Natura Impact Statement

Proposed Extension

Rockchapel Cemetery

Co. Cork

Report prepared for Cork County Council

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Contents

Appendices

List of Figures

List of Tables

1 Introduction

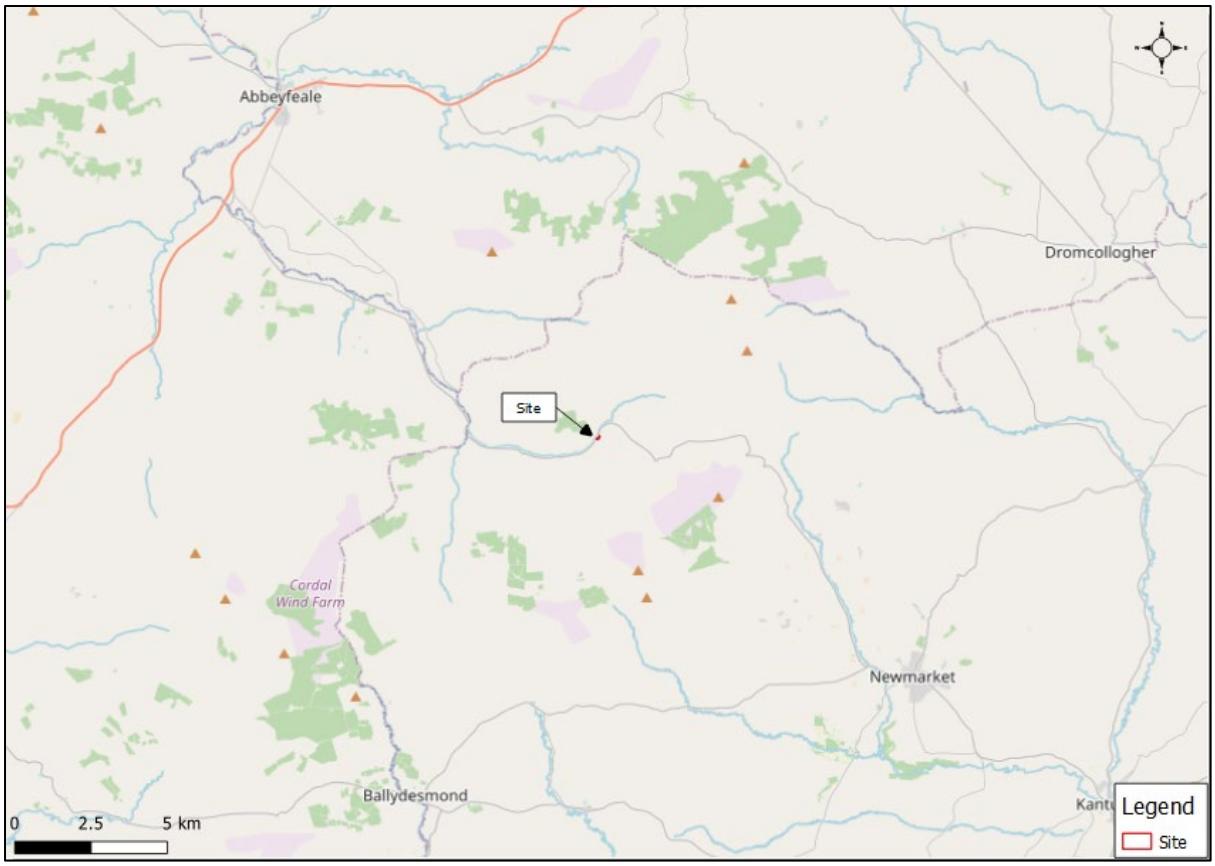
This Natura Impact Statement (NIS) provides information in support of the Appropriate Assessment (AA), prepared by Greenleaf Ecology on behalf of Cork County Council, in respect of the proposed Extension at Rockchapel Cemetery, Co. Cork. This report provides information and appraises the potential that the proposed cemetery extension, alone or in combination with other plans and projects, will have an adverse effect on the integrity of European sites in view of best scientific knowledge and the conservation objectives of the sites. European sites are those identified as sites of European Community importance designated as Special Areas of Conservation under the Habitats Directive (92/43/EEC) or as Special Protection Areas under the Birds Directive (79/409/ECC as codified by Directive 2009/147/EC).

The proposed cemetery extension is described in Section 1.2 of this report. The location of the proposed development is illustrated in Figure 1-1.

1.1 Statement of Competence

This NIS has been prepared by Karen Banks. Karen is an ecologist with 15 years' experience in the field of ecological assessment. She holds a BSc (Hons) in Environment and Development from Durham University, and is a full member of the Chartered Institute of Ecology and Environmental Management. Karen has extensive experience in ecological field survey and impact assessment. In her career as an ecologist Karen has undertaken Appropriate Assessments (AA) covering the transport, energy and land use sectors, with work including assessment of Plans at the national, regional and local level; and numerous AAs of projects.

Figure 1-1: Site location map



1.2 Project Description

The proposed site is located in the townland of Tooreennagrena, Rockchapel, Co. Cork.

The proposed development will comprise the following elements:

- The construction of an access road and various other infrastructure including hearse turning area and boundary treatments.
- The provision of 193 burial plots, meaning that the burial capacity of the proposed burial ground extension is 193 burials

1.2.1 Construction Methodology

This section describes the construction methodologies for each element of the proposed works.

1.2.1.1 Access Road

The internal access roads will be the main element of the site infrastructure. The road will provide access to, and define, the areas where the burial plots will be located. The access road will be installed using the following methodology:

- A 360-degree excavator will be used to excavate the areas to a competent subgrade as per the locations outlined in the Detailed Design Drawings which accompany this application.
- The area where any excavations are planned will be surveyed and all existing services will be identified. All relevant bodies i.e. ESB, Gas Networks Ireland, Eir, Cork County Council etc. will be contacted and all drawings for all existing services sought.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- The excavated material will be set aside for re-use as part of road edge re-instatement and ground preparation of the burial plot areas. Any surplus material will be removed to a licenced tip facility.
- The excavation will be infilled with 6F2 or Cl 804 stone material as appropriate.
- The road verge reinstatement and road side landscaping will be completed as the excavations are backfilled with the stone material.
- The internal access road will be finished with a layer of bituminous surface.
- The drainage infrastructure will be installed as part of the access road and is further summarised in Section 1.2.1.4 below.

1.2.1.2 Burial Plots

The layout of the burial plots will be managed by CCC as and when plots are made available. CCC will manage and coordinate the alignment and positioning of the burial plots as per the Detailed Design Drawings which accompany this application. The access roads serving each area of burial plot will provide access for plot excavation and burials. The initial construction works associated with burial plot will be restricted to ground preparation which will be completed as part of the access road construction. Plot excavation will only occur immediately prior to a burial. Maximum burial depths are expected to be 1.6mbgl. This will only allow single burials in each plot. This is in line with updated Cork County Council Burial Ground Bye-Laws.

Plots will be surfaced with grass with a narrow plinth for headstones at the head of each row of plots, and with access footpaths. This is in line with Cork County Council policy for burial grounds.

The site is an extension to the existing Rockchapel burial ground. Data from Cork County Council show that the burial rate at the existing Rockchapel site was 2 to 3 burials per annum.

It is expected that the burial rate will not exceed 5 burials per year.

1.2.1.3 Welfare Facilities

There are no welfare facilities being provided on site

1.2.1.4 Site Drainage

All surface water runoff from access road shall be collected by a new French drain running along the access road and a new soakaway. All proposed road gullies to be constructed will have silt traps.

1.3 Consultation

Correspondence and consultation undertaken in respect of this NIS is summarised below in Table 1-1.

Table 1-1: Consultation undertaken in respect of the proposed cemetery extension, Rockchapel, Co. Cork

Consultee	Method of Consultation	Summary of Consultation
Development Applications Unit	Email sent on 01/04/2021	No response received to date
Danny O'Keeffe **District Conservation Officer** **National Parks and Wildlife Service**	Email sent 11/06/2021	No response received to date

1.4 Study Area and Zone of Influence

The proposed development will comprise a cemetery extension within the townland of Tooreennagrena, Co. Cork.

Determination of this project's Zone of Influence (ZoI) was achieved by assessing all elements of the proposed project against the ecological receptors within the project footprint, in addition to all ecological receptors that could be connected to and subsequently impacted by the proposed project through impact pathways. To this end, the ZoI extends outside of the proposed cemetery extension footprint to include ecological receptors connected to the project through overlap / intersection, proximity and connectivity through features such as waterbodies.

1.5 Findings of Screening for Appropriate Assessment

A Screening for Appropriate Assessment (AA) report was completed for this project in 2021 (Appendix A). The assessment report found that the site is located c.7m to the east of the Lower River Shannon SAC at its closest point. There is potential hydrological connectivity between the proposed works and the Lower River Shannon SAC via overland flow to the River Feale, which forms part of this SAC, and there is potential for sediment/hydrocarbon transport to the Lower River Shannon SAC during construction. Applying the precautionary principle, it was concluded that the potential for significant adverse effects on aquatic QI species for Lower River Shannon SAC cannot be ruled out. The site is located c.40m from the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. There is potential for disturbance to breeding and foraging Hen Harrier, the SCI for this SPA. Given the potential for significant adverse effects on the Lower River Shannon SAC and the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA, the report concluded that the proposed Extension at Rockchapel Cemetery, Co. Cork could not be screened out for AA and that an NIS be completed to inform the AA.

1.6 NIS Objectives

This NIS considers impacts to the Lower River Shannon SAC and the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA, focusing on potential impacts such as the release of water borne pollutants to the Lower River Shannon SAC and potential disturbance impacts on Hen Harrier.

2 Methodology

2.1 Legislative Background for Appropriate Assessment

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as "The Habitats Directive", provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. As defined under the Habitats Directive (Article 3(1)) Natura 2000 is a European ecological network composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, shall enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range.

In Ireland, these sites are designated as European sites and include SPAs, established under the EU Birds Directive (79/409/EEC, as codified by 2009/147/EC) for birds and SACs, established under the Habitats Directive 92/43/EEC for habitats and species.

The Habitats Directive has been transposed into Irish law by Part XAB of the Planning and Development Act 2000 - 2020 and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011) as amended.

Articles 6(3) and 6(4) of the Habitats Directive sets out the decision-making tests for plans and projects likely to have a significant effect on or to adversely affect the integrity of European sites. Article 6(3) establishes the requirement for Appropriate Assessment (AA):

Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

Both EU and national guidance exists in relation to Member States fulfilling their requirements under the EU Habitats Directive, with particular reference to Article 6(3) and 6(4) of that Directive. The methodology followed in this report to inform the assessment has had regard to the following legislation and guidance listed in Section 2.2:

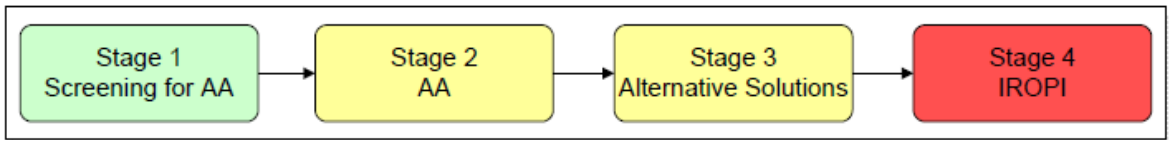
- Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (also known as the 'Habitats Directive');
- Council Directive 2009/147/EC on the conservation of wild birds, codified version, (also known as the 'Birds Directive');
- The European Communities (Birds and Natural Habitats) Regulations 2011 to 2015; and
- The Planning and Development Act 2000-2020.

2.2 Stages of Appropriate Assessment

Article 6(3) & (4) of the Habitats Directive defines a step-wise procedure where plans or projects are considered. The Department of the Environment, Heritage and Local Government guidelines (DoELHG, 2009, rev 2010) outlines the European Commission's methodological guidance (EC, 2002) promoting a four-stage process to complete the AA, and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

The four stages are summarised diagrammatically in Figure 2-1. Stages 1-2 deal with the main requirements for assessment under Article 6(3). Stage 3 may be part of the Article 6(3) Assessment or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

Figure 2-1: Four stages of appropriate assessment[1]



Stage 1 Appropriate Assessment

Stage 1 AA comprises the Screening process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3) as follows:

i. whether a plan or project (in this instance the proposed cemetery extension development) is directly connected to or necessary for the management of the European sites, and

ii. whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on the European sites in view of their conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA).

Stage 2: Appropriate Assessment

The aim of the stage 2 AA process is to identify any adverse impacts that the plan or project might have on the integrity of relevant European sites. As part of the assessment, a key consideration is 'in combination' effects with other plans or projects. Where adverse impacts are identified, mitigation measures can be proposed that would avoid, reduce or remedy any such negative impacts and the plan or project can be amended and / or conditions and restrictions imposed. If it is considered that mitigation measures will not be able to satisfactorily reduce potential adverse impact on a Natura 2000 site then an assessment of alternative solutions is considered in Stage 3. This is then followed by Stage 4 in the event that adverse impacts remain and the proposed activity or development is deemed to be of Imperative Reasons of Overriding Public Interest (IROPI), allowing an assessment of compensatory measures to be considered.

This NIS informs Stage 2 of the AA process and determines if the project is likely to affect the integrity (structure and function) of European sites. As the screening process identified that potential impacts to the Lower River Shannon SAC and the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA are unknown, uncertain or cannot be ruled out without further assessment, then an AA is required.

The NIS represents a detailed, targeted assessment of the nature and potential significance of direct and indirect impacts arising from the proposed project. An assessment of cumulative impacts (both from the project objectives, and other policies, plans and programmes) is also completed as part of the NIS. The NIS also incorporates best practice and mitigation measures to eliminate potential adverse impacts.

This NIS has been prepared having regard to the following guidance and legislation:

Guidance

- Department of the Environment, Heritage and Local Government (DoEHLG) (2009, rev 2010a), Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities.

[1] IROPI – Imperative Reasons for Overriding Public Interest

- Department of the Environment, Heritage and Local Government (DoEHLG, 2010b), Department of Environment Heritage and Local Government Circular NPWS 1/10 and PSSP 2/10 on Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities.
- EPA (2013) Integrated Biodiversity Impact Assessment – Streamlining AA, SEA and EIA Processes: Practitioners Manual. Environmental Protection Agency.
- European Commission (2018), Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2000a), Communication from the Commission on the Precautionary Principle, Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2002), Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2013), Interpretation Manual of European Union Habitats. Version EUR 28.
- European Commission (2006), Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities.

3 European Sites within Project Zone of Influence

The findings of the Screening for AA concluded that two European sites, namely the Lower River Shannon SAC and the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA, are located within the ZoI of the proposed cemetery extension.

Table 3-1 details these European sites and their proximity and connectivity to the proposed cemetery extension. Figure 3-1 illustrates the European sites within a 5km radius of the proposed site and Figure 3-2 provides a zoomed in map of European site boundaries in relation to the proposed site.

Table 3-1: Connectivity of European sites within the zone of influence of the proposed cemetery extension

European Site	Distance from Proposed Site (km)[2]	Connectivity
Lower River Shannon SAC (002165)	0.007km	Potential indirect connectivity via overland flow. Both the proposed site and this SAC are located within the Abbeyfeale GWB.
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site Code: 004161)	0.04	There is potential hydrological connectivity via overland flow to this SPA. Both the proposed site and this SPA are located within the Abbeyfeale GWB. This SPA is located to the west and south of the proposed site; the proposed site and this SPA are located in close proximity .

