

**Ecological Impact Assessment (EclA) for the Proposed Extension to
the Existing Graveyard at Drumcliff, Ennis, Co. Clare.**



20th June 2023

Prepared by: Bryan Deegan (MCIEEM) of Altemar Ltd.

On behalf of: Clare County Council.

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Document Control Sheet

Client	Clare County Council.		
Project	Ecological Impact Assessment (EclA) for the proposed extension to the existing graveyard at Drumcliff, Ennis, Co. Clare.		
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Table of Contents

Introduction.....	1
Background.....	1
Study Objectives.....	1
Altemar Ltd.....	1
Project Description.....	2
Landscape.....	2
Drainage.....	2
Ecological Assessment Methodology.....	10
Desk Study.....	10
Field Survey.....	10
Consultation.....	10
Spatial Scope and Zone of Influence.....	10
Impact Assessment Significance Criteria.....	11
Results.....	13
Proximity to Designated Conservation Sites.....	13
Habitats and Species.....	24
Potential Impacts.....	32
Construction Impacts.....	32
Operational Impacts.....	33
Mitigation Measures & Monitoring.....	34
Cumulative Impacts.....	40
Residual Impacts and Conclusion.....	40
References.....	41
Appendix 1 – Long-eared Owl Survey Report.....	43

Introduction

Background

Ecological Impact Assessment (EclA) has been defined as *‘the process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components’* (Treweek, 1999). *“The purpose of EclA is to provide decision-makers with clear and concise information about the likely ecological effects associated with a project and their significance both directly and in a wider context. Protecting and enhancing biodiversity and landscapes and maintaining natural processes depends upon input from ecologists and other specialists at all stages in the decision-making and planning process; from the early design of a project through implementation to its decommissioning”* (IEEM, 2010).

The following EclA has been prepared by Altemar Ltd. at the request of Clare County Council. The project relates to the proposed extension to the existing graveyard at Drumcliff, Ennis, Co. Clare.

Study Objectives

The objectives of this EclA are to:

1. Outline the project and any alternatives assessed;
2. Undertake a baseline ecological feature, resource and function assessment of the site and zone of influence;
3. Assess and define significance of the direct, indirect and cumulative ecological impacts of the project during its construction, lifetime and decommissioning stages;
4. Refine, where necessary, the project and propose mitigation measures to remove or reduce impacts through sustainable design and ecological planning; and
5. Suggest monitoring measures to follow up the implementation and success of mitigation measures and ecological outcomes.

The following guidelines have been used in preparation of this EclA:

- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002);
- Guidelines on the information to be contained in EIARs (2022);
- Guidelines for Ecological Impact Assessment (EclA) (IEEM, 2019);
- Advice Notes on current practice in the preparation of EIS’s (EPA, 2003);
- Institute of Ecology and Environmental Management Guidelines for EIA (IEEM, 2005).

Altemar Ltd.

Since its inception in 2001, Altemar has been delivering ecological and environmental services to a broad range of clients. Operational areas include: residential; infrastructural; renewable; oil & gas; private industry; Local Authorities; EC projects; and, State/semi-State Departments. Bryan Deegan, the managing director of Altemar, is an Environmental Scientist and Marine Biologist with 28 years’ experience working in Irish terrestrial and aquatic environments, providing services to the State, Semi-State and industry. He is currently contracted to Inland Fisheries Ireland as the sole “External Expert” to environmentally assess internal and external projects. He is also chair of an internal IFI working group on environmental assessment. Bryan Deegan (MCIEEM) holds a MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and a NCEA National Certificate in Science (Aquaculture).

Project Description

The proposed development comprises improvement works to St Brigid's Section E and the Development of an Extension to the existing Burial Ground at Drumcliff Burial Ground located at the Townlands of Drumcliff, Ennis, Co.Clare

The proposed development comprises:-

- An addition of circa 350 double plots including provision for ash plots.
- Access road improvements including lay-bys, turning circle and traffic calming measures.
- Parking; 23 standard spaces, 6 Wheelchair accessible spaces
- Footpaths
- Drainage
- Planting and landscaping including Columbarium and Reflectance Garden
- Associated Site Works

The proposed site outline, location, site layout plan, and site sections are demonstrated in Figures 1-4.

Landscape

The landscape strategy for the proposed development has been designed by Cormac Langan Landscape Architecture. The proposed landscape plan is demonstrated in Figure 5.

Drainage

A Hydrological and Hydrogeological Assessment has been prepared by Hydro-Environmental Services (HES) to accompany this planning application. This report details the following surface water drainage strategy for the proposed development:

'A detailed drainage design plan has been prepared for the proposed development. The drainage design has taken into account the sloping nature of the site, with drainage features running with the existing ground contours to ensure that all surface waters arising at the site are captured within the drainage system, with no direct unattenuated discharge of surface water from the proposed development site.'

The design of the drainage system incorporates the following measures:

- *Surface water falling on green (grave) areas will infiltrate into green areas. Perforated pipes running below paths across the slope of the land, will collect heavy flows and divert to soak pits at the northeastern boundary of the Section G extension.*
- *Footpaths will be sloped toward adjacent green areas to allow for infiltration. Surface water from footpaths, which does not directly infiltrate to ground, will be collected within the perforated drainage pipes.*
- *Surface water from new roadway will generally be served by an open swale along the roadway. A soak pit area will be provided at the lowest point of the swale run to accommodate any heavy flows of surface water than is not absorbed by the swale itself.*
- *New gullies serving existing roadway/proposed roadway junction area are served by a soak pit.*
- *Main Pedestrian Access Ramp and stairs with non-porous finish to be accommodated by soak pit.*
- *Acco drain to be added to Section E area is to be served by an existing soak pit.'*
- *The Hydrological and Hydrogeological Assessment concludes:*
- *'There are no direct hydrological connections between the site and downgradient surface water bodies. Standard separation distances (50m) to surface water features are maintained by the proposed cemetery;*
- *➤ The drainage design incorporated into the proposed development will ensure that surface water will be collected, treated and retained within the site, with infiltration to ground via 5 no. proposed soakaways;*
- *➤ The conceptual site model of the site is outlined in Section 4.1 and in summary is conceptualised as a sloping site, underlain by thick clay-rich subsoils (8.5-13.5m) which form a drumlin feature overlying the limestone bedrock which forms the primary groundwater aquifer within the region. Low/moderate permeability rates indicate slow potential infiltration to groundwater within these subsoils into the underlying aquifer.*

- *From this conceptual model, surface water is considered to be the main potential pathway for potential effects, rather than groundwater;*
- *➤ Potential topographically downgradient receptors include –*
- *o 1 no. karst feature (Poulacorey swallow hole) mapped 250m north of the proposed development site. The Poulacorey swallow hole is connected to the Drumcliff Spring PWS (1km south). The recommended separation distance to drinking water supplies is 250m (SEPA Guidelines, refer to Footnote 3), which is maintained in this instance; and,*
- *o The Ballyalia Lake pNHA and SAC and Ballyalia Lough SPA are situated ~200m north of the site.*
- *An assessment of potential impacts on downgradient receptors has been completed within Section 4 of this report. Proven and effective drainage management techniques have been incorporated into the design, to ensure surface water impacts on downgradient receptors will not occur. All surface water runoff generated from hardstanding areas within the site will be retained on-site and allowed to recharge to ground via 5 no. soakaways;*
- *➤ The impact assessment process has concluded that there will be no significant effects on downgradient surface water bodies as a result of the proposed development;*
- *➤ An impact assessment of potential groundwater effects has also been completed. Due to the underlying thickness of subsoils, which provide a substantial protective layer to the underlying aquifer and the geophysical inference of good, clean, non-karstified limestone underlying the proposed extension site, the conclusion of the assessment process is that there will be no significant effects on groundwater quality as a result of the proposed development; and,*
- *➤ During the operational phase, the hydrological regime at the site will be controlled by a range of sustainable drainage measures. There will be no cumulative impacts on surface water quality or quantity, with respect to the existing Drumcliff cemetery (Section E) as a result of the proposed development. In terms of groundwater cumulative impacts, the burial and natural breakdown of remains within the proposed extension will lead to increased levels of certain nutrients such as Ammonia and Nitrate within the grave plots. Due to the thickness of subsoils (8.5-13.5m) and the low/moderate permeability of the subsoil, cumulative impacts, with respect to the existing Drumcliff cemetery, are not expected to occur.'*

The proposed site services layout is demonstrated in Figure 6.



Project: Graveyard Extension
 Location: Drumcliff, Ennis, Co. Clare
 Date: 14th April 2023
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Figure 1. Site outline and location



Site Outline

0 50 100 150 200 m

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Figure 2. Site outline

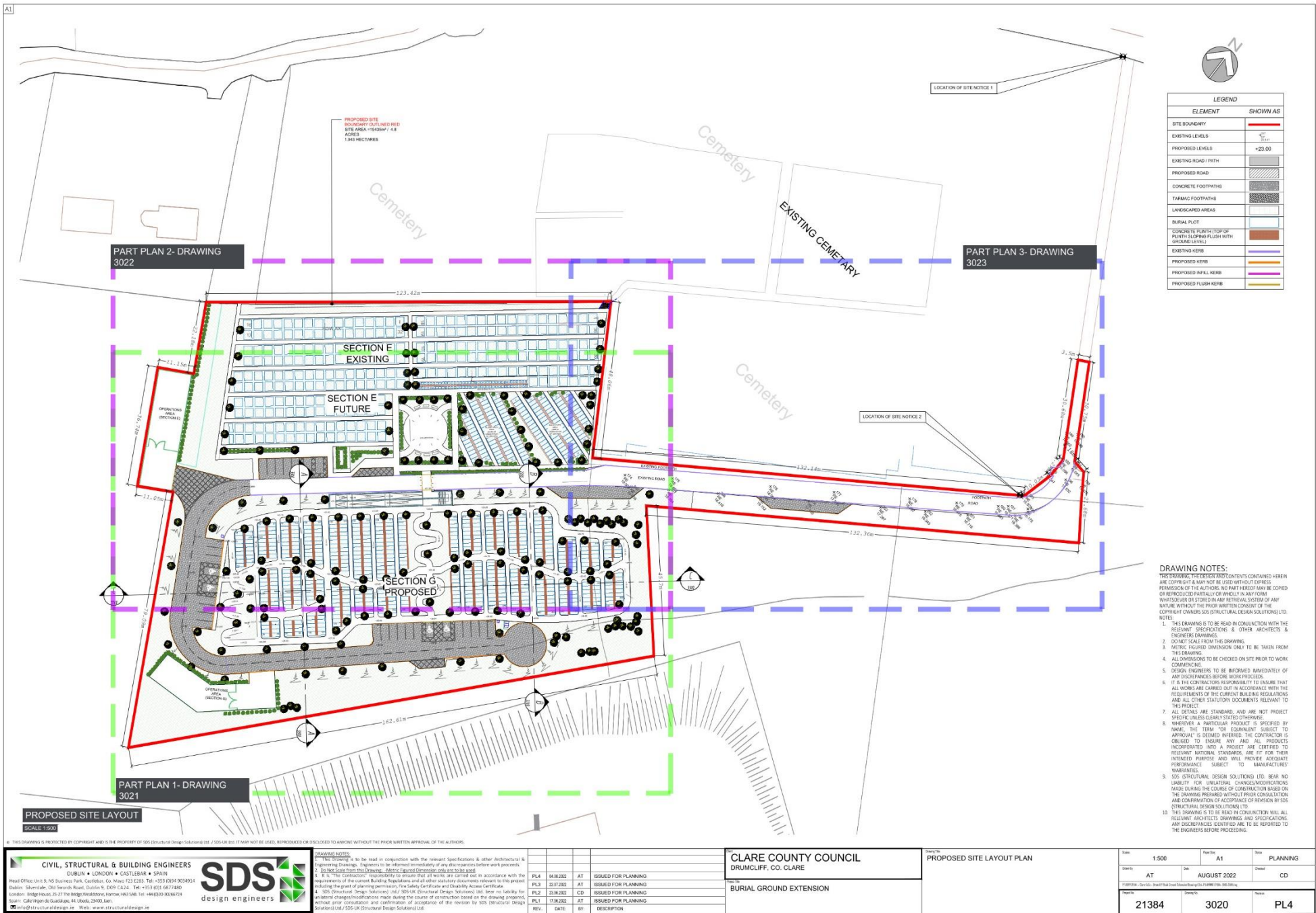
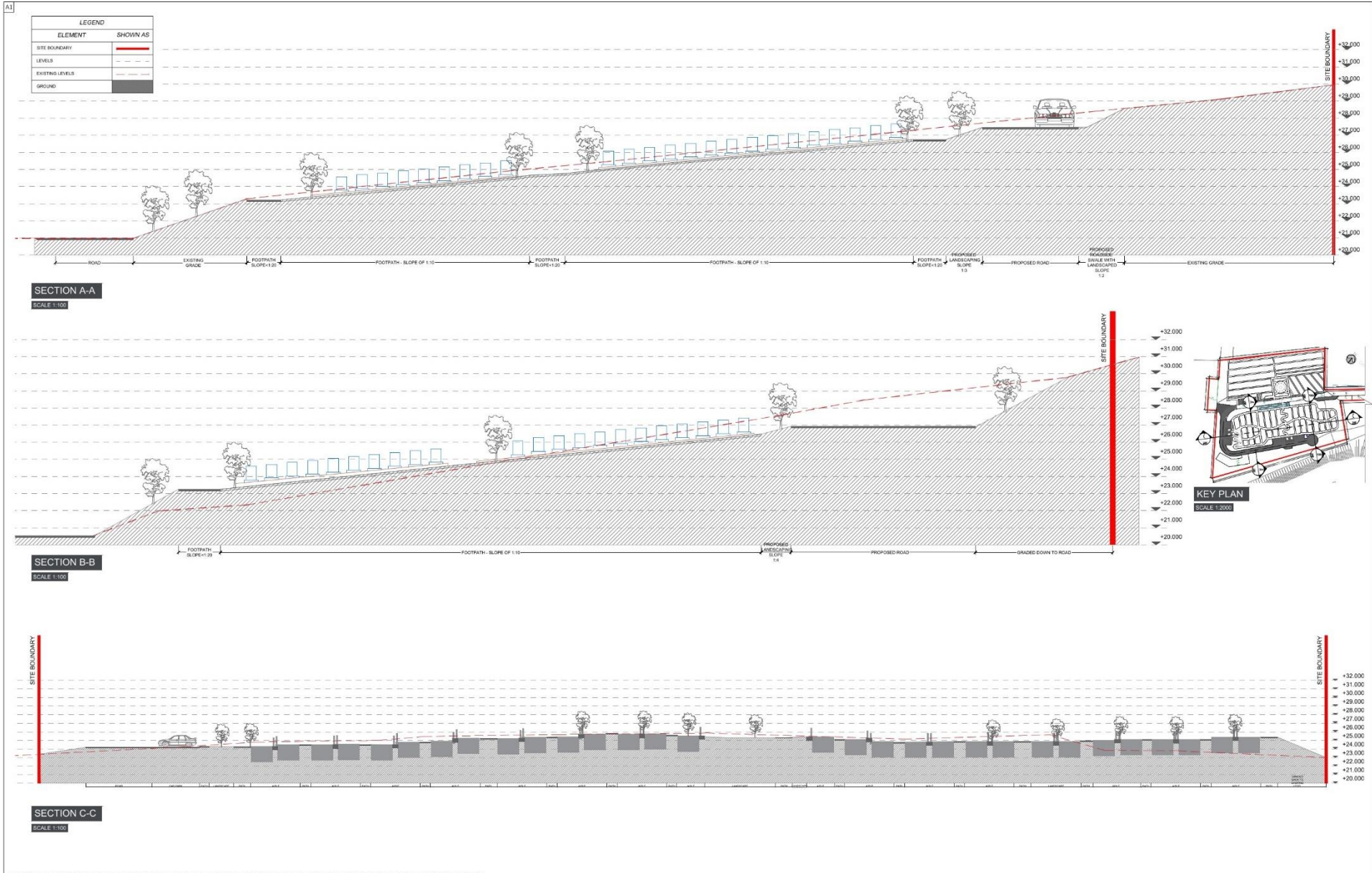


