4.0 ECOLOGY AND BIODIVERSITY

4.1 Introduction

This assessment presents a summary of ecological features which are, or have the potential to be, ecological constraints to the Proposed Development (the Proposed Development is described in Chapter 2). This chapter evaluates the importance of the ecological resources present and defines the degree of significance of potential impacts resulting from the Proposed Development. The report also identifies appropriate mitigation measures and defines residual impacts.

A stage 1 screening report for Appropriate Assessment has been produced and is included in the Application. This report concludes that no significant impacts would occur to Natura 2000 sites as a result of the Proposed Development.

4.2 Policy and legislation context

This section addresses the legislation and guidance that has been considered when preparing this chapter, and key policy context relevant to biodiversity.

Legislation

- The Planning & Development Act 2000 & the Planning and Development (Amendment) Act, 2010 (as amended) hereafter referred to as the Planning Acts;
- The Wildlife Act 1976 as amended by the Wildlife (Amendment) Act, 2000 (as amended) hereafter referred to as the Wildlife Acts;
- The EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU), the Planning and Development Acts 2000-2018, and the Planning and Development Regulations, 2001-2018;
- European Communities (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018);
- European Commission (EC) Habitats Directive 92/43/EEC (as amended);
- EC Birds Directive 2009/147/EC;
- European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) hereafter referred to as the Birds and Habitats Regulations;
- Flora (Protection) Order, 2015;
- Environment (Miscellaneous Provisions) Act 2011; and
- The Local Government (Water Pollution) Act, 1977 (as amended by Sections 3 and 24 of the 1990 Act.).

Relevant Policies and Plans

- National Biodiversity Plan, 2017-2021;
- Ireland's National Strategy for Plant Conservation;
- All Ireland Pollinator Plan 2015 – 2020; and
- Draft Biodiversity Action Plan for South Dublin County - Connecting with Nature 2020 – 2026.

Relevant Guidance

- Invasive Species in Ireland (NPWS, 2004);

- Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater and Coastal Environments (CIEEM, 3rd Edition 2018);
- Circular Letter PL 1/2017 - Implementation of Directive 2014/52/EU on the Effects of Certain Public and Private Projects on the Environment (EIA Directive), 15 May 2017;
- Key Issues Consultation Paper - Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems, 2 May 2017;
- Environmental Impact Assessment of Projects - Guidance on the Preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU). European Commission of the European Union 2017;
- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002);
- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Draft, Environmental Protect Agency, 2017);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Environment, Community and Local Government, 2018);
- Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2008);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009);
- NRA Environmental Assessment and Construction Series Guidelines (NRA, 2006- 2009);
- A Guide to Habitats in Ireland. (Fossitt, 2000);
- Bat Surveys: Good Practice Guidelines (Collins, 2016);
- Bat Mitigation Guidelines for Ireland, Irish Wildlife Manuals No. 25 (Kelleher & Marnell, 2006); and
- Bats & Lighting Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Ireland, December 2010).

4.3 Assessment methodology and significance criteria

Desktop survey

A desktop review was conducted of available published and unpublished information, including a review of data available on the National Parks and Wildlife Services (NPWS and National Biodiversity web-based databases), to identify key habitats and species that may be present, in particular those protected by legislation. To assess the likely current status of species in the vicinity of the Site, the search included relevant grid square searches around the Site boundary and was limited to records returned from within the last 20 years.

Designated nature conservation site assessment

Sites of international importance, including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are collectively known as Natura 2000 sites. These sites contain examples of some of the most important natural and semi-natural ecosystems in Europe. Designated sites, which also include Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) were also searched for. The designated search area was 15 km from the Site boundary for Natura 2000 sites, and 5 km from the Site boundary for NHA and pNHA sites.

In the subsequent analysis of designated sites, particular attention was given to potential for the development to influence a designated site. In other words, potential ecological pathways were identified; these pathways

can be hydrological, hydrogeological, physically overlapping or exhibiting habitat and species synergies that could result in temporary or residual effects being afforded to a designated site.

4.4 Ecological survey

Habitats

The Site was surveyed by Tom O'Donnell BSc (Hons) MSc CEnv MCIEEM on the 25th and 26th January 2021 and 23rd February 2021 (O'Donnell, 2021) and an ecological walkover survey incorporating a Phase 1 habitat and flora assessment was carried out in accordance with the Heritage Council's guidelines (Smith *et al*. 2011). The dominant habitats present were classified according to Fossitt (2000) and key botanical species were identified. Any other records of interest (e.g. invasive plant species) were also marked on field maps and locations were recorded.

Aerial photographs and Site maps assisted the habitat survey. Habitats have been named and described following Fossitt (2000).

Ecological Survey methods were in general accordance with those outlined in the following documents:

- Heritage Council (2011). Best Practice Guidance for Habitat Survey and Mapping;
- Phase 1 Habitat Survey methodology (Joint Nature Conservation Committee (JNCC), 1990, revised 2010); and
- Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (NRA, 2009).

Fauna

Bats

Daytime visual assessments were carried out to identify any bat roosting potential which may exist within the Site. Treelines within the Site contain mature trees which were considered to have potential as bat roosts. 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 was carried out on 25th and 26th January 2021 and 23rd February 2021 and 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 4.1 below (O'Donnell, 2021).

Table 4.1: Methodology for describing the potential suitability of features for bats[1].

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.

[1] *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition)', Collins (2016).*

Suitability	Description
	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.

Avifauna

An assessment of the Site's ability to host breeding and foraging birds was undertaken. The likely bird assemblages were predicted by considering habitat composition of the Site and desk study data. Due to Covid-19 restrictions and Project timing appropriate surveys could not be conducted prior to the submission of the planning application. The applicant has engaged Lesley Lewis of Limosa Environmental[2] to undertake a breeding bird survey of the site during Spring 2021 and this is well underway. This will also be supplemented by a peregrine falcon management plan. Precautionary mitigation has been developed and is presented within this chapter in the absence of 2020 baseline data.

Mammals

Terrestrial mammal surveys were carried out by Tom O'Donnell during the course of ecological walkover surveys. Walkover surveys were carried out within the site boundary, and also extending to a distance of 150 meters of the Environmental Impact Assessment (EIA) study area in areas with potential to support underground mammal dwellings. 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. Clark 1988, Sutherland 1996, Bang & Dahlstrom 2004 and JNCC 2004).

Camera traps were deployed at five locations throughout the Site (see Figure 4.1) and recording was carried out for 28 days and nights from 25th January to 23rd February 2021. The cameras were infra-red equipped to allow monitoring of activity by night as well as by day. The cameras were triggered by movement, at which point a photo was recorded and a 10 second recording delay was applied. The aim of the camera trap survey was to record evidence of terrestrial mammal activity to inform the ecological assessment. Cam_4 was removed during the study period and not recovered and therefore no imagery was returned from this location.

[2] https://www.limosaenvironmental.ie/

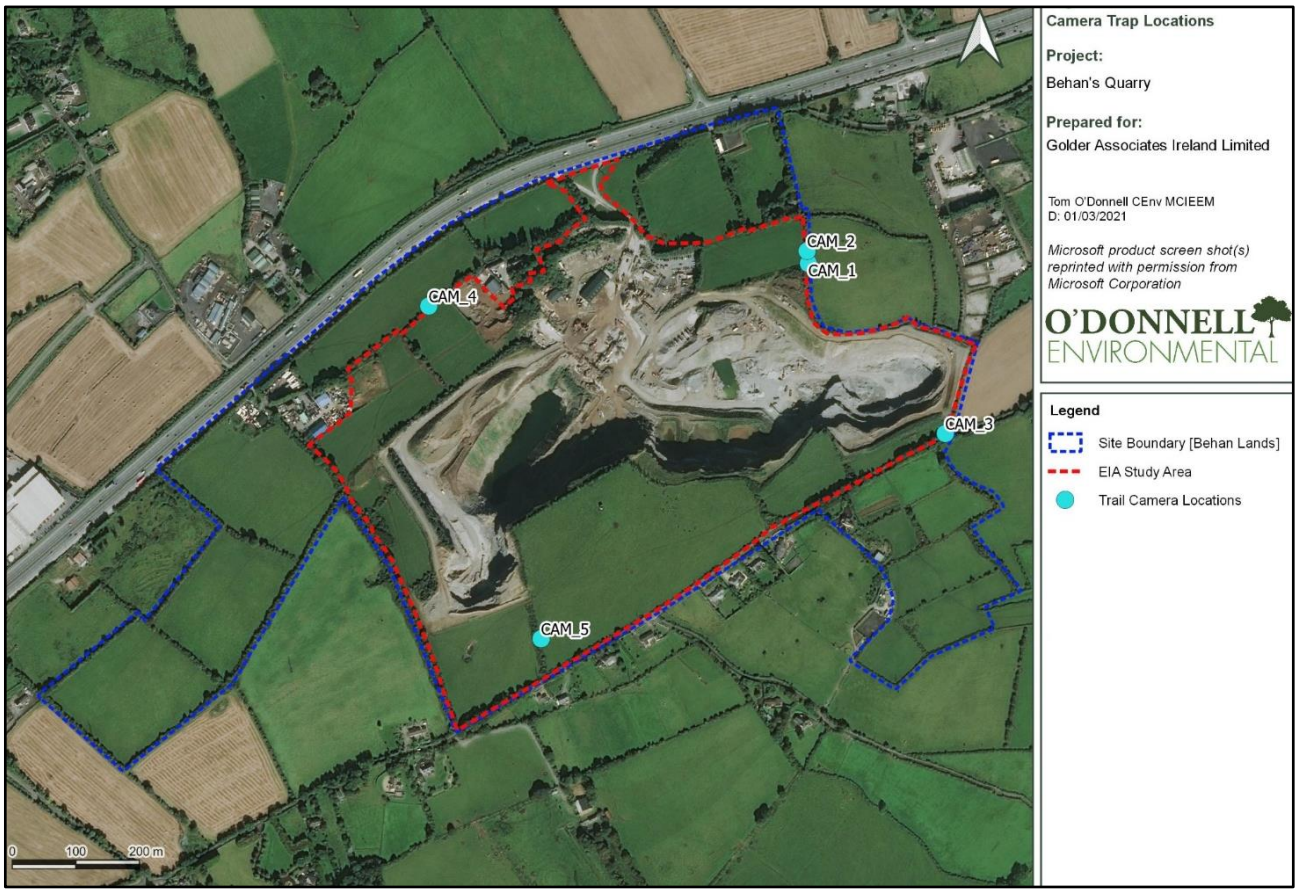

Figure 4.1: Camera Trap Locations

Herpetofauna and Invertebrates

An assessment of the Site's ability to host herpetofauna (reptiles and amphibians) and invertebrates was undertaken. The likely assemblages were predicted by considering desk study results, satellite mapping and habitat composition.

Aquatic ecology

The assessment considered the potential for hydrological connectivity between the Site and surface water features, and also considered what effects could be afforded to aquatic fauna and habitat receptors. It Is important to note that no ditches or streams cross the Site. The Site is located within the River Giffeen catchment which is part of the River Liffey system. The Highdown Hill stream leading to the River Giffeen is located approximately 1km to the north of the Site. The Tootenhill Stream flows in a north-easterly direction about 0.75 km to the east of the Site.

4.4.1 Survey constraints or limitations

Habitats

It is acknowledged that due to the seasonality of various floral species, not all species will be apparent at any one time in the year. The habitat survey was not carried out in the optimal season for such work, though given the fairly ubiquitous habitats on Site this is not considered to be a constraint.

Invasive Species

Throughout survey work the opportunity was taken to record the presence of any invasive non-native species. However, the detectability of such species can vary throughout the year and depending on their life stage or recent management.

4.5 Impact assessment method

Habitats and species were assessed in accordance with the guidance contained in the document *Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland* (CIEEM, 2018) which recommends that the value of an ecological resource be determined within a defined geographical context (Figure 4.2).