[2] Distance measured "as the crow flies"

Figure 3-1: European sites within the zone of influence of the proposed cemetery extension

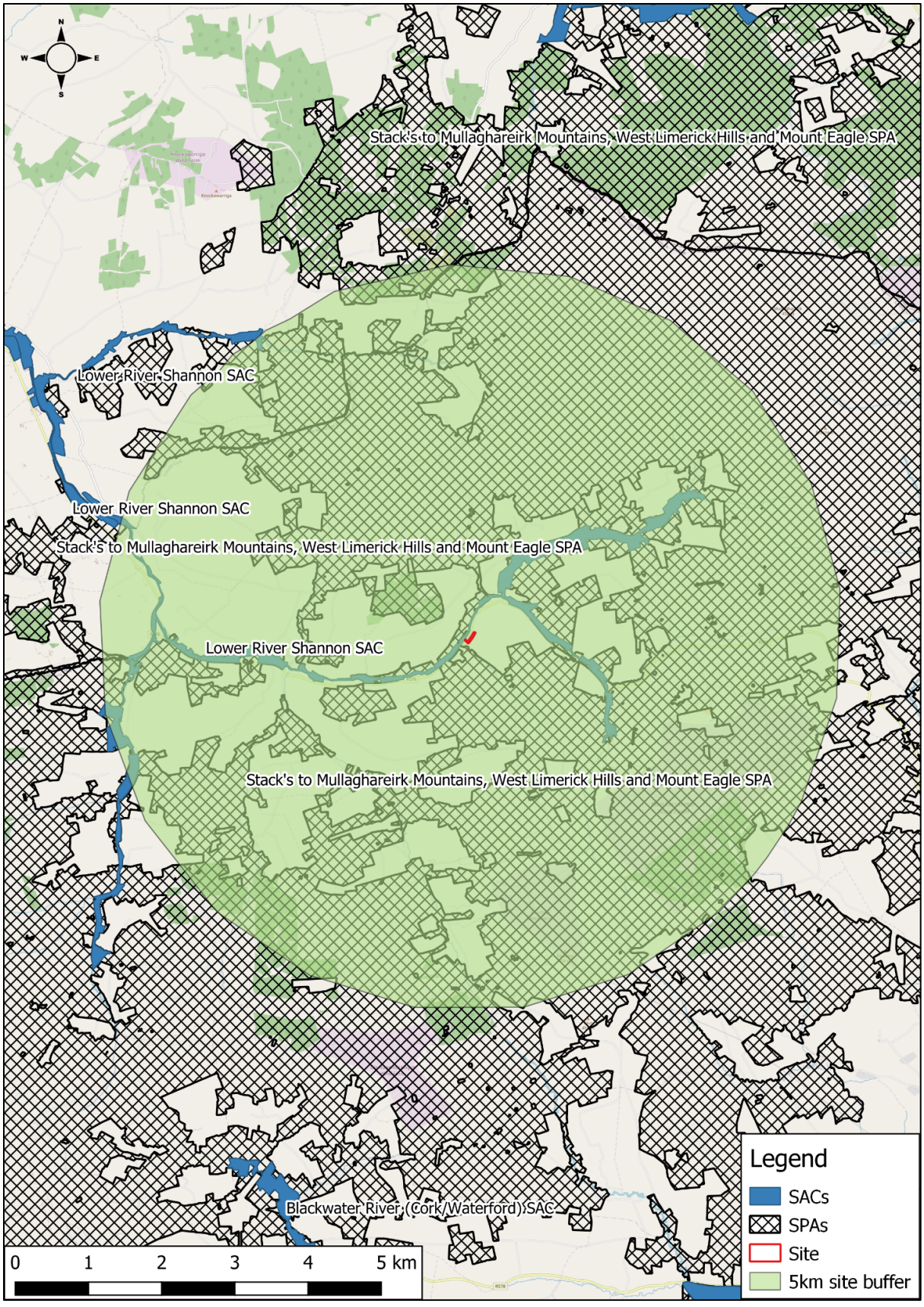


Figure 3-2: European site boundaries proximal to the proposed site, Rockchapel

3.1 Summary of European Sites Relevant to the Stage 2 Appropriate Assessment

3.1.1 Lower River Shannon SAC (Site Code: 002165)

As described in the Standard Data Form (NPWS, 2018), this site is a very large, long site approximately 14 km wide and 120 km long, encompassing: the drained river valley which forms the River Shannon estuary; the broader River Fergus estuary, plus a number of smaller estuaries e.g. Poulnasherry Bay; the freshwater lower reaches of the Shannon River, between Killaloe and Limerick, plus the freshwater stretches of much of the Feale and Mulkear catchments; a marine area at the mouth of the Shannon estuary with high rocky cliffs to the north and south; ericaceous heath on Kerry Head and Loop Head; and several lagoons. The underlying geology ranges from Carboniferous limestone (east of Foynes) to Namurian shales and flagstones (west of Foynes) to Old Red Sandstone (at Kerry Head). The salinity of the system varies daily with the ebb and flood of the tide and with annual rainfall fluctuations seasonally.

The site contains many Annexed habitats, including the most extensive area of estuarine habitat in Ireland. A good range of Annexed species are also present, including the only known resident population of *Tursiops truncatus* in Ireland, all three Irish species of lamprey, and a good population of *Salmo salar*. A number of birds listed on the EU Birds Directive either winter or breed in the site. The site is internationally important for waterfowl with more than 50,000 individuals occurring in winter. Several species listed in the Irish Red Data Book are present, perhaps most notably the only known Irish populations of *Scirpus triqueter*.

3.1.1.1 Qualifying Interests

The importance of a site designated under the Habitats Directive is defined by its qualifying features or interests. Qualifying interests for any European site are listed on a pro forma, called the Natura 2000 standard data form, which forms the basis of the rationale behind designation, and informs the Conservation Management Plan for targeted management and monitoring of key species and habitats.

Qualifying interests for the Lower River Shannon SAC are given in Table 3-2, along with the conservation status and specific sensitivities and main threats relevant to each feature. Information on the conservation status for each habitat within the SAC was extracted from the Natura 2000 Standard Data Form on the NPWS website http://www.npws.ie/protectedsites/. This information provides specific details on the conservation status of each habitat within the SAC. The environmental sensitivities have been derived from The Status of EU Protected Habitats and Species in Ireland[3] .

Table 3-2: Conservation Status and Main Threats to the Qualifying Interests of Lower River Shannon SAC

Annex I Habitat/Annex II Species	Conservation Status at Lower River Shannon SAC[4]	Environmental Sensitivity/Main Threats (Ranked High to Medium)
[1110] Sandbanks which are slightly covered by sea water all the time	B= Good conservation status.	No pressures or threats noted
[1130] Estuaries	B= Good conservation status.	F20 Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro-particular pollution (H) A28 Agricultural activities generation marine pollution (H) G16 Marine aquaculture generating marine pollution (H) I02 Other invasive alien species (other than species of Union concern) (H) XU Unknown pressure (M)
[1140] Mudflats and sandflats not covered by seawater at low tide	B= Good conservation status.	F20 Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro-particular pollution (H) A28 Agricultural activities generation marine pollution (H) G16 Marine aquaculture generating marine pollution (H)
[1150] *Coastal lagoons	B= Good conservation status.	J02 Mixed source marine water pollution (marine and coastal) (H)

[3] NPWS (2019a) The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitats Assessments. Unpublished Report, National Parks and Wildlife Service and NPWS (2019b) The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished Report, National Parks and Wildlife Service.

[4] Natura 2000 Standard Data Forms version date September 2018

		K04 Modification of hydrological flow (H) K02 Drainage (H) L01 Abiotic natural processes (e.g. Erosion, silting up, drying out, submersion, salinization (M) L03 Accumulation of organic material (M) C12 Extraction activities generating marine pollution (M) N04 Sea-level and wave exposure changes due to climate change (M)
[1160] Large shallow inlets and bays	A= Excellent conservation status.	F20 Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro-particular pollution (H) A28 Agricultural activities generating marine pollution (H) B23 Forestry activities generating pollution to surface or ground waters (M) G01 Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (H) G16 Marine aquaculture generating marine pollution (H) I02 Other invasive alien species (other than species of Union concern) (H) Xu Unknown pressure (M)
[1170] Reefs	A= Excellent conservation status.	G01 Marine fishing and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (H) G03 Marine fish and shellfish harvesting (professional, recreational) activities causing physical loss and disturbance of seafloor habitats (H)
[1220] Perennial vegetation of stony banks	A= Excellent conservation status.	F08 Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures) (H)

		C01 Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell) (M) E01 Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (M) F07 Sports, tourism and leisure activities (M) F09 Deposition and treatment of waste/garbage from household/recreational facilities (M) I02 Other invasive alien species (other than species of Union concern) (M)
[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts	A= Excellent conservation status.	C01 Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell) (M) E01 Roads, paths railroads and related infrastructure (e.g. bridges, viaducts, tunnels) (M) F07 Sports, tourism and leisure activities (M) F08 Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures) (M) I02 Other invasive alien species (other than species of Union concern) (M) N03 Increases or changes in precipitation due to climate change (M) N04 Sea-level and wave exposure changes due to climate change (M)
[1310] *Salicornia* and other annuals colonising mud and sand	C= Average or reduced conservation status.	I02 Other invasive alien species (other than species of Union concern) (M) A09 Intensive grazing or overgrazing by livestock (M)
[1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	B= Good conservation status.	A09 Intensive grazing or overgrazing by livestock (H) F07 Sports, tourism and leisure activities (H) A33 Modification of hydrological flow or physical alternation of water bodies for agriculture

		(excluding development and operation of dams) (M) A36 Agriculture activities not referred to above (M) F08 Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures) (M) I02 Other invasive alien species (other than species of Union concern) (M)
[1410] Mediterranean salt meadows (Juncetalia maritimi)	B= Good conservation status.	A09 Intensive grazing or overgrazing by livestock (H) A33 Modification of hydrological flow or physical alternation of water bodies for agriculture (excluding development and operation of dams) (M) A36 Agriculture activities not referred to above (M) A10 Extensive grazing or undergrazing by livestock (M)
[3260] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	B= Good conservation status.	A26 Agricultural activities generating diffuse pollution to surface or ground waters (H) A25 Agricultural activities generating point source pollution to surface or ground waters (H) K04 Modification of hydrological flow (H) K05 Physical alteration of water bodies (H) F12 Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (H) B23 Forestry activities generating pollution to surface or ground waters (M) F11 Pollution to surface or ground water due to urban run-offs (M) C05 Peat extraction (M) F13 Plants, contaminated or abandoned industrial sites generating pollution to surface or ground water (M)

		K01 Abstraction from groundwater, surface water or mixed water (M)
[6410] *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	B= Good conservation status.	A02 Conversion from one type of agricultural land use to another (H) A06 Abandonment of grassland management (e.g. cessation of grazing or of mowing) (H) A10 Extensive grazing or undergrazing by livestock (H) B01 Conversion to forest from other land uses, or afforestation (excluding drainage) (H) A14 Livestock farming (without grazing) (M) A31 Drainage for use as agricultural land (M)
[91E0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)	B= Good conservation status.	I02 Other invasive alien species (other than species of Union concern)(H) I04 Problematic native species (M) B09 Clear-cutting, removal of all trees (M) I05 Plant and animal diseases, pathogens and pests (M)
[1029] Freshwater Pearl Mussel *Margaritifera margaritifera*	B= Good conservation status.	A31 Drainage for use as agricultural land (H) B27 Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (H) F31 Other modification of hydrological conditions for residential or recreational development (H) A26 Agricultural activities generating diffuse pollution to surface or ground waters (H) B23 Forestry activities generating pollution to surface or ground waters (H) F12 Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M) C05 Peat extraction (M) F28 Modification of flooding regimes, flood protection for

		residential or recreational development (M) D02 Hydropower (dams, weirs, run-off-the-river), including infrastructure (M) F33 Abstraction of ground and surface waters (including marine) for public water supply and recreational use (M)
[1095] Sea Lamprey *Petromyzon marinus*	B= Good conservation status.	D02 Hydropower (dams, weirs, run-off-the-river), including infrastructure (H) N03 Increases or changes in precipitation due to climate change (H) A19 Application of natural fertilisers on agricultural land (M) A20 Application of synthetic (mineral) fertilisers on agricultural land (M) A31 Drainage for use as agricultural land (M) G01 Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations (M) Xo Threats and pressures from outside the Member State (M) N01 Temperature changes (e.g. rise of temperature & extremes) due to climate change (M) N02 Droughts and decreases in precipitation due to climate change (M)
[1096] Brook Lamprey *Lampetra planeri*	B= Good conservation status.	A19 Application of natural fertilisers on agricultural land (M) A20 Application of synthetic (mineral) fertilisers on agricultural land (M) A31 Drainage for use as agricultural land (M) B09 Clear-cutting, removal of all trees (M) D02 Hydropower (dams, weirs, run-off-the-river), including infrastructure (H) F11 Pollution to surface or ground water due to urban run-offs (M) F12 Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating

		pollution to surface or ground water (M) N01 Temperature changes (e.g. rise of temperature & extremes) due to climate change (M) N02 Droughts and decreases in precipitation due to climate change (M)
[1099] River Lamprey *Lampetra fluviatilis*	B= Good conservation status.	D02 Hydropower (dams, weirs, run-off-the-river), including infrastructure (H) N03 Increases or changes in precipitation due to climate change (H) A19 Application of natural fertilisers on agricultural land (M) A20 Application of synthetic (mineral) fertilisers on agricultural land (M) A31 Drainage for use as agricultural land (M) E03 Shipping lanes, ferry lanes and anchorage infrastructure (e.g. canalisation, dredging) (M) N01 Temperature changes (e.g. rise of temperature & extremes) due to climate change (M) N02 Droughts and decreases in precipitation due to climate change (M)
[1106] Atlantic Salmon *Salmo salar* (only in fresh water)	A= Excellent conservation status.	A26 Agricultural activities generating diffuse pollution to surface or ground waters (H) G19 Other impacts from marine aquaculture, including infrastructure (H) K05 Physical alteration of water bodies (H) N01 Temperature changes (e.g. rise of temperature & extremes) due to climate change(H) A25 Agricultural activities generating point source pollution to surface or ground waters (M) B23 Forestry activities generating pollution to surface or ground waters (M) F12 Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M)

		F28 Modification of flooding regimes, flood protection for residential or recreational development (M) G11 Illegal harvesting, collecting and taking (M) I02 Other invasive species (other than species of Union concern) (M) J01 Mixed source pollution to surface and ground waters (limnic and terrestrial) (H) J01 Mixed source pollution to surface and ground waters (limnic and terrestrial) (H) G20 Abstraction of water, flow diversion, dams and other modifications of hydrological conditions for freshwater aquaculture (M) L06 Interspecific relations (competition, predation, parasitism, pathogens) (M)
[1349] Bottlenose Dolphin *Tursiops truncatus*	B= Good conservation status.	C09 Geotechnical surveying (M) G01 Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)
[1355] Otter *Lutra lutra*	A= Excellent conservation status.	No pressures or threats noted

* denotes a priority habitat

3.1.1.2 Threats and Pressures to Lower River Shannon SAC

The Natura Standard Data Form for Lower River Shannon SAC identifies the most important threats and pressures (high and medium) on this site as detailed in Table 3-3.