Figure 3. Proposed Site Layout Plan



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CIVIL, STRUCTURAL & BUILDING ENGINEERS DUBLIN • LONDON • CASTLEBAR • SPAIN Head Office: Unit 9, 45 Rindale Park, Castlebar, Co. Mayo O23 22B, Tel: +353 (0)84 903 8954 Dublin: Silverdale, Old Swans Road, Dublin 9, D09 CA24, Tel: +353 (0)1 8877 7480 London: Bridge House, 25-27 The Quadrant, London, EC4A 3DF, Tel: +44 (0)20 3286 5751 Spain: Calle Virgen de Guadalupe, 44 Urb. 23403, San.	SDS design engineers	CLARE COUNTY COUNCIL DRUMCLIFF, CO. CLARE BURIAL GROUND EXTENSION	PROPOSED SITE SECTIONS		Date: AS SHOWN Date: AT Project No: 21384	Plan No: A1 Date: JUNE 2022 Drawing No: 3300	Date: PLANNING Date: TYL Revision: PL1
			PL1 17.06.2022 AT ISSUED FOR PLANNING	REV. DATE BY DESCRIPTION	21384	3300	PL1

Figure 4. Proposed Site Sections



LEGEND

-  HEADSTONE PLINTH
-  RETAINING WALL (To Engineers Spec.)
-  GRASSED/LAWN AREAS
-  HEDGE PLANTING MIX
-  GROUNDCOVER & HERBACEOUS PLANTING MIX
-  BULB PLANTING AREAS
-  TREE PLANTING
(See Planting Specification for Details)
-  SITE BOUNDARY
-  ROADWAY
_ Tarmacadam (To Engineers Spec.)
-  PEDESTRIAN PATHWAYS
_ Concrete (To Engineers Spec.)
-  COLUMBARIUM WALL AREA_Hydropave Paving
Colour: Slate & Charcoal Border
-  SEATING
_ Foyle Seat; Larkin Engineering
-  BIKE RACK (To be agreed with client.)
-  LIGHTING STANDARD (To be agreed with client.)

Figure 5. Proposed Landscape Plan

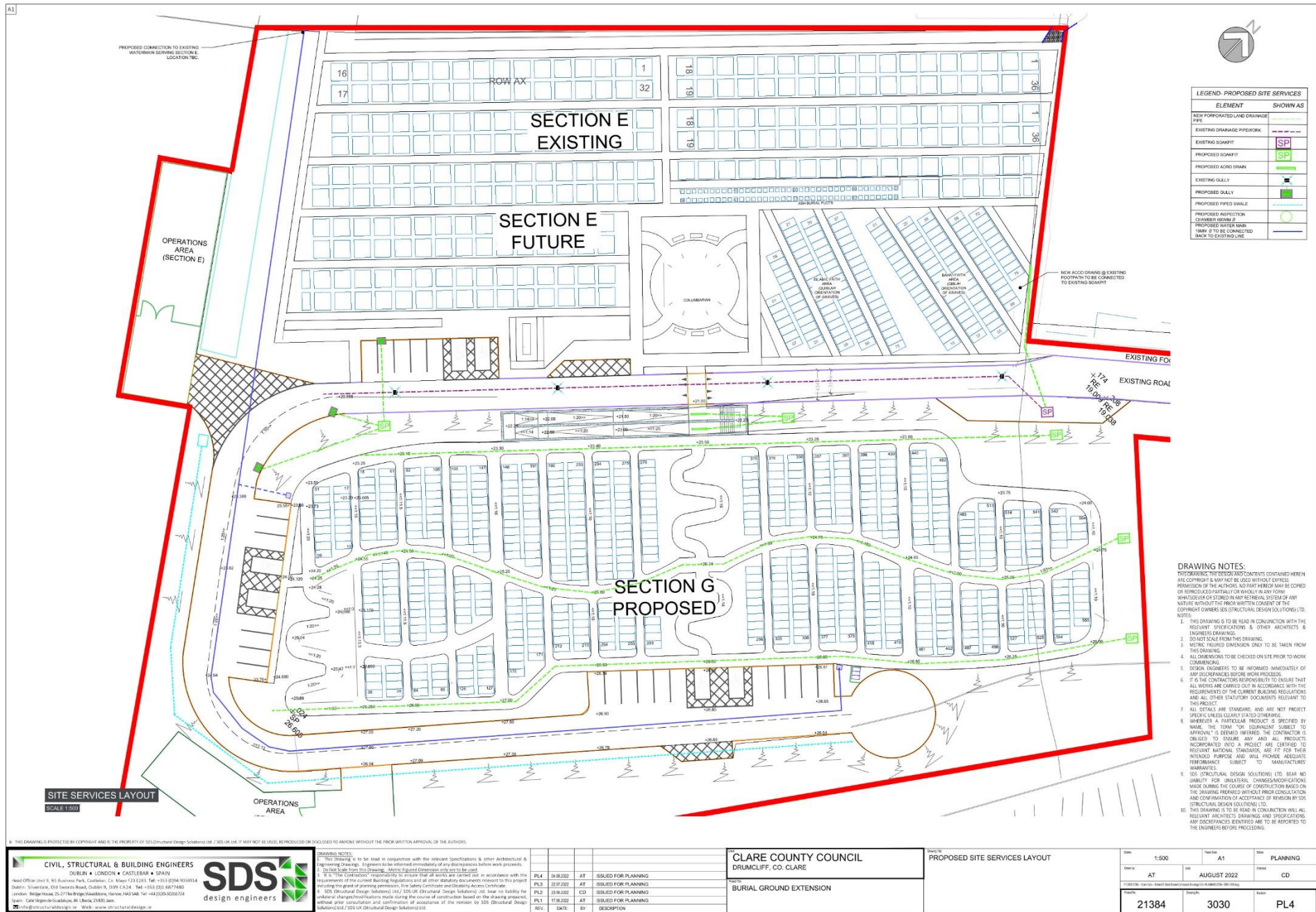


Figure 4. Proposed site services layout

Ecological Assessment Methodology

Desk Study

A desk study was undertaken to gather and assess ecological data prior to undertaking fieldwork elements. Sources of datasets and information included:

- The National Parks and Wildlife Service
- National Biological Data Centre
- Satellite, aerial and 6" map imagery
- Bing Maps (ArcGIS)

A provisional desk-based assessment of the potential species and habitats of conservation importance was carried out in March 2023 and updated in April 2023. Altemar assessed the project, the proposed construction methodology and the operation of the proposed development.

Field Survey

An initial field survey was carried out by Altemar Ltd. on the 5th April 2023, following completion of the desk-based assessment. A site visit was carried out by Bryan Deegan in relation to flora and fauna. The survey was carried out in mild dry conditions and covered all the lands within the site outline and the land immediately outside the site. The purpose of the field survey was to identify habitat types according to the Fossitt (2000) habitat classification and map their extent. In addition, more detailed information on the species composition and structure of habitats, conservation value and other data were gathered. In addition a long eared owl survey was carried out by MKO (Appendix I).

Survey Limitations

The field survey was carried out in April. This is within the period for full species assessments of the floral cover and mammal activity. It should be noted that good coverage of the site was possible and there was full and clear access to all areas. There is no limitation in relation to the survey timings.

Consultation

The National Biological Data Centre records were consulted for species of conservation significance.

Spatial Scope and Zone of Influence

As outlined in CIEEM (2018) *'The 'zone of influence' for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries.'* In line with best practice guidance an initial zone of influence be set at a radius of 2km for non-linear projects (IEA, 1995).

The Zol of the proposed project would be seen to be restricted to the site outline, with potential for minor localised noise impacts during construction which do not extend significantly beyond the site outline nor are they likely to have any significant effects on any designated conservation sites.

However, there is the potential for downstream impacts on proximate watercourses and downstream conservation sites via dust and contaminated surface water runoff (silt) during construction. Standard but robust construction phase controls need to be implemented to limit the potential impact of the proposed development into the surrounding environment.

Impact Assessment Significance Criteria

This section of the EIA examines the potential causes of impact that could result in likely significant effects to the species and habitats that occur within the ZOI of the proposed development. These impacts could arise during either the construction or operational phases of the proposed development. The following terms are derived from EPA EIA Guidance and are used in the assessment to describe the predicted and potential residual impacts on the ecology by the construction and operation of the proposed development.

Magnitude of effect and typical descriptions

Magnitude of effect (change)	Typical description	
High	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Medium	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Low	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial effect on attribute or a reduced risk of negative effect occurring
Negligible	Adverse	Very minor loss or alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.

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 or habitats identified in county plans, Areas of special amenity or subject to tree protection constraints.
Local	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.
Site	Very low importance and rarity. Ecological feature of no significant value beyond the site boundary

Quality of Effects	Effect Description
Negative /Adverse Effect	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Neutral Effect	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Positive Effect	A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).

Significance of Effects

Significance of Effect	Description of Potential Effect
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

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

Describing the Probability of Effects	Description
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

Results

Proximity to Designated Conservation Sites

Designated conservation sites (National and international) within 15km of the proposed development are seen in Figures (7-10) and Tables 1 & 2. It should be noted that the proposed development site is not within a designated conservation area. The closest European sites are the Ballyallia Lake SAC and Ballyallia Lough SPA, located 100m from the proposed development site (Figures 7 & 8). The nearest designated Natural Heritage Areas (NHA) to the site is Oysterman's Marsh NHA, located 8.6 km from the site. The nearest Proposed NHA (Ballyallia Lake pNHA) is located 110m from the site (Figure 9). The nearest RAMSAR site (Ballyallia Lough) is located 45m from the proposed development site (Figure 10).

The nearest watercourse to the subject site is the Drumcliff Stream, located 170m to the north of the subject site (Figure 11). There is an indirect hydrological pathway to designated national conservation sites located downstream of the subject site via surface water drainage.

There are a number of waterbodies (including the Drumcliff Stream and Poulacorry River) located topographically down-gradient to the north of the subject site. This network of waterbodies ultimately outfalls to Ballyallia Lough. It is proposed to collect, treat, and retain surface water drainage within the subject site, with infiltration to ground via 5 no. proposed soakaways. Given that surface water drainage will infiltrate into the ground, it is considered that there is an indirect hydrological pathway to conservation sites within Ballyallia Lough via surface water drainage to topographically down-gradient waterbodies located to the north of the site.

Watercourses and designated conservation sites located proximate to the subject site are demonstrated in Figure 11-15.

Table 1. Distances to NATURA 2000 sites within 15km of the subject site

Site Code	European Site	Distance
Special Areas of Conservation		
IE000014	Ballyallia Lake SAC	100 m
IE002165	Lower River Shannon SAC	400 m
IE002247	Toonagh Estate SAC	3 km
IE000032	Dromore Woods and Loughs SAC	3.9 km
IE000037	Pouladatig Cave SAC	4.5 km
IE002091	Newhall and Edenvale Complex SAC	5 km
IE002246	Ballycullinan, Old Domestic Building SAC	6.3 km
IE000016	Ballycullinan Lake SAC	6.5 km
IE001926	East Burren Complex SAC	7.1 km
IE002010	Old Domestic Building (Keevagh) SAC	8 km
IE000057	Moyree River System SAC	8.4 km
IE000019	Ballyogan Lough SAC	9.8 km
IE002318	Knockanira House SAC	10 km
IE002314	Old Domestic Buildings, Rylane SAC	10.3 km
IE000064	Poulnagordon Cave (Quin) SAC	10.8 km
IE002157	Newgrove House SAC	11 km
IE000051	Lough Gash Turlough SAC	13 km
Special Protection Areas		
IE004041	Ballyallia Lough SPA	100 m
IE004077	River Shannon and River Fergus Estuaries SPA	5.9 km
IE004168	Slieve Aughty Mountains SPA	8 km
IE004220	Corofin Wetlands SPA	8.4 km

Table 2. Distances to designated conservation sites within 15km of the subject site

Conservation Site Name	Conservation Type	Distance
Ballyallia Lake	pNHA	110 m
Lough Cleggan	pNHA	1 km
Newpark House, Ennis	pNHA	2.7 km
Dromore Woods And Loughs	pNHA	3.9 km
Cahircalla Wood	pNHA	3.9 km
Pouladatig Cave	pNHA	4.4 km
Newhall and Edenvale Complex	pNHA	5 km
Fergus Estuary And Inner Shannon, North Shore	pNHA	5.8 km
Ballycullinan Lake	pNHA	6.5 km
Inchicronan Lough	pNHA	6.8 km
East Burren Complex	pNHA	7.1 km
Durra Castle	pNHA	7.4 km
Old Domestic Building (Keevagh)	pNHA	8 km
Moyree River System	pNHA	8.4 km
Ballyogan Lough	pNHA	9.8 km
Dromoland Lough	pNHA	10.3 km
Poulnagordon Cave (Quin)	pNHA	10.8 km
Ballycar Lough	pNHA	12.7 km
Lough Gash Turlough	pNHA	13 km
Fin Lough (Clare)	pNHA	13.6 km
Rosroe Lough	pNHA	14.7 km
Oysterman's Marsh	NHA	8.6 km
Lough Acrow Bogs	NHA	14.2 km
Maghera Mountain Bogs	NHA	14.6 km
Ballyallia Lough	Ramsar	45 m