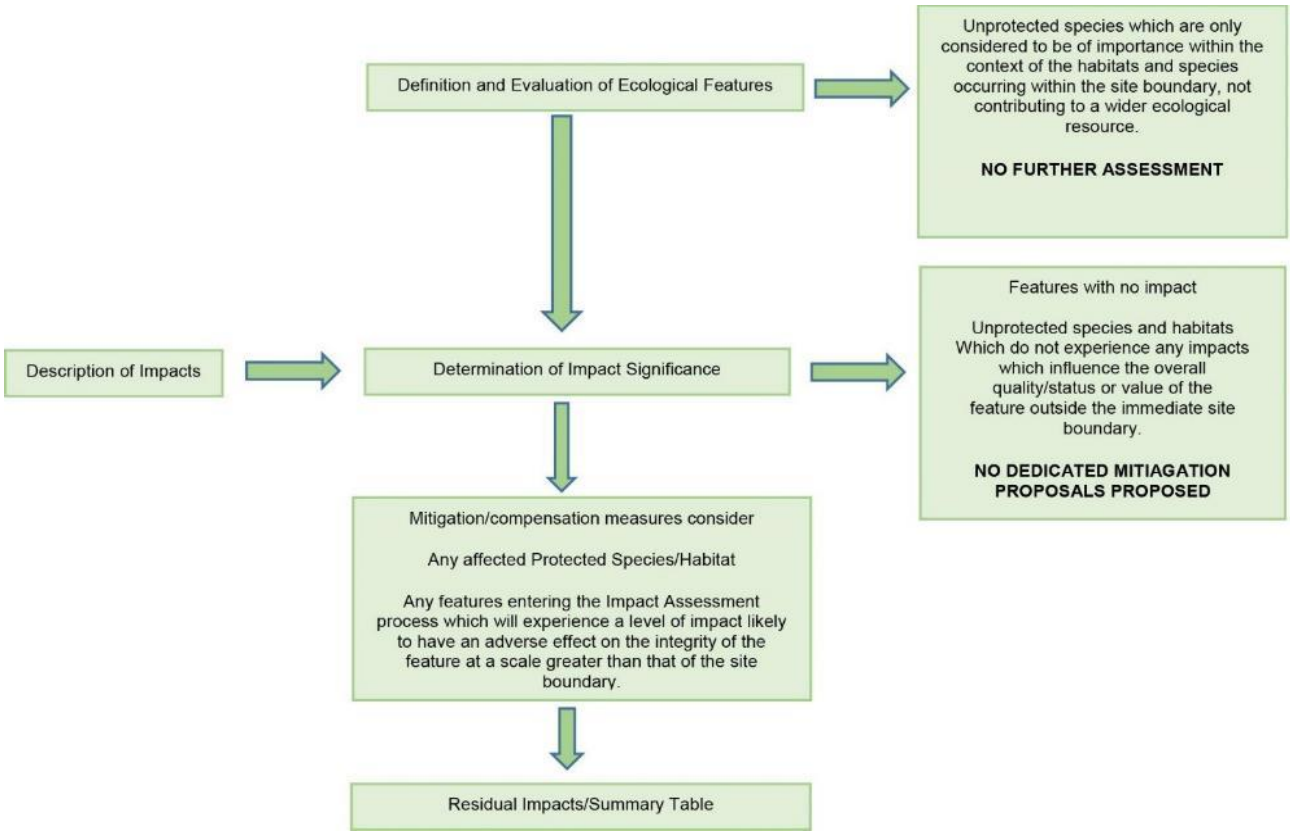

Figure 4.2: Impact Assessment Method

Defining Importance

The relative importance of each ecological feature has been defined on a geographical scale, from international importance, to having relevance only in the context of the site boundary. The definitions employed for the basis of the evaluation are presented in Table 4.3. It should be noted that professional judgement has been employed in the allocation of a level of importance to each feature **as it occurs on the site**. In other words, the value of the feature is presented in the context of its actual status within the site. **Therefore, a single individual of a species which is protected under the European Union (EU) Habitats Directive would not automatically be considered to be of European (international) Importance, but would be evaluated in the context of its relationship to the overall population and conservation status**.

Defining Impact

The impacts to ecological features are defined by their geographical significance in terms of the likely effect and the defined importance of the feature being affected. It is not possible in this system to have an impact greater than the overall geographical importance of the feature (e.g. the maximum possible impact to a feature of a regional importance would be one which is of regional significance). Impacts which do not have significance beyond the immediate area (the site) will be managed through the implementation of construction and habitat management plans. One exception to this is the case of impacts on Protected Species, where **any** impact would result in the implementation of mitigation measures.

Defining Magnitude of Change

Considering the potential for impacts as defined above, an assessment of the magnitude of change is arrived at. This is based on Table 4.2 below, and relies on professional subjective judgement in deciding the level of magnitude of change.

Table 4.2: Criteria for Assessing Magnitude of Change

Impact Level	Description
Severe Impact	Ecological effects of a scale or magnitude which would result in permanent, total loss of an irreplaceable species or habitat of international or national importance (occasionally of local importance), or which would result in the substantial loss of a protected/rare habitat or a population of a protected/rare species. They represent key factors in the decision-making process. Typically, mitigation measures would be unlikely to remove such effects.
Major Impact	These effects are likely to relate to permanent impacts at a regional or local level, or temporary impacts at an international or national level, and could be potential concerns to the project depending upon the relative importance attached to the issue during the decision making process. The effects are likely to be large in scale or magnitude, and result in substantial medium term loss of protected/rare species or habitats. Mitigation and detailed design work are unlikely to entirely eliminate all ecological effects.
Moderate Impact	These effects are usually only at local or regional level, and may be short or medium term only, or temporary impacts on a small part of an international site. However, the cumulative effects of such issues may lead to an increase in the overall effect on ecological features. They represent issues where effects will be experienced, but mitigation measures and detailed design work may ameliorate/enhance some of the consequences upon affected interests, but some residual effects will still arise.
Minor Impact	These effects are likely to be local issues only; or small magnitude impacts at the regional and national level, they are usually temporary, and are unlikely to be of importance in the decision making process. However, they are of relevance in enhancing the subsequent design of the development and consideration of mitigation measures.
Not Significant / No Impact	No perceivable impacts on ecological features (habitat or species). Impacts may be beneath levels of perception, within normal bounds of variation, within the margin of forecasting error, or impacting on exceptionally poor baseline conditions.
Beneficial / Positive Impact	These effects are those, which through implementation, would be anticipated to benefit the ecology of the site. They may advance the objectives of local, national or international species or habitats.

Outlining mitigation, compensation, and enhancement measures

Receptors subject to significant impacts (those which have the potential to affect the ecological resource outside of the immediate site boundary) are the focus of provision of mitigation measures which have been formulated according to the mitigation hierarchy (avoid, reduce / minimise, compensate). All proposed mitigation measures follow industry best practice. Those for protected species follow the prescribed regulatory protocols.

Defining residual impact

Following the application of mitigation measures, impacts to each ecological feature are reassessed, and any residual impacts are reported.

As stated by the Chartered Institute of Ecology and Environmental Management CIEEM guidance (2018), '*The importance of an ecological feature should be considered within a defined geographical context*'. Accordingly, each feature has been assessed based on the scale described in Table 4.3.

Table 4.3: Criteria for Establishing Receptor Sensitivity/Importance

Importance	Ecological Valuation
International	Sites, habitats or species protected under international legislation e.g. Habitats and Species Directive. These include, amongst others: SACs, SPAs, Ramsar sites, Biosphere Reserves, including sites proposed for designation, plus undesignated sites that support populations of internationally important species.
National	Sites, habitats or species protected under national legislation e.g. Wildlife Act 1976 and amendments. Sites include designated and proposed NHAs, Statutory Nature Reserves, National Parks, plus areas supporting resident or regularly occurring populations of species of national importance (e.g. 1% national population) protected under the Wildlife Acts, and rare (Red Data List) species.
Regional	Sites, habitats or species which may have regional importance, but which are not protected under legislation (although Local Plans may specifically identify them) e.g. viable areas or populations of Regional Biodiversity Action Plan habitats or species.
Local/County	Areas supporting resident or regularly occurring populations of protected and red data listed-species of county importance (e.g. 1% of county population), Areas containing Annex I habitats not of international/national importance, County important populations of species of habitats identified in county plans, Areas of special amenity or subject to tree protection constraints.
Local (Higher and Lower, NRA 2009)	Areas supporting resident or regularly occurring populations of protected and red data listed-species of local importance (e.g. 1% of local population), Undesignated sites or features which enhance or enrich the local area, sites containing viable area or populations of local Biodiversity Plan habitats or species, local Red Data List species etc. This may be split into higher and lower categories as per NRA, 2009.
Site	Very low importance and rarity. Ecological feature of no significant value beyond the Site boundary.

4.6 Baseline Results

4.6.1 Desk Study

Designated Nature Conservation Sites

The internationally statutory designated nature conservation sites in the vicinity of the Site are shown in Figure 4.3 below.

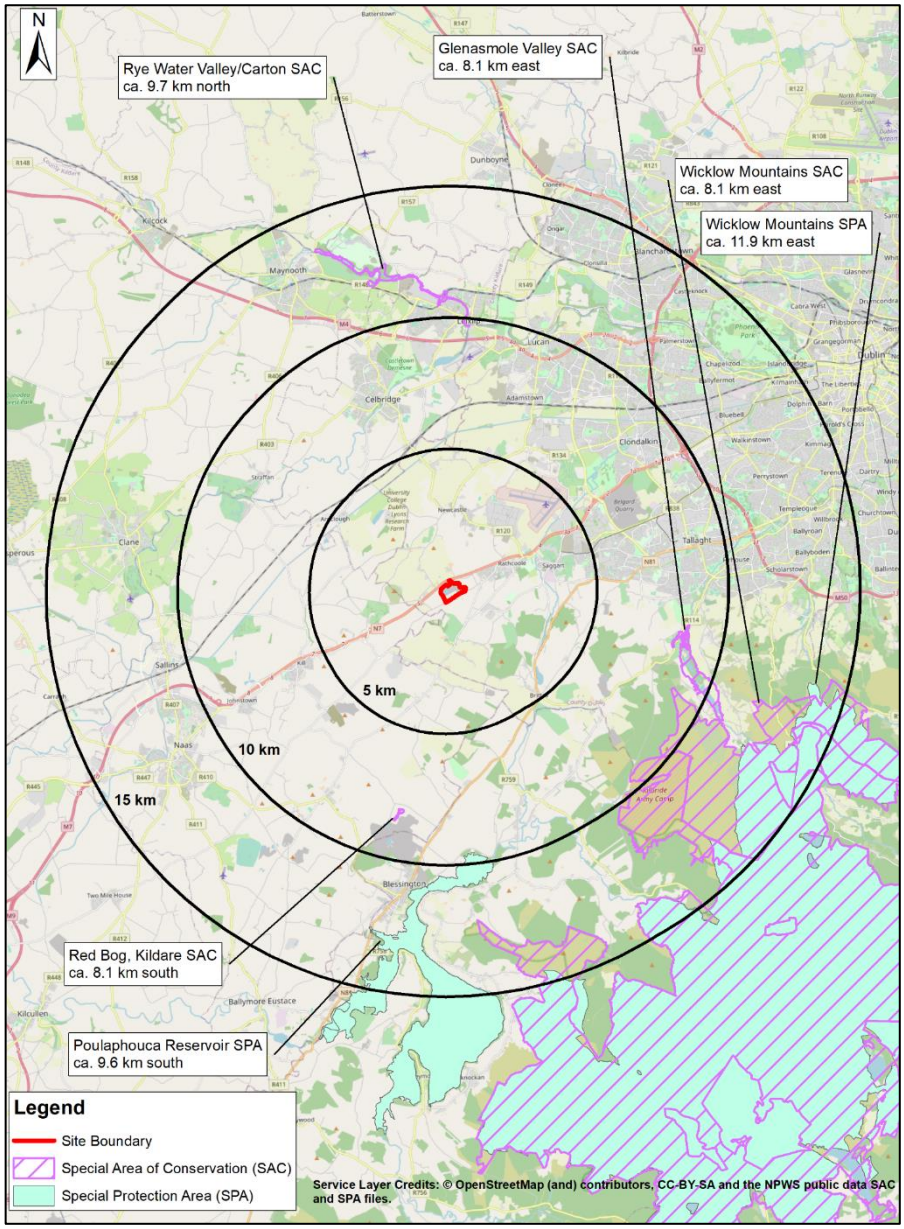

Figure 4.3: International Statutory Designations surrounding the Site, including 5, 10, and 15 km buffers.

International Designations (Natura 2000 sites)

There are six Natura 2000 sites located within 15 km of the Proposed Development, as listed below:

- Red Bog, Kildare SAC – (ca. 7.5 km south of the Site);
- Poulaphouca Reservoir SPA – (ca. 10 km south of the Site);
- Wicklow Mountains SAC (ca. 12 km south east of the Site);
- Wicklow Mountains SPA (ca. 12 km south east of the Site);
- Glensamole Valley SAC (ca. 7.5 km east of the Site); and
- Rye Water Carton SAC (ca. 10 km north of the Site.

A stage 1 screening for appropriate assessment has been prepared for this Project which evaluates the potential for significant effects on the integrity of these EU sites. Given that no element of the Proposed Development

will be undertaken within or directly adjacent to any Natura 2000 site, there is no potential for direct effects on the qualifying interests of any designated sites as a consequence of the development.

National Designations (NHAs) and pNHA

No Natural Heritage Areas (NHAs) were identified within 5 km of the Site. However, three proposed NHAs (pNHAs) were identified as shown on Figure 4.4 below.

- Kilteel Wood pNHA (c. 4 km South of the Site);
- Slade of Saggart And Crooksling Glen (c. 3 km south-east of the Site); and
- Grand canal (c. 4 km north-west of the Site).