Table 3-3: Negative Threats, Pressures and Activities with impacts to Lower River Shannon SAC

Threats and Pressures (Code)[5]	**Threat Type**	**Rank[6]**	**Inside(i) / Outside (o) / Both (b)**
F03.01	Hunting	L	i
B	Sylviculture, forestry	L	i
A08	Fertilisation	M	o
A04	Grazing	M	i
H04	Air pollution, air-borne pollutants	M	o
E01	Urbanised areas, human habitation	M	o

[5] Threat code sourced from Natura 2000 data form and follows reference list provided on threats, pressures and activities for European sites

[6] Threat, pressure and impact ranking provided on Natura 2000 data form: H – High, M – Medium, L - Low

G01.01	Nautical sports	L	i
E03	Discharges	M	i
J02.01.02	Reclamation of land from sea, estuary or marsh	M	o
C01.03.01	Hand cutting of peat	L	i
J02.10	Management of aquatic and bank vegetation for drainage purposes	L	i
I01	Invasive non-native species	L	i
J02.12.01	Sea defence or coast protection works, tidal barrages	L	i
A08	Fertilisation	M	i
K02.03	Eutrophication (natural)	M	o
F01	Marine or freshwater aquaculture	L	i
E03	Discharges	M	o
D01.01	Paths, tracks, cycling tracks	L	i
C01.01.02	Removal of beach materials	L	i
J02.01.01	Polderisation	M	i

3.1.2 Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site Code: 004161)

The Standard Data Form (NPWS, 2018) describes this site as a very large, upland site, centred on the borders between the counties of Cork, Kerry and Limerick. The peaks are not notably high or indeed pronounced, with a maximum of 451 m at Knockhefa. Many rivers rise within the site, notably the Blackwater, Feale, Clydagh, Oolagh, and Smerlagh. The site consists of a variety of upland habitats, though almost half (45%) is afforested. The coniferous forest includes first and second rotation plantations, with both pre-thicket stands present as well as clearfell areas. A substantial part (28%) of the site is unplanted blanket bog and heath, with both wet and dry heath present. The remainder of the site is largely rough grassland that is used for hill farming. Some areas of scrub and deciduous woodland occur, especially within the river valleys.

This SPA supports c. 21% of the all-Ireland population of *Circus cyaneus*, which is the largest concentration in the country for the species. Habitat excellent for both nesting and foraging purposes. *Asio flammeus*, a rare breeding bird in Ireland, has nested in the past and has been recorded intermittently in recent years. *Falco columbarius* has a presence though the size of the population is unknown. *Lagopus lagopus*, a Red Data Book species, occurs.

3.1.2.1 Special Conservation Interests for Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA

The Species of Conservation Interest for the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is Hen Harrier (*Circus cyaneus*) [A082]. The conservation status of this species is classified as 'A' (Excellent conservation status) on the NPWS Standard Data Form (2018) available on the NPWS website.[7]

[7] https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004161.pdf

3.1.2.2 Threats and Pressures to the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA

The Natura Standard Data Form for Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA identifies the most important threats and pressures (high and medium) on this SPA as detailed in Table 3-4.

Table 3-4: Negative threats, pressures and activities with impacts on Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA

Threats and Pressures (Code)	Threat Type	Rank	Inside (i) / Outside (o) / Both (b)
B	Sylviculture, forestry	H	i
C01.03	Peat extraction	M	i

3.2 Conservation Objectives of European Site

Article 6.3 of the Habitats Directive and Part XAB of the Planning and Development Act 2000- 2020 require that the impact of the project (either alone or in combination with other projects or plans) on the integrity of the European site is considered with respect to the conservation objectives of the site and to its structure and function. The European Commission guidance on Natura 2000 (MN2000) states that:-

"*The integrity of the site involves its constitutive characteristics and ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the habitats and species for which the site has been designated and the site's conservation objectives*" (MN2000, Section 4.6.4)."

The maintenance of favourable condition of qualifying interests at the site level will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. Favourable conservation status of habitats and species is described in the Guidance as follows:

- **Favourable conservation status** of a **habitat** can be described as being achieved when: "*its natural range, and the area it covers within that range, is stable or increasing, and the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable*".
- **Favourable conservation status** of a **species** can be described as being achieved when: "*population data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and there is, and will probably continue to be, sufficiently large habitat to maintain its populations on a long term basis*".

Site-specific conservation objectives aim to define favourable conservation conditions for the qualifying interests, i.e. Annex I habitat and Annex II species, as applicable. The conservation objectives are presented as a list of attributes against which targets have been set. All of the attributes in relation to each relevant feature have been considered in relation to the potential impacts associated with the proposed cemetery extension. Site specific conservation objectives (SSCOs) for the qualifying interests of Lower River Shannon SAC are detailed in Table 3-4 and Table 3-5 below.

Table 3-5: Site specific conservation objectives, attributes and targets for the QI habitats of the Lower River Shannon SAC (NPWS, 2012)

Conservation Objectives of Lower River Shannon SAC		
Sandbanks which are slightly covered by sea water all the time [1110]		
Attribute	**Measure**	**Target**
Habitat distribution	Occurrence	The distribution of sandbanks is stable, subject to natural processes.
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.
Community distribution	Hectares	Conserve the following communities in a natural condition: Subtidal sand to mixed sediment with *Nephtys* spp. community complex.
Estuaries [1130]		
Attribute	**Measure**	**Target**
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Estuarine subtidal muddy sand to mixed sediment with gammarids community complex; Subtidal sand to mixed sediment with *Nucula nucleus* community complex; Subtidal sand to mixed sediment with *Nephtys* spp. community complex; Fucoid-dominated intertidal reef community complex; Faunal turf-dominated subtidal reef community; and Anemone-dominated subtidal reef community.
Mudflats and sandflats not covered by seawater at low tide [1140]		
Attribute	**Measure**	**Target**
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sand with *Scolelepis squamata* and *Pontocrates* spp. community; and Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex.
***Coastal lagoons [1150]**		
Attribute	**Measure**	**Target**
Habitat area	Hectares	Area stable or increasing, subject to natural processes.
Habitat distribution	Occurrence	No decline, subject to natural processes.
Salinity regime	Practical salinity units (psu)	Median annual salinity and temporal variation within natural ranges
Hydrological regime	Metres	Annual water level fluctuations and minima within natural ranges
Barrier: connectivity between lagoon and sea	Permeability	Appropriate hydrological connections between lagoons and sea, including where necessary, appropriate management
Water quality: chlorophyll a	µg/L	Annual median chlorophyll a within natural ranges and less than 5µg/L

Water quality: molybdate reactive phosphorus (MRP)	mg/L	Annual median MRP within natural ranges and less than 0.1mg/L
Water quality: dissolved inorganic nitrogen (DIN)	mg/L	Annual median DIN within natural ranges and less than 0.15mg/L
Depth of macrophyte colonisation	Metres	Macrophyte colonisation to maximum depth of lagoons
Typical plant species	Number and M^2	Maintain number and extent of listed lagoonal specialists, subject to natural variation
Typical animal species	Number	Maintain listed lagoon specialists, subject to natural variation
Negative indicator species	Number and % cover	Negative indicator species absent or under control
Large shallow inlets and bays [1160]		
Attribute	**Measure**	**Target**
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sand with *Scolelepis squamata* and *Pontocrates* spp. community; Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Subtidal sand to mixed sediment with *Nucula nucleus* community complex; Subtidal sand to mixed sediment with *Nephtys* spp. community complex; Fucoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone dominated subtidal reef community; and *Laminaria* dominated community complex.
Reefs [1170]		
Attribute	**Measure**	**Target**
Distribution	Occurrence	The distribution of reefs remains stable, subject to natural processes.
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.
Community structure	Biological composition	Conserve the following reef community types in a natural condition: Fucoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone dominated subtidal reef community; and *Laminaria* dominated community complex.
Perennial vegetation of stony banks [1220]		
Attribute	**Measure**	**Target**
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.

Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation composition: typical species and subcommunities	Percentage cover at a representative sample of monitoring stops	Maintain the typical vegetated shingle flora including the range of subcommunities within the different zones
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover
Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]		
Attribute	**Measure**	**Target**
Habitat length	Kilometres	Area stable, subject to natural processes, including erosion.
Habitat distribution	Occurrence	No decline, subject to natural processes.
Physical structure: functionality and hydrological regime	Occurrence of artificial barriers	No alteration to natural functioning of geomorphological and hydrological processes due to artificial structures
Vegetation structure: zonation	Occurrence	Maintain range of sea cliff habitat zonations including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
Vegetation composition: typical species and subcommunities	Percentage cover at a representative sample of monitoring stops	Maintain range of subcommunities with typical species listed in the Irish Sea Cliff Survey (Barron et al., 2011)
Vegetation composition: negative indicator species	Percentage	Negative indicator species (including non-natives) to represent less than 5% cover
Vegetation composition: bracken and woody species	Percentage	Cover of bracken (*Pteridium aquilinum*) on grassland and/or heath less than 10%. Cover of woody species on grassland and/or heath less than 20%
***Salicornia* and other annuals colonizing mud and sand [1310]**		
Attribute	**Measure**	**Target**
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime

Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: height	Centimetres	Maintain structural variation within sward
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated
Vegetation composition: typical species and sub-communities	Percentage cover	Maintain the presence of species-poor communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species- *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]		
Attribute	**Measure**	**Target**
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% area outside creeks vegetated
Vegetation composition: typical species and subcommunities	Percentage cover at a representative sample of monitoring stops	Maintain range of subcommunities with typical species listed in SMP (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species – *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%
Mediterranean salt meadows (Juncetalia maritimi) [1410]		
Attribute	**Measure**	**Target**

Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.
Habitat distribution	Occurrence	No decline, subject to natural processes.
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimetres	Maintain structural variation in the sward
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated
Vegetation composition: typical species and subcommunities	Percentage cover at a representative sample of monitoring stops	Maintain range of subcommunities with characteristic species listed in SMP (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species – Spartina anglica	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]		
Attribute	**Measure**	**Target**
Habitat area	Kilometres	Area stable or increasing, subject to natural processes.
Habitat distribution	Occurrence	No decline, subject to natural processes.
Hydrological regime: river flow	Metres per second	Maintain appropriate hydrological regimes
Hydrological regime: tidal influence	Daily water level fluctuations - metres	Maintain natural tidal regime
Hydrological regime: freshwater seepages	Metres per second	Maintain appropriate freshwater seepage regimes
Substratum composition: particle size range	Millimetres	The substratum should be dominated by the particle size ranges, appropriate to the habitat sub-type (frequently sands, gravels and cobbles)
Water quality: nutrients	Milligrams per litre	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition
Vegetation composition: typical species	Occurrence	Typical species of the relevant habitat sub-type should be present and in good condition
Floodplain connectivity	Area	The area of active floodplain at and upstream of the habitat should be maintained
Riparian habitat	Area	The area of riparian woodland at and upstream of the bryophyte-rich sub-type should be maintained

***Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]**		
Attribute	**Measure**	**Target**
Habitat area	Hectares	Area stable or increasing, subject to natural processes.
Habitat distribution	Occurrence	No decline, subject to natural processes.
Vegetation structure: broadleaf herb: grass ratio	Percentage	Broadleaf herb component of vegetation between 40 and 90%
Vegetation structure: sward height	Percentage	30-70% of sward between 10 and 80cm high
Vegetation composition: typical species	Number	At least 7 positive indicator species present, including 1 "high quality" species
Vegetation composition: notable species	Number	No decline, subject to natural processes
Vegetation composition: negative indicator species	Percentage	Negative indicator species collectively not more than 20% cover, with cover by an individual species less than 10%. Non-native invasive species, absent or under control
Vegetation composition: negative indicator moss species	Percentage	Bog mosses (*Sphagnum* spp.) not more than 10% cover; hair mosses (*Polytrichum* spp.) not more than 25% cover
Vegetation structure: woody species and bracken (*Pteridium aquilinum*)	Percentage	Cover of woody species and bracken not more than 5% cover
Physical structure: bare ground	Percentage	Not more than 10% bare ground
***Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]**		
Attribute	**Measure**	**Target**
Habitat area	Hectares	Area stable or increasing, subject to natural processes
Habitat distribution	Occurrence	No decline
Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size
Woodland structure: cover and height	Percentage and metres	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and well-developed herb layer
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types
Woodland structure: natural regeneration	Seedling: sapling: pole ratio	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy
Hydrological regime: flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation
Woodland structure: dead wood	m^3 per hectare; number per hectare	At least 30m^3/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include

		stems greater than 40cm diameter (greater than 20cm diameter in the case of alder)
Woodland structure: veteran trees	Number per hectare	No decline
Woodland structure: indicators of local distinctiveness	Occurrence	No decline
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover not less than 95%
Vegetation composition: typical species	Occurrence	A variety of typical native species present, depending on woodland type, including alder (*Alnus glutinosa*), willows (*Salix* spp) and, locally, oak (*Quercus robur*) and ash (*Fraxinus excelsior*)
Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control

Table 3-6: Site specific conservation objectives, attributes and targets for the QI species of the Lower River Shannon SAC (NPWS, 2012)

Freshwater Pearl Mussel *Margaritifera margaritifera* [1029]			
Attribute	**Measure**	**Target**	**Notes**
Distribution	Kilometres	Maintain at 7km.	This conservation objective applies to the freshwater pearl mussel population in the Cloon River, Co. Clare only.
Population size	Number of adult mussels	Restore to 10,000 adult mussels	
Population structure: recruitment	Percentage per size class	Restore to least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length	
Population structure: adult mortality	Percentage	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution	
Habitat extent	Kilometres	Restore suitable habitat in more than 3.3km (see map 15) and any additional stretches necessary for salmonid spawning	
Water quality: macroinvertebrate and phytobenthos (diatoms)	Ecological quality ratio (EQR)	Restore water quality macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93	
Substratum quality: filamentous algae (macroalgae), macrophytes	Percentage	Restore substratum quality filamentous algae: absent or trace (<5%); macrophytes: absent or trace (<5%)	

(rooted higher plants)			
Substratum quality: sediment	Occurrence	Restore substratum quality stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment	
Substratum quality: oxygen availability	Redox potential	Restore to no more than 20% decline from water column to 5cm depth in substrate	
Hydrological regime: flow variability	Metres per second	Restore appropriate hydrological regimes	
Host fish	Number	Maintain sufficient juvenile salmonids to host glochidial larvae	
Sea Lamprey *Petromyzon marinus* [1095]			
Attribute	**Measure**	**Target**	**Notes**
Distribution: extent of anadromy	% of river accessible	Greater than 75% of main stem length of rivers accessible from estuary	Artificial barriers can block or cause difficulties to lampreys' upstream migration, thereby limiting the species to lower stretches and restricting access to spawning areas.
Population structure of juveniles	Number of age/size groups	At least three age/size groups present	
Juvenile density in fine sediment	Juveniles/m²	Juvenile density at least 1/m²	Juveniles burrow in areas of fine sediment in still water.
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds	Lampreys spawn in clean gravels.
Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	Despite observed spawning activity, sampling for ammocoetes consistently fails to find these in many sampling stations and never in any great numbers
Brook Lamprey *Lampetra planeri* [1096]			
Attribute	**Measure**	**Target**	**Notes**
Distribution	% of river accessible	Access to all water courses down to first order streams	Artificial barriers can block or cause difficulties to brook lampreys' migration, both up- and downstream, thereby possibly limiting the species to specific stretches and creating genetically isolated populations (Espanhol et al., 2007)
Population structure of juveniles	Number of age/size groups	At least three age/size groups of brook/river lamprey present	It is impossible to distinguish between brook and river lamprey juveniles in the field (Gardiner,

			2003), hence they are considered together in this target
Juvenile density in fine sediment	Juveniles/m²	Mean catchment juvenile density of brook/river lamprey at least 2/m²	Juveniles burrow in areas of fine sediment in still water
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds	Spawning site and redd attributes established by IFI (Rooney et al., in press)
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	Many sites with suitable larval attributes i.e. fine sediment in low velocity habitat, are found not to contain larval lamprey. This may be a function of chance or probability, or may be a consequence of insufficient recruitment to fill all spatial niches. Occupancy in excess of 50% of sites would be 'reasonable' for the Irish catchments examined to date (King et al., unpublished data)
River Lamprey Lampetra fluviatilis [1099]			
Attribute	**Measure**	**Target**	**Notes**
Distribution	% of river accessible	Access to all water courses down to first order streams	Artificial barriers can block or cause difficulties to river lampreys' migration, both up- and downstream, thereby possibly limiting the species to specific stretches and creating genetically isolated populations (Espanhol et al., 2007)
Population structure of juveniles	Number of age/size groups	At least three age/size groups of brook/river lamprey present	It is impossible to distinguish between brook and river lamprey juveniles in the field (Gardiner, 2003), hence they are considered together in this target
Juvenile density in fine sediment	Juveniles/m²	Mean catchment juvenile density of brook/river lamprey at least 2/m²	Juveniles burrow in areas of fine sediment in still water.
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds	
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	Many sites with suitable larval attributes i.e. fine sediment in low velocity habitat, are found not to contain larval lamprey. This may be a function of chance or probability, or may be a consequence of insufficient recruitment to fill all spatial niches. Occupancy in excess of 50% of sites would be 'reasonable' for the Irish catchments examined to date (King et al., unpublished data)

