, which is 350 mg/m2/day. The Contractor shall continuously monitor dust over the variation of weather and material disposal to ensure the limits are not breached throughout the project. To avoid, reduce and / or mitigate potential dust issues, the contractor will introduce measures as follows:

- Any temporary site road 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 will be sprayed during periods of dry weather in order to suppress dust migration from the site.
- Stockpiles will be sprayed during periods of dry weather in order to suppress dust migration from the site.

4.2.4 Noise

The Contractor will be required to monitor base noise levels at the site location before commencement of the project. Noise monitoring will be required throughout the project. Variation of noise levels from those experienced as part of everyday life in an area can result

in extreme disruption. The Contractor shall implement measures to eliminate where possible and reduce noise levels where not. The proposed development shall comply with BS 5228 "Noise Control on Construction and open sites Part 1: Code of practice for basic information and procedures for noise control" (or such further limits as imposed by Cork Country Council). It shall be ensured that noise levels emanating from the proposed development (when measured at specified noise sensitive locations shall not exceed 55 dBA (30 minute Leq) between 08.00 hours and 18.00 hours, Monday to Saturday inclusive and shall not exceed 45 dBA (15 minute Leq) at any other time, without the prior written agreement of the Planning Authority. The development site is accessed through a public road. Background noise levels are expected to be elevated during daytime hours. To the east and southwest of the site, there is residential housing fronting onto Chapel Lane and Greenmount Rd. The principle sources of noise emissions from the site will be:

- General construction activity, including HGV traffic to / from the site, use of power tools etc.

To reduce the impact of noise emissions the following work practices will be employed:

- Working hours will be 08:00 to 18:00 Monday to Friday and 08:00 to 16:00 on Saturdays. There will be no construction activity on Sundays or bank holidays.
- All site plant will be maintained in good working order and exhausts will be fitted with mufflers and unnecessary revving of engines will be avoided.
- A speed limit of 15kph will be enforced at the site

Appendix D -

Descriptions of Ecological Effects

Table F1.1 - Descriptions of Ecological Effects

Quality of Effects	Positive Effects: A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities). Neutral Effects: No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error. Negative Effects: A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Describing the Significance of Effects	Imperceptible: An effect capable of measurement but without significant consequences. Not significant: An effect which causes noticeable changes in the character of the environment but without significant consequences. Slight Effects: An effect which causes noticeable changes in the character of the environment without affecting its sensitivities. Moderate Effects: An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. Significant Effects: An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment. Very Significant: An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment. Profound Effects: An effect which obliterates sensitive characteristics.
Describing the Extent and Context of Effects	Extent: Describe the size of the area, the number of sites, and the proportion of a population affected by an effect. Context: Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?).
Describing the Probability of Effects	Likely Effects: The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented. Unlikely Effects: The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

Describing the Duration of Effects	Momentary Effects: Effects lasting from seconds to minutes. Brief Effects: Effects lasting less than a day. Temporary Effects: Effects lasting less than a year. Short-term Effects: Effects lasting one to seven years. Medium-term Effects: Effects lasting seven to fifteen years. Long-term Effects: Effects lasting fifteen to sixty years. Permanent Effects: Effects lasting over sixty years. Reversible Effects: Effects that can be undone, for example through remediation or restoration

Adapted from 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' EPA (2022).

Appendix E -

Bat Roost Information

Bat Tube 1FR

[Pic. 1]: 1FR installed

This Tube system meets the characteristic behavioural requirements of the types of bats that inhabit buildings. The design maintains excellent climatic conditions inside the Tube allowing the animals to either hang onto the wooden rear or onto the wood-concrete front. It requires no maintenance because droppings fall out of the entrance ramp.

Installation: Can be installed on external walls – either flush or beneath a rendered surface in concrete and, during renovation work, under wooden paneling or in building cavities (e.g., slab-type building structures, bridges, etc). If required, it can be painted using standard air-permeable exterior paint. Birds will not occupy this box. To allow access into existing cavities in buildings, use the 2FR model below.

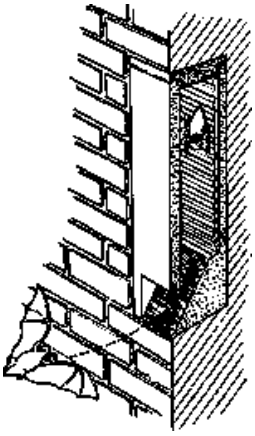
[Pic. 2]: 1FR Bat Tube

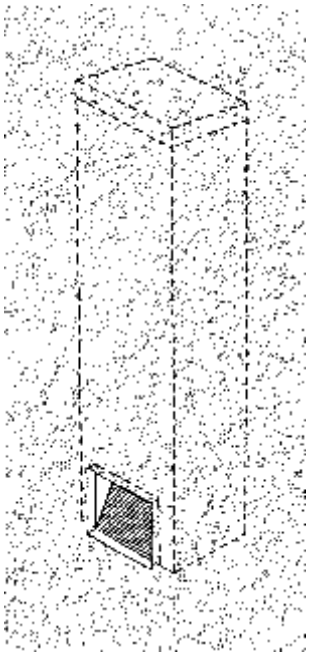
Suitable for: Bat species that inhabit buildings

Material: SCHWEGLER wood-concrete with integrated wooden panel onto which the bats can cling.

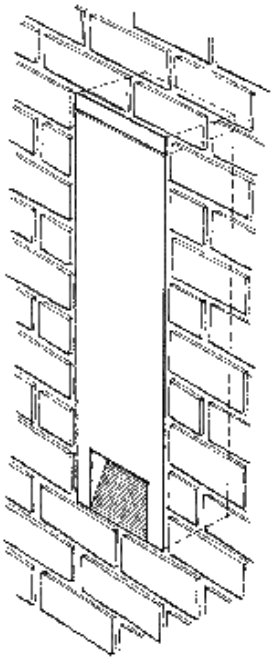
Colour: grey material, paintable with standard air-permeable wall-paint
Dimensions: height 47.5 x width 20 x depth 12.5 cm
Entrance: width 15 x height 2 cm

Weight: ca. 9,8 kg





[Pic. 4]: 1FR in rendered surface



[Pic. 5]: 1FR built in brickwork

O'DONNELL ENVIRONMENTAL

info@odonnellenviro.ie