All pNHA sites are on the relative periphery of the search area. The pNHA sites are all separated from the Site either by the N7 roadway, other smaller roads and open agricultural land, limiting any ecological connectivity. Accordingly, it is not anticipated that these pNHAs will be subject to any direct effects as a result of the development. Equally, given the distance and separation from the Site, it is considered unlikely that the development will result in any indirect effects on the pNHAs, such as from an increase in noise levels or dust deposition. Accordingly, it is considered highly unlikely that the development will result in any negative effects on the qualifying features of the pNHAs.

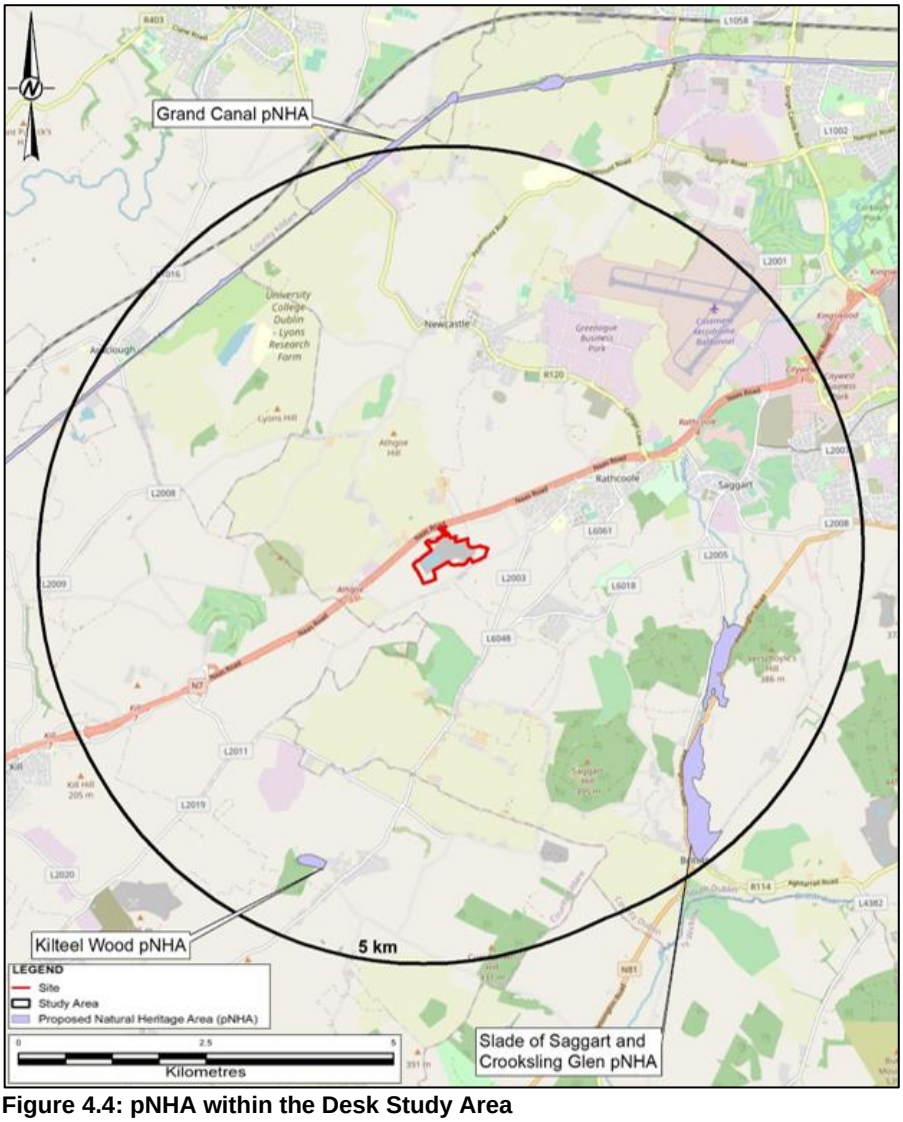

Figure 4.4: pNHA within the Desk Study Area

Fauna

The National Parks and Wildlife Service (NPWS)[3] and the National Biodiversity Data Centre (NBDC) databases were searched for records of protected species within the most appropriate 2 km grid square for the Site. The results are presented in Table 4.4 below.

Table 4.4: Protected species data within the most appropriate 2 km grid square for the Site

Species Group	Species Name	Count	Most recent record
Bird	Eurasian Jay (*Garrulus glandarius)*	1	31/12/2011
Flowering plant	Winter Heliotrope (*Petasites fragrans*)	3	26/01/2018
Insect - butterfly	Green-veined White (*Pieris napi*)	1	05/08/2013
Insect - butterfly	Large White (*Pieris brassicae)*	2	05/08/2013
Terrestrial mammal	Eastern Grey Squirrel (*Sciurus carolinensis*)	1	31/12/2011
Terrestrial mammal	European Rabbit (*Oryctolagus cuniculus*)	1	05/08/2013
Terrestrial mammal	Red Fox (*Vulpes vulpes*)	1	11/10/2016

It is noted that location information for a number of species is confidential and not provided on the database, including for golden eagle (*Aquila chrysaetos*), peregrine falcon (*Falco peregrinus*), merlin (*Falco columbarius*), hen harrier (*Circus cyaneus*), marsh harrier (*Circus aeruginosus*), and white-tailed eagle (*Haliaeetus albicilla*).

The freely available desk study results should not be considered definitive data sets for the desk study area. An absence of desk study data does not necessarily dictate that a site is absent of notable flora or fauna in a historical or current context.

Habitats

The NPWS database did not return any records for protected habitats or flora from within or adjacent to the Site within grid square N92X.

4.6.2 Habitat Assessment

The habitats present within the boundary of the proposed Site are described below (Figure 4.5) and as further presented in Appendix 4.1 (O'Donnell, 2021).

Improved Agricultural Grassland (GA1)

The Site is dominated by improved agricultural grassland (GA1 - Fossitt (2000). For clarity and ease of use, GA1 is not mapped within Figure 4.5 and consists of all areas within the study area not otherwise mapped. This grassland is used for silage production as well as grazing by cattle. Improved agricultural grassland is a highly modified/improved grassland habitat, which is generally species poor, dominated by a typical agricultural species assemblage. Perennial Rye-grass (*Lolium perenne*) is the dominant grass species with Yorkshire Fog (*Holcus lanatus*) and Cocksfoot (*Dactylis glomerata*) also abundant. Other species noted include Ribworth Plantain (*Plantago lanceolata*), White Clover (*Trifolium repens*), Broad-leaved Dock (*Rumex obtusifolius*), Meadow Buttercup (*Ranunculus acris*) and Dandelion (*Taraxacum vulgaria*).

[3] www.npws.ie mapviewer [accessed 30/10/2020]

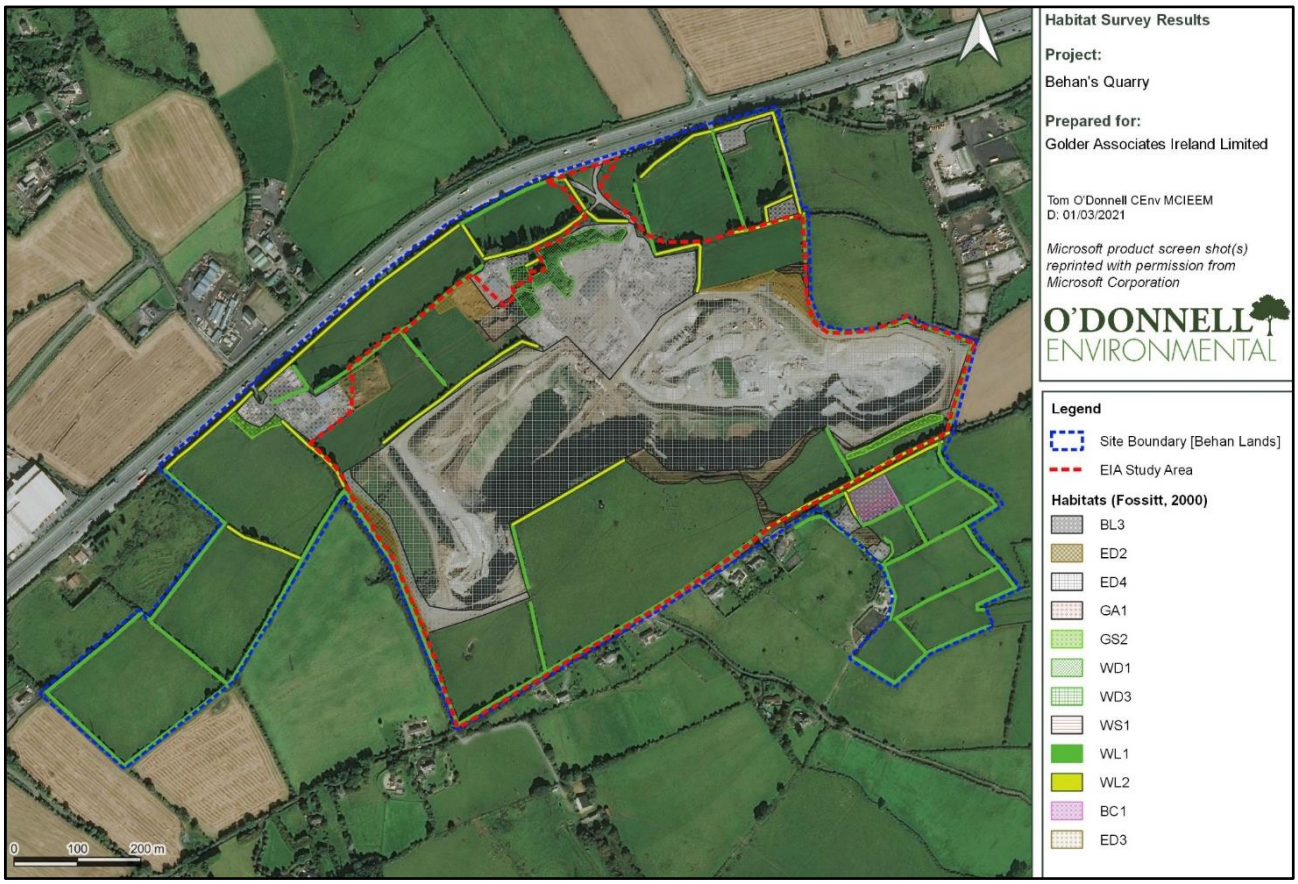

Figure 4.5: Habitat Baseline at the Site

Improved agricultural grassland (GA1) is a highly modified or improved grassland habitat which is subject to ongoing intensive management for agricultural purposes including the application of fertiliser. As such it supports limited floral diversity and local biodiversity potential (Figure 4.6).

Figure 4.6: Intensive Agricultural Grassland (GA1), Courtesy of O'Donnell, 2021.

Hedgerows (WL1)

A number of hedgerows are present within the Site. Locations of hedgerow habitats are represented by a 4-meter-wide strip in the Habitat Map, Figure 4.5. The Site, including its boundary, contains approximately 5.7km of hedgerows in total. The hedgerows within the Site are generally poorly managed and in many cases ingress by livestock occurs resulting in loss of ground level vegetation and a gappy/defunct hedgerow structure. Hawthorne, Elder and Gorse were the most common hedgerow species encountered overall. Bramble was also found to be abundant in hedgerows throughout the Site (Figure 4.7).

Hedgerows occasionally contain mature trees. On the western boundary of the Site a double hedgerow is present, and analysis of historic mapping shows this double hedgerow borders both sides of a disused roadway. A small section of hedgerow along the N7 roadway was historically 'laid' to increase the effectiveness of the hedgerow as a barrier to stock. The hedgerows of the Site offer some semi-natural habitat and ecological connectivity which is of some significance in a local context.

Figure 4.7: Hedgerow (WL1).

Treelines (WL2)

The Site, including its boundary, contains approximately 3.03km of treeline habitats in total. Treelines of different types and ages are present which reflects the various uses and ownership of the Site and adjoining areas over the years. At the main entrance to the quarry Site, in proximity to the reception yard, Leyland Cypress treelines provide screening from the nearby N7 roadway. Screening planting is also present on the northern and southern edges of the main open quarry face, this planting consists of Elder and Pine (*Pinus sp.*), while some Hawthorne and Gorse is also becoming established. Older treelines typically comprise mature Ash trees, Hawthorne and Elder. Beech is present occasionally. The treelines offer semi-natural habitat which has some significance in a local context (Figure 4.8).

Figure 4.8: Treeline (WL2) on north-east of Site.

Scrub (WS1)

Gorse and Elder dominated scrub are present primarily in proximity to the open quarry area, where berms and bare soil have recolonised naturally (Figure 4.9). Hawthorn and bramble are commonly associated with these scrub habitats. Buddleia, a common alien invasive species, was recorded in scrub above the southern side of the open quarry face. Scrub habitat often provides a number of important ecological functions including providing nesting habitat for birds, however this habitat is limited in scale and subject to disturbance effects.