Atlantic Salmon *Salmo salar* (only in fresh water) [1106]			
Attribute	**Measure**	**Target**	**Notes**
Distribution: extent of anadromy	% of river accessible	100% of river channels down to second order accessible from estuary	Artificial barriers block salmons' upstream migration, thereby limiting the species to lower stretches and restricting access to spawning areas. The large hyrdo-electric station at Ardnacrusha and the Parteen regulating weir present considerable obstructions to upstream passage of salmon on the Shannon main channel. While both have fish passes installed, upstream migration of salmon is still problematical. Further weirs upstream on the Shannon also restrict access to spawning habitat. No such obstacles, causing significant fish passage issues for salmon are present on the Feale and Mulkear rivers
Adult spawning fish	Number	Conservation Limit (CL) for each system consistently exceeded	A conservation limit is defined by the North Atlantic Salmon Conservation Organisation (NASCO) as "the spawning stock level that produces long-term average maximum sustainable yield as derived from the adult to adult stock and recruitment relationship". The salmon stocks in the Shannon above the impoundments are significantly below their Conservation Limits. Salmon stocks in the Feale and Mulkear rivers are above CL
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling	Target is threshold value for rivers currently exceeding their conservation limit (CL). The abundance of salmon fry at monitored sites on the Shannon main channel, above the hydro-electric station, is significantly below this target
Out-migrating smolt abundance	Number	No significant decline	Smolt abundance can be negatively affected by a number of impacts such as estuarine pollution, predation and sea lice (*Lepeophtheirus salmonis*). On the Shannon main channel, salmon smolt abundance may be significantly affected by mortality passing through hydroelectric turbines

Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes	Salmon spawn in clean gravels. Artificial barriers are currently preventing salmon from accessing suitable spawning habitat on the Shannon main channel
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA	Q values based on triennial water quality surveys carried out by the Environmental Protection Agency (EPA)
Bottlenose Dolphin *Tursiops truncatus* [1349]			
Attribute	**Measure**	**Target**	**Notes**
Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	None
Habitat use: critical areas	Location and hectares	Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition.	
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site	
Otter *Lutra lutra* [1355]			
Attribute	**Measure**	**Target**	**Notes**
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique.
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 596.8ha above high water mark (HWM); 958.9ha along river banks/ around ponds	No field survey. Areas mapped to include 10m terrestrial buffer along shoreline (above HWM and along river banks) identified as critical for otters (NPWS, 2007)
Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 4,461.6ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (HWM) (NPWS, 2007; Kruuk, 2006)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 500.1km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake/lagoon) habitat	Hectares	No significant decline. Area mapped and calculated as 125.6ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk, 2006; Kruuk and Moorhouse, 1991)

Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006) and wrasse and rockling in coastal waters (Kingston et al., 1999)
Barriers to connectivity	Number	No significant increase. For guidance, see map 10	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed

3.2.1 Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA

Site specific conservation objectives have not been set for the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. The overarching Conservation Objective for the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is:

"*To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: Hen Harrier (Circus cyaneus)* [A082]".

4 Existing Environment

An ecological walkover survey of the proposed site was carried out by ecologist Ms Karen Banks, MCIEEM, on 17th March 2021.

The survey assessed the potential for Qualifying Interests (QIs) and species of Special Conservation Interest (SCIs) of European sites within the ZoI of the proposed development.

4.1 Terrestrial Habitats

The proposed site comprises hardstanding (BL3) to the south of the existing cemetery; damp improved agricultural grassland (GA1) to the south east (Plate 1, Figure 4-1); and species poor wet grassland (GS4) to the east (Plate 2, Figure 4-1). The sward in the wet grassland does not appear to have been re-seeded in recent years and is dominated by Soft Rush (*Juncus effusus*), with Yorkshire Fog (*Holcus lanatus*), Bent grasses (*Agrostis* spp.), Common Sorrel (*Rumex acetosa*), Creeping Buttercup (*Ranunculus repens*) and Cuckooflower (*Cardamine pratensis*). No evidence of invasive plant species was recorded at the proposed site.

There are no watercourses or drainage ditches within the proposed site. The River Feale (FW2) is located c.40m to the west of the site at its closest point. Conifer plantation (WD4) is located to the west of the existing cemetery and the R576 road (Plate 3, Figure 4-1).

No Annex I habitat was recorded at the proposed site.

Figure 4-1: Photographs of habitats present at the proposed site, Rockchapel

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>1. Improved grassland at the proposed site</td><td>2. Wet grassland to the east of the existing cemetery</td></tr>
<tr><td>  </td><td></td></tr>
<tr><td>3. The existing graveyard and conifer plantation to the west of the site</td><td></td></tr>
</table>

4.2 Species

Fauna were surveyed through observation of field signs such as direct observation, tracks, feeding signs and droppings. Habitats were assessed for their potential for use, or confirmed use, by protected species of fauna during the site walkover undertaken on 17th March 2021.

Fauna were surveyed through observation of field signs such as direct observation, tracks, feeding signs and droppings. Habitats were assessed for their potential for use, or confirmed use, by protected species of fauna during the site walkover undertaken in March 2021. The results of the site walkovers then informed the scope of further taxon specific surveys, which included badger survey, otter survey and a preliminary bat roost survey. No evidence of badger was recorded at the proposed site and the habitats at the proposed site and its immediate environs are of negligible suitability for roosting bats. No evidence of otter activity (spraints, holts, couches, lay-ups) was recorded at the River Feale adjacent to the site. However, it is likely that otter forage and commute along the River Feale.

No Annex II species or Annex I bird species were recorded at the proposed site.

4.2.1 Surface Water

4.2.1.1 Water Bodies

The proposed site is located within the Feale_020 River Sub-basin (EPA code IE_SH_23F010040). The River Feale is located c.40m to the west of the site. In the vicinity of the site, the River Feale is a 3rd order watercourse which flows in a south westerly direction before ultimately discharging into the Mouth of the Shannon coastal waterbody to the west of Listowel.

The proposed project overlies the Abbeyfeale (GWB) (EPA code IE_SH_G_001). The main rock unit groups within the GWB are Namurian Undifferentiated, Namurian Sandstones and Namurian Shales. There are small areas of Westphalian Shales and Dinantian Pure Unbedded Limestones. These rocks are devoid of intergranular permeability; groundwater flow occurs in fractures and faults. Generally, groundwater levels are 0-6 m below ground level, and follow the topography.[8]

4.2.1.2 Surface Water Quality and Risk Characterisation

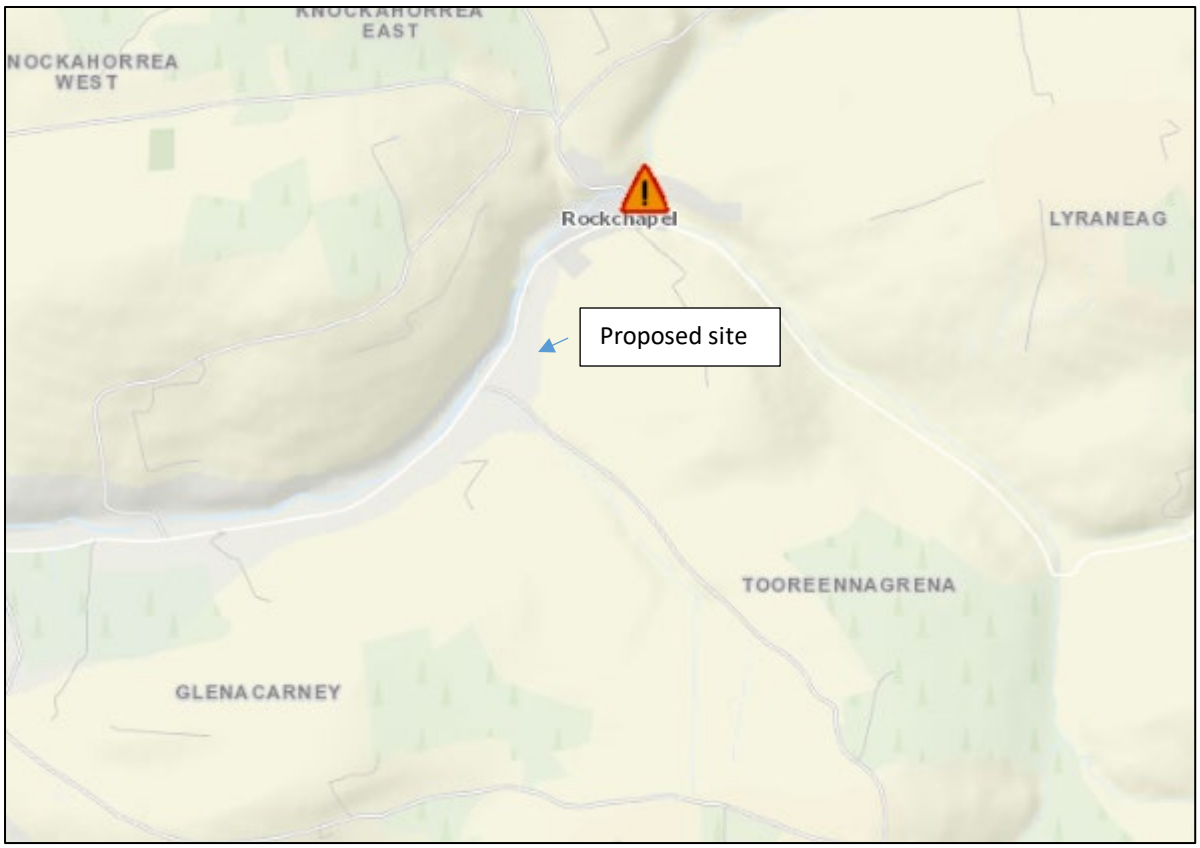
Macroinvertebrate sampling for Q-value determination was conducted within the River Feale as part of EPA's Water Framework Directive monitoring. The nearest sampling point is located at the Bridge at Rockchapel, within the River Feale c.0.6km to the north-east of the proposed site (straight line distance). In 2020, the Q value score was Q 4-5 (High macroinvertebrate quality) at this monitoring station. The watercourses within the Feale_20 Sub-basin are classified as 'Not at risk' under the WFD and 'Good' status under the WFD 2013-2018 round. The Abbeyfeale GWB is classified as being of 'Not at risk' and 'Good' status under the WFD.

4.2.2 Flooding

The Office of Public Works (OPW) flood mapping (http://www.floodinfo.ie/map/floodmaps/) indicates the flood extents for the Feale River. An historical flood event has been recorded at Rockchapel, c.0.5km to the north-east of the site. As indicated in Figure 4-2**,** no flood events have been recorded at the proposed site and its immediate environs.

[8] https://secure.dccae.gov.ie/GSI_DOWNLOAD/Groundwater/Reports/GWB/AbbeyfealeGWB.pdf

Figure 4-2: OPW flood risk mapping of the proposed site and surrounding area



4.2.3 Soil, Geology and Hydrogeology

The Geological Survey of Ireland (GSI) online database (www.gsi.ie) was consulted for available edaphic, geological and hydrological information of the site and its environs. The site is overlaid by AminPD, mineral, poorly drained (Mainly acidic) soils. In terms of bedrock geology, the Glenoween Shale Formation, composed of grey, silty mudstone underlies the site.

The bedrock units which underlie the site are mapped by the GSI as part of the same Locally Important Aquifer. Groundwater vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease at which groundwater may be contaminated. The study area is of 'High' to 'Extreme' groundwater vulnerability. There are no karst features located in the vicinity of the proposed works.

5 Impact Assessment

Impacts can be direct and indirect and the impacts that could potentially occur through the construction and operation of the proposed cemetery extension are as follows:

- Changes in key indicators of conservation value such as decrease in water quality within the Lower River Shannon SAC.
- Disturbance to key species within the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA.

The assessment of impacts identifies the potential construction and operational phase impacts on the Lower River Shannon SAC and Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA in the absence of mitigation.

5.1 Direct Impacts

The proposed site is located c.7m to the east of the Lower River Shannon SAC at its closest point. There are no resource requirements (e.g. excavation or abstraction) from European sites for the proposed development. Consequently, none of the lands designated as part of European sites will be directly impacted or removed as a result of the proposed development. Therefore, there will be no direct impacts to European sites in this regard.

5.2 Indirect Impacts

5.2.1 Lower River Shannon SAC

In the vicinity of the proposed site, the River Feale potentially supports the following aquatic species, which are all QI species of the Lower River Shannon SAC:

1. *Petromyzon marinus* (Sea Lamprey) [1095]
2. *Lampetra planeri* (Brook Lamprey) [1096]
3. *Lampetra fluviatilis* (River Lamprey) [1099]
4. *Salmo salar* (Salmon) [1106]

Potential impacts of the proposed works would mainly be in relation to the effects on instream communities of waterborne sediment loss during the construction phase. Sediment loss could arise from soil excavation activity in relation to: removal of topsoil, construction of roadway and footpaths, construction of the boundary wall and construction of drainage. There is potential, to a lesser extent, for sediment release associated with machinery traversing lands for the duration of the construction period.

Excessive sediment loss to the River Feale (if this was to occur) could give rise to increased suspended solids and bottom sedimentation in the watercourse, downslope of the proposed cemetery extension. This can negatively affect aquatic habitat quality through smothering of macroinvertebrate habitats and fish nursery areas when deposited. Elevated concentration of suspended solids within the water column are negative to water quality, potentially damaging the gills of salmonid fish and/or benthic macroinvertebrates. Lamprey nursery areas are less likely to be adversely affected by small amounts of instream sedimentation, since juveniles (ammocoetes) inhabit areas of silt deposition during their nursery stage. However, lampreys depend on clean gravels for spawning, similar to salmonids.

There is also potential for the loss of hydrocarbons (diesel, oils and hydraulic fluid) and/or wet concrete during the construction phase. Hydrocarbon spills from poorly secured or non-bunded fuel storage areas, leaks from vehicles or plant or spills during re-fuelling can all give rise to the escape of hydrocarbons from construction sites to water courses. These spills, if they occurred, can give rise to tainting of fish downstream or, if large enough, fish and invertebrate kills. Concrete spills, or release of concrete wash-out or wheel-wash water to nearby watercourses is potentially toxic to instream fauna, and can cause fish and invertebrate kills downstream, if in high concentration. However, it is

noted that the likelihood of either hydrocarbon or concrete loss occurring from a well-equipped and well-maintained construction site is very low.

There are no watercourses or active drainage ditches within the proposed site. However, the site drains from east to west towards the River Feale, as such, there is potential for export of sediment and potentially damaging waterborne pollutants (e.g., sediment, wet cement, hydrocarbons) during the construction phase as a result of overland flow. The existing vegetation present between the River Feale and the R576, comprising spruce and bramble scrub opposite the existing cemetery and rush pasture opposite the proposed site entrance to the cemetery extension, would allow for settlement of solids before reaching the River Feale. However, applying the precautionary principle, there is potential for the export of deleterious substances to the River Feale via spillage of sediment laden run-off to drainage ditches located to the west of the site, and in turn the River Feale, should heavy rain occur during earth excavation, soil spreading and construction of the new site entrance.

It is likely that otter (*Lutra lutra*) utilise the River Feale in the vicinity of the site for foraging and commuting. There is potential for the proposed works to result in temporary disturbance impacts on otter during the construction phase. In the event of a severe spill of deleterious substances into the River Feale, there is potential for a temporary reduction in available prey species for otter.