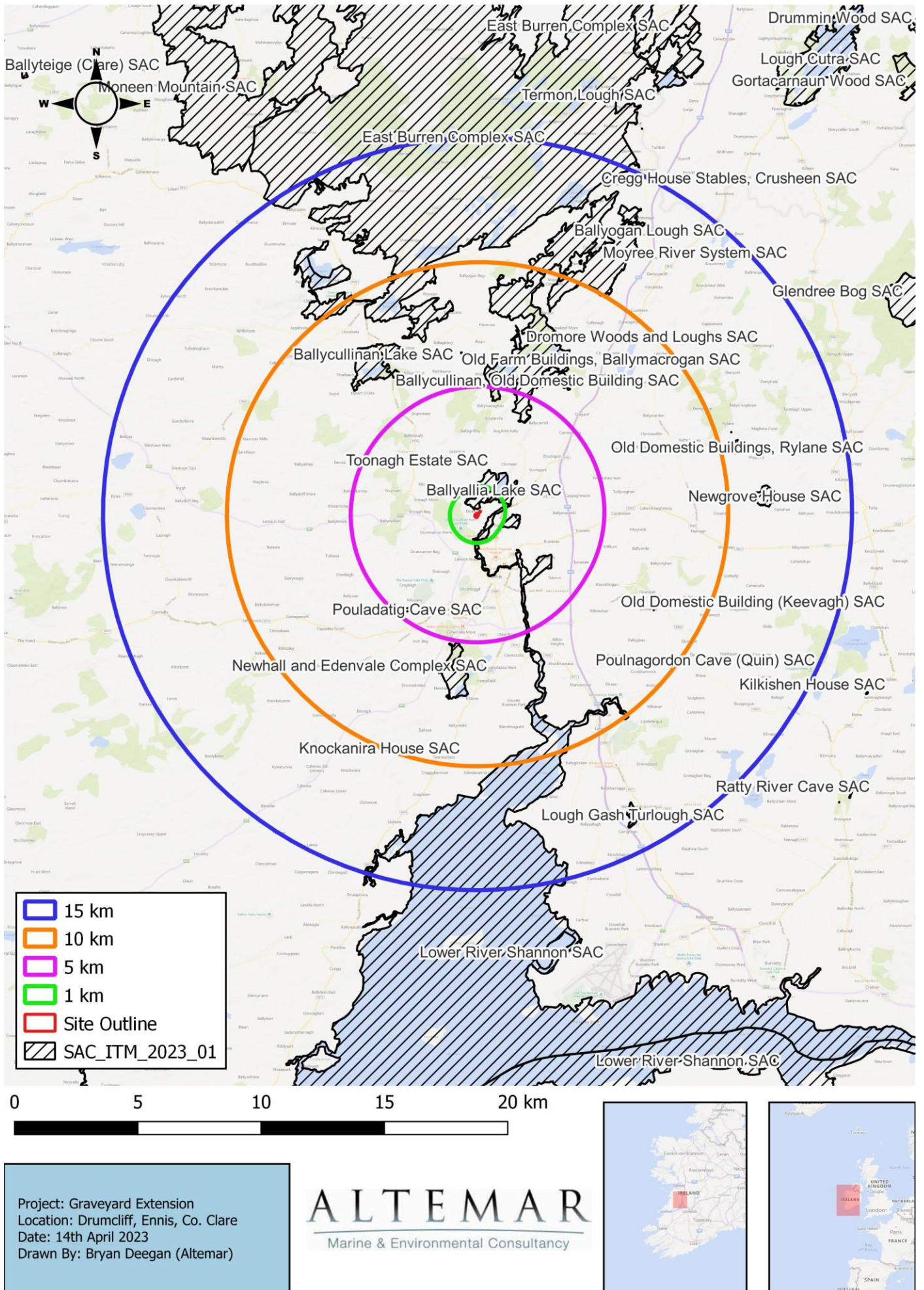
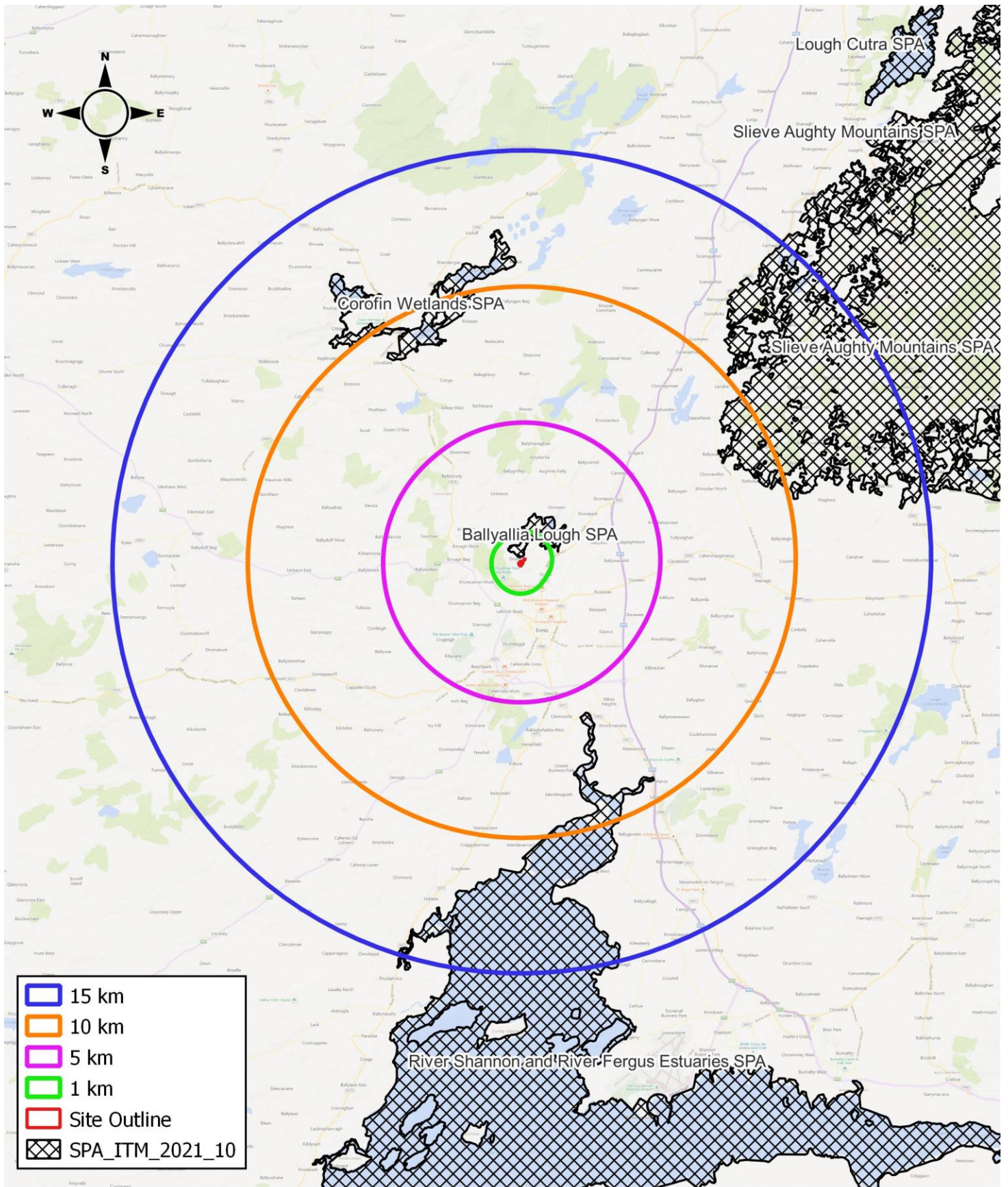


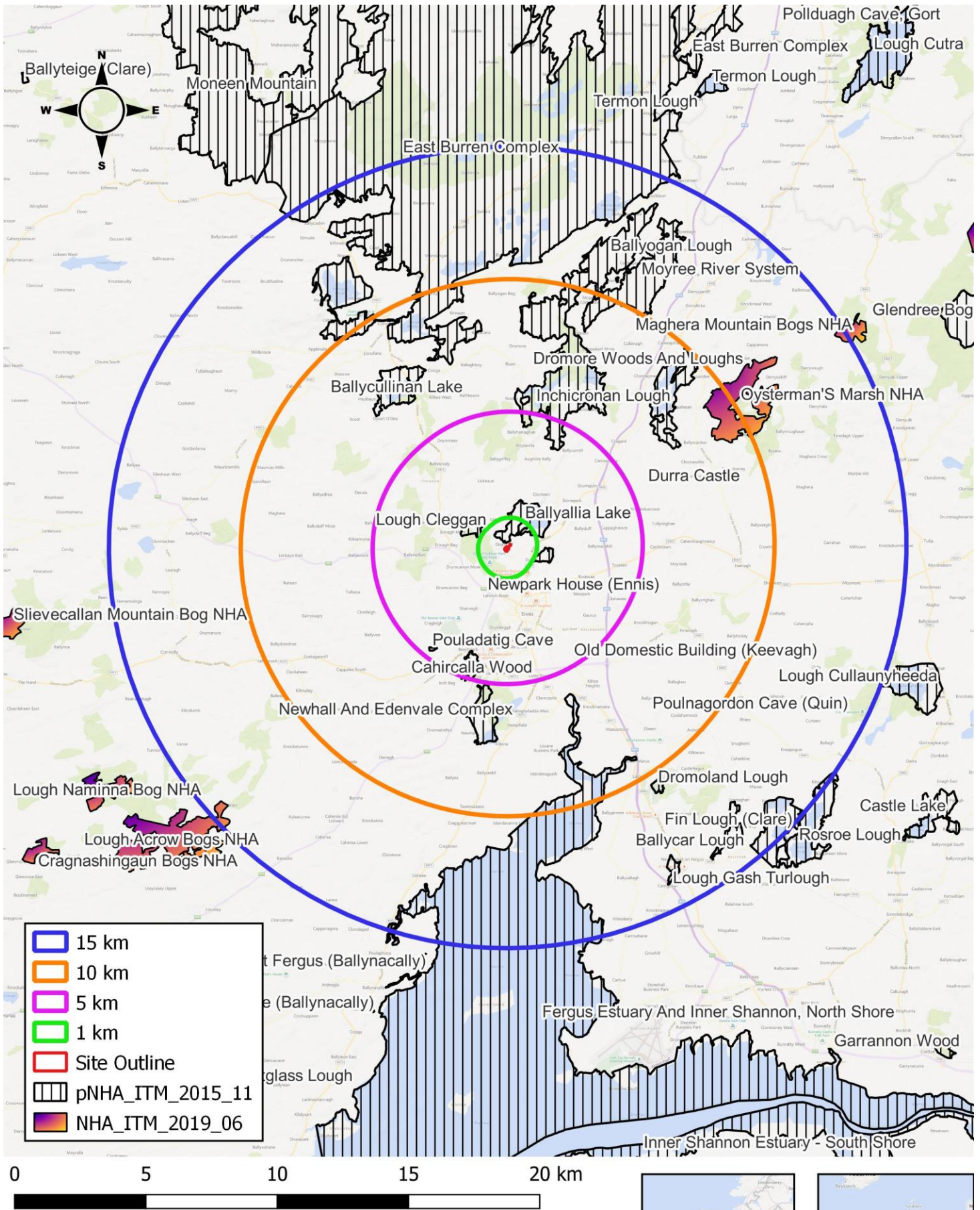
Figure 7. Special Areas of Conservation (SAC) located within 15km of the proposed development



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Figure 8. Special Protection Areas (SPA) within 15km of proposed development



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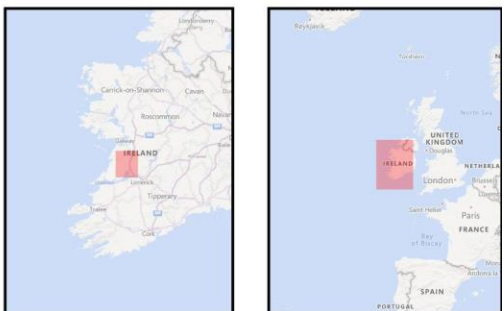
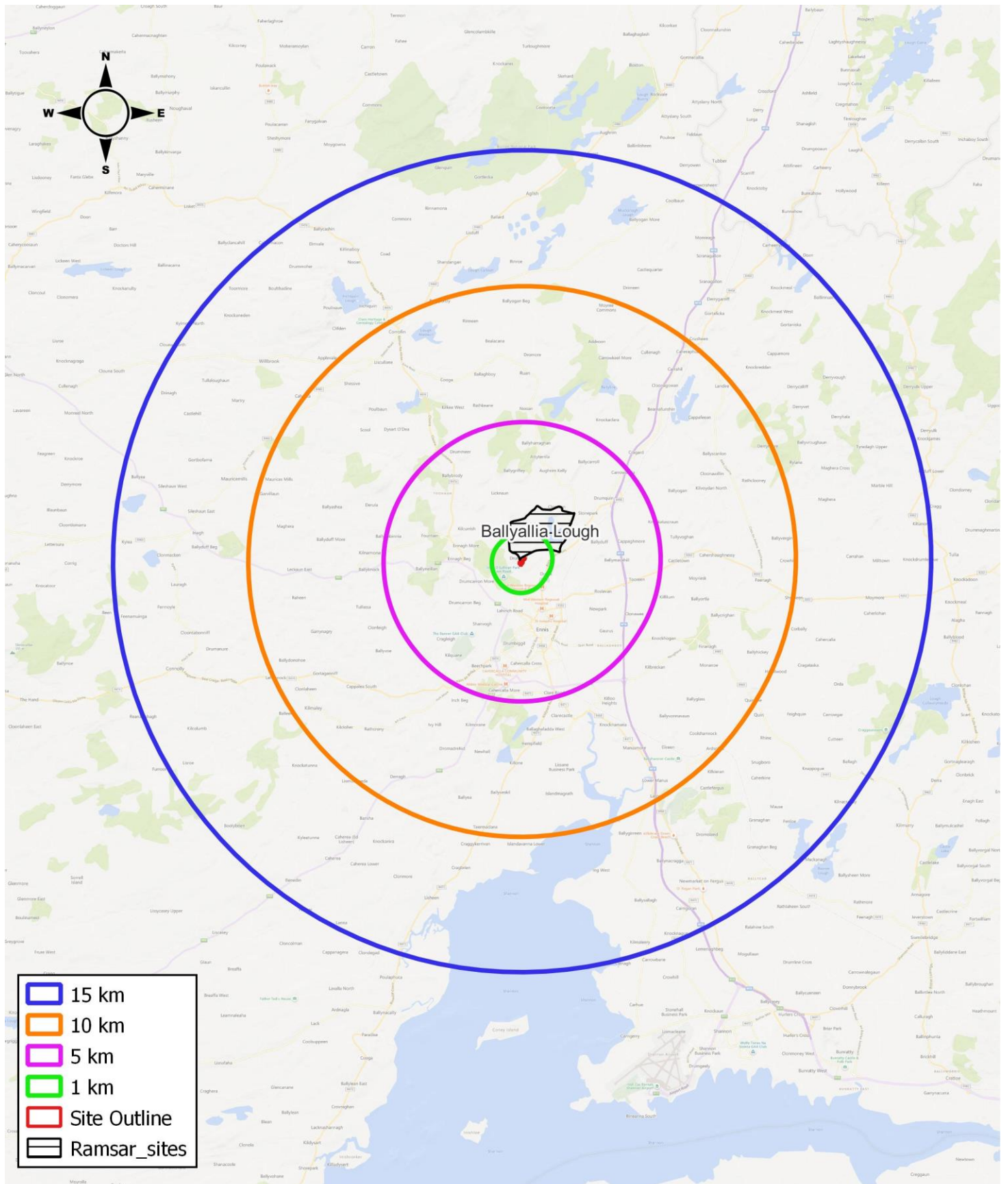