Figure 4.9: Scrub (WS1) on southern quarry boundary of the Site.

Mixed Broadleaf Woodland (WD1)

A small area of ca. 0.6ha of mixed broadleaf woodland (WD1) occurs on the northern side of the quarry Site, proximal to an old residence and buildings associated with quarrying activities (Figure 4.10). The woodland was found to be dominated by sycamore. Understorey species consist of hawthorn and bramble. The WD1 habitat contains occasional rhododendron, which is associated with horticultural planting surrounding the old residence. The woodland currently has limited floral diversity, nevertheless it represents a valuable habitat in a local context with a degree of naturalness.

Figure 4.10: Mixed Broadleaf Woodland (WD1).

Mixed Conifer Woodland (WD3)

A small area ca. 0.11ha of mixed conifer woodland (WD3) is partially contained within the Site, on the eastern boundary of the Site. The WD3 habitat contains Sitka Spruce trees and abundant rhododendron, which is associated with horticultural planting surrounding 'Windmill House', a historic residence. Rhododendron, similar to Buddleia (described above) is an alien invasive species. This woodland is of low ecological value.

Buildings and Artificial Surfaces (BL3)

A variety of buildings and artificial surfaces are present within the Site associated with quarrying activities as well as agricultural and residential purposes. These areas are generally of low ecological significance. An old residence is located north of the existing quarry (and associated outbuildings) which is titled 'Windmill House' on OSI historic 6" mapping (Figure 4.11Figure 4.12). The base of a windmill, after which the townland is named, is located south of the quarry. These structures may be of importance to bats and nesting birds.

Figure 4.11: Buildings and artificial surfaces (BL3).

Figure 4.12: Buildings and artificial surfaces (BL3).

Arable Crops (BC1)

A small area of arable crops (BC1) was used in the previous growing season for the production of potatoes and turnips (Figure 4.13). This habitat is of low ecological value.

Figure 4.13: Arable Crops (BC1).

Other habitats within the Site, which are of low botanical importance, are:

- Active Quarries and Mines' (ED4). The area of 'active quarries and mines' is approximately 21.5 ha; and
- Spoil and Bare Ground' (ED2). This habitat occurs marginal to active quarrying areas and measures approximately 1.07 ha.

4.6.3 Fauna Assessment

The presence, or potential presence, of species on the Site was identified from the desk study and Habitat walkover survey. In addition, specific survey work was carried out in respect of roosting bats and mammals as outlined below.

Mammals

Walkover surveys and camera trapping were carried out to identify mammal species utilising the Site. Areas of habitat with suitability to host an underground dwelling for a protected mammal species were surveyed within the Site boundary and an area extending to 150m of the Site (refer Figure 4.14 below). Fox was observed during walkover surveys and was frequently encountered during the camera trapping survey. Rabbits are abundant at the Site and rabbit burrows are present almost ubiquitously within hedgerow and treeline habitats throughout the Site.

A badger sett was recorded immediately adjoining the Site boundary (see Figure 4.14). The location of the sett is of relevance to the current application, given the proximity of quarrying activities to the sett. The sett occurs in an area where scrub clearance has recently been undertaken using an excavator to scrape back bramble dominated scrub.

The sett appears to be well established and was in active use at the time of survey. A number of entrances were visible in the area which was scraped back, and further entrances may have been obscured by these works. A primary entrance was visible behind the existing fence line (i.e. immediately outside the area which was scraped). This entrance shows spoil associated with significant and ongoing excavation, and bedding was visible within the spoil. No latrines were noted but these may have been obscured within dense scrub or may have been removed by scrub clearance works.

The large size of the sett, the number of entrances visible and the presence of bedding within recently excavated spoil indicate that the sett is a 'main' sett and is likely used for breeding. The sett is located within a relatively sheltered location in a local context, being partially within a double hedgerow associated with a disused roadway.

Badgers are common and widespread in agricultural habitats across the Republic of Ireland (Sleeman *et al*. 2009). Badgers construct and use setts of different types (main, annex, subsidiary and outlier setts) (SNH 2001). Main setts are of the greatest conservation importance and are where breeding typically occurs. No additional setts could be found, including annex, subsidiary or outlier setts which may be associated with the main sett. No other evidence of badger activity within the Site could be found although badgers are highly likely to forage within the Site. Badgers were not recorded on any of the camera traps.

Bats

Daytime visual assessments were carried out to identify features with bat roosting potential which may exist within the Site. These ground level roost inspections were carried out in winter, which is the optimal time of year for such surveys. No known underground structures (such as caves, mines or icehouses) are present within the Site, and therefore relevant features consist of trees and buildings.

No roosting bats were encountered during the current survey, and no unoccupied roosts which contained signs of bats were encountered. While no bat roosts could be identified, a number of trees had features which are considered to have potential to support roosting bats. The trees are categorised according to their potential following Collins (2016) (see Table 4.5).

A total of 20 trees within the Site were considered to have some potential for bats. No 'high' potential tree roosts were identified. One tree was considered to have 'moderate' potential, while 19 trees were considered to have 'low' potential (see Table 4.5). Maternity roosts are of considerable conservation importance to bats. Based on ground level visual survey it is unlikely that any maternity roosts are present in trees within or adjoining the Site.

A number of Potential Roosting Features (PRFs) were identified in trees, and it is likely that some of these features will be used at least occasionally by day-roosting bats. Most of Ireland's 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 owing to the decay and damage to trees which may provide more PRFs.

Three structures (or discrete groups of structures) were considered to have potential to be used by roosting bats (B_01 to B_03, see Table 4.5 and Figure 4.14). Two features with 'moderate' potential to support roosting bats were identified, while one feature with 'low' potential was identified. Internal surveys were carried out in accessible areas of farm buildings and outbuildings associated with the residence. Internal surveys of the residence (e.g. attic space) were not carried out due to COVID restrictions.

Table 4.5: Description of features within the Site considered to have potential to support roosting bats.

Ref.	Bat Potential	Species	Comment
B_01	Moderate	N/A	Historic masonry residence and associated outbuildings. Slate roof.
B_02	Moderate	N/A	Masonry agricultural buildings.
B_03	Low	N/A	Windmill base. Suitable for crevice dwelling species but isolated and significant light and wind ingress.
T_01	Low	Beech	Semi-mature. Moderate ivy cover. Cluster of similar trees in this area.
T_02	Low	Ash	Mature. Heavy Ivy cover. No other PRFs visible.
T_03	Low	Ash	Semi-mature and nearby trees forming cluster. Moderate ivy cover.
T_04	Low	-	Standing dead tree. Some peeling bark and decay features.

Ref.	Bat Potential	Species	Comment
T_05	Low	Sycamore	Large, multi-stem. Heavy ivy cover with some thick, interweaving ivy stems.
T_06	Low	Sycamore	Large, multi-stem. Heavy ivy cover with some thick, interweaving ivy stems.
T_07	Low	Sycamore	Large, multi-stem. Heavy ivy cover with some thick, interweaving ivy stems.
T_08	Low	Elder	Dense ivy cover. No other PRFs visible.
T_09	Low	Ash	Mature. Some minor PRFs visible at height. Heavy ivy cover.
T_10	Low	Ash	Mature. Moderate ivy growth with some thick interweaving stems. No other PRFs visible.
T_11	Low	Ash	Semi-mature. Moderate ivy cover.
T_12	Moderate	Ash	Mature. Visible minor PRFs include splits and rot-holes. Dense ivy cover with some thick and interweaving stems.
T_13	Low	Ash	Multi-stem. Dense ivy cover. No other PRFs visible.
T_14	Low	Ash	Dense ivy cover. No other PRFs visible.
T_15	Low	Beech	Moderate ivy cover. No other PRFs visible.
T_16	Low	Ash	Dense ivy cover. No other PRFs visible.
T_17	Low	Ash	Moderate ivy cover. No other PRFs visible.
T_18	Low	Ash	Semi-mature. Moderate ivy cover. No other PRFs visible.
T_19	Low	Ash	Semi-mature. Moderate ivy cover. No other PRFs visible.
T_20	Low	Various	Double treeline. Contains a number of trees with low potential.

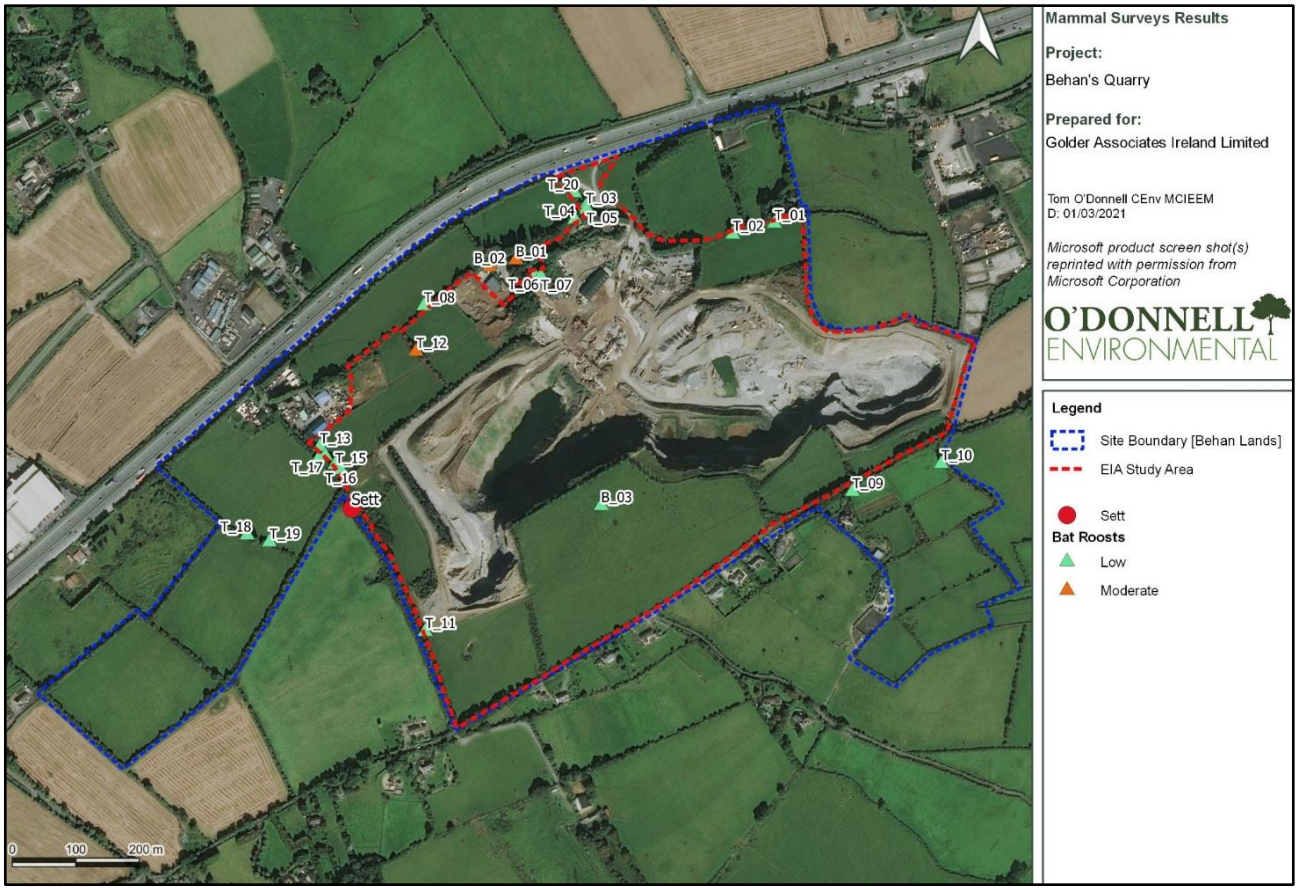

Figure 4.14: Mammal Survey Results

Avifauna

The Site periphery, including boundary features is likely to be used by general passerine and farmland species using the hedgerows surrounding the Site for nesting and foraging. It is possible that Site operations have created habitat for some bird species. In many cases species such as sand martins which often colonise quarry sites will benefit from the availability of stockpiled sand and aggregates.

In addition, Peregrine falcon (*Falco peregrinus*) are known to make use of cliffs that would have otherwise not existed at quarrying sites. The Peregrine falcon Falco peregrinus is listed on Annex I of the Birds Directive. As described in the ecology chapter within an EIAR for the Site in 2015 (Byrne Environmental, 2015) a single Peregrine was seen flying above the quarry Site to the west. It was subsequently seen to roost on the cliff face above the standing water. Due to the timing of this observation it cannot be concluded that breeding/nesting is occurring however, it strongly indicates that this may be the case. During the survey of 2010 documented by Byrne Environmental, 2015 (which also took place in November) Peregrine was not recorded although confirmation of its presence was made during both breeding and winter seasons as part of the 2007- 2011 Bird Atlas project (Balmer *et al*., 2013). Preliminary results for the 2021 breeding bird survey indicate that a female Peregrine is again at the Site sat on eggs. The presence of common and widespread bird species on the Site periphery is of Site importance. The potential presence of breeding peregrine at the Site is of Local/County importance.