Operational Phase

The Lower River Shannon SAC is located to the west of the proposed site (Figure 3-1). During the operational phase, the grave spaces in the cemetery extension will be located to the east of the existing cemetery, c.50m from the Lower River Shannon boundary and c.70m from the River Feale. In view of the location of the cemetery extension to the east of the existing cemetery, there is no potential pathway for run-off of deleterious substances to the River Feale via overland flow during the operational phase. As detailed in Section 1.2, surface water runoff from the access road shall be collected by a new French drain running along the access road and a new soakaway. All proposed road gullies to be constructed will have silt traps. The capacity of the proposed graveyard extension is 193 burial plots. It is expected that the burial rate will not exceed 5 burials per year. Welfare facilities will not be provided as part of the proposals. In view of the nature, size and location of the proposed works c.70m to the east of the River Feale, no significant effects on the groundwater quality flowing towards the River Feale and Lower River Shannon SAC are expected during the operational phase. No significant adverse effects on the water quality within Lower River Shannon SAC are expected during the operational phase.

5.2.2 Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA

Construction Phase

The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is located c.40m to the south of the proposed site at its closest point. The SCI for this SPA is hen harrier (*Circus cyaneus*) [A082]. There is potential for noise during excavation and construction to result in disturbance or displacement impacts on hen harrier.

The preferred breeding habitat of hen harriers in Ireland is pre-thicket forest habitats and the preferred foraging ground is moorland/ grassland habitat mosaics, which support large numbers of

prey species (e.g. meadow pipit). In Ireland, hen harrier also forage in afforested habitats.[9] Areas supporting a higher proportion of improved grassland are generally avoided.[10]

The proposed development would result in the change of habitat type over the footprint of the cemetery extension from improved agricultural grassland and species poor wet grassland to buildings and artificial surfaces (BL3). This alteration in habitat will not have an adverse effect on hen harrier due to the small scale of the proposed development and the low suitability of the agriculturally improved grassland and species poor wet grassland at the site to support breeding or foraging habitat for hen harrier. It is further noted that the proposed site lacks significant hedgerows, which would reduce cover for prey items such as small mammals and birds (e.g. meadow pipit and skylark), which are major prey items for hen harrier. In view of the factors described above, it is considered that the proposed site is not suitable for breeding hen harrier and is of limited value for foraging.

As noted in Table 3-4, the greatest threats to the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA are considered to be sylviculture and peat extraction. Conifer plantation is located adjacent to the R576 to the west of the proposed site (Figure 4-1). At the time of survey, this area of forestry comprised mature Spruce and, as such, is not suitable for nesting hen harrier. Mature forestry is not the favoured habitat for foraging hen harrier, however the potential for this species to forage occasionally in the wider environs of the site cannot be discounted.

In view of the small scale of the proposed works, the unsuitability of the footprint of the proposed site as breeding or foraging habitat for hen harrier, and the lack of suitable breeding habitat and the less favourable foraging resources available for hen harrier in the wider environs of the site, it is considered that the proposed development will not have an adverse effect the conservation condition of hen harrier, the SCI species for the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA during the construction phase.

Operational Phase

There is potential for an increase in human presence to result in disturbance impacts on breeding and foraging hen harrier. However, as noted above, the habitats at the proposed site are not suitable to support breeding or foraging hen harrier and the wider environs do not support suitable breeding habitat or favoured foraging habitat for this species. Further, it is expected that the burial rate will not exceed 5 burials per year In view of these factors, it is considered that the proposed development will not have an adverse effect the conservation condition of hen harrier, the SCI species for the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA during the operational phase.

5.3 Assessments of Habitats and Species of Conservation Interest

The Conservation Objectives for the Lower River Shannon SAC are presented in Section 3.2**.** This section assesses the likelihood of the proposed cemetery extension impacting the conservation objectives and QIs assigned for the Lower River Shannon SAC.

5.3.1 Attributes for the Lower River Shannon SAC

The Lower River Shannon SAC is designated for 14 no. Annex I habitats and 7 no. Annex II species. Site specific attributes and proposed targets to maintain favourable conservation condition for these habitats and species, in addition to potential impacts are described in in Table 5-1 below.

[9] Ruddock, M. & Dunlop, B.J., O'Toole, L., Mee, A., Nagle, T. (2012) Republic of Ireland National Hen Harrier Survey 2010. Irish Wildlife Manual, No. 59. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

[10] Wilson, M.W. et al., 2009. The importance of pre-thicket conifer plantations for nesting Hen Harriers *Circus cyaneus* in Ireland. Ibis, 151(2), pp.332–343.

Table 5-1: Site-specific Conservation Objectives, Attributes, Targets and Potential Impacts for the Lower River Shannon SAC

Conservation Objectives of Lower River Shannon SAC			
Sandbanks which are slightly covered by sea water all the time [1110]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat distribution	Occurrence	The distribution of sandbanks is stable, subject to natural processes.	None: this habitat is located c.49km north-west of the proposed site (straight line distance), there is no potential for adverse effects, or changes to the conservation status of this habitat.
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	
Community distribution	Hectares	Conserve the following communities in a natural condition: Subtidal sand to mixed sediment with *Nephtys* spp. community complex.	
Estuaries [1130]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	None: this habitat is located c.39km north-west of the proposed site (straight line distance), there is no potential for adverse effects, or changes to the conservation status of this habitat.
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Estuarine subtidal muddy sand to mixed sediment with gammarids community complex; Subtidal sand to mixed sediment with *Nucula nucleus* community complex; Subtidal sand to mixed sediment with *Nephtys* spp. community complex; Fucoid-dominated intertidal reef community complex; Faunal turf-dominated subtidal reef community; and Anemone-dominated subtidal reef community.	
Mudflats and sandflats not covered by seawater at low tide [1140]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	None: this habitat is located c.39km north-west of the proposed site (straight line distance), there is no potential for adverse effects, or changes to the conservation status of this habitat.
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sand with *Scolelepis squamata* and *Pontocrates* spp. community; and Intertidal sand to mixed	

		sediment with polychaetes, molluscs and crustaceans community complex.	
***Coastal lagoons [1150]**			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat area	Hectares	Area stable or increasing, subject to natural processes.	None: the attributes of this Annex I habitat will not be impacted by the proposed cemetery extension due to the significant distance (c.51km at closest point) and remote and tenuous connectivity between the project and the location of coastal lagoons within Lower River Shannon SAC.
Habitat distribution	Occurrence	No decline, subject to natural processes.	
Salinity regime	Practical salinity units (psu)	Median annual salinity and temporal variation within natural ranges	
Hydrological regime	Metres	Annual water level fluctuations and minima within natural ranges	
Barrier: connectivity between lagoon and sea	Permeability	Appropriate hydrological connections between lagoons and sea, including where necessary, appropriate management	
Water quality: chlorophyll a	µg/L	Annual median chlorophyll a within natural ranges and less than 5µg/L	
Water quality: molybdate reactive phosphorus (MRP)	mg/L	Annual median MRP within natural ranges and less than 0.1mg/L	
Water quality: dissolved inorganic nitrogen (DIN)	mg/L	Annual median DIN within natural ranges and less than 0.15mg/L	
Depth of macrophyte colonisation	Metres	Macrophyte colonisation to maximum depth of lagoons	
Typical plant species	Number and M^2	Maintain number and extent of listed lagoonal specialists, subject to natural variation	
Typical animal species	Number	Maintain listed lagoon specialists, subject to natural variation	
Negative indicator species	Number and % cover	Negative indicator species absent or under control	
Large shallow inlets and bays [1160]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	None: this habitat is located c.43km north-west of the proposed site (straight line distance), there is no potential for adverse effects, or changes to the conservation status of this habitat.
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sand with *Scolelepis squamata* and *Pontocrates* spp. community; Intertidal sand to mixed sediment with polychaetes,	

		molluscs and crustaceans community complex; Subtidal sand to mixed sediment with *Nucula nucleus* community complex; Subtidal sand to mixed sediment with *Nephtys* spp. community complex; Fucoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone dominated subtidal reef community; and *Laminaria* dominated community complex.	
Reefs [1170]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Distribution	Occurrence	The distribution of reefs remains stable, subject to natural processes.	None: this habitat is located c.43km north-west of the proposed site (straight line distance), there is no potential for adverse effects, or changes to the conservation status of this habitat.
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	
Community structure	Biological composition	Conserve the following reef community types in a natural condition: Fucoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone dominated subtidal reef community; and *Laminaria* dominated community complex.	
Perennial vegetation of stony banks [1220]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	None: this habitat is located c. 43km north-west of the proposed site (straight line distance) and connectivity is remote and tenuous. The attributes of this Annex I habitat will not be impacted by the proposed cemetery extension.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.	
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural	

		processes including erosion and succession	
Vegetation composition: typical species and subcommunities	Percentage cover at a representative sample of monitoring stops	Maintain the typical vegetated shingle flora including the range of subcommunities within the different zones	
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	
Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat length	Kilometres	Area stable, subject to natural processes, including erosion.	None: this habitat is located c.43km north-west of the proposed site (straight line distance) and connectivity is remote and tenuous. The attributes of this Annex I habitat will not be impacted by the proposed cemetery extension.
Habitat distribution	Occurrence	No decline, subject to natural processes.	
Physical structure: functionality and hydrological regime	Occurrence of artificial barriers	No alteration to natural functioning of geomorphological and hydrological processes due to artificial structures	
Vegetation structure: zonation	Occurrence	Maintain range of sea cliff habitat zonations including transitional zones, subject to natural processes including erosion and succession	
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	
Vegetation composition: typical species and subcommunities	Percentage cover at a representative sample of monitoring stops	Maintain range of subcommunities with typical species listed in the Irish Sea Cliff Survey (Barron et al., 2011)	
Vegetation composition: negative indicator species	Percentage	Negative indicator species (including non-natives) to represent less than 5% cover	
Vegetation composition: bracken and woody species	Percentage	Cover of bracken (*Pteridium aquilinum*) on grassland and/or heath less than 10%. Cover of woody species on grassland and/or heath less than 20%	
***Salicornia* and other annuals colonizing mud and sand [1310]**			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	None: this coastal habitat is located c.51km to the north-west of the proposed site, there is no potential for

Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.	adverse effects, or changes to the conservation status of this habitat.
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	
Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession	
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	
Vegetation structure: height	Centimetres	Maintain structural variation within sward	
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated	
Vegetation composition: typical species and sub-communities	Percentage cover	Maintain the presence of species-poor communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)	
Vegetation structure: negative indicator species- *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	None: this habitat is located c.43km to the north-west of the proposed cemetery extension, there is no potential for adverse effects, or changes to the conservation status of this habitat.
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.	
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural	

		processes, including erosion and succession	
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% area outside creeks vegetated	
Vegetation composition: typical species and subcommunities	Percentage cover at a representative sample of monitoring stops	Maintain range of subcommunities with typical species listed in SMP (McCorry and Ryle, 2009)	
Vegetation structure: negative indicator species – *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	
Mediterranean salt meadows (Juncetalia maritimi) [1410]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	None: this habitat is located c.38km to the north-west of the proposed site (straight line distance), there is no potential for adverse effects, or changes to the conservation status of this habitat.
Habitat distribution	Occurrence	No decline, subject to natural processes.	
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	
Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitats including transitional zones, subject to natural processes including erosion and succession	
Vegetation structure: vegetation height	Centimetres	Maintain structural variation in the sward	
Vegetation structure: vegetation cover	Percentage cover at a representative	Maintain more than 90% of area outside creeks vegetated	

	sample of monitoring stops		
Vegetation composition: typical species and subcommunities	Percentage cover at a representative sample of monitoring stops	Maintain range of subcommunities with characteristic species listed in SMP (McCorry and Ryle, 2009)	
Vegetation structure: negative indicator species – Spartina anglica	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat area	Kilometres	Area stable or increasing, subject to natural processes.	None: this habitat was not recorded in the River Feale during the site survey. The proposed works will not affect habitat area.
Habitat distribution	Occurrence	No decline, subject to natural processes.	None: this habitat was not recorded in the River Feale during the site survey. The proposed works will not affect habitat distribution.
Hydrological regime: river flow	Metres per second	Maintain appropriate hydrological regimes	None: the proposed works will not affect the hydrological regime.
Hydrological regime: tidal influence	Daily water level fluctuations - metres	Maintain natural tidal regime	None: the proposed works will not affect the hydrological regime.
Hydrological regime: freshwater seepages	Metres per second	Maintain appropriate freshwater seepage regimes	None: the proposed works will not affect the hydrological regime.
Substratum composition: particle size range	Millimetres	The substratum should be dominated by the particle size ranges, appropriate to the habitat sub-type (frequently sands, gravels and cobbles)	Yes: this habitat was not recorded in the River Feale during the site survey. However, it is not known whether this habitat is present downstream of the site. Applying the precautionary principle, the potential for proposed works to affect the substratum cannot be discounted.
Water quality: nutrients	Milligrams per litre	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition	Yes: while the works will not result on the release of nutrients to the River Feale, should there be an increase in silt levels there is potential for an associated rise in the level of nutrients.

Vegetation composition: typical species	Occurrence	Typical species of the relevant habitat sub-type should be present and in good condition	Yes: while the works will not result on the release of nutrients to the River Feale, should there be an increase in silt levels there is potential for an associated rise in the level of nutrients.
Floodplain connectivity	Area	The area of active floodplain at and upstream of the habitat should be maintained	Yes: there is potential for a rise in silt and nutrient levels to alter the species composition of this habitat downstream of the site.
Riparian habitat	Area	The area of riparian woodland at and upstream of the bryophyte-rich sub-type should be maintained	None: the proposed works will not affect the area of riparian habitat.
***Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]**			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat area	Hectares	Area stable or increasing, subject to natural processes.	None: the location of this habitat within the SAC has not been mapped. However, the habitats at the proposed site comprise agriculturally improved grassland bound by an earth bank; there are no Molinia meadows present within the ZoI of the proposed works.
Habitat distribution	Occurrence	No decline, subject to natural processes.	
Vegetation structure: broadleaf herb: grass ratio	Percentage	Broadleaf herb component of vegetation between 40 and 90%	
Vegetation structure: sward height	Percentage	30-70% of sward between 10 and 80cm high	
Vegetation composition: typical species	Number	At least 7 positive indicator species present, including 1 "high quality" species	
Vegetation composition: notable species	Number	No decline, subject to natural processes	
Vegetation composition: negative indicator species	Percentage	Negative indicator species collectively not more than 20% cover, with cover by an individual species less than 10%. Non-native invasive species, absent or under control	
Vegetation composition: negative indicator moss species	Percentage	Bog mosses (*Sphagnum* spp.) not more than 10% cover; hair mosses (*Polytrichum* spp.) not more than 25% cover	
Vegetation structure: woody species and bracken (*Pteridium aquilinum*)	Percentage	Cover of woody species and bracken not more than 5% cover	
Physical structure: bare ground	Percentage	Not more than 10% bare ground	

***Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]**			
Attribute	**Measure**	**Target**	**Potential Impacts**
Habitat area	Hectares	Area stable or increasing, subject to natural processes	None: there is no connectivity between the proposed site and this habitat.
Habitat distribution	Occurrence	No decline	
Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	
Woodland structure: cover and height	Percentage and metres	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and well-developed herb layer	
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types	
Woodland structure: natural regeneration	Seedling: sapling: pole ratio	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	
Hydrological regime: flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	
Woodland structure: dead wood	m^3 per hectare; number per hectare	At least $30m^3$/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder)	
Woodland structure: veteran trees	Number per hectare	No decline	
Woodland structure: indicators of local distinctiveness	Occurrence	No decline	
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover not less than 95%	
Vegetation composition: typical species	Occurrence	A variety of typical native species present, depending on woodland type, including alder (*Alnus glutinosa*), willows (*Salix* spp) and, locally, oak (*Quercus robur*) and ash (*Fraxinus excelsior*)	