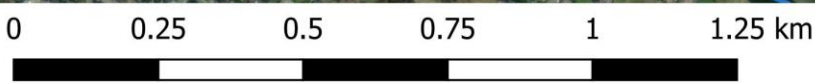
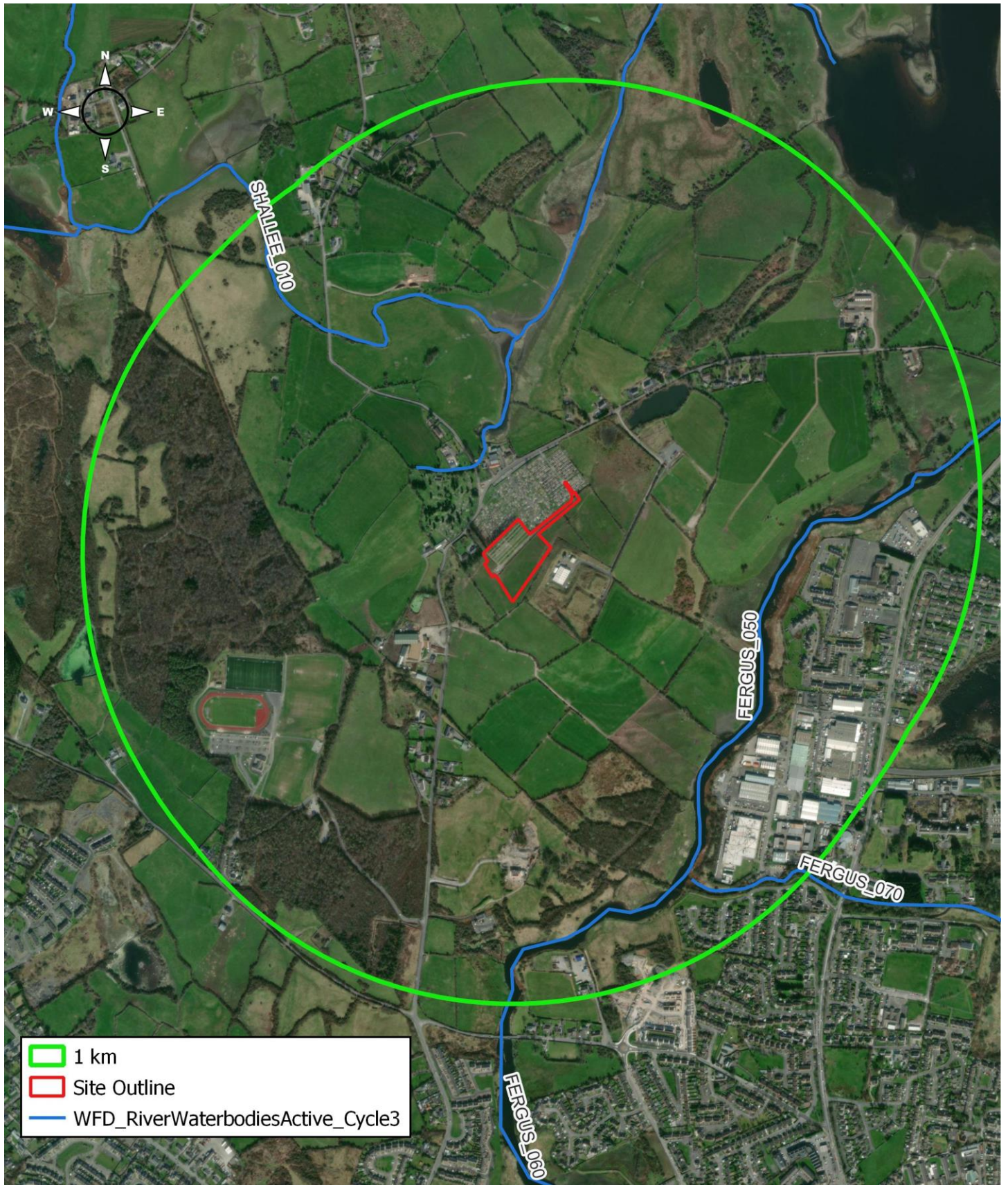
Figure 9. Proposed Natural Heritage Areas (pNHA) within 15km of the proposed development



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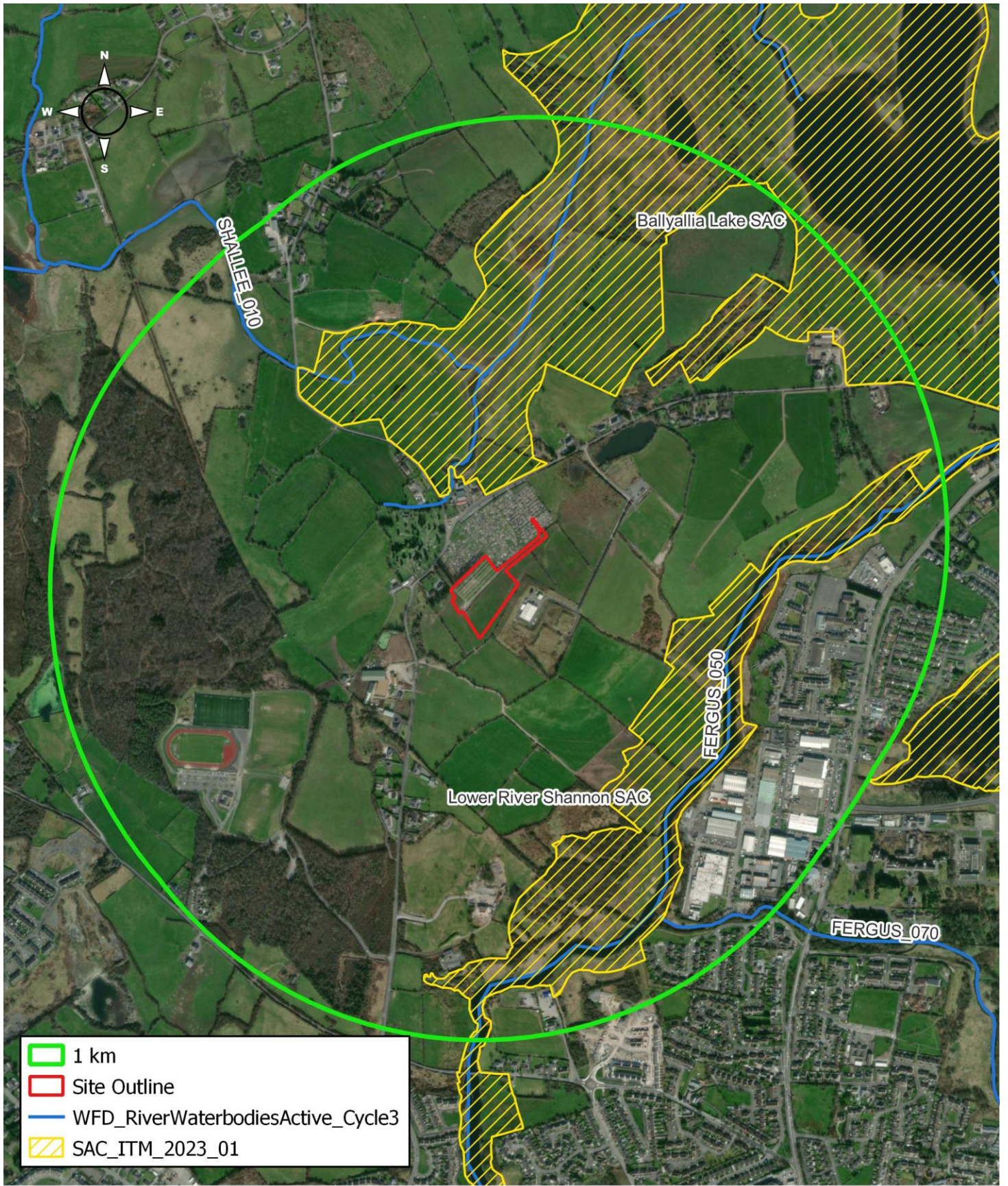
Figure 10. Ramsar sites within 15km of the proposed development



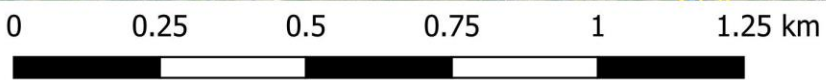
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Figure 11. Watercourses within 1km of the proposed development



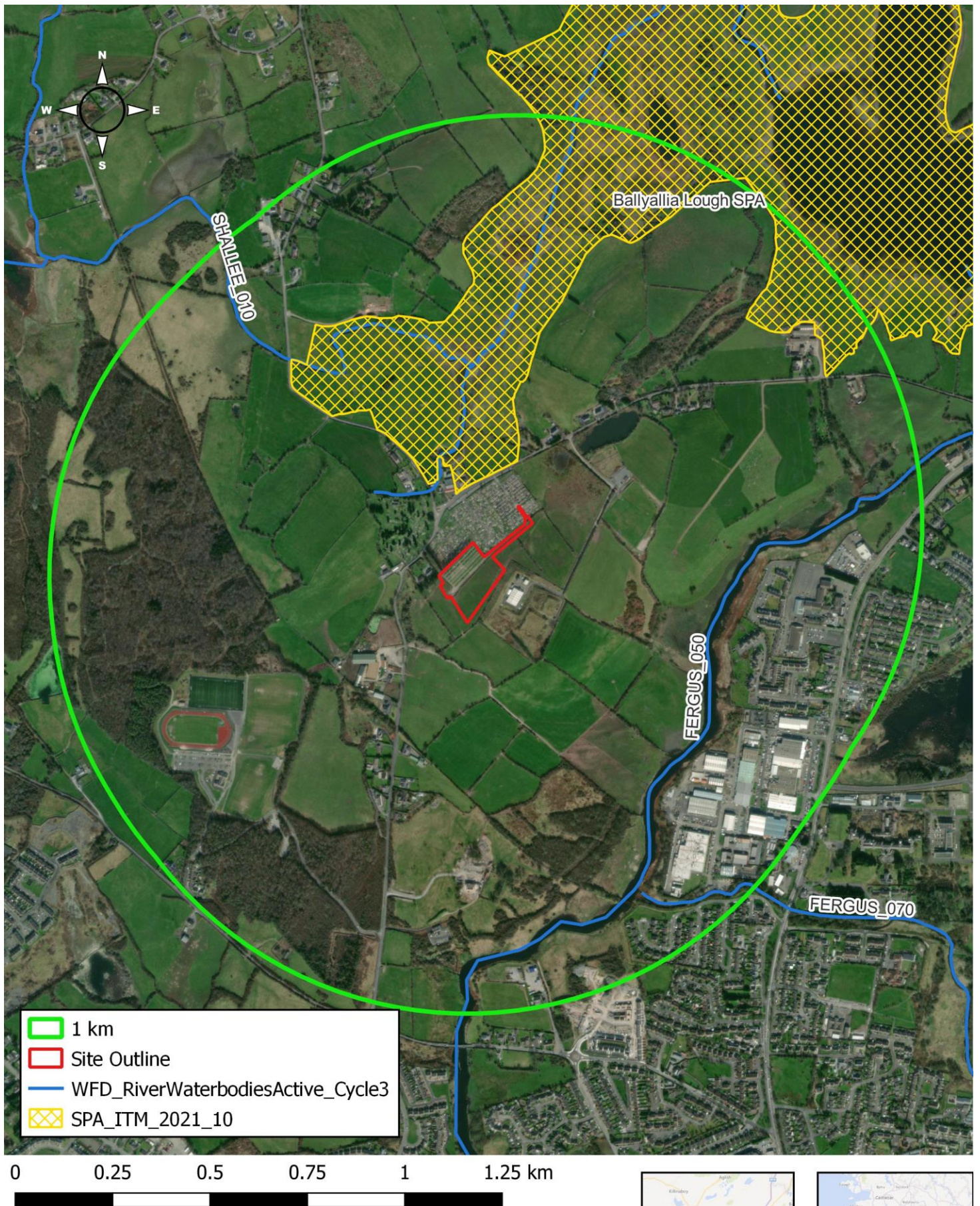
- █ 1 km
- █ Site Outline
- █ WFD_RiverWaterbodiesActive_Cycle3
- █ SAC_ITM_2023_01



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Figure 12. Watercourses and SACs within 1km of the proposed development