Herpetofauna and Invertebrates

The Site generally exhibits a hostile environment for the herpetofauna and invertebrate groups. The Common Frog (*Rana temporaria*) and the Smooth Newt (*Lissotriton vulgaris*) are afforded protection under the Wildlife Act (1976) and Wildlife (Amendment) Act, 2000. The Common lizard (*Zootoca vivipara*) is also afforded protection under the Wildlife Act (1976) and Wildlife (Amendment) Act, 2000. As described by Byrne Environmental (2015) the lack of semi-natural habitat and in particular the absence of wet areas or standing water, precludes the presence of any amphibian species along the margins of the quarry Site. An area of standing water is present on the quarry floor, however it is unlikely that amphibians use this habitat for breeding due to the level of disturbance and the absence of any aquatic or marginal vegetation. Similarly, there is an absence of suitable semi-natural habitat for common lizard.

The relatively sterile habitats of the quarry floor at the Site extend upward toward peripheral boundary hedges, grassland and scrub habitat. This habitat is ubiquitous and not species-rich (Byrne Environmental, 2015) as such it is not considered to be optimal habitat for invertebrate species. The collective value of herpetofauna and invertebrates is of Site value only and impacts from operational disturbance are considered to be not significant e.g. no perceivable impacts on ecological features. Impacts may be beneath levels of perception, within normal bounds of variation, within the margin of forecasting error, or impacting on poor baseline conditions.

Aquatic ecology

As described by Byrne Environmental (2015) there are no water courses running through the Site or directly adjacent to it. Ordnance Survey maps show that the nearest stream lies to the east and drains into the Griffeen river, which itself joins the river Liffey in the centre of Lucan. The Tootenhill Stream flows in a north-easterly direction about 0.75 km to the east of the Site. An area of open pooled water is noted on the quarry floor. This water has evidently collected from decades of precipitation and the absence of aquatic or marginal plants indicates that there is little or no residual biodiversity value in this feature. Given the absence of aquatic flora and fauna on Site and compounded by the fact that the Site has no hydrological connectivity with surface water features, aquatic receptors are scoped out of this assessment as described in the following sections.

Summary

The presence, or potential presence, of species on the Site was identified from the desk study which included an extensive review of secondary data gleaned from previous ecological assessments undertaken at the Site and also from baseline surveys undertaken in 2021 (O'Donnell, 2021).

Summary Table 4.6 lists the species which were considered likely to occur within the Site, on the basis of the presence of suitable habitat and/or the occurrence of recent records in the vicinity. The species, together with its legislative designation is listed.

The source(s) of information relating to each species could include:

- Existing records from desk study;
- Presence of suitable habitat identified during habitat survey;
- Results of specific survey work as applicable (i.e. relating to badger and bats); and / or
- Direct observation.

For each species with the potential to occur on Site, the final column of Table 4.6 presents a brief summary of the status of the species in relation to the Site itself. If the survey fails to record the species and the habitats are unsuitable, then it is concluded that the species is unlikely to occur, and it is not considered further within the assessment. If a species is confirmed as present, an indication of the likely population size/status within the Site is provided. This information is used in the evaluation presented in Table 4.6.

Table 4.6: Assessment of the potential for faunal species to occur within the site.

Species/Group	Status	Summary of status on site
Bats	Wildlife Acts (1976 – 2010) – EU Habitat Directive.	The peripheral area of the Site supports some suitable foraging and commuting habitat for bat species. A total of 20 trees and some buildings within the Site were considered to have some potential for bats. No 'high' potential tree roosts were identified. One tree was considered to have 'moderate' potential, while 19 trees were considered to have 'low' potential.
Mammals	Wildlife Acts (1976 – 2010)	A possible badger sett was identified on Site but no evidence of current presence was detected by the camera trapping survey. Some limited potential for common and widespread mammals such as rabbit and fox to use the Site periphery.
Avifauna	Wildlife Acts (1976 – 2010), EU Birds Directive, Birds of Conservation Concern (BoCC[4], Ireland).	The peripheral Site area supports some opportunities for foraging and nesting bird species. Common and widespread species were recorded on Site (Byrne Environmental, 2015). In addition, Peregrine falcon which is listed as an Annex 1 (EU Birds Directive) species was recorded possibly nesting on Site (Byrne Environmental, 2015).
Herpetofauna and Invertebrates	Wildlife Acts (1976 – 2010)	Limited available resources on the Site. Some limited potential to occur within the Site periphery in relation to scrub and hedgerows. Scoped out of the assessment.
Aquatic Fauna	Salmonids, Wildlife Acts (1976 – 2010) – EU Habitat Directive.	No available resource within the Site. Scoped out of the assessment.

[4] Colhoun, K. & Cummins, S. (2013) Birds of Conservation Concern in Ireland 2014–2019. Irish Birds 9: 523–544.

4.7 Evaluation

The evaluation of ecological features (sites, habitats and species) which could be affected by the development is presented in Table 4.7. The table includes:

- Any statutory designated areas, with the exception of Natura 2000 sites, which are situated within 5 km of the project site that have potential ecological connection(s) with the Site;
- Any surface or groundwater bodies that have hydrological connectivity with the Site;
- Any habitat type recorded within the Site; and
- Any species of conservation importance which has been confirmed as occurring / has potential to occur within the Site.

The value of the feature is based upon how important the feature is in relation to its geographical context. In other words, at what level of geographical resolution would the feature contained within the Site (habitat or species) be recognised as contributing to biodiversity to a significant degree. The evaluation takes into account extent (or population size) within the Site compared to the resource elsewhere and whether it has characteristics which either elevate or depress its importance in comparison with a 'typical' example (for example, whether a habitat is particularly species rich, or depleted in species).

Common and widespread species or habitat, therefore, only have a level of importance in respect of the biodiversity of their immediate area (taken in this case to be represented by the boundary of the Site). Such features are not considered further within the Impact Assessment. Some protected species may, under certain circumstances (such as a single example occurring within the Site, as part of a much larger local population) be considered to only be of importance within the Site itself. Such species, on the basis of legal and planning regulation compliance, are included within the Impact Assessment and, (if necessary) dedicated impact mitigation measures are provided. Table 4.7 presents each feature occurring, together with the rationale for its evaluation.

Table 4.7: Classifying the geographical Importance of Key Ecological Features

Key Ecological Features	Importance	Rationale
Habitats		
Active Quarry and Hardstanding	Negligible	This habitat offers negligible biodiversity value. Not considered further in this assessment.
Buildings and Artificial Surfaces	Site	This habitat offers negligible biodiversity value. Whilst bats and birds may roost in these features, the features will not be impacted by the Development. Not considered further in this assessment.
Improved Grassland	Site	This habitat does not represent a valuable resource in terms of biodiversity given the Site is in an area with abundant farmland, and this type of habitat is considered to be ubiquitous and not inherently biodiverse or rare in accordance with ecological value based upon the criteria defined by Ratcliffe (1977), namely: naturalness, size, rarity and diversity. Not considered further in this assessment.
Colonising Ground	Site	This type of habitat is considered to be ubiquitous and not inherently biodiverse or rare in accordance with ecological value based upon the criteria defined by Ratcliffe (1977), namely: naturalness, size, rarity and diversity. Not considered further in this assessment.

Key Ecological Features	Importance	Rationale
Scrub (Site periphery)	Site	This habitat is not extensive within the Site and this habitat is considered to be ubiquitous and not inherently biodiverse or rare in accordance with ecological value based upon the criteria defined by Ratcliffe (1977), namely: naturalness, size, rarity and diversity. Not considered further in this assessment.
Hedgerows and occasional trees	Local Importance (lower value) (following NRA, 2009)	These features are likely to represent a useful resource for fauna such as mammals, birds, and breeding birds in particular. This feature is carried forward into the design mitigation and impact assessment sections.
Arable Crops	Site	This habitat is not extensive within the Site and this habitat is considered to be ubiquitous and not inherently biodiverse or rare in accordance with ecological value based upon the criteria defined by Ratcliffe (1977), namely: naturalness, size, rarity and diversity. Not considered further in this assessment.
Mixed Conifer Woodland	Site	This habitat is not extensive within the Site and this habitat is considered to be ubiquitous and not inherently biodiverse or rare in accordance with ecological value based upon the criteria defined by Ratcliffe (1977), namely: naturalness, size, rarity and diversity. Not considered further in this assessment.
Mixed Broadleaved Woodland	Local Importance (lower value) (following NRA, 2009)	This discrete area of habitat is likely to represent a useful resource for fauna such as mammals, birds, and breeding birds in particular. However, this feature will not be affected by Project proposals. Not considered further in this assessment.
Species		
Bats	Local Importance (higher value) (following NRA, 2009).	The peripheral Site supports some suitable foraging and commuting habitat, some trees have low or moderate bat roosting potential. This feature (species group) is carried forward into the design mitigation and impact assessment sections.
Mammal	Local Importance (higher value) (following NRA, 2009).	The peripheral Site scrub, hedgerows, and trees may support a number of common and widespread mammal species. A badger sett has also been identified on Site. This species group is carried forward into the design mitigation and impact assessment sections.
Avifauna	Site and Local/County (Peregrine).	The peripheral Site scrub, hedgerows, and trees are likely to support a number of common and widespread bird species. Evidence of Peregrine on Site has also been recorded and is of Local/County significance. This species group (breeding birds) is carried forward into the design mitigation and impact assessment sections.

4.8 Impact Assessment

Given the nature of the assessment, the operational impacts are summarised below:

- Land take (permanent loss);
- Habitat modification through anthropogenic effects;
- Disturbance to habitats and species through noise from traffic and blasting;

- Individual species disturbance / mortality; and
- Impacts of dust as a result of extraction activities.

Potential direct and indirect impacts from water quality and quantity are as follows:

- Local (Site based) Impacts of dust and Site runoff (sediments, fuel, etc.) as a result of quarrying activities; and
- Impacts on surface water quality within the Site.

There are two areas for the proposed extensions at the Site that involve new land take, to the north west and north east (refer Figure 4.15 below). The land take combined area is ca. 5.19 ha (this includes out to the perimeter safety berms, shown as the cyan polygons).

Figure 4.15: Land Take for Project development in the Operational Phase

4.8.1 Hedgerows and Occasional Trees

Characterisation of Unmitigated Impacts

The potential for ecological impact to hedgerows and trees, in the absence of mitigation, focuses on the following factors:

- Permanent loss in accordance with the ca. 5.2 ha of land take described above;
- Potential un-planned encroachment of machinery and quarry footprint (impacts on root protection zones); and

- Dust deposition and subsequent changes in habitat composition.

Loss and damage to hedgerows and trees or modification would afford a negative impact. In the absence of mitigation, this may restrict this resource to fauna during the operational assessment timeframe.

Rationale for Prediction of Effect

Degradation of foraging habitat and potential habitat severance is less likely to cause stress to species associated with hedgerow habitat given the abundance of optimal habitat within the local setting. On a precautionary basis, it is considered certain that this impact will negatively affect the conservation status of these linear landscape features.

Effect without Mitigation

The unmitigated effect of this operation would result in a **minor** negative impact on habitat of **local (lower)** sensitivity and importance. These effects are likely to be local issues only; or small magnitude impacts at the regional and national level, they are usually temporary, and are unlikely to be of importance in the decision-making process. However, they are of relevance in enhancing the subsequent design of the restoration and consideration of mitigation measures.

4.8.2 Bats

Characterisation of Unmitigated Impacts

The potential for ecological impacts to bats as a result of the Site development focuses on the following factors:

- Permanent loss of potential bat roosting locations (trees) exhibiting low or moderate bat roosting potential;
- Loss or modification of ecological connectivity (hedgerows); and
- Increased noise, lighting and human activity along commuting routes and within foraging habitats on the Site periphery.

The removal of woody vegetation such as trees and scrub would permanently remove foraging and commuting habitat for bats. Potential effects to bat species include a negative biophysical effect to hedgerow, treeline, scrub and peripheral habitat which may inhibit bat commuting value. Linear landscape features, such as hedgerows, are important habitats for bats, providing flight paths between roosts and foraging sites and as foraging habitats (e.g. Verboom and Huitema 1997, Oakeley and Jones 1998, Russ and Montgomery 2002).

Noise effects associated with the operation of the quarry would be temporary during diurnal parts of the day and no nocturnal noise effects are anticipated to occur.