Vegetation composition: negative indicator species	Occurrence	Negative indicator species, particularly non-native invasive species, absent or under control	
Freshwater Pearl Mussel *Margaritifera margaritifera* [1029]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Distribution	Kilometres	Maintain at 7km.	None: This conservation objective applies to the freshwater pearl mussel population in the Cloon River, Co. Clare only. There is no connectivity between the proposed works and the freshwater pearl mussel population of the Cloon River.
Population size	Number of adult mussels	Restore to 10,000 adult mussels	
Population structure: recruitment	Percentage per size class	Restore to least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length	
Population structure: adult mortality	Percentage	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution	
Habitat extent	Kilometres	Restore suitable habitat in more than 3.3km (see map 15) and any additional stretches necessary for salmonid spawning	
Water quality: macroinvertebrate and phytobenthos (diatoms)	Ecological quality ratio (EQR)	Restore water quality macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93	
Substratum quality: filamentous algae (macroalgae), macrophytes (rooted higher plants)	Percentage	Restore substratum quality filamentous algae: absent or trace (<5%); macrophytes: absent or trace (<5%)	
Substratum quality: sediment	Occurrence	Restore substratum quality stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment	
Substratum quality: oxygen availability	Redox potential	Restore to no more than 20% decline from water column to 5cm depth in substrate	
Hydrological regime: flow variability	Metres per second	Restore appropriate hydrological regimes	
Host fish	Number	Maintain sufficient juvenile salmonids to host glochidial larvae	
Sea Lamprey *Petromyzon marinus* [1095]			
Attribute	**Measure**	**Target**	**Potential Impacts**

Distribution: extent of anadromy	% of river accessible	Greater than 75% of main stem length of rivers accessible from estuary	None: the proposed works will not affect the accessibility of the river to sea lamprey.
Population structure of juveniles	Number of age/size groups	At least three age/size groups present	None: no alteration in the population structure of juveniles will arise from the proposals.
Juvenile density in fine sediment	Juveniles/m²	Juvenile density at least 1/m²	There is potential for adverse impacts on juvenile lamprey as a result of excessive sedimentation or the mobilisation of contaminants.
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds	There is potential for adverse impacts on lamprey spawning habitat as a result of excessive sedimentation or the mobilisation of contaminants.
Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	There is potential for adverse impacts on lamprey juvenile habitat as a result of excessive sedimentation or the mobilisation of contaminants.
Brook Lamprey *Lampetra planeri* [1096]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Distribution	% of river accessible	Access to all water courses down to first order streams	None: the proposed works will not affect the accessibility of the river to sea lamprey.
Population structure of juveniles	Number of age/size groups	At least three age/size groups of brook/river lamprey present	None: no alteration in the population structure of juveniles will arise from the proposals.
Juvenile density in fine sediment	Juveniles/m²	Mean catchment juvenile density of brook/river lamprey at least 2/m²	There is potential for adverse impacts on juvenile lamprey as a result of excessive sedimentation or the mobilisation of contaminants.
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds	There is potential for adverse impacts on lamprey spawning habitat as a result of excessive sedimentation or the mobilisation of contaminants.
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	There is potential for adverse impacts on lamprey juvenile habitat as a result of excessive sedimentation or the mobilisation of contaminants.
River Lamprey Lampetra fluviatilis [1099]			
Attribute	**Measure**	**Target**	**Potential Impacts**

Distribution	% of river accessible	Access to all water courses down to first order streams	None: the proposed works will not affect the accessibility of the river to sea lamprey.
Population structure of juveniles	Number of age/size groups	At least three age/size groups of brook/river lamprey present	None: no alteration in the population structure of juveniles will arise from the proposals.
Juvenile density in fine sediment	Juveniles/m²	Mean catchment juvenile density of brook/river lamprey at least 2/m²	There is potential for adverse impacts on juvenile lamprey as a result of excessive sedimentation or the mobilisation of contaminants.
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds	There is potential for adverse impacts on lamprey spawning habitat as a result of excessive sedimentation or the mobilisation of contaminants.
Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	There is potential for adverse impacts on lamprey juvenile habitat as a result of excessive sedimentation or the mobilisation of contaminants.
Atlantic Salmon *Salmo salar* (only in fresh water) [1106]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Distribution: extent of anadromy	% of river accessible	100% of river channels down to second order accessible from estuary	None: the proposed works will not result in a change in the accessibility of rivers.
Adult spawning fish	Number	Conservation Limit (CL) for each system consistently exceeded	Yes: there is potential for impacts on the number of spawning fish in the River Feale as a result of excessive sedimentation or the mobilisation of contaminants.
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling	Yes: there is potential for adverse impacts on salmon fry as a result of excessive sedimentation or the mobilisation of contaminants.
Out-migrating smolt abundance	Number	No significant decline	None: the proposed works would not be expected to have an adverse impact on out-migrating smolt
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes	Yes: there is potential for impacts on the number and distribution of redds in the River Feale as a result of excessive sedimentation
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA	Yes: there is potential for a reduction in Q value in the River Feale as a result of

			mobilisation of contaminants and excessive sedimentation.
Bottlenose Dolphin *Tursiops truncatus* [1349]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	None: the proposed works will not introduce barriers to this species and will not affect the habitat use of this coastal species. The proposed works will not result in disturbance impacts to this species.
Habitat use: critical areas	Location and hectares	Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition.	
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site	
Otter *Lutra lutra* [1355]			
Attribute	**Measure**	**Target**	**Potential Impacts**
Distribution	Percentage positive survey sites	No significant decline	None: no field signs were observed at the time of the site visit, however suitable habitat is present along the River Feale west of proposed site (outside the site boundary). Further, there is a record of otter from Feale Bridge in Rockchapel, c.0.8km north-east of the site. As otter are present within the local area, they are likely to be present within the River Feale adjacent to the proposed site. A reduction in water quality may result in a reduction in prey species available for otter that forage along the River Feale. However, any reduction in water quality is likely to be temporary and localised. The high mobility and large foraging ranges of otter means that they are likely to be able to accommodate such localised changes in prey distribution and abundance. There is potential for temporary visual and noise disturbance to otters foraging in the River Feale in the vicinity of the site during construction. However, otters are generally nocturnal, with a peak of activity occurring
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 596.8ha above high water mark (HWM); 958.9ha along river banks/ around ponds	
Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 4,461.6ha	
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 500.1km	
Extent of freshwater (lake/lagoon) habitat	Hectares	No significant decline. Area mapped and calculated as 125.6ha	
Couching sites and holts	Number	No significant decline	
Fish biomass available	Kilograms	No significant decline	
Barriers to connectivity	Number	No significant increase. For guidance, see map 10	

			around dawn and dusk, therefore the main activity period for otter is outside standard construction working hours. In view of the these factors, and in consideration of the relatively small size and scale of the proposed works in relation to the abundance of available habitat for otter within the River Feale, visual and noise disturbance impacts would not be expected to have a significant adverse effect on this species.

5.3.2 Attributes for SCI of the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA

The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA supports one SCI species; i.e. hen harrier (*Circus cyaneus*) [A082]. Specific conservation objectives have not been provided for the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. The overarching Conservation Objective for the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is:

"*To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: Hen Harrier (Circus cyaneus) [A082]"*.

As described in Section 5.2.2, it is considered that the proposed development will not have significant adverse effects on the conservation condition of hen harrier, the SCI species for the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA during the construction or operational phase due to the small scale of the proposed works and the unsuitability of the proposed site and its immediate environs as breeding habitat for this species. Further, the footprint of the proposed site is unsuitable for foraging hen harrier and the immediate environs of the site do not support favoured foraging habitat for this species.

5.4 Cumulative/ In-Combination Effects

It is a requirement of Appropriate Assessment that the cumulative or in-combination effects of the proposed development together with other Plans or projects are assessed. Cumulative impacts can result from the successive, incremental, and/or combined effects of a development (plan, project or activity) when added to other existing, planned, and/or reasonably anticipated developments.

A search of the Cork County Council planning enquiry system[11] and the EIA Portal[12] was conducted for developments that may have in-combination effects on European sites with the proposed cemetery extension. The search included developments that are proximal to the proposed site and those that may have an adverse cumulative or in-combination impact with the proposals on the water quality of the Lower River Shannon SAC.

Plans relevant to the area were searched in order to identify any elements of the Plans that may act cumulatively or in-combination with the proposed development.

[11] https://www.kerrycoco.ie/planning/online-planning-enquiry/

[12] https://www.housing.gov.ie/planning/environmental-assessment/environmental-impact-assessment-eia/eia-portal

A list of those projects and Plans which may potentially contribute to cumulative or in-combination impacts with the proposed cemetery extension was generated for as listed in Table 5-2 below.

Table 5-2: List of potential projects and Plans which may contribute to cumulative impacts

Plan / Programme/Policy	Key Objectives/Policies/Proposals	Potential for In-combination Effects and Mitigation
Cork County Development Plan 2014-2020	The policies and objectives of this plan are intended to contribute to the delivery of a number of key aims for the county as a whole. They are as follows: ▪ Enhanced quality of life for all ▪ Sustainable patterns of growth in urban and ▪ rural areas ▪ Sustainable and balanced economic investment ▪ An effective physical and community ▪ Infrastructure ▪ A quality built environment ▪ A network of enhanced natural resources ▪ Responsible guardianship of the County	Policies and objectives of the Cork County Development Plan 2014 – 2020 ensure that local planning applications comply with proper planning and sustainability and with the requirements of relevant EU Directives and environmental considerations, there is no potential for adverse in-combination effects on European Sites.
River Basin Management Plan 2018-2021	The project should comply with the environmental objectives of the Irish RBMP which are to be achieved generally by 2021. ▪ Ensure full compliance with relevant EU legislation ▪ Prevent deterioration ▪ Meeting the objectives for designated protected areas ▪ Protect high status waters ▪ Implement targeted actions and pilot schemes in focus sub-catchments aimed at: targeting water bodies close to meeting their objective and addressing more complex issues which will build knowledge for the third cycle.	The implementation and compliance with key environmental policies, issues and objectives of this management plan will result in positive in-combination effects to European sites. The implementation of this plan will have a positive impact for the biodiversity. It will not contribute to in-combination or cumulative impacts with the proposed development.
Inland Fisheries Ireland Corporate Plan 2016 -2020 **The Inland Fisheries Act 2010.**	To ensure that Ireland's fish populations are managed and protected to ensure their conservation status remains favourable. That they provide a basis for a sustainable world class recreational angling product, and that pristine aquatic habitats are also enjoyed for other recreational uses. ▪ To develop and improve fish habitats and ensure that the conditions required for fish populations to thrive are sustained and protected. ▪ To grow the number of anglers and ensure the needs of IFI's other key stakeholders are being met in a sustainable conservation focused manner.	The implementation and compliance with key environmental issues and objectives of this corporate plan will result in positive on-combination effects to European sites. The implementation of this corporate plan will have a positive impact for biodiversity of inland fisheries and ecosystems. It will not contribute to in-combination or cumulative impacts with the proposed works.

	▪ EU (Quality of Salmonid Waters) Regulations 1988. All works during development and operation of the project must aim to conserve fish and other species of fauna and flora habitat; biodiversity of inland fisheries and ecosystems and protect spawning salmon and trout.	
WWTP discharges	Newmarket.	Discharges from municipal WWTPs are required to meet water quality standards. Irish Water Capital Investment Plan 2014-2016 and 2017 – 2021 proposes to upgrade water treatment services countrywide. The long-term cumulative impact is predicted to be negligible.
IPPC Programme	Newmarket Co-Operative Creameries Ltd. (P0793), c14.9km to the south-east of the proposed site as the crow flies.	Discharges from these facilities are governed by strict limits to ensure compliance with quality standards. The long-term cumulative impact is predicted to be negligible.
Residential Applications Under consideration[13]	Various local planning applications[14] in proximity and within the Zone of Influence of the proposed residential development. These include small scale domestic dwelling extension and community facility developments.	Adherence to the overarching policies and objectives of the Cork County Development Plan 2015 - 2020 ensure that local planning applications and subsequent grant of planning comply with the core strategy of proper planning and sustainability and with the requirements of relevant EU Directives and environmental considerations, there is no potential for significant adverse in combination effects on European Sites.

5.5 Conclusion of Impact Assessment

The proposed site is located c.7m to the east of the Lower River Shannon SAC at its closest point. The existing vegetation to the west of the site, between the R576 and the River Feale, would allow for settlement of solids in run-off from the proposed site during the construction phase. However, applying the precautionary principle, there is potential for the export of deleterious substances to the River Feale via spillage of sediment laden run-off to drainage ditches located to the west of the site, and in turn the River Feale, should heavy rain occur during earth excavation, soil spreading and construction of the new site entrance and roadway. There may be temporarily elevated

[13] The Local Planning Applications included in this potential in-combination impacts assessment support the following criteria: planning applications granted within the past five years that may contribute to potential cumulative impacts on European sites of concern.

[14] http://maps.corkcoco.ie/planningenquiryv3/LAResources/info.aspx, accessed 18/06/2021

concentrations of suspended solids during the construction phase arising if heavy rain occurred during earth excavation in the construction phase, but the effect would be limited to a temporary disturbance on salmon or lampreys in the River Feale adjacent to the site.

The proposed site is located c.40m from the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. The proposed development will not have significant adverse effects on the conservation condition of hen harrier, the SCI for the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA during the construction or operational phase due to the small scale of the proposed works and the unsuitability of the proposed site and its immediate environs as breeding habitat for this species. Further, the footprint of the proposed site is unsuitable for foraging hen harrier and the wider environs of the site do not support favoured foraging habitat for this species.

Rockchapel and its environs support a low number of small scale local developments that have been granted planning permission. These developments have been granted planning permission on the basis that, where relevant, targeted and site specific mitigation is completed to minimise potential impacts to the Lower River Shannon SAC. Assuming that best practice construction methods and mitigation measures are effectively implemented for all other developments, then no significant negative cumulative and in-combination impacts on the water quality of the Lower River Shannon SAC with the proposed cemetery extension are expected.

No potential adverse impacts on the water quality of the Lower River Shannon SAC have been identified during the operational phase of the development.

All possible sources of effects from the proposed development, in combination with all other sources in the existing environment and any other effects likely to arise from other proposed plans or projects have been identified.

Robust and effective mitigation measures to avoid and or ameliorate these impacts are provided in Section 6.

6 Mitigation

As stated in MN2000:

"*Mitigation measures may be proposed by the plan or project proponent and/or required by the competent national authorities in order to avoid the potential impacts identified in the appropriate assessment or reduce them to a level where they will no longer adversely affect the site's integrity*" (Section 4.6.6).

Potential impacts identified in the above chapters primarily relate to the deterioration in the water quality of the River Feale, which forms part of the Lower River Shannon SAC, during the construction phase of the proposed cemetery extension. Mitigation measures to avoid or reduce the potential impacts on the Lower River Shannon SAC are provided in the following sections.

6.1 Construction Phase

6.1.1 General

The control measures for the proposed development will follow the following current best practice guidelines:

- H. Masters-Williams et al (2001) Control of water pollution from construction sites. Guidance for consultants and contractors (C532). CIRIA;
- IFI (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters. Inland Fisheries Ireland, Dublin;
- Murnane *et al* (2002) Control of Water Pollution from Construction Sites- Guide to Good Practice. SP156; and
- Murphy, D. (2004) Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites. Eastern Regional Fisheries Board, Dublin.