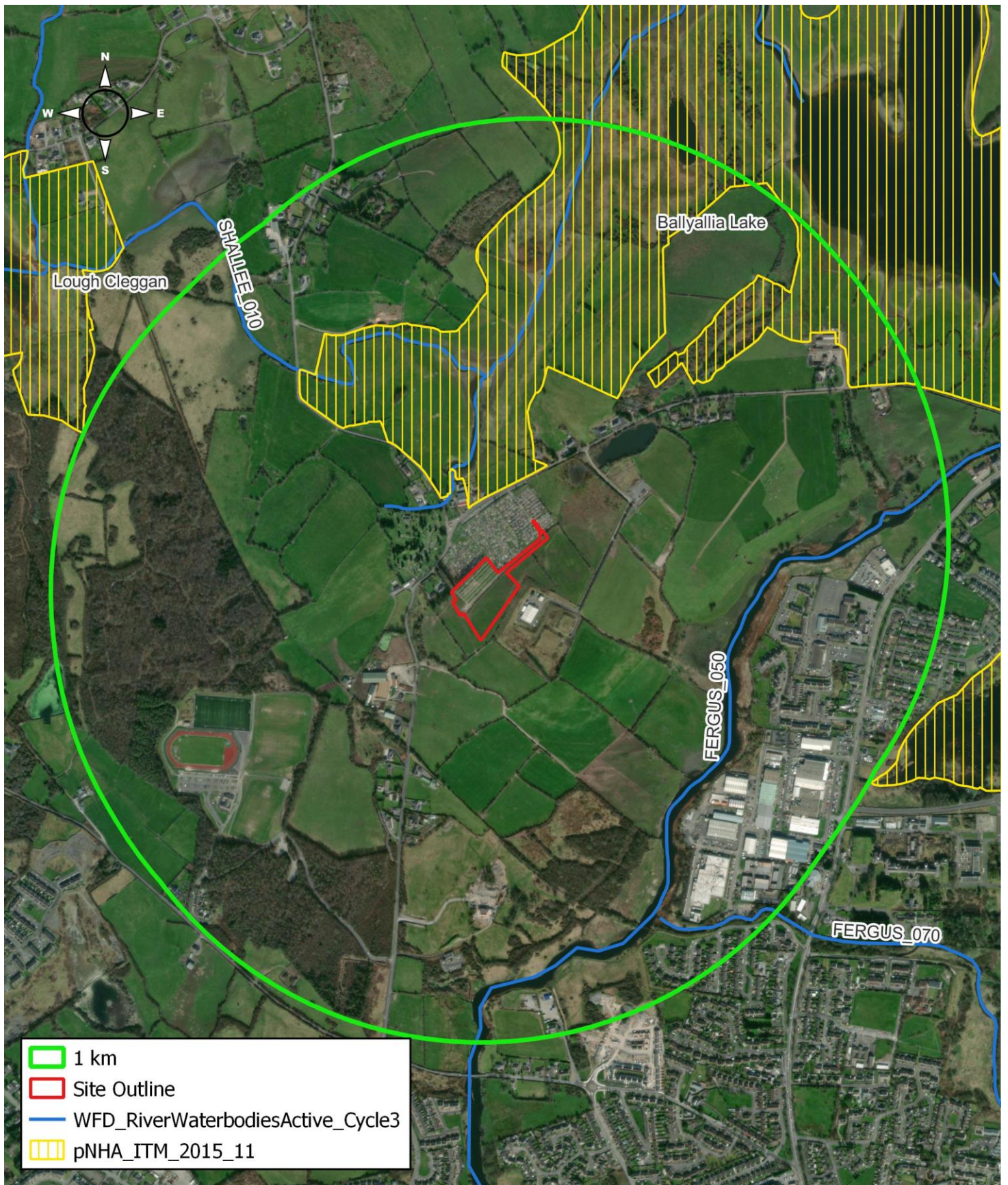


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Figure 13. Watercourses and SPAs within 1km of the proposed development



- █ 1 km
- █ Site Outline
- █ WFD_RiverWaterbodiesActive_Cycle3
- █ pNHA_ITM_2015_11

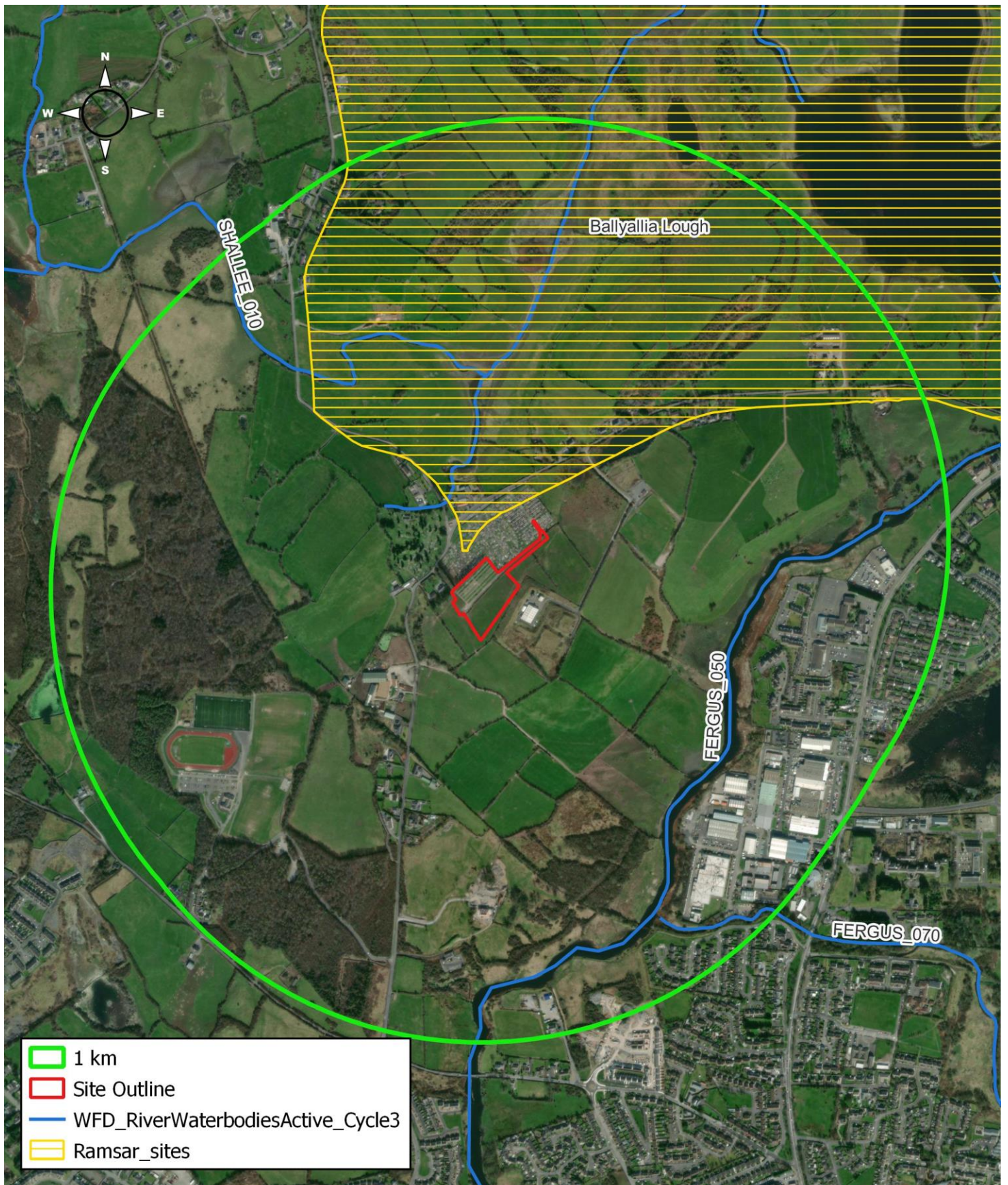
0 0.25 0.5 0.75 1 1.25 km

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Figure 14. Watercourses and pNHAs within 1km of the proposed development



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 Location: Drumcliff, Ennis, Co. Clare
 Date: 14th April 2023
 Drawn By: Bryan Deegan (Altamar)



Figure 15. Watercourses and Ramsar sites within 1km of the proposed development

Habitats and Species

A site assessment was carried out on the 5th April 2023. Habitats within the proposed site were classified according to Fossitt (2000) (Figure 16).

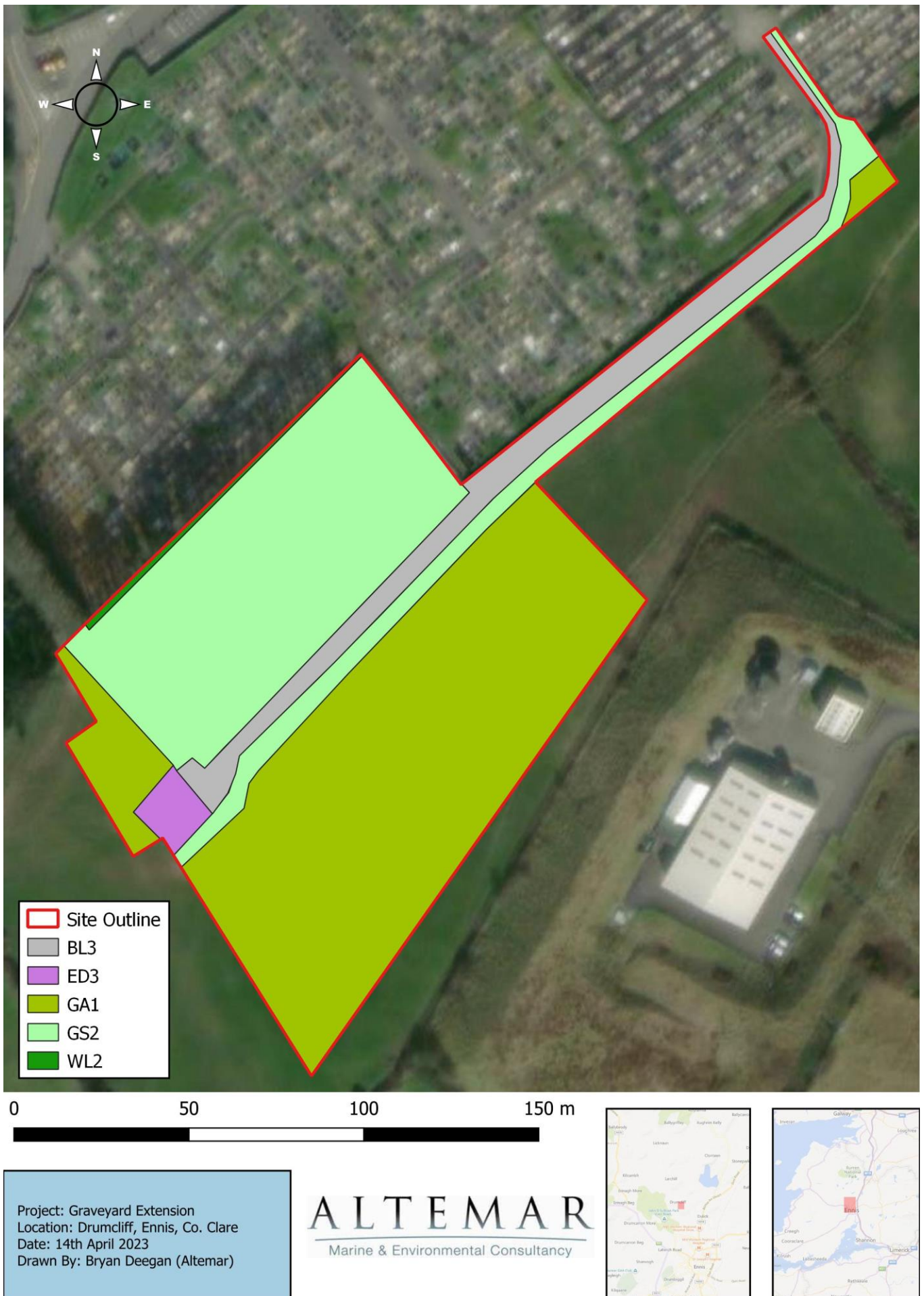


Figure 16. Fossitt (2000) Habitat map of proposed development site

As can be seen from Figure 16, the site consists of the following habitats (Fossitt, 2000):

BL3- (Buildings and artificial surfaces)

No flora or fauna of conservation importance were noted in these areas. The Buildings and artificial surfaces on site consist of existing paved roads and footpaths. A small wall clad in ivy (*Hedera helix*) is located between the footpath and the graveyard.



Plate 1. Buildings and artificial surfaces habitat.

GS2 Dry meadows and grassy verges



Plate 2. Graveyard.

Biodiversity was low in this habitat which was amongst the graves and along the side of the road. Species consisted thistles (*Cirsium arvense* & *C. vulgare*), clover (*Trifolium spp.*), docks (*Rumex spp.*), nettle (*Urtica dioica*), creeping buttercup (*Ranunculus repens*), scarlet pimpernel (*Anagallis arvensis*), great willowherb (*Epilobium hirsutum*), willow sapling (*Salix sp.*) nettle (*Urtica dioica*), bramble (*Rubus fruticosus agg.*), moss (*Sphagnum sp.*) and dandelion (*Taraxacum vulgaria*)

ED3-Recolonising Bare Ground.



As seen in Figure 16 a small area of recently cleared ground is noted in the south western portion of the site and has begun to recolonise with vegetation including mosses (*Sphagnum sp.*).

GA1-Agricultural Grassland.



Improved agricultural grassland is located to the east of the site. The sloped fields appeared to be actively grazed. Horses were grazing in the field at the northern end of the site where the watermain will be placed. Biodiversity in these areas was relatively poor and the species was dominated by thistles (*Cirsium arvense*, *C. vulgare*), daisy (*Bellis perennis*), nettle (*Urtica dioica*), clover (*Trifolium repens*), plantains (*Plantago spp.*), creeping buttercup (*Ranunculus repens*), dandelion (*Taraxacum spp.*), lesser celandine (*Ficaria verna ssp verna*), rushes (*Juncus sp.*) and docks (*Rumex spp.*). No species of conservation importance or invasive species were noted.

Evaluation of Habitats

The proposed development site consists of an existing graveyard, access road, footpath improved agricultural grasslands, and mature treelines. No habitats of conservation significance were noted within the site outline.

Plant Species

The plant species encountered at the various locations on site are detailed above. No plant species protected under Irish or international legislation were noted on site. Records of rare and threatened species from NBDC and NPWS were examined. No rare or threatened plant species were recorded within the proposed development site.

Invasive Plant species

No species that are listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) which makes it an offence under Regulation 49 to plant, disperse, allow or cause to grow these plants were noted on site.

Terrestrial Mammals

All areas of the site were accessible. Full survey coverage of the site was possible and there are no limitations in relation to the mammal assessment. No mammal activity was noted on site. No badgers (*Meles meles*) or badger activity was noted on site. Otters (*Lutra lutra*) activity was not noted on site and it is unlikely that they are present due to the lack of a watercourse onsite. No evidence of deer was noted on site. No hedgehogs (*Erinaceus erinaceus*) were seen during the site visit, but may be present on site. No protected terrestrial mammals were noted on site or in the vicinity of the site. Records of rare and threatened species from NBDC and NPWS were examined. No rare or threatened faunal species were recorded within the proposed site.

Bats

No bat roosts were noted onsite. There are trees of bat roosting potential within the mature treeline located to the west of the site. It should be noted that no trees will be removed as part of the proposed development. No lighting is proposed onsite.

Amphibians/Reptiles

The common frog (*Rana temporaria*) or the common lizard (*Lacerta vivipara*) were not observed on site. There are no water features within the site boundary that could be important to frogs.

Birds

No bird species of conservation importance have been noted on site. No trees within the site are proposed for removal. A Long-eared Owl survey was undertaken by MKO within the proposed development site and existing burial ground. As outlined in Appendix I: *'There was no evidence of the presence of long-eared owl found during the field survey undertaken on the 13th of February 2023. While potential nests were found, there were no pellets found at the base of trees and no owls were recorded within or in proximity to the nests when observed using the thermal camera. No long-eared owls were heard during the dusk survey.'*

Assessment of Biodiversity Records

The National Biodiversity Data Centre's online viewer was consulted in order to determine the extent of biodiversity and/or species of interest in the area. First, an assessment of the site-specific area was carried out by generating a report based on the site outline, however it recorded no species of interest in the site area. Following this a 2 km² grid, reference number R37J, based on the Ordnance Survey Ireland (OSI) Irish Grid classification system was assessed. Table 3 provides a list of all species recorded in the species reports generated for this grid that possess a specific designation, such as Invasive Species or Protected Species.