Rationale for Prediction of Effect

The trees that will be residually affected by the project exhibited negligible, low and a single moderate bat roosting potential result. As such, with the exception of the moderate tree no further assessment is considered appropriate. However, in accordance with best practice (Collins, 2016) good practice tree felling, that demonstrates a precautionary working principle, should be implemented.

The rationale for effect on bat species considers that a small number of low-status roosts may be affected by the Proposed Development (potentially present in the trees). The footprint of the Proposed Development is considered to be poor and relatively ubiquitous in terms of foraging value and the restoration of both roosting and foraging habitat is proposed within the mitigation section. On a precautionary basis, it is considered likely that these impacts could negatively affect the conservation status of the bat population.

Effect without Mitigation

The unmitigated impact of this development would result in **minor negative** effects to species of **Local (higher)** importance. These effects are likely to be local issues only; or small magnitude impacts at the regional and national level, they are usually temporary, and are unlikely to be of importance in the decision-making process. However, they are of relevance in enhancing the subsequent design of the restoration and consideration of mitigation measures.

4.8.3 Breeding Birds

Characterisation of Unmitigated Impacts

The potential for ecological impact to the breeding bird group, in the absence of mitigation focuses on the following factors:

- Operational noise (blasting and vehicle movements);
- Discrete vegetation and habitat removal (hedgerow, trees, scrub and grassland);
- Dust deposition and subsequent changes in habitat composition (changes to structural, foraging, breeding and commuting habitat); and
- Potential effects to bird species include a negative biophysical effect to vegetation availability which may disturb breeding birds and reduce available forage.

Potential losses of available nesting habitat as a result of the quarry operation would be discrete and dependant on habitat type. In the context of the available nesting habitat within the trees, cliffs and scrub vegetation at the Site periphery the impact can be considered minor. Noise effects associated with the operation of the quarry would be temporary and reversible.

Rationale for Prediction of Effect

The rationale for effect to bird species considers that discrete losses of available nesting habitat may occur and disturbance may occur to species protected at the National and European level (Peregrine falcon). The Site periphery is considered to exhibit some suitable breeding bird habitat for passerines and cliffs within the Site are known to support Peregrine falcon. It is considered that effects to treeline and hedgerow habitat are discrete and wholly reversible. Minor losses of scrub and trees, used for foraging and breeding, are unlikely to cause stress to this group given the abundance of habitat (mature trees, hedgerow and pasture) within the local setting. On a precautionary basis, it is considered likely that this temporary impact could negatively affect the conservation status of the bird populations on and adjacent to the Site.

Effect without Mitigation

The unmitigated impact on this feature would result in a **minor** effect to species of **site and Local/County** importance. The majority of bird species are protected under the Wildlife Acts (1976-2012) where it is an offence to hunt, interfere with or destroy their breeding or resting places unless authority is obtained via statutory licence provision. Peregrine Falcon is further protected by the Habitats Directive and listed as an Annex I species.

4.8.4 Mammals

Characterisation of Unmitigated Impact

The potential for ecological impact to the mammal group focuses on the following factors:

- Land take and encroachment toward a badger sett;
- Operational noise disturbance;
- Vegetation and habitat removal (hedgerow, tree, scrub, bare ground and grassland); and

- Dust deposition and subsequent changes in habitat composition (changes to structural, foraging and commuting habitat).

The mammal group includes badger, fox, rabbit, stoat, pygmy shrew, and hedgehog. Although this group of species are generally mobile, operational impacts attributed to land take, noise disturbance, vegetation removal, loss of foraging habitat and dust deposition must be considered. Dust that settles on plants, can affect the plants' transpiration, respiration and other metabolic activity, by clogging pores and damaging waxy cuticles on the leaves, and by reducing available light. Dust can alter soil and water chemistry, structure and trophic status which may have impacts on the composition of plant and invertebrate communities. Dust can have direct impacts on insect and other invertebrate populations. Impacts on plant and invertebrate communities may result in effects further up the food chain (small mammals).

Rationale for Prediction of Effect

The variable effects associated with operational noise and potential habitat severance and loss at different distances from the source of disturbance, are very little understood for small to medium mammals. Habitat loss would be likely to afford a level of perceived stress and possible mortality, dependent on species mobility, though this is not certain. Minor losses of foraging habitat and potential habitat severance is less likely to cause stress to this species group given the availability of other suitable habitat (scrub, grassland) within the local setting. On a precautionary basis, it is considered likely that this impact could negatively affect the conservation status of the local mammal population including a badger sett.

Effect without Mitigation

The unmitigated effect to this group would result in **minor** impacts to species of **Local (higher)** importance. Small mammals such as stoat and hare are protected under the Wildlife Acts (1976-2010).

4.9 Mitigation, Compensation and Enhancement Measures

The principal objective of the ecological mitigation is to take measures to reduce negative effects of the Project. Details of committed mitigation, compensation and enhancement measures including the provision of a restoration plan are outlined in this section.

4.9.1 Hydrocarbons/Chemical Safeguards & Protection of Site water

Proposed mitigation measures are outlined as follows (these are already implemented at the existing quarry Site):

- All soil / overburden stockpiles will be covered (i.e. vegetated) to minimise the risk of rain / wind erosion;
- Restoration of topsoil and overburden will be carried out on a phased basis to speed up restoration biodiversity value as defined in the restoration plan;
- All plant and machinery will continue to be regularly serviced before being used on Site;
- Mobile plant fuelling will take place in a designated area of the Site with appropriate drip trays/nappies in place. Static plant or tracked excavators will refuel over a drip tray with an absorbent mat. In addition, spill kits will be maintained on site to deal with all spills and leaks, and spill training will be provided to relevant staff members;
- Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water;
- Fuel and oil containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores;

- Containers and bunding for storage of hydrocarbons and chemicals will have a holding capacity of 110% of the volume to be stored;
- Fuel and oil stores including tanks and drums will be regularly inspected for leaks and signs of damage;
- Drip-trays will be used for fixed or mobile plant such as pumps and generators to retain oil leaks and spills;
- Only designated trained operators will be authorised to refuel mobile plant on Site;
- Procedures and contingency plans will be set up to deal with emergency accidents or spills; and,
- An emergency spill kit (including absorbers) will be available for use in the event of an accidental spill on the quarry floor and key personnel trained in their use.

4.9.2 Protection of Retained Habitat

To protect retained hedgerows and trees, such vegetation will be protected with secure fencing prior to the commencement of extractive works on Site. This protection will be designed following NRA guidance (NRA, 2005), in particular, with regard to root protection areas and fencing specifications (unless otherwise advised by a suitably qualified arboriculturalist). Dust suppression will be implemented in accordance with best practice guidance (CIRIA, 2016).

4.9.3 Habitat Compensation

Planting will be required to mitigate for required tree and hedge removal and a restoration plan will require replacement of any trees and shrub species removed on a “like for like” basis (as a minimum). Consideration will be given towards hawthorn, blackthorn mix with individual alder and birch (to form native tree hedges) and deciduous trees (native tree species include oak, alder, birch). Full details are provided in the accompanying restoration plan.

4.9.4 Mammals

Bat activity surveys including passive monitoring will be undertaken for a minimum of five nights and emergence surveys at structures identified with potential to host roosting bats (B_01 to B_03) will also be undertaken. Transect surveys will be carried out at emergence and/or re-entry to gather information on bat activity and to identify any activity which may indicate the presence of a roost or key commuting routes.

Monitoring will be carried out to understand the ecological context and significance of the identified main badger sett and the impact of further loss of badger foraging habitat, including a bait marking study. A camera trap survey at the sett will be carried out (under appropriate license) to seek to determine if breeding is occurring within the sett.

4.9.5 Birds

A breeding bird (including Peregrine Falcon) survey for the Site is currently being undertaken. Preliminary results indicate that a female Peregrine is again at the Site sat on eggs. The result of this work will form the basis of a Peregrine falcon management and monitoring plan for the Site.

4.9.6 Invasive Species

Measures will be implemented throughout Site works to safeguard against the spread of any invasive non-native species (such as buddleia, cotoneaster, Japanese knotweed or rhododendron). Indeed, where possible such plants will be removed from the Site (and disposed of appropriately, following an appropriate method statement). As such, an invasive species survey will be undertaken within the appropriate window for this type of work which is likely to be within the growing season (April to September inclusive).

4.9.7 Enhancement

The restoration plan for the Site offers opportunities for habitat enhancement over and above the existing situation. Such enhancement measures will be detailed in a formal restoration plan, and will be drafted in line with the following principles regarding enhancement measures for habitats and for fauna.

Habitat

New habitat provision under the restoration plan will include provisions for trees, hedgerow, and shrub planting over and above the current situation. Where possible, these will be planted in association with other habitats of elevated value, such as wildflower grassland. Planting should comprise native species of local provenance. Where this is not possible, plants should be selected for their fruit, berry, or nectar bearing qualities. All landscape planting within the site will be managed for the benefit of wildlife.

Fauna

To increase opportunities of roosting bats and nesting birds, a number of bat and bird boxes will be incorporated in the restoration plan for the Site, placed on trees of a suitable size. In addition, to increase opportunities for invertebrates within the Site, **i**nvertebrate boxes will be provided under the restoration plan. These boxes will be located in sheltered areas of new and retained vegetation, such as in association with hedgerows.

4.10 Residual effects

For the purposes of robust assessment, residual effects have been considered to be effects that were identified in the impact assessment process prior to the consideration of any additional mitigation, as full details of some of the additional mitigation are yet to be developed. These effects were all identified as being not significant to minor afforded to species of Site and Local (higher and lower) importance. The on-going operation of the quarry, committed delivery of mitigation measures and eventual restoration of the quarry is likely to result in all effects being considered to be not significant. In essence, this can be described as having no perceivable impacts on ecological features (habitat or species). Impacts may be beneath levels of perception, within normal bounds of variation. Depending on the efficacy of the restoration proposals at eventual closure of the Site, there may be an opportunity to provide a minor positive (net gain) for biodiversity value at the Site level.

4.11 Cumulative impacts and Safeguarding Zones

Golder have reviewed the planning portal websites and South Dublin County Development Plan in addition to being involved in projects where EIAR is required within South Dublin County and the broader region. It is noted that there are no extractive or sizeable industries in the surrounds of the Site which may contribute to cumulative effects. It is therefore considered that no significant cumulative impacts would occur.

Casement Aerodrome is ca. 3.5 km away from the Site. As defined in the County Development Plan '*It is the policy of the Council to safeguard the current and future operational, safety and technical requirements of Casement Aerodrome and to facilitate its ongoing development for military and ancillary uses, such as an aviation museum, within a sustainable development framework.*

IE8 Objective 4: To prohibit and restrict development in the environs of Casement Aerodrome in the following ways:

e) By controlling and assessing the locations of any activities which may be an attraction to birds[5]*.*

[5] https://www.sdcc.ie/en/download-it/publications/south-dublin-county-council-development-plan-2016-2022-written-statement.pdf

7.8.1 CASEMENT AERODROME Casement Aerodrome is in continuous aviation use and is the only fully equipped military airbase in the State and serves as the main centre of Air Corps operations.

The restoration plan for the Site will be cognisant of the safeguarding policies detailed above with an obligation placed upon the requirements to avoid colonisation of the Site by significant numbers of birds. This will be implemented via a habitat restoration selection and management process designed to avoid aggregations of birds at the Site.

4.12 Summary and Conclusions

This chapter has evaluated the importance of the ecological resources present and defined the degree of significance of potential impacts resulting from the Project proposals. The assessment approach has followed CIEEM (2018) and taken account of national planning policy and Local Plan policies in respect of nature conservation and protected species legislation in identifying impacts and has also defined appropriate avoidance, mitigation (including design mitigation) and compensation measures to be implemented.

The assessment has concluded that no nature conservation sites will be directly or indirectly affected by the Project.

The habitat survey of the Site identified the presence of some habitat of elevated ecological value; namely trees within the Site, and hedgerows at Site boundaries.

Specific faunal survey work carried out identified the use of the Site by a number of common and widespread species, whilst potential for the use of the Site by species protected under both national and European legislation was also identified. Accordingly, suitable mitigation and compensation measures have been outlined in this Chapter, to safeguard these species.

In addition to mitigation for any potential impacts of the development on local flora and fauna, the opportunity has been taken to incorporate a number of enhancement measures within the assessment, to improve habitat quality over and above the current situation, together with creating new opportunities for fauna within the Site. These enhancements focus on the restoration of the quarry. Habitat enhancements at minerals sites have the potential to enhance biodiversity and to provide a public benefit at the end of their working lives through restoration[6].

[6] https://service-rspb.boldlight.co.uk/app/uploads/sites/3/2016/03/Nature-After-Minerals-report.pdf

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APPENDIX 4.1

O'Donnell Environmental 2021, Ecological Report

1 Introduction

O'Donnell Environmental was commissioned by Golder Associates Ireland Limited to carry out ecological surveys and reporting required to support ecological and environmental reporting. Specifically, the following was carried out:

- Preliminary Phase 1 habitat survey
- Terrestrial mammal survey
- Preliminary bat roost survey.