6.1.1.1 Construction Phase Mitigation

The following measures shall be adhered to during the construction phase to mitigate against potential risks to the water quality of the receiving environment:

- Any surface vegetation removed during site clearance shall be retained in an area over 20m away from any watercourse (i.e. the River Feale).
- No earthworks will be undertaken in prolonged heavy weather conditions.
- Prior to undertaking any excavation works it is proposed to erect sediment control to the west of the site adjacent to the R576 to intercept any silt laden runoff that may arise during heavy rainfall. In view of the current habitats present at this location (i.e. existing site entrance, hardstanding and pavement adjacent to the R576 road), sandbags would be an appropriate method of sediment control.
- A careful site drainage audit shall be carried out to identify any shallow drains / depressions and preferential flow paths from the works area towards the River Feale or the local road at the west of the site. Depressions/ preferential flow paths shall be fitted with e.g., cut-off drains/structures, geo-textile and stake and/or staked down strawbale silt traps that will intercept and slow water velocity, encourage dispersal of flows and settlement of silt prior to meeting the sandbags at the western boundary of the site.
- Any sediment/silt-traps, and check dams necessary to control run-off will be regularly checked, maintained, cleaned and/or replaced, if necessary, during the construction phase.
- To minimise any impact on surface or ground waterbodies from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas. Oil and fuel storage tanks will be stored in designated areas, and these areas will be bunded to a volume of 110% of the capacity of the largest tank/ container within the bunded area(s)

(plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) will be diverted for collection and safe disposal.

- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area (or where possible off the site) which will be a minimum of 20m away from watercourses. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment.
- All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to surface water and the underlying subsoil. The pouring of concrete will take place within a designated area using a geo-synthetic material to prevent concrete runoff into surface water and the soil/ groundwater media. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility off site.

6.1.1.2 Likely Success of Mitigation

The mitigation provided in Section 6.1.1.1 is based on best practice measures provided in current best practice pollution prevention guidelines. With the effective implementation of these measures, there is a high level of confidence in their likely success.

6.1.2 Operational Phase

No significant adverse effects have been identified during the operational phase, therefore no specific mitigation measures are required.

7 Analysis and Conclusions

7.1 Integrity of the European Site

From "*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*" (EC, 2018), the meaning of integrity is described as follows;

'*The integrity of the site involves its constitutive characteristics and ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the habitats and species for which the site has been designated and the site's conservation objectives*.' (MN2000, Section 4.6.4)'.

7.2 Integrity of Lower River Shannon SAC

Site Specific Conservation Objectives were published for Lower River Shannon SAC in August 2012. The overarching conservation objective for the European site is as follows:

Objective: "*To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected* "(see Section 3).

Potential exists for impacts to the QIs of Lower River Shannon SAC during the construction phase of the proposed cemetery extension; however these can be readily mitigated through the implementation of mitigation as outlined in Section 6.

From the information gathered and the predictions made about the changes that are likely to result from the construction and operation stages of the project and the mitigation measures proposed to avoid impacts to the SAC, the integrity of site checklist is completed for Lower River Shannon SAC in Table 7-1 below.

Table 7-1: Integrity of site checklist for Lower River Shannon SAC

Conservation Objectives		
Does the project have the potential to:	**Yes or No**	**Comment**
Cause delays in progress towards achieving the conservation objectives of the site?	No	Potential impacts affecting Lower River Shannon SAC will be avoided and will not cause delays in achieving the conservation objectives of the site. Required mitigation measures are outlined in Section 6.
Interrupt progress towards achieving the conservation objectives of the site?	No	Potential impacts affecting Lower River Shannon SAC will be avoided and will not interrupt progress in achieving the conservation objectives of the site. Required mitigation measures are outlined in Section 6.
Disrupt those factors that help to maintain the favourable conditions of the site?	No	Factors potentially disrupting the favourable conservation conditions of the site will be restricted through the implementation of mitigation measures. Required mitigation measures are outlined in Section 6.
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	No	Potential impacts affecting Lower River Shannon SAC such as the deterioration of water quality within the SAC will be minimised through the application of mitigation. Required mitigation measures are outlined in Section 6.
Other Indicators		
Does the project or plan have the potential to:		
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the	No	Potential impacts may occur through pollution of the receiving watercourse/ waterbody during the construction

site functions as a habitat or ecosystem?		phase. However these impacts can be effectively mitigated. Required mitigation measures are outlined in Section 6.
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	No	Potential impacts may occur through pollution of the receiving watercourse/ waterbody during the construction phase. However these impacts can be effectively mitigated. Required mitigation measures are outlined in Section 6.
Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	No	Potential impacts may occur through pollution of the receiving watercourse/ waterbody during the construction phase. However these impacts can be effectively mitigated. Required mitigation measures are outlined in Section 6.
Reduce the area of key habitats?	No	There will be no direct loss of key habitats associated with Lower River Shannon SAC. However, potential indirect impacts may occur through pollution of the receiving watercourse/ waterbody during the construction phase. However these impacts can be effectively mitigated. Required mitigation measures are outlined in Section 6.
Reduce the population of key species?	No	There will be no direct impacts on the population of key species. Indirect impacts may occur due to the deterioration of water quality in the receiving watercourse/ waterbody during the project's construction phase. However these impacts can be effectively mitigated. Required mitigation measures are outlined in Section 6.
Change the balance between key species?	No	Indirect impacts may occur due to the deterioration of water quality in the receiving watercourse/ waterbody during the project's construction phase. However these impacts can be effectively mitigated. Required mitigation measures are outlined in Section 6.
Reduce diversity of the site?	No	Indirect impacts may occur due to the deterioration of water quality in the receiving watercourse/ waterbody during the project's construction phase. However these impacts can be effectively mitigated. Required mitigation measures are outlined in Section 6.
Result in disturbance that could affect population size or density or the balance between key species?	No	Indirect impacts may occur due to the deterioration of water quality in the receiving watercourse/ waterbody during the project's construction phase. However these impacts can be effectively mitigated. Required mitigation measures are outlined in Section 6.
Result in fragmentation?	No	The proposed development will not result in the fragmentation of areas designated as part of Lower River Shannon SAC.
Result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)?	No	No key features of Lower River Shannon SAC will be lost or reduced as a result of construction or operation of the proposed development.

7.3 Integrity of the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA

Generic Conservation Objectives were published for Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA in March 2021. The overarching conservation objective for the European site is as follows:

Objective: "*To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA*"(see Section 3).

As detailed in Section 5.2.2, it is considered that the proposed development will not have significant adverse effects on the conservation condition of hen harrier, the SCI species for the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA during the construction or operational phase due to the small scale of the proposed works and the unsuitability of the proposed site and its immediate environs as breeding habitat for this species. Further, the footprint of the proposed site is unsuitable for foraging hen harrier and the wider environs of the site do not support favoured foraging habitat for this species.

It can be objectively concluded that the proposed development will not adversely affect the integrity of the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA in view of the sites conservation objectives and that the conservation condition of the SCI for this SPA will not be compromised by the proposed development directly, indirectly or cumulatively.

7.4 Conclusion

This NIS has been prepared following the Department of the Environment, Heritage and Local Government guidance *'Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities*' (DoEHLG, 2010a). The assessment for the proposed Extension at Rockchapel Cemetery, Co. Cork investigates the potential adverse effects on the qualifying interests of European sites arising from the proposals. The assessment considers whether the proposed cemetery extension construction and operation, alone or in combination with other projects or plans, will have adverse effects on the integrity of a European site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects.

Provided that the mitigation measures recommended in Section 6 are implemented in full, it can be objectively concluded that the proposed development will not adversely affect the integrity of the Lower River Shannon SAC or Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA in view of the sites conservation objectives and that the conservation status of the qualifying interests and special conservation interests will not be compromised by the proposed development directly, indirectly or cumulatively.

The key considerations that have contributed towards this conclusion are summarised as follows:

- The proposed cemetery extension is located c.7m from the Lower River Shannon SAC at its closest point. There are no resource requirements (e.g. excavation or abstraction) from European sites for the proposed development. Consequently, none of the lands designated as part of European sites will be directly impacted or removed as a result of the proposed development.
- No indirect impacts on the water quality of the Lower River Shannon SAC are expected in relation to sediment or pollution laden surface water run-off during the construction phase of the proposed cemetery extension due to the requirement for the proposed construction works to adhere to best practice construction guidelines and the specific mitigation measures provided in Section 6.
- No impacts on the SCI for Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA are expected to occur due to the small scale of the proposed works and the unsuitability of the proposed site and its immediate environs as breeding habitat for hen harrier. The habitats present at the site and its wider environs are not favoured foraging habitat for hen harrier, the SCI for this SPA.

The conclusion of this NIS is that with the implementation of best practice and the recommended mitigation measures there will be no potential for direct, indirect or cumulative impacts arising from the proposed Extension at Rockchapel Cemetery, Co. Cork either alone or in combination with any

other plans or projects. The integrity of the Lower River Shannon SAC and Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA will not be adversely affected. No reasonable scientific doubt remains as to the absence of such adverse effects.

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Appendix A Screening for Appropriate Assessment Report

Screening for Appropriate Assessment

Proposed Extension

Rockchapel Cemetery

Co. Cork

Report prepared for Cork County Council

By Karen Banks MCIEEM

27th June, 2021

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Contents

Appendices

List of Figures

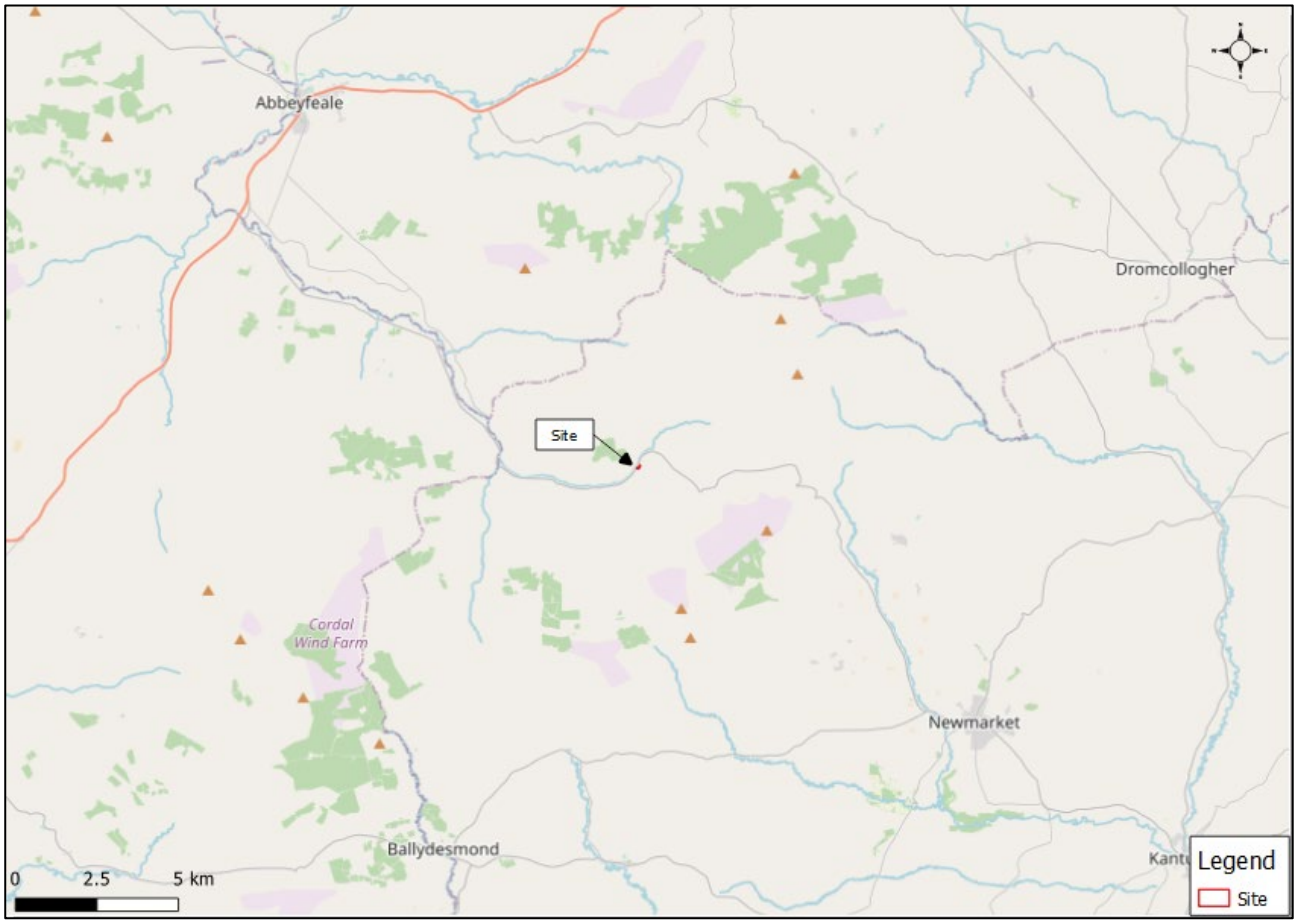
List of Tables

1 Introduction

Greenleaf Ecology was commissioned by Cork County Council to prepare a Screening for Appropriate Assessment (AA) for the proposed Extension at Rockchapel Cemetery, Co. Cork (Figure 1-1).

This report comprises information in support of screening for AA to be undertaken by the competent authority in line with the requirements of Article 6(3) of the EU Habitats Directive (Directive 92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora; the Planning and Development Act 2000-2020, and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) as amended.

Figure 1-1: Site location map



1.1 Legislative Context for Appropriate Assessment

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as "The Habitats Directive", provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000.

The Habitats Directive has been transposed into Irish law by Part XAB of the Planning and Development Act, 2000 - 2020 and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011) as amended. In the context of the proposed development, the governing legislation is the Birds and Habitats Regulations. This Screening has been prepared on behalf of Cork County Council, who are the Competent Authority responsible for undertaking the Screening for AA for this development.

Article 6(3) of the Habitats Directive set out the decision-making tests for plans and projects likely to adversely affect the integrity of European sites (Annex 1.1). Article 6(3) establishes the requirement for AA:

Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

Natura 2000 sites are defined under the Habitats Directive (Article 3) as a coherent European ecological network of special areas of conservation, composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, shall enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range. In Ireland, these sites are designated as European sites and include Special Protection Areas (SPAs), established under the EU Birds Directive (79/409/EEC, as codified by 2009/147/EC) for birds and Special Areas of Conservation (SACs), established under the Habitats Directive 92/43/EEC for habitats and species.

The competent authority is obliged to consider, in view of best scientific knowledge, whether the proposed works are likely to have a significant effect either individually or in combination with other plans and projects. If screening determines that there is likely to be significant effects on a European site, then AA must be carried out for the proposed works at Rockchapel, including the compilation of a Natura Impact Statement (NIS) to inform the decision making.

1.2 Statement of Competence

This AA Screening was carried out by Karen Banks, MCIEEM. Karen is an ecologist with Greenleaf Ecology and has 15 years' experience in the field of ecological assessment. Karen is experienced in the production of AAs and Natura Impact Statements including those for transport infrastructure, small to large scale housing and mixed-use developments, flood alleviation schemes and wind farms.

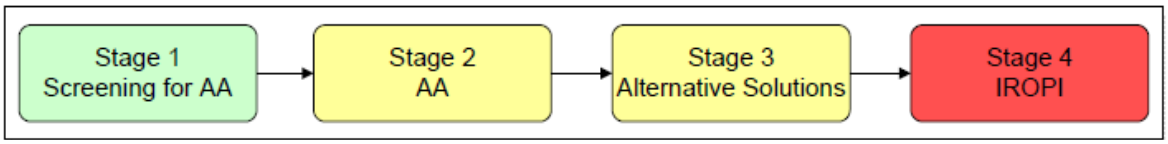
2 Methodology

2.1 Stages of Appropriate Assessment

The Department of the Environment, Heritage and Local Government guidelines (DELHG, 2009, rev. 2010) outlines the European Commission's methodological guidance (EC, 2002) promoting a four-stage process to complete the AA and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

The four stages are summarised diagrammatically in Figure 2-1. Stages 1-2 deal with the main requirements for assessment under Article 6(3), and Regulation 42 of the Birds and Habitats Regulations. Stage 3 may be part of the Article 6(3) Assessment or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

Figure 2-1: Four stages of Appropriate Assessment



Stage 1 - Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

i. whether a plan or project (in this instance the proposed works) is directly connected to or necessary for the management of the European sites, and

ii. whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on the European sites in view of their conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). This report fulfils the information necessary to enable the competent authority to screen the proposal for the requirement to prepare an AA.