Table 3. Table of species, NBDC

Date of Record	Species Name	Designation
19/05/2020	Common Frog (<i>Rana temporaria</i>)	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
19/05/2019	Barn Owl (<i>Tyto alba</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
31/12/2011	Barn Swallow (<i>Hirundo rustica</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Black-headed Gull (<i>Larus ridibundus</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
31/12/2011	Common Coot (<i>Fulica atra</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
03/02/2005	Common Kingfisher (<i>Alcedo atthis</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Common Linnet (<i>Carduelis cannabina</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Common Pheasant (<i>Phasianus colchicus</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
27/10/2017	Common Snipe (<i>Gallinago gallinago</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
09/01/2023	Common Starling (<i>Sturnus vulgaris</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Date of Record	Species Name	Designation
18/07/2022	<i>Common Swift (Apus apus)</i>	<i>Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List</i>
20/01/2023	<i>Common Wood Pigeon (Columba palumbus)</i>	<i>Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species</i>
23/07/2006	<i>Eurasian Curlew (Numenius arquata)</i>	<i>Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List</i>
31/12/2011	<i>Eurasian Woodcock (Scolopax rusticola)</i>	<i>Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List</i>
31/12/2011	<i>Greylag Goose (Anser anser)</i>	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List</i>
31/12/2011	<i>Hen Harrier (Circus cyaneus)</i>	<i>Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List</i>
31/12/2011	<i>House Martin (Delichon urbicum)</i>	<i>Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List</i>
09/01/2023	<i>House Sparrow (Passer domesticus)</i>	<i>Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List</i>
31/12/2011	<i>Mallard (Anas platyrhynchos)</i>	<i>Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species</i>
31/12/2011	<i>Mute Swan (Cygnus olor)</i>	<i>Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List</i>
31/12/2011	<i>Northern Lapwing (Vanellus vanellus)</i>	<i>Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species:</i>

Date of Record	Species Name	Designation
		<i>Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List</i>
31/12/2011	Rock Pigeon (<i>Columba livia</i>)	<i>Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species</i>
31/07/1991	Sky Lark (<i>Alauda arvensis</i>)	<i>Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List</i>
01/11/1909	Snowy Owl (<i>Bubo scandiaca</i>)	<i>Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List</i>
31/12/2011	Water Rail (<i>Rallus aquaticus</i>)	<i>Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List</i>
21/12/2020	Whooper Swan (<i>Cygnus cygnus</i>)	<i>Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List</i>
30/06/2006	Yellowhammer (<i>Emberiza citrinella</i>)	<i>Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List</i>
23/02/2020	Barberry (<i>Berberis vulgaris</i>)	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species</i>
24/08/2022	Butterfly-bush (<i>Buddleja davidii</i>)	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species</i>
04/09/2007	Canadian Waterweed (<i>Elodea canadensis</i>)	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)</i>
29/04/2019	Chives (<i>Allium schoenoprasum</i>)	<i>Threatened Species: Vulnerable</i>
05/06/2019	Cornflower (<i>Centaurea cyanus</i>)	<i>Threatened Species: Waiting list</i>
20/05/2020	Himalayan Honeysuckle (<i>Leycesteria formosa</i>)	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species</i>
06/11/2017	Himalayan Knotweed (<i>Persicaria wallichii</i>)	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)</i>
06/10/2017	Japanese Knotweed (<i>Fallopia japonica</i>)	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)</i>
22/06/2020	Japanese Rose (<i>Rosa rugosa</i>)	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species</i>

Date of Record	Species Name	Designation
09/05/2019	<i>Rhododendron ponticum</i>	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)</i>
15/04/2019	<i>Spring Gentian (Gentiana verna)</i>	<i>Threatened Species: Near threatened</i>
20/02/2020	<i>Sycamore (Acer pseudoplatanus)</i>	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species</i>
23/02/2020	<i>Three-cornered Garlic (Allium triquetrum)</i>	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)</i>
16/07/2022	<i>Traveller's-joy (Clematis vitalba)</i>	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species</i>
30/05/1979	<i>Dingy Skipper (Erynnis tages)</i>	<i>Threatened Species: Near threatened</i>
02/06/2020	<i>Small Blue (Cupido minimus)</i>	<i>Threatened Species: Endangered</i>
28/05/2016	<i>Small Heath (Coenonympha pamphilus)</i>	<i>Threatened Species: Near threatened</i>
23/05/2010	<i>Wood White (Leptidea sinapis)</i>	<i>Threatened Species: Near threatened</i>
15/07/2022	<i>Scarce Blue-tailed Damselfly (Ischnura pumilio)</i>	<i>Threatened Species: Vulnerable</i>
14/06/2022	<i>Large Red Tailed Bumble Bee (Bombus (Melanobombus) lapidarius)</i>	<i>Threatened Species: Near threatened</i>
05/09/2016	<i>Jenkins' Spire Snail (Potamopyrgus antipodarum)</i>	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species</i>
01/02/2014	<i>Brown Rat (Rattus norvegicus)</i>	<i>Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)</i>
12/08/2014	<i>Daubenton's Bat (Myotis daubentonii)</i>	<i>Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts</i>
08/08/2013	<i>Eurasian Pygmy Shrew (Sorex minutus)</i>	<i>Protected Species: Wildlife Acts</i>
17/01/2023	<i>Eurasian Red Squirrel (Sciurus vulgaris)</i>	<i>Protected Species: Wildlife Acts</i>
07/08/2013	<i>Lesser Noctule (Nyctalus leisleri)</i>	<i>Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts</i>
19/08/2020	<i>Pine Marten (Martes martes)</i>	<i>Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts</i>
22/06/2021	<i>West European Hedgehog (Erinaceus europaeus)</i>	<i>Protected Species: Wildlife Acts</i>

Potential Impacts

This report has been prepared to outline the construction and operational phase measures in addition to detailing the potential impacts on sensitive receptors within the Zone of Influence (ZOI).

Construction Impacts

The overall development of the site is likely to have direct negative impacts upon the existing habitats, fauna and flora. Direct negative effects will be manifested in terms of the removal of the site's internal habitats. The removal of these habitats will result in a loss of species and habitats of low biodiversity importance. The area is not deemed to be an important foraging area for terrestrial mammals or birds of conservation importance. Treelines will not be impacted by the project.

Designated Conservation sites within 15km

The proposed development is not located within a designated conservation site. The nearest designated conservation site is the Ballyallia Lake pNHA, located 45m from the subject site. The nearest Natura 2000 sites are Ballyallia Lake SAC and Ballyallia Lough SPA (100m). There is no direct hydrological pathway to any designated European conservation site. There is an indirect hydrological pathway to designated national conservation sites located downstream of the subject site via surface water drainage.

There are a number of waterbodies (including the Drumcliff Stream and Poulacorry River) located topographically down-gradient to the north of the subject site. This network of waterbodies ultimately outfalls to Ballyallia Lough. It is proposed to collect, treat, and retain surface water drainage within the subject site, with infiltration to ground via 5 no. proposed soakaways. Given that surface water drainage will infiltrate into the ground, it is considered that there is an indirect hydrological pathway to conservation sites within Ballyallia Lough via surface water drainage to topographically down-gradient waterbodies located to the north of the site.

Works on site and dust on site during construction may lead to silt or dust from site entering topographically down-gradient waterbodies (including Drumcliff Stream and Poulacorry River), which ultimately outfall to conservation sites within Ballyallia Lough. Concrete, silt or pollution could enter topographically down-gradient waterbodies during works including, site clearance, reprofiling and dewatering, if required during construction.

The use of plant and machinery, as well as the associated temporary storage of construction materials, oils, fuels and chemicals, could lead to pollution on site and pollution of topographically down-gradient waterbodies. The storage of topsoil or works onsite could lead to dust entering proximate waterbodies.

Given the nature of the works, all of these effects would be expected to be localised in nature restricted to the immediate vicinity of the site and would have little effect on European sites. However, without the presence of mitigation measures there is a potential for effects if significant quantities of pollution or silt were generated on site.

Impacts: Minor adverse / National / Negative / Not significant / Short-term. Mitigation is required in relation to water pollution (A NIS has been prepared for the proposed project)

Biodiversity

The impact of the development during construction phase will be a loss of existing habitats and species on site. It would be expected that the flora and fauna associated with these habitats would also be displaced.

Terrestrial mammalian species

No protected terrestrial mammals were noted on site. Loss of habitat and habitat fragmentation may affect some common mammalian species.

Impacts: Low adverse / site / Negative Impact / Not significant / short term.

Flora

No protected flora was noted on site. Site clearance will remove the flora species on site. Invasive species were not noted on site.

Impacts: Low adverse / site / Negative Impact / Not Significant / Short term

Bat Fauna

No bat roosts were noted onsite. There are trees of bat roosting potential within the mature treeline located to the north of the site. It should be noted that no trees will be removed as part of the proposed development. Lighting during construction could impact on foraging activity if required.

Impacts: Low adverse / site / Negative Impact / Not Significant / Short term. Mitigation is needed in the form of the control of light spill during construction.

Aquatic Biodiversity

No watercourses or ponds are noted on site. Silt and pollution could potentially impact on biodiversity downstream of the surface water network.

Impacts in the absence of mitigation: Minor adverse / local / Negative Impact /not significant effects/ short term. Mitigation is needed in the form of control of silt and petrochemical and dust during construction.

Bird Fauna

No bird species of conservation importance have been noted on site. No trees within the site are proposed for removal.

A Long-eared Owl survey was undertaken by MKO within the proposed development site and existing burial ground. As outlined in Appendix I: *'Following the completion of an early season survey for long eared owls at the site, the survey that was carried out did not record any definitive evidence of the species utilising the site. However suitable habitat for the species was present and a number locations within the site were noted where existing nests could potentially be used by the species for breeding. No trees within the site are proposed for removal as part of the proposed development, and there is no potential for loss of nesting habitat.'*

Impacts: Low adverse / Local / Negative Impact / Not significant / short term. Mitigation is needed in the control of light spill during construction.

Operational Impacts

No lighting is proposed onsite. The construction of new drainage networks will have to comply with SUDS and County Council requirements and as a result would have negligible impact on habitats and species surrounding proposed development site.

Designated Conservation sites within 15km

The proposed development includes a sustainable drainage strategy. The development will comply with Clare County Council requirements and the Water Pollution Acts and standard measures will be in place to prevent downstream impacts. *'During the operational phase, the hydrological regime at the site will be controlled by a range of sustainable drainage measures. There will be no cumulative impacts on surface water quality or quantity, with respect to the existing Drumcliff cemetery (Section E) as a result of the proposed development. In terms of groundwater cumulative impacts, the burial and natural breakdown of remains within the proposed extension will lead to increased levels of certain nutrients such as Ammonia and Nitrate within the grave plots. Due to the thickness of subsoils (8.5-13.5m) and the low/moderate permeability of the subsoil, cumulative impacts, with respect to the existing Drumcliff cemetery, are not expected to occur.'*

Impacts: Negligible / International / Neutral Impact / Not significant / Long-term

Biodiversity

Terrestrial mammalian species

No protected terrestrial mammals were noted on site.

Impacts: Low adverse / site / Negative Impact / Not significant / short term.

Flora

No protected flora or invasive species were noted on site.

Impacts: Negligible/ site / Negative Impact / Not significant / long-term

Bat Fauna

The proposed development will change the local environment as some of the existing vegetation will be removed. No bat roosts or potential bat roosts will be lost due to this development and the species expected to occur onsite should persist. No lighting is proposed onsite.

Impacts: Neutral / International / Not significant / long term.

Aquatic Biodiversity

Standard measures will be in place in relation to surface water discharges. No additional mitigation is required.

Potential Impacts in the absence of mitigation: Low adverse / local / Negative Impact / Not significant / long term

Bird Fauna

The proposed development will increase activity in the area. Management of the site could result in a loss of wintering bird areas particularly in relation to increased disturbance and loss of foraging habitat. No lighting is proposed onsite.

As outlined in the Owl Survey Report (Appendix 1): 'It is not anticipated that there would be any potential for significant impacts on long-eared owl as a result of the proposed extension to the existing cemetery. It is anticipated that the site post-development would continue to support populations of small rodents which in turn provide prey for owls, and roosting opportunities in trees within the site will be fully retained. No new artificial public lighting is proposed as part of the proposals, and therefore there is no potential for disturbance and fragmentation effects resulting from any increase in artificial lighting at night.'

Impacts: Moderate adverse / International / Negative Impact / Not significant / Long-term

Mitigation Measures & Monitoring

Standard construction and operational controls will be incorporated into the proposed development project to minimise the potential negative impacts on the ecology within the Zone of Influence (Zoi), biodiversity, and local biodiversity within / proximate to the subject site are outlined in Table 5.