1.1 STATEMENT OF COMPETENCE

Tom O'Donnell BSc (Hons) MSc CEnv MCIEEM 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 over 10 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 2021-04) and to capture bats (C181/2020).

2 Methodology

The site was surveyed by Tom O'Donnell BSc (Hons) MSc CEnv MCIEEM on the 25th and 26th January 2021 and 23rd February 2021 and an ecological walkover survey incorporating a Phase 1 habitat and flora assessment was carried out in accordance with the Heritage Council's guidelines (Smith *et al*. 2011). The dominant habitats present were classified according to Fossitt (2000) and key botanical species were identified. Any other records of interest (e.g. invasive plant species) were also marked on field maps and/or locations were recorded. Winter is a sub-optimal time of the year for the survey of habitats and flora, and therefore the survey is considered to be provisional, pending further survey during the summer period.

Terrestrial mammal surveys were carried out by Tom O'Donnell during the course of ecological walkover surveys. Walkover surveys were carried out within the site boundary, and also extending to a distance of 150 meters of the Environmental Impact Assessment (EIA) study area in areas with potential to support underground mammal dwellings. 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. Clark 1988, Sutherland 1996, Bang & Dahlstrom 2004 and JNCC 2004).

Camera traps were deployed at five locations throughout the site (see **Figure 2.1**) and recording was carried out for 28 days and nights from 25th January to 23rd February 2021. The cameras were infra-red equipped to allow monitoring of activity by night as well as by day. The cameras were triggered by movement, at which point a photo was recorded and a 10 second recording delay was applied. The aim of the camera trap survey was to record evidence of terrestrial mammal activity in order to inform the ecological assessment. Cam_4 was removed during the study period and not recovered and therefore no imagery was returned from this location.

Daytime visual assessments were carried out to identify any bat roosting potential which may exist within the site boundary boundary. Treelines within the study contain mature trees which were considered to have potential as bat roosts. 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 was carried out on 25th and 26th January 2021 and 23rd February 2021 and 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 2.1**, below.

Table 2.1. 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).

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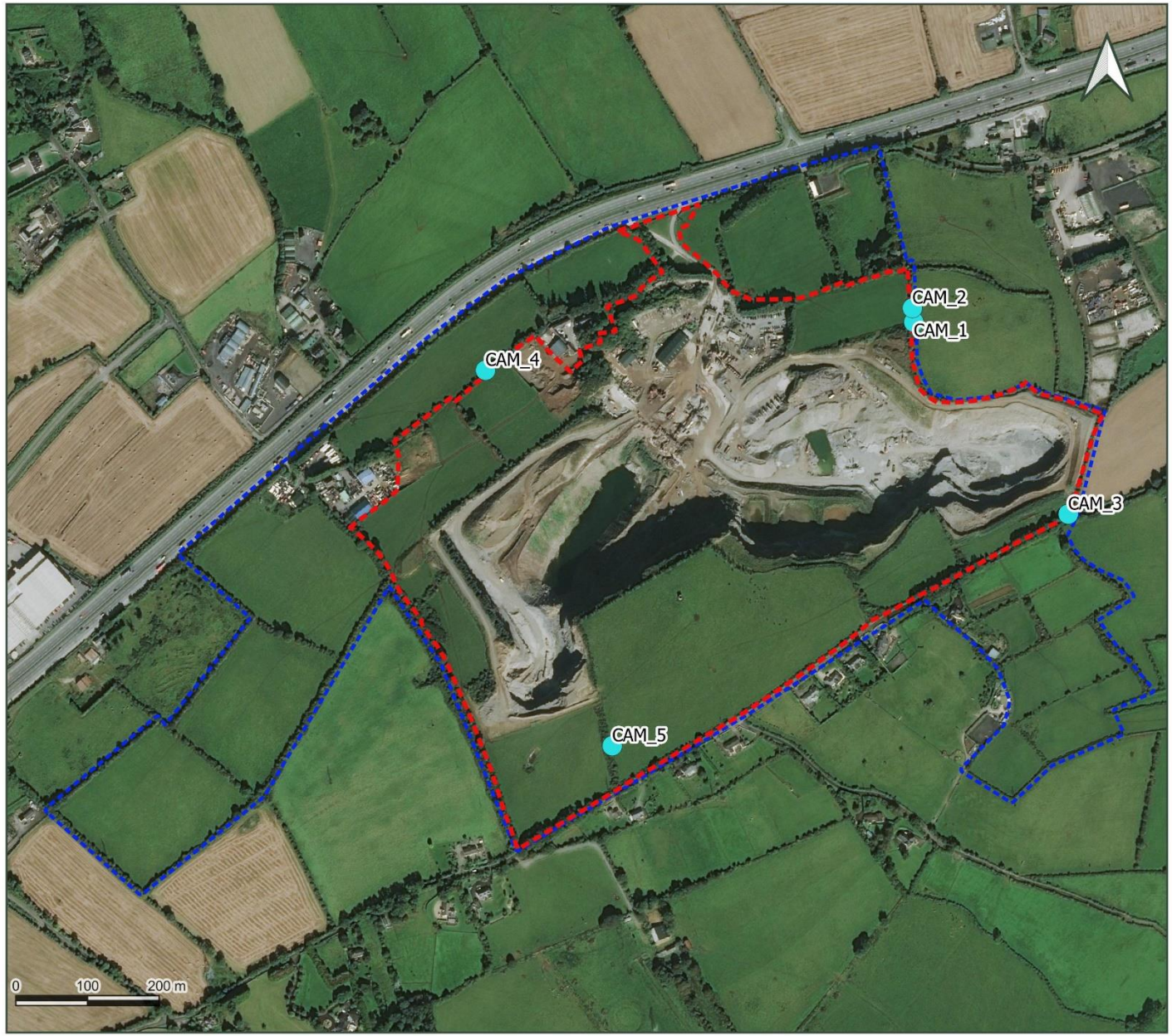

Figure 2.1
Camera Trap Locations

Project:
Behan's Quarry

Prepared for:
Golder Associates Ireland Limited

Tom O'Donnell CEnv MCIEEM
D: 01/03/2021

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Legend

- Site Boundary [Behan Lands]
- EIA Study Area
- Trail Camera Locations

3 Results

3.1 HABITATS

The habitats present within the boundary of the proposed site are described below.

3.1.1 Improved Agricultural Grassland (GA1)

The site is dominated by 'improved' agricultural grassland (GA1 - Fossitt (2000). For clarity and ease of use, GA1 is not mapped within **Figure 3.1** and consists of all areas within the study area not otherwise mapped.

This grassland is used for silage production as well as grazing by cattle. Improved agricultural grassland is a highly modified/improved grassland habitat, which is generally species poor, dominated by a typical agricultural species assemblage. Perennial Rye-grass (*Lolium perenne*) is the dominant grass species with Yorkshire Fog (*Holcus lanatus*) and Cocksfoot (*Dactylis glomerata*) also abundant. Other species noted include Ribworth Plantain (*Plantago lanceolata*), White Clover (*Trifolium repens*), Broad-leaved Dock (*Rumex obtusifolius*), Meadow Buttercup (*Ranunculus acris*) and Dandelion (*Taraxacum vulgaria*).

Improved agricultural grassland (GA1) is a highly modified or improved grassland habitat which is subject to ongoing intensive management for agricultural purposes including the application of fertiliser. As such it supports limited floral diversity and local biodiversity potential.

Plate 3.1 - Intensive Agricultural Grassland (GA1).

3.1.2 Hedgerows (WL1)

A range of hedgerows are present within the study area. Locations of hedgerow habitats are represented by a 4-meter-wide strip in the 'Habitat Map', **Figure 3.1**. The study area, including its boundary, contains approximately 5.7km of hedgerows in total. The hedgerows within the study area are generally poorly managed and in many cases ingress by livestock occurs resulting in loss of ground level vegetation and a 'gappy' hedgerow structure.

Hawthorne, Elder and Gorse were the most common hedgerow species encountered overall. Bramble was also found to be abundant in hedgerows throughout the study area.

Hedgerows occasionally contain mature trees. On the western boundary of the proposed site a double hedgerow is present, and analysis of historic mapping shows this double hedgerow borders both sides of a disused roadway. A small section of hedgerow along the N7 motorway was historically 'laid' to increase the effectiveness of the hedgerow as a barrier to stock.

The hedgerows of the proposed site offer some semi-natural habitat and ecological connectivity which is of some significance in a local context.

Plate 3.2 - Hedgerow (WL1).

3.1.3 Treelines (WL2)

The study area, including its boundary, contains approximately 3.03km of treeline habitats in total. Treelines of different types and ages are present which reflects the various uses and ownership of the proposed site and adjoining areas over the years.

At the main entrance to the quarry site, in proximity to the reception yard, Leyland Cypress treelines provide screening from the nearby N7 roadway. Screening planting is also present on the northern and southern edges of the main open quarry face, this planting consists of Elder and Pine (*Pinus sp.*), while some Hawthorne and Gorse is also becoming established. Older treelines typically comprise mature Ash trees, Hawthorne and Elder. Beech is present occasionally.

The treelines offer semi-natural habitat which has some significance in a local context.

Plate 3.3 - Treeline (WL2) on north-east of study area.

3.1.4 Scrub (WS1)

Gorse and Elder dominated scrub are present primarily in proximity to the open quarry area, where berms and bare soil have recolonised naturally. Hawthorne and Bramble are commonly associated with these scrub habitats. Buddleia, a common alien invasive species, was recorded in scrub above the southern side of the open quarry face.

Scrub habitat often provides a number of important ecological functions including providing nesting habitat for birds, however this habitat is limited in scale and subject to disturbance effects.

Plate 3.4 - Scrub (WS1) on southern quarry boundary.

3.1.5 Mixed Broadleaf Woodland (WD1)

A small area, 0.6ha of mixed broadleaf woodland (WD1) occurs on the northern side of the quarry, proximal to and old residence and buildings associated with quarrying activities. The woodland was found to be dominated by Sycamore. Understorey species consist of Hawthorne and Bramble. The WD1 habitat contains occasional Rhododendron, which is associated with horticultural planting surrounding an old residence. The woodland currently has limited floral diversity is highly disturbed, nevertheless it represents a valuable habitat in a local context with a degree of naturalness.

Plate 3.5 - Mixed Broadleaf Woodland (WD1).

3.1.6 Mixed Conifer Woodland (WD3)

A small area, 0.11ha of mixed conifer woodland (WD3) is partially contained within the proposed site, on the eastern boundary of the site. The WD3 habitat contains Sitka Spruce trees and abundant Rhododendron, which is associated with horticultural planting surrounding 'Windmill House', a historic residence. Rhododendron, similar to Buddleia (described above) is an alien invasive species. This woodland is of low ecological value.

3.1.7 Buildings and Artificial Surfaces (BL3)

A variety of buildings and artificial surfaces are present within the proposed study area, associated with quarrying activities as well as agricultural and residential purposes. These areas are generally of low ecological significance. An old residence is located north of the existing quarry (and associated outbuildings) which is titled 'Windmill House' on OSi historic 6" mapping. The base of a windmill, after which the townland is named, is located south of the quarry. These structures may be of importance to bats and nesting birds.

Plate 3.2 - Buildings and artificial surfaces (BL3).

Plate 3.2 - Buildings and artificial surfaces (BL3).

3.1.8 Arable Crops (BC1)

A small area of 'arable crops' (BC1) was used in the previous growing season for the production of potatoes and turnips. This habitat is of low ecological value.

Plate 3.2 - Arable Crops (BC1).

Other significant habitats in the study area, which are of low botanical importance, are:

- 'Active Quarries and Mines' (ED4). The area of 'active quarries and mines' is approximately 21.5ha.
- Spoil and Bare Ground' (ED2). This habitat occurs marginal to active quarrying areas and measures approximately 1.07ha.

3.2 MAMMALS

Walkover surveys and camera trapping were carried out to identify mammal species utilising the proposed site. Areas of habitat with suitability to host an underground dwelling for a protected mammal species were surveyed within and the site boundary and an area extending to 150m of the EIA study area.

Fox was observed during walkover surveys and were frequently encountered during the camera trapping survey. Rabbits are abundant at the site and Rabbit burrows are present almost ubiquitously within hedgerow and treeline habitats throughout the study area.

A badger sett was recorded immediately adjoining the proposed site boundary (see **Figure 3.2**). The location of the sett is of relevance to the current application, given the proximity of quarrying activities to the sett. The sett occurs in an area where scrub clearance has recently been undertaken using an excavator to scrape back bramble dominated scrub.