Table 5. Sensitive Receptors/Impacts and mitigation measures.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
Biodiversity and Watercourses	<ul style="list-style-type: none"> • Habitat Degradation • Dust deposition • Pollution • Silt ingress • Potential downstream impacts. 	<p>As detailed in the “Memo: Drumcliff PWS and Proposed Drumcliff Burial Ground” prepared by Hydro-Environmental Services to accompany this application, the following mitigation measures will be implemented during the construction phase of development:</p> <p><i>‘Management of surface water runoff and subsequent treatment before release off-site will be undertaken during construction work as follows:</i></p> <ul style="list-style-type: none"> • <i>lines of silt fencing will be constructed along the northern boundary of the site during construction;</i> • <i>All stockpiles will be damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation; and,</i> • <i>Restricting construction to within well marked areas, adherence to the non-carrying out of construction after or during heavy rainfall.</i> <p><i>The following measures in relation to the management of hydrocarbons and related oils/fuels will be implemented:</i></p> <ul style="list-style-type: none"> • <i>All plant and machinery will be serviced before being mobilised to site;</i> • <i>No plant maintenance will be completed on site, any broken down plant will be removed from site to be fixed;</i> • <i>Refuelling will be completed in a controlled manner using drip trays at all times;</i> • <i>Any fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage;</i> • <i>Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills;</i> • <i>Only designated trained operators will be authorised to refuel plant on site;</i> • <i>Procedures and contingency plans will be set up to deal with emergency accidents or spills; and,</i> • <i>An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill.</i> <p><i>The following measures in relation to the management of cement-based products will be implemented:</i></p> <ul style="list-style-type: none"> • <i>No batching of wet-cement products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place;</i> • <i>No washing out of any plant used in concrete transport or concreting operations will be allowed on-site;</i> • <i>The contractor will use weather forecasting to plan dry days for pouring concrete; and,</i> • <i>The pour site will be free of standing water, and plastic covers will be ready in case of a sudden rainfall event.’</i>

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		<p>Further, as outlined in the Hydrological and Hydrogeological Assessment, the following mitigation measures will be implemented:</p> <p><i>'Earthworks and Drainage Network Construction</i></p> <p><i>Management of surface water runoff and subsequent treatment before release off-site will be undertaken during construction work as follows:</i></p> <ul style="list-style-type: none"> • <i>2 lines of silt fencing will be constructed along the northern boundary of the site during construction;</i> • <i>All stockpiles will be damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation; and,</i> • <i>Restricting construction to within well marked areas, adherence to the non-carrying out of construction after or during heavy rainfall.</i> <p><i>Potential Release of Hydrocarbon</i></p> <ul style="list-style-type: none"> • <i>All plant and machinery will be serviced before being mobilised to site;</i> • <i>No plant maintenance will be completed on site, any broken down plant will be removed from site to be fixed;</i> • <i>Refuelling will be completed in a controlled manner using drip trays at all times;</i> • <i>Any fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage;</i> • <i>Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills;</i> • <i>Only designated trained operators will be authorised to refuel plant on site;</i> • <i>Procedures and contingency plans will be set up to deal with emergency accidents or spills; and,</i> • <i>An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill.</i> <p><i>Release of Cement-Based Products</i></p> <ul style="list-style-type: none"> • <i>No batching of wet-cement products will occur on site. Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place;</i> • <i>No washing out of any plant used in concrete transport or concreting operations will be allowed on-site;</i> • <i>The contractor will use weather forecasting to plan dry days for pouring concrete; and,</i> • <i>The pour site will be free of standing water, and plastic covers will be ready in case of a sudden rainfall event.'</i> <p>Additionally, the following mitigation measures will be implemented.</p>

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		<ul style="list-style-type: none"> • A project ecologist will be appointed to oversee works from prior to commencement of works on site to the completion of all drainage elements. • Local silt traps established throughout site. • Mitigation measures on site include dust control, stockpiling away from drains • Stockpiling of loose materials will be kept to a minimum of 20m from drains. • Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system. • Fuel, oil and chemical storage will be sited within a bunded area. The bund will be at least 50m away from drains, excavations and other locations where it may cause pollution. • Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. • Fuel, oil and chemical storage will be sited within a bunded area. • Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. • During the construction works, silt traps will be put in place in the vicinity of all runoff channels to prevent sediment entering the Drumcliff Stream watercourse network. • Sufficient onsite cleaning of vehicles prior to leaving the site and on nearby roads, will be carried out, particularly during groundworks. • The Site Manager will be responsible for the pollution prevention programme and will ensure that at least daily checks are carried out to ensure compliance. A record of these checks will be maintained. • The site compound will include a dedicated bund for the storage of dangerous substances including fuels, oils etc. Refuelling of vehicles/machinery will only be carried out within the bunded area. • Concrete trucks, cement mixers or drums/bins are only permitted to wash out in designated wash out area greater than 50m from sensitive receptors including drains. • Spill containment equipment shall be available for use in the event of an emergency. The spill containment equipment shall be replenished if used and shall be checked on a scheduled basis. <p>Air & Dust</p> <p>Dust may enter the Drumcliffe Stream watercourse network via air or surface water with potential downstream impacts. Mitigation measures will be carried out reduce dust emissions to a level that avoids the possibility of adverse effects on downstream biodiversity. The main activities that may give rise to dust emissions during construction include the following:</p> <ul style="list-style-type: none"> • Excavation of material; • Materials handling and storage; • Movement of vehicles (particularly HGV's) and mobile plant. • Contaminated surface runoff

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		<p><i>Mitigation measures to be in place:</i></p> <ul style="list-style-type: none"> • Consultation will be carried with an ecologist throughout the construction phase; • Trucks leaving the site with any excavated material will be covered so as to avoid dust emissions along the haulage routes. • Speed limits on site (15kmh) to reduce dust generation and mobilisation. <p><i>Site Management</i></p> <ul style="list-style-type: none"> • Regular inspections of the site and boundary should be carried out to monitor dust, records and notes on these inspections should be logged. • Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. • Make the complaints log available to the local authority when asked. • Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book. <p><i>Monitoring</i></p> <ul style="list-style-type: none"> • Undertake daily on-site and off-site inspection, where receptors are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces within 100 m of site boundary, integrity of the silt control measures, with cleaning and / or repair to be provided if necessary. <p><i>Preparing and Maintaining the Site</i></p> <ul style="list-style-type: none"> • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. • Avoid site runoff of water or mud. • Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. • Cover, seed or fence stockpiles to prevent wind whipping. • Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic. • Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions. <p><i>Operations</i></p> <ul style="list-style-type: none"> • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.

Sensitive Receptors	Potential Impacts	Designed-in Mitigation
		<ul style="list-style-type: none"> • Use enclosed chutes and conveyors and covered skips. • Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. <p><i>Measures Specific to Earthworks</i></p> <ul style="list-style-type: none"> • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. • Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. • Only remove the cover in small areas during work and not all at once. • During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust. • The Contractor will be required to consult with an ecologist prior to the beginning of works to identify any additional measures that may be appropriate and/or required. <p><i>Storage/Use of Materials, Plant & Equipment</i></p> <ul style="list-style-type: none"> • Materials, plant and equipment shall be stored in the proposed site compound location; • All oils, fuels and other hazardous liquid materials shall be clearly labelled and stored in an upright position in an enclosed bunded area within the proposed development site compound. The capacity of the bunded area shall conform with EPA Guidelines – hold 110% of the contents or 110% of the largest container whichever is greater; • Fuel may be stored in the designated bunded area or in fuel bowzers located in the proposed compound location. Fuel bowzers shall be double skinned and equipped with certificates of conformity or integrity tested, in good condition and have no signs of leaks or spillages; • Smaller quantities of fuel may be carried/stored in clearly labelled metal Jeri cans. Green for diesel and red for petrol and mixes. The Jeri cans shall be in good condition and have secure lockable lids. The Jeri cans shall be stored in a drip tray when not in use. • Drip trays will be turned upside down if not in use to prevent the collection of rainwater; • Plant and equipment to be used during works, will be in good working order, fit for purpose, regularly serviced/maintained and have no evidence of leaks or drips.
Bats	<ul style="list-style-type: none"> • Lighting Impacts 	<ul style="list-style-type: none"> • If lighting is required during construction, it will be done sensitively on site with no direct lighting of treelines.
Birds	<ul style="list-style-type: none"> • Disturbance to nests. 	<ul style="list-style-type: none"> • If lighting is required during construction, it will be done sensitively on site with no direct lighting of treelines
Mammals	<ul style="list-style-type: none"> • Death/injury • Disturbance 	<ul style="list-style-type: none"> • A pre-construction survey will be carried out for terrestrial mammals of conservation importance. If terrestrial mammals of conservation importance are noted on site NPWS will be consulted in relation to removal and the appropriate permissions obtained.

Cumulative Impacts

There are several proposed developments located in the area surrounding the subject site. The following is a list of planning applications as identified on the Department of Housing, Local Government and Heritage's 'National Planning Application Database' portal¹:

Table 6. In-combination Effects Assessed

Ref. No.	Address	Proposal
21664	Ballymaley, Ennis, Co Clare	<i>for development at Ballymaley, Ennis, Co Clare. The proposed development will consist of 24 No. 4 bedroom detached houses, comprising 19 No. 2 storey houses with second floor dormer rooms (Type A) 2 No. 2 storey houses (Type B), 3 No. 2 storey houses, Type B1, new site entrances, roads, paths, driveways, boundary walls, pedestrian walkway, landscaping, drainage with attenuation tank and associated site works.</i>
20297	Drumcliff, Ennis, Co. Clare	<i>the development will consist of: demolition of an existing dwelling house and construction of a single replacement dwelling house, provision of a new vehicular access onto the Drumcliff Road, provision of a new waste water treatment system, percolation area, and connections ancillary to the residential development, appropriate landscaping and boundary treatments, as well as all associated site development works and services</i>

The projects outlined were reviewed. It is considered that cumulative effects on biodiversity, with other existing and proposed developments in proximity to the application area, would be unlikely, neutral, not significant and localised. It is concluded that no significant effects on biodiversity will be seen as a result of the proposed development alone or in combination with other projects.

No significant cumulative impacts are likely in relation to the proposed development.

Residual Impacts and Conclusion

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential effects on the terrestrial, mammalian, avian and aquatic sensitive receptors through the application the standard construction and operational phase controls. No significant effects on biodiversity are likely. Residual effects on biodiversity are considered to be: Low adverse / site / Negative Impact / Not significant / short term.

¹ <https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de>

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Long-eared Owl Survey Report

Proposed Extension of Existing Burial Ground in Drumcliff, Ennis, Co. Clare





DOCUMENT DETAILS

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Table of Contents

1.	INTRODUCTION	1
1.1	Site Description.....	1
1.2	Characteristics of Permitted Development	1
1.3	Objectives.....	1
1.4	Statement of Authority	1
2.	METHODOLOGY	3
2.1	Desk Study.....	3
2.2	Field Survey.....	3
2.3	Limitations.....	3
3.	RESULTS.....	4
3.1	Desk Study.....	4
3.2	Field Survey.....	4
4.	DISCUSSION AND RECOMMENDATIONS	11
4.1	Potential Construction Phase Impacts.....	11
4.2	Potential Operational Phase Impacts.....	11
4.3	Potential For Habitat Enhancement.....	11
5.	CONCLUSION	12
6.	BIBLIOGRAPHY.....	13
	<i>Figure 1-1 Site Location Map.....</i>	<i>2</i>
	<i>Figure 3-1: Overall site nest locations.....</i>	<i>5</i>
	<i>Figure 3-2: Southern area nest locations.....</i>	<i>6</i>
	<i>Figure 3-3: Northern area nest locations.....</i>	<i>7</i>

1. INTRODUCTION

MKO was commissioned by Clare County Council to undertake long-eared owl (*Asio otus*) surveys to inform the proposed expansion of the burial ground located at Drumcliff, Co. Clare. Clare County Council were previously notified of the presence of long-eared owls within the burial ground, who may have used the site for nesting and/or foraging purposes. Drumcliff is located approximately 3km north of Ennis, with the existing burial ground located on the Drumcliff road.

The purpose of the surveys was to identify any presence of long-eared owl within the site, and assess whether there may be any potential impacts on these species as a result of the proposed works.

1.1 Site Description

The proposed site is located on Drumcliff road in Drumcliff Co. Clare. The proposed site is an extension of the existing burial ground to an area of grassland located adjacent to the burial ground. There are no flowing watercourses present on site within the proposed development boundary with areas in the surrounding landscape composed of improved agricultural grasslands, with mature treelines offering a potential nesting site for long-eared owls.

1.2 Characteristics of Permitted Development

Planning Permission is sought by Clare County Council. The proposed development is described and will consist of the following and all associated site works and services.

The development proposes to extend the existing burial ground in order to accommodate the Ennis Community. The development will also involve the construction of internal roads, footpaths and shared surfaces. The proposed development site is located along the western boundary of the existing burial ground.

A site location map is presented in Figure 1.1.

1.3 Objectives

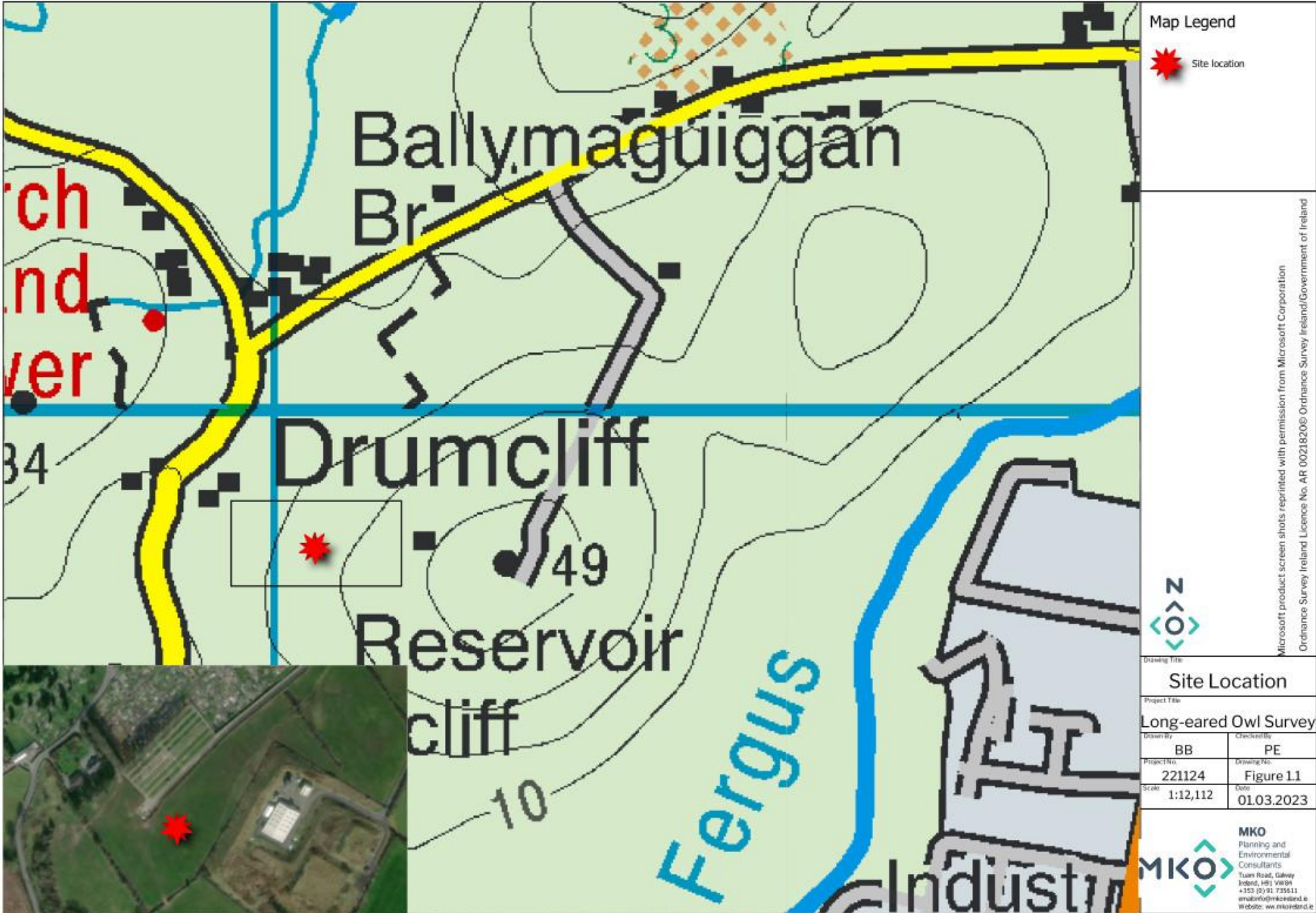
The objectives of the surveys and report are as follows:

- Identify signs of long-eared owls usage of the site including potential nesting sites within the vicinity of the proposed development site
- Report and map the results of the surveys
- Identify any potential ecological impacts remedial mitigation that may be required for long-eared owls according to the results of the surveys.

1.4 Statement of Authority

The long-eared owl survey was undertaken by Brónagh Boylan (B.Sc.) and Cora Twomey (B.Sc.). Brónagh and Cora have relevant academic qualifications and survey experience and are competent experts in undertaking the ecological surveys used to inform this assessment.

This report has been compiled by Brónagh Boylan (B.Sc.). The report has been reviewed by Patrick Ellison (B.Sc., M.Sc., ACIEEM). Patrick is an experienced ecologist with over 6 years' experience in ecological assessment and management.



2. METHODOLOGY

2.1 Desk Study

The National Biodiversity Data centre database was accessed on 01.03.2023 to search for existing records of long-eared owls within the proposed site or in the surrounding area of the site. Data from the relevant tetrads (R3279, R3379, R3380) was downloaded and examined for any records of long-eared owl. The species detail provided on both the Biodiversity Ireland website (<https://maps.biodiversityireland.ie/Species/11151>) and Birdwatch Ireland website (<https://birdwatchireland.ie/birds/long-eared-owl/>) were also consulted to obtain relevant information regarding distribution and legislation (if any) surrounding the species.

2.2 Field Survey

An ecological survey to determine the presence or absence of long-eared owls within the proposed development site and existing burial ground was carried out on the 13th February 2023. An initial walkover survey of the entire site and existing cemetery was carried out for evidence of owls and potentially suitable existing nests that could be used by the species within trees; particular attention was given to treeline, as the treelines may offer potential nesting habitat for the species.

The survey was carried out for a total of 4 hours, with surveyors present onsite from one hour before dusk (to examine the nesting potential offered by trees within the proposed site boundary and existing burial ground), and 3 hours after dusk (to detect the presence, if any, of any owls, particularly territorial male long-eared owls given the time of year, on site). A search was carried out at the base of trees where potentially suitable nests were present within the site for pellets, and binoculars were used to examine nests present within trees. A thermal camera (make: Thermal Monocular Eye II E6 + V3.0 (InfiRay UK) was used following dusk to examine trees and identified nests within the site for the presence of long-eared owl.

2.3 Limitations

The field survey was carried out early in the breeding season for long-eared owls, and therefore could not conclusively determine whether breeding was taking place on site during 2023. However, male long-eared owls are likely to be very territorial and actively calling at this time of year in areas where they intend to breed. The species utilises old nests of species such as magpies and other corvids, and therefore the presence of these features indicate the places where the species is likely to nest. Therefore, whilst a survey carried out at this time of the year cannot confirm successful breeding at the site, the most likely locations for nesting by long-eared owls could be ascertained.

3. RESULTS

3.1 Desk Study

The National Biodiversity Data centre database results showed that there were no records of long-eared owl in the tetrads: R3379 and R3380. There was a record of long-eared owl recorded within tetrad R3279 from 06.03.2020. Tetrad R3279 covers the western boundary of the existing burial ground, and the north-west of the proposed extension site. The species detail provided by Biodiversity Ireland indicate the widespread distribution of this species, which is found all across Ireland (see Plate 3-1). This is supported by information obtained from Birdwatch Ireland which describes the species as the most common and widespread owl in Ireland, and the most likely to be seen owl species in Ireland.




Plate 3-1: Distribution of the number of records of Long-eared Owl recorded within each 10km grid square (ITM)- obtained from the National Biodiversity Data centre Ireland.

3.2 Field Survey

No evidence of long-eared owl was recorded during the survey. A total of four potentially suitable nests were recorded as potential nesting sites for long-eared owl (see Figure 3.1). The nests were constructed from sticks and were high up in the trees, and were likely used corvid nests or could also represent previous long-eared owl nests from past breeding seasons. One potential nesting site was located along the north-western boundary of the proposed development site (see Figure 3-2), while three potential nests were recorded in the burial ground located north of the proposed development site (see Figure 3-3).



Map Legend

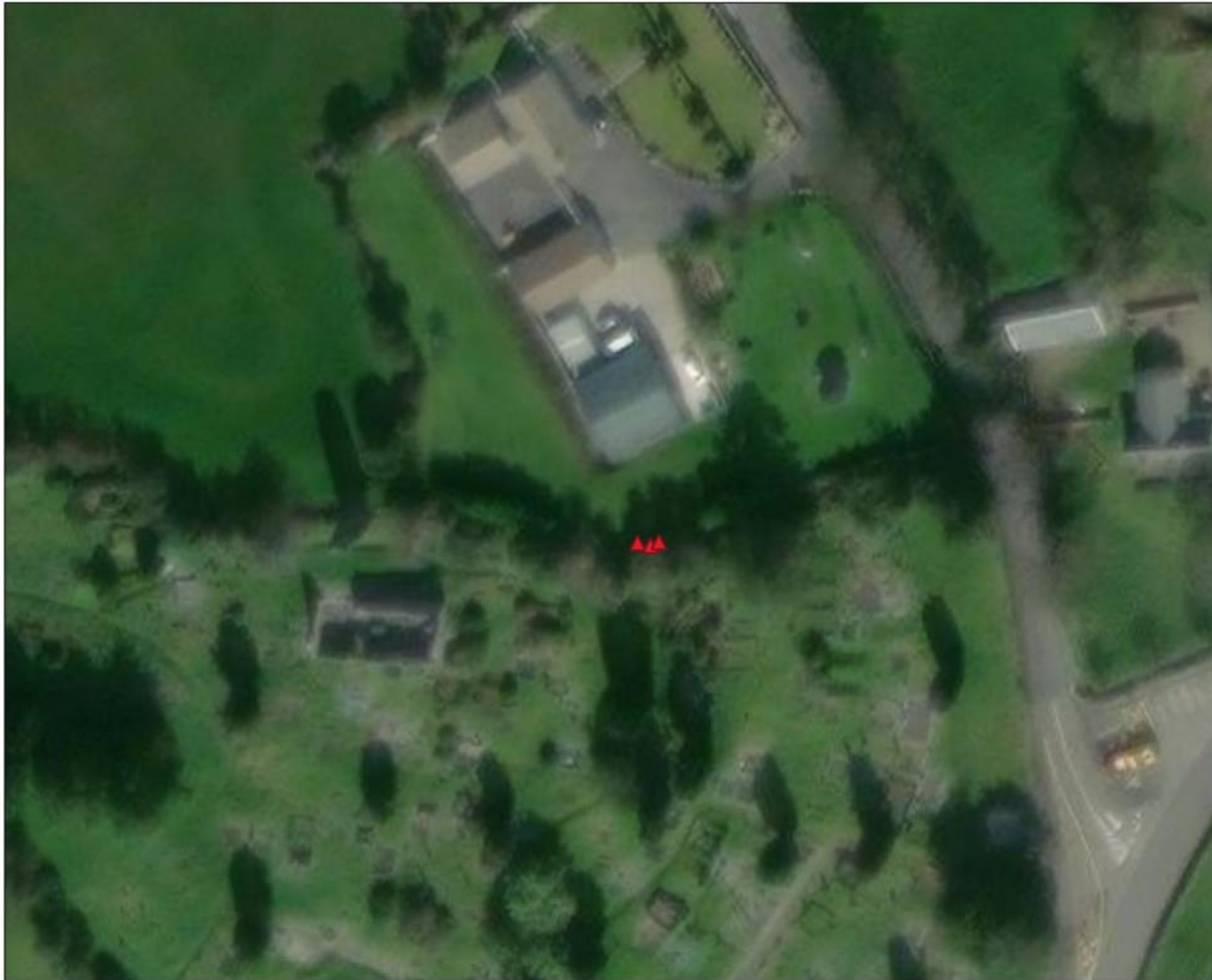
 Potential nest

Microsoft product screen shots reprinted with permission from Microsoft Corporation



Drawing Title	
Potential Nest Sites, Whole Site	
Project Title	
Drumcliff Cemetery, Ennis, Co. Clare	
Drawn By	Checked By
BB	PE
Project No.	Drawing No.
221124	Figure 3.1
Scale	Date
1:3,000	20.02.2023

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Map Legend

▲ Potential nest

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Drawing Title	
Potential Nest Sites, Northern Area	
Project Title	
Drumcliff Cemetery, Ennis, Co. Clare	
Drawn By	Checked By
BB	PE
Project No.	Drawing No.
221124	Figure 3.2
Scale	Date
1:731	20.02.2023


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Map Legend

 Potential nest



Ordnance Survey, Ireland Licence No. CYAL50267517 © Ordnance Survey Ireland/Government of Ireland

Drawing Title
**Potential Nest Sites,
Southern Area**

Project Title
Clare Coco: Long Eared Owl Survey

Drawn By: **BB** Checked By: **PE**

Project No.: **221124** Drawing No.: **Figure 3.3**

Scale: **1:731** Date: **20.02.2023**



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A potential nest was identified along a treeline located at the western boundary of the existing burial ground, to the north of the proposed development site(see Plate 3-2). The potential nest consisted of twigs and was located at the top of a mature ash (*Fraxinus* spp.) tree (see Plate 3-3).



Plate 3-2: Potential nest located within a treeline along the western boundary of the existing burial ground.



Plate 3-3: Potential nest within the treeline located along the western boundary of the existing burial ground composed mainly of twigs.

North of the proposed development site, in a section of the existing burial ground located at the northern site of the Drumcliffe road, an additional three potentially suitable nests were identified. The three nests were located along the northern boundary of the burial ground, in an area of dense scrub, with the potential nests located in semi-mature trees which were densely covered in ivy (Plate 3-4, Plate 3-5).



Plate 3-4: Burial ground located to the north of the proposed development site, facing southward to existing burial ground which is proposed to be expanded.

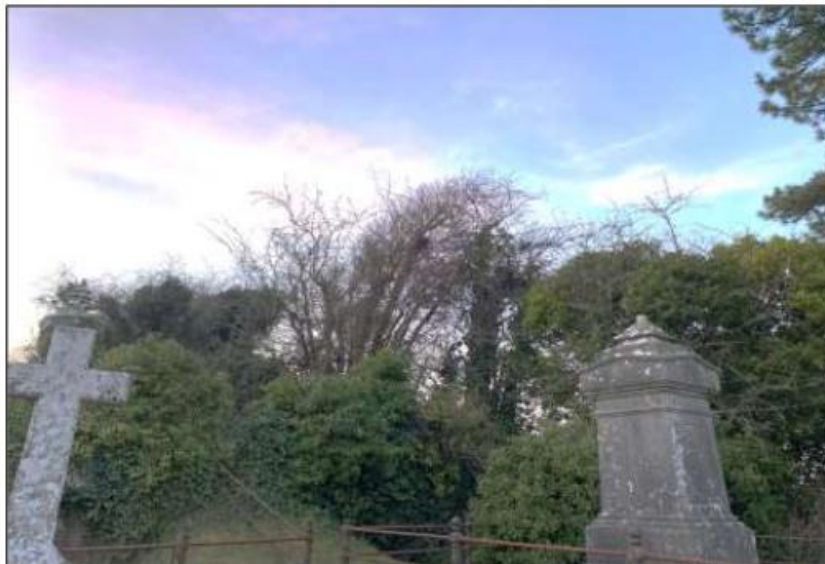


Plate 3-5: Scrub area located along northern boundary of the burial ground located north of the proposed development site in which three potential nests were found.



There were no owl pellets found at the base of any trees within the site and no screeching sounds were recorded during the survey, indicating the absence of the species from the site at the time of survey. No long-eared owls were identified using the thermal camera, which was used throughout the site with a specific focus on potential nest locations.

4. DISCUSSION AND RECOMMENDATIONS

There was no evidence of the presence of long-eared owl found during the field survey undertaken on the 13th of February 2023. While potential nests were found, there were no pellets found at the base of trees and no owls were recorded within or in proximity to the nests when observed using the thermal camera. No long-eared owls were heard during the dusk survey.

4.1 Potential Construction Phase Impacts

It is possible that this site may be used in the future by long-eared owls, as they have previously been recorded within the site (communication from Clare County Council), and the site offers potential nesting habitat and foraging grounds for the species. The locations of potential nests of long-eared owls were recorded during the survey, in both the northern and southern sections of the site (see Figure 3-1, Figure 3-2, and Figure 3-3). As there are no proposals for tree removal as part of the proposed development works no potential nesting habitat for this species will be lost. All works should nonetheless be carried out outside of the nesting season (1st March to 31st August), to avoid potential for disturbance of nesting long-eared owls, which are sensitive to disturbance during the breeding season.

Where it is not possible to entirely avoid the nesting season, pre-work commencement surveys for this species will be required in order to ascertain the presence of any active nests and to assess the need for additional mitigation.

It is not anticipated that the proposed extension to the cemetery would result in any significant loss of suitable foraging habitat for long-eared owls; the species is known to utilise cemeteries (see Riegert et al. 2009), and it is anticipated that the site post development would continue to support populations of small rodents which in turn provide prey for owls.

Where lighting is unavoidable during construction works, any such lighting should be designed to minimise light spillage, with light directed away from mature treelines within the site, in particular from the locations noted in the field survey as having potential nests located within them (see Figure 3-1, Figure 3-2, and Figure 3-3).

4.2 Potential Operational Phase Impacts

It is not anticipated that there would be any potential for significant impacts on long-eared owl as a result of the proposed extension to the existing cemetery. It is anticipated that the site post-development would continue to support populations of small rodents which in turn provide prey for owls, and roosting opportunities in trees within the site will be fully retained. No new artificial public lighting is proposed as part of the proposals, and therefore there is no potential for disturbance and fragmentation effects resulting from any increase in artificial lighting at night.

4.3 Potential For Habitat Enhancement

Given that long-eared owls have previously been recorded utilising the site, the opportunity for further enhancement of this site for this species is available. It is therefore recommended that 2 artificial nest baskets will be instated within the site as an enhancement for long-eared owls. The baskets should be installed on retained or transplanted trees within the site at a height of at least 4m and approximately 1m below the tree canopy where possible. MKO can provide further advice on appropriate siting of nest features where required.

5. CONCLUSION

Following the completion of an early season survey for long eared owls at the site, the survey that was carried out did not record any definitive evidence of the species utilising the site. However suitable habitat for the species was present and a number locations within the site were noted where existing nests could potentially be used by the species for breeding. No trees within the site are proposed for removal as part of the proposed development, and there is no potential for loss of nesting habitat. The proposed development is likely to continue to provide suitable habitat for the species, and provided that works are carried out outside of the nesting season to avoid any disturbance to the species, no potential for significant effects on long-eared owls has been identified. Provision of additional nesting habitat in the form of artificial nest features for the species has been recommended within the scheme as further enhancement.

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