The sett appears to be well established and was in active use at the time of survey. A number of entrances were visible in the area which was scraped back, and further entrances may have been obscured by these works. A primary entrance was visible behind the existing fenceline (i.e. immediately outside the area which was scraped). This entrance shows spoil associated with significant and ongoing excavation, and bedding was visible within the spoil. No latrines were noted but may be obscured within dense scrub or may have been removed by scrub clearance works.

The large size of the sett, the number of entrances visible and the presence of bedding within recently excavated spoil indicate that the sett is a 'main' sett and is likely used for breeding. The sett is located

within a relatively sheltered location in a local context, being partially within a double hedgerow associated with a disused roadway.

Badgers are common and widespread in agricultural habitats across the Republic of Ireland (Sleeman *et al*. 2009). Badgers construct and use setts of different types (main, annex, subsidiary and outlier setts) (SNH 2001). Main setts are of the greatest conservation importance and are where breeding typically occurs. No additional setts could be found, including annex, subsidiary or outlier setts which may be associated with the main sett. No evidence of badger activity within the study area could be found although badgers are highly likely to forage within the study area. Badgers were not recorded on any of the camera traps.

Table 2 – Images of relevance to the terrestrial mammal assessment.

Entrance to main sett. Significant excavation evident, with bedding visible in spoil.

Secondary entrances to main sett within area of scrub clearance.

Rabbit emerging from burrow. Cam_1.

Red Fox. Cam_2.

Pair of Red Fox. Cam_3.

Red Fox. Cam_5.

Daytime visual assessments were carried out to identify features with bat roosting potential which may exist within the site boundary. These ground level roost inspections were carried out in winter, which is the optimal time of year for such surveys. No known underground structures (such as caves, mines or icehouses) are present within the study area, and therefore relevant features consist of trees and buildings.

No roosting bats were encountered during the current survey, and no unoccupied roosts which contained signs of bats were encountered. While no bats roosts could be identified, a number of trees had features which are considered to have potential to support roosting bats. The trees are categorised according to their potential following Collins (2016) (see **Table 2.1**).

A total of 20 trees within the study area were considered to have some potential for bats. No 'high' potential tree roosts were identified. 1 tree was considered to have 'moderate' potential, while 19 trees were considered to have 'low' potential (see **Table 3.1**).

Maternity roosts are of considerable conservation importance to bats. Based on ground level visual survey it is unlikely that any maternity roosts are present in trees within or adjoining the study site, but this cannot be ruled out.

A number of Potential Roosting Features (PRF's) were identified in trees, and it is likely 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.

Three structures (or discrete groups of structures) were considered to have potential be used by roosting bats (B_01 to B_03, see **Table 3.1** and **Figure 3.2**). Two features with 'moderate' potential to support roosting bats were identified, while one feature with 'low' potential was identified. Internal surveys were carried out in accessible areas of farm buildings and outbuildings associated with the Residence. Internal surveys of the Residence (e.g. attic space) were not carried out due to COVID restrictions.

Table 3.1 - Description of features within study area considered to have potential to support roosting bats.

Ref.	Bat Potential	Species	Comment
B_01	Moderate	N/A	Historic masonry residence and associated outbuildings. Slate roof.
B_02	Moderate	N/A	Masonry agricultural buildings.
B_03	Low	N/A	Windmill base. Suitable for crevice dwelling species but isolated and significant light and wind ingress.
T_01	Low	Beech	Semi-mature. Moderate ivy cover. Cluster of similar trees in this area.

T_02	Low	Ash	Mature. Heavy Ivy cover. No other PRFs visible.
T_03	Low	Ash	Semi-mature and nearby trees forming cluster. Moderate ivy cover.
T_04	Low	-	Standing dead tree. Some peeling bark and decay features.
T_05	Low	Sycamore	Large, multi-stem. Heavy ivy cover with some thick, interweaving ivy stems.
T_06	Low	Sycamore	Large, multi-stem. Heavy ivy cover with some thick, interweaving ivy stems.
T_07	Low	Sycamore	Large, multi-stem. Heavy ivy cover with some thick, interweaving ivy stems.
T_08	Low	Elder	Dense ivy cover. No other PRFs visible.
T_09	Low	Ash	Mature. Some minor PRF's visible at height. Heavy ivy cover.
T_10	Low	Ash	Mature. Moderate ivy growth with some thick interweaving stems. No other PRF's visible.
T_11	Low	Ash	Semi-mature. Moderate ivy cover.
T_12	Moderate	Ash	Mature. Visible minor PRF's include splits and rot-holes. Dense ivy cover with some thick and interweaving stems.
T_13	Low	Ash	Multi-stem. Dense ivy cover. No other PRFs visible.
T_14	Low	Ash	Dense ivy cover. No other PRFs visible.
T_15	Low	Beech	Moderate ivy cover. No other PRFs visible.
T_16	Low	Ash	Dense ivy cover. No other PRFs visible.
T_17	Low	Ash	Moderate ivy cover. No other PRFs visible.
T_18	Low	Ash	Semi-mature. Moderate ivy cover. No other PRFs visible.
T_19	Low	Ash	Semi-mature. Moderate ivy cover. No other PRFs visible.
T_20	Low	Various	Double treeline. Contains a number of trees with low potential.

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Figure 3.1
Habitat Survey Results

Project:
Behan's Quarry

Prepared for:
Golder Associates Ireland Limited

Tom O'Donnell CEnv MCIEEM
D: 01/03/2021

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Legend

- Site Boundary [Behan Lands]
- EIA Study Area

Habitats (Fossitt, 2000)

- BL3
- ED2
- ED4
- GA1
- GS2
- WD1
- WD3
- WS1
- WL1
- WL2
- BC1
- ED3

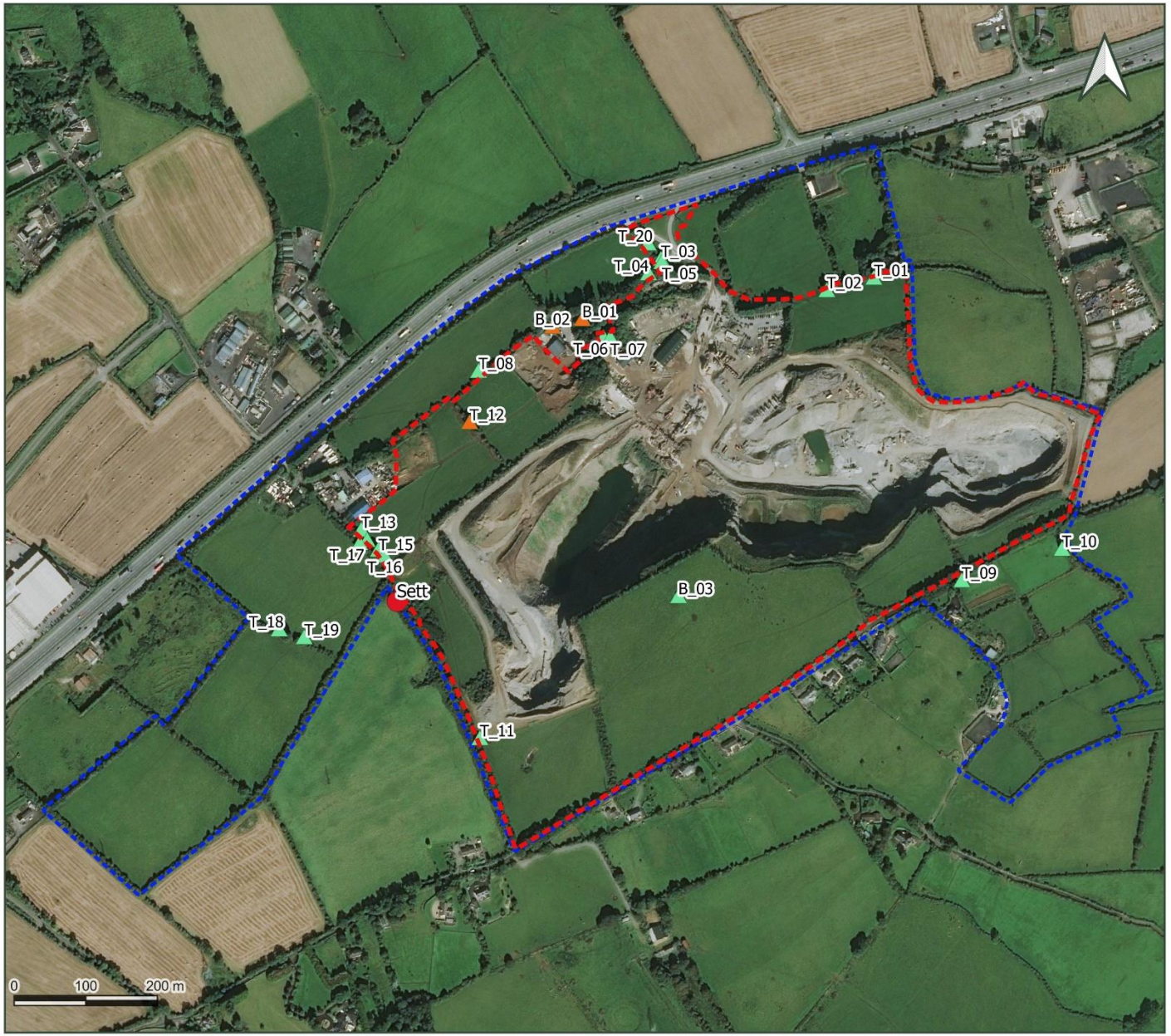

Figure 3.2
Mammal Surveys Results

Project:
Behan's Quarry

Prepared for:
Golder Associates Ireland Limited

Tom O'Donnell CEnv MCIEEM
D: 01/03/2021

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O'DONNELL ENVIRONMENTAL

Legend

- Site Boundary [Behan Lands]
- EIA Study Area
- Sett

Bat Roosts

- Low
- Moderate

4 Discussion & Recommendations

Habitats & Botanical

Hedgerows were considered to be locally ecologically significant in terms of structure and habitat connectivity due to their age, structure botanical diversity and interconnectivity with other semi-natural habitats within the study area and locally.

Any semi-natural habitats including hedgerows and treelines which may be lost in any future expansion of the quarry should to be replaced along the margins of the proposed quarry extension area. The replacement linear woodland features will be connected to the existing hedgerow and treeline network within the site boundary. Replacement hedgerow and treeline structures should reflect species occurring naturally locally. All gaps within and between existing hedgerows within the study area should be planted to strengthen ecological connectivity within the site and to the surrounding landscape. Buddleia and Rhododendron, both alien invasive plant species, are present in the study area and should be controlled and eradicated.

In terms of ecological significance, hedgerows and treelines on site are considered to be of Local Importance (lower value) (following NRA, 2009). This is due to their limited botanical diversity overall and often diminished structural integrity. They do however provide the main source of ecological connectivity and transit for faunal species within the site.

Mammals

The main badger sett is likely to remain in constant use and to be used by badgers for breeding purposes. The proposed quarry extraction development may pose a risk to the underground network of the sett potentially resulting in collapse of tunnel networks due to vibration. NRA (2006) states that during the badger breeding season (December to June inclusive), no work should be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts (regardless of the classification of the sett; main, outlier etc.).

Measures should be implemented to ensure that badgers within the identified sett are protected from disturbance. Should this not be possible, closure of a currently active sett should only be considered during the period of July to November (inclusive) in order to avoid disturbance during the badger breeding season (NRA, 2006) and a derogation license should be sought from NPWS to facilitate the removal of the sett. Should sett closure be required, a bait marking survey should be considered in order to delineate the existing territorial boundary of the badger family. This information would also help to inform an assessment of the impact of the loss of foraging habitat on badgers as a result of any future expansion of the quarry.

The badger sett is considered to be of 'Local Importance (higher value)' (following NRA, 2009). Should the badger outlier sett be permanently removed, its loss is likely to have a moderate negative effect on local badger populations in the short term (following EPA, 2017). An alternative main sett should be constructed in advance of the closure and the badger group in the short term (one to seven years) are likely to create further setts if required locally.

A number of potential bat roosting sites have been identified but no winter roosting was confirmed. It is not possible to assess the overall importance of the site to bats based on a winter survey alone.

4.1 FURTHER SURVEY

In order to inform a comprehensive ecological impact assessment, the following surveys are recommended:

- Breeding bird surveys (in combination with ongoing Peregrine Falcon surveys). Point counts and transect survey should be carried out.
- Bat activity survey including passive monitoring for a minimum of five nights and emergence surveys at structures identified with potential to host roosting bats (B_01 to B_03). Transect surveys should be carried out at emergence and/or re-entry to gather information on bat activity and to identify any activity which may indicate the presence of a roost or key commuting routes.

- Monitoring should be carried out to understand the ecological context and significance of the identified main sett and the impact of further loss of badger foraging habitat, including a bait marking study. A camera trap survey at the sett should be carried out (under appropriate license) to seek to determine if breeding is occurring within the sett.

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