This report forms Stage 1 of the AA process and sets out the following information:

- Description of the proposed works;
- Characteristics of the proximal European sites; and
- Assessment of significance of the proposed works on the European sites in question.

The methodology followed in relation to this assessment has had regard to the following guidance and legislation:

- European Union Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 92/43/EEC;
- Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities (DOEHLG 2009, rev 2010);
- The Planning and Development Act 2000-2020;
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC, 2018);
- Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC, 2002);

- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission 2013;
- The European Union (Environmental Impact Assessment and Habitats) Regulations 2011; and
- The European Communities (Birds and Natural Habitats) Regulations, S.I. No. 477 of 2011 (as amended).

2.2 Information consulted for this report

The Screening assessment had regard to the following sources of data and information:

- Information on the location, nature and design of the proposed project;
- Department of Housing, Planning, and Local Government – online land use mapping www.myplan.ie/en/index.html;
- Department of Housing, Planning, and Local Government- EIA Portal https://www.housing.gov.ie/planning/environmental-assessment/environmental-impact-assessment-eia/eia-portal
- Environmental Protection Agency (EPA) – Water Quality www.epa.ie, http://gis.epa.ie/Envision;
- Geological Survey of Ireland – Geology, soils and Hydrogeology www.gsi.ie;
- Water Framework Directive website – www.catchments.ie;
- Inland Fisheries Ireland website and www.wfdfish.ie;
- National Parks and Wildlife Service – online European site network information, including site conservation objectives www.npws.ie;
- National Parks and Wildlife Service – Information on the status of EU protected habitats in Ireland (NPWS 2019);
- National Biodiversity Data Centre – www.biodiversityireland.ie;
- Ordnance Survey of Ireland – Mapping and Aerial photography www.osi.ie; and
- Site survey, undertaken on 17th March 2021.

2.3 Screening Protocol

The sequence of events when completing the AA Screening process is provided below:

- Definition of the zone of influence for the proposed works;
- Identification of the European sites that are situated (in their entirety or partially or downstream) within the zone of influence of the proposed works;
- Identification of the most up-to-date QIs and SCIs for each European site within the zone of influence;
- Identification of the environmental conditions that maintain the QIs/SCIs at the desired target of Favourable Conservation Status;
- Identification of the threats/impacts – actual or potential that could negatively impact the environmental conditions of the QIs/SCIs within the European sites;
- Highlighting the activities of the proposed works that could give rise to significant negative impacts; and
- Identification of other plans or projects, for which in-combination impacts would likely have significant effects.

2.3.1 Screening Determination

In accordance with Regulation 42(7) of the Birds and Natural Habitats Regulations 2011 (S.I. No. 477/2011) as amended, the competent authority (Cork County Council), shall:

> *"determine that an Appropriate Assessment of a plan or project is not required where the plan or project is not directly connected with or necessary to the management of the site as a European site and if it can be excluded on the basis of objective scientific information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site*".

Further, under Regulation 42(8) (a):

Where, in relation to a plan or project for which an application for consent has been received, a public authority makes a determination that an Appropriate Assessment is required, the public authority shall give notice of the determination, including reasons for the determination of the public authority, to the following—

the applicant,

if appropriate, any person who made submissions or observations in relation to the application to the public authority, or

if appropriate, any party to an appeal or referral.

(b*) Where a public authority has determined that an Appropriate Assessment is required in respect of a proposed development it may direct in the notice issued under subparagraph (a) that a Natura Impact Statement is required.*

3 Project Description

The proposed site is located in the townland of Tooreennagrena, Rockchapel, Co. Cork.

The extension of Rockchapel cemetery will consist of the following works:

- New cemetery area to have upper layer of topsoil excavated 100-150mm and stored on site. The site is to be levelled with gradual falls.
- New 1.2m wide footpaths and reinforced concrete foundation beams 600mm X 300mm with 3 no 12mm diameter mild steel bars to take headstones shall be laid out as per map included in Appendix A.
- The excavated topsoil will be spread on the site, rotavated, rolled and grass seeded.
- 225mm hollow block wall 1500mm high stepped as required on 750mm x 225mm foundations finished with 100mm high precast concrete coping – as specified to be laid on walls. Walls to be plastered on both sides.
- Construction of roadway from public road to access the new extension with turning area at the entrance to new cemetery. Excavation and fill required along this roadway to required levels. Fill of 300mm layer of crushed stone with 150mm Clause 804 on top. The road will then be double surface dressed.
- New fencing to be erected along the entrance road.
- Installation of French drain around the perimeter of the site and along the new roadway.
- Erection of new entrance walls and piers at the entrance to the public road.

3.1 Existing Environment

A site survey was undertaken on 17th March 2021 by ecologist Ms. Karen Banks.

The proposed site comprises hardstanding (BL3) to the south of the existing cemetery; damp improved agricultural grassland (GA1) to the south east; and species poor wet grassland (GS4) to the east. The sward in the wet grassland does not appear to have been re-seeded in recent years and is dominated by Soft Rush (*Juncus effusus*), with Yorkshire Fog (*Holcus lanatus*), Bent grasses (*Agrostis* spp.), Common Sorrel (*Rumex acetosa*), Creeping Buttercup (*Ranunculus repens*) and Cuckooflower (*Cardamine pratensis*).

The River Feale (FW2) is located c.40m to the west of the site (see Section 3.1.1).

No evidence of invasive plant species was recorded at the proposed site.

3.1.1 Surface Water

3.1.1.1 Water Bodies

The proposed site is located within the Feale_020 River Sub-basin (EPA code IE_SH_23F010040). The River Feale is located c.40m to the west of the site. In the vicinity of the site, the River Feale is a 3rd order watercourse which flows in a south westerly direction before ultimately discharging into the Mouth of the Shannon coastal waterbody to the west of Listowel.

The proposed project overlies the Abbeyfeale (GWB) (EPA code IE_SH_G_001). The main rock unit groups within the GWB are Namurian Undifferentiated, Namurian Sandstones and Namurian Shales. There are small areas of Westphalian Shales and Dinantian Pure Unbedded Limestones. These rocks are devoid of intergranular permeability; groundwater flow occurs in fractures and faults. Generally, groundwater levels are 0-6 m below ground level, and follow the topography.[1]

[1] https://secure.dccae.gov.ie/GSI_DOWNLOAD/Groundwater/Reports/GWB/AbbeyfealeGWB.pdf

3.1.1.2 Surface Water Quality and Risk Characterisation

Macroinvertebrate sampling for Q-value determination was conducted within the River Feale as part of EPA's Water Framework Directive monitoring. The nearest sampling point is located at the Bridge at Rockchapel, within the River Feale c.0.6km to the north-east of the proposed site (straight line distance). In 2020, the Q value score was Q 4-5 (High macroinvertebrate quality) at this monitoring station. The watercourses within the Feale_20 Sub-basin are classified as 'Not at risk' under the WFD and 'Good' status under the WFD 2013-2018 round. The Abbeyfeale GWB is classified as being of 'Not at risk' and 'Good' status under the WFD.

3.1.2 Flooding

The Office of Public Works (OPW) flood mapping (http://www.floodinfo.ie/map/floodmaps/) indicates the flood extents for the Feale River. An historical flood event has been recorded at Rockchapel, c.0.5km to the north-east of the site. As indicated in Figure 3-1**,** no flood events have been recorded at the proposed site and its immediate environs.

Figure 3-1: OPW flood risk mapping of the proposed site and surrounding area

3.1.3 Soil, Geology and Hydrogeology

The Geological Survey of Ireland (GSI) online database (www.gsi.ie) was consulted for available edaphic, geological and hydrological information of the site and its environs. The site is overlaid by AminPD, mineral, poorly drained (Mainly acidic) soils. In terms of bedrock geology, the Glenoween Shale Formation, composed of grey, silty mudstone underlies the site.

The bedrock units which underlie the site are mapped by the GSI as part of the same Locally Important Aquifer. Groundwater vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease at which groundwater may be contaminated. The study area is of 'High' to 'Extreme' groundwater vulnerability. There are no karst features located in the vicinity of the proposed works.

3.2 Description of European Sites

This stage of the screening for AA process describes European sites within the zone of influence of the works.

Connectivity between the proposed works and European sites has been reviewed. Connectivity is identified via the potential source-pathway-receptor model which identifies the potential impact pathways such as land, air, hydrological, hydrogeological pathways etc. which may support direct or indirect connectivity of the proposed works to European sites and/or their qualifying features.

In view of the source, pathway and receptors of potential impacts and the location, nature, and scale of the proposed development, a 5km radius is considered appropriate to screen all likely significant effects that might impact upon the European sites. This is in line with *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (DoEHLG, 2009, rev. 2010).

The European sites located within 5km of the proposed works are outlined in Table 3-3 and Figure 3-2 **.** There are 2 European sites located within 5km of the proposed works:

1. Lower River Shannon SAC (Site Code: 002165); and
2. Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site Code: 004161).

Source – pathway – receptor dynamics were assessed for Lower River Shannon SAC and it was determined that as the proposed site is located c.7m to the east of this SAC, there is potential indirect connectivity (via surface water, groundwater, air or other environmental vectors) between the proposed works and this site. The site is located within close proximity (c.40m) of Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA, therefore there is potential indirect connectivity (via surface water, groundwater, air or other environmental vectors) between the proposed works and this site. As a result, Lower River Shannon SAC and Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA will be considered further in the below impact assessment.

Figure 3-2: European Sites Located within 5km of the Proposed Works

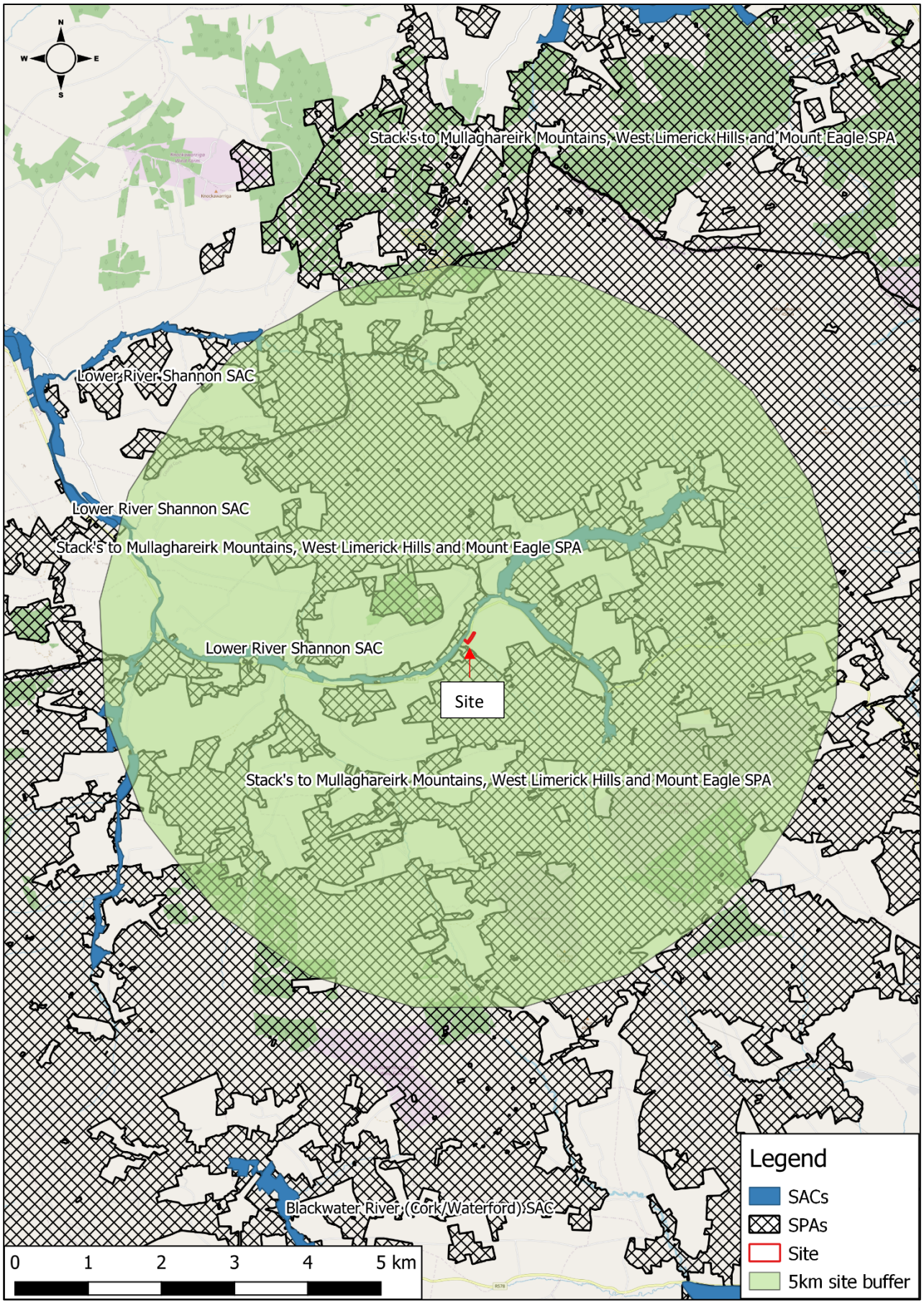


Table 3-1: European Sites within 5km of the Proposed Works

Site Name and Code	Qualifying Interests	Distance from Proposed Site (km)[2]	Connectivity
Lower River Shannon SAC (Site Code: 002165)	**Annex I Habitats** Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] **Annex II Species** *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349]	0.007km	Potential indirect connectivity via overland flow. Both the proposed site and this SAC are located within the Abbeyfeale GWB.

[2] Distance measured "as the crow flies"

	Lutra lutra (Otter) [1355]		
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site Code: 004161)	Hen Harrier (*Circus cyaneus*) [A082]	0.04	There is potential hydrological connectivity via overland flow to this SPA. Both the proposed site and this SPA are located within the Abbeyfeale GWB. This SPA is located to the west and south of the proposed site; the proposed site and this SPA are located in close proximity .

4 Screening Assessment Criteria

4.1 Is the Project Necessary to the Management of European Sites?

The proposal is not directly connected with or necessary to the management of any European Site.

4.2 Likely Direct, Indirect or Secondary Impacts of the Project on the European Sites

The proposed project is located outside the boundary of the Lower River Shannon SAC and Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA. Therefore, no direct impacts will occur through land take or fragmentation of habitats.

Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is of special conservation interest for Hen Harrier. This SPA is located c.40m to the west and south of the proposed site at its closest point. Mature conifer plantation is located c.40m to the west of the site and c.400m to the south of the site and improved agricultural grassland/ wet grassland is located outside of the site boundary to the north, east and south. In view of the proximity of the proposed site to this SPA and the presence of forestry in the vicinity of the site, the potential for adverse effects on breeding or foraging Hen Harrier, an SCI for Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA, as a result of disturbance during the construction phase cannot be excluded.

The proposed site is located c. 7m from the boundary of the Lower River Shannon SAC and drains from east to west towards the River Feale, which forms part of this SAC. In the vicinity of the proposed site, the River Feale potentially supports the following species, which are all QI species of the Lower River Shannon SAC:

1. *Petromyzon marinus* (Sea Lamprey) [1095]
2. *Lampetra planeri* (Brook Lamprey) [1096]
3. *Lampetra fluviatilis* (River Lamprey) [1099]
4. *Salmo salar* (Salmon) [1106]
5. *Lutra lutra* (Otter) [1355]

Given the proposed site's location proximal to the Lower River Shannon SAC and the potential indirect connectivity between the site and this SAC via overland flow, there is potential for deleterious substances to enter the River Feale in surface water run-off during the construction phase. If of sufficient severity, degradation in water quality may potentially result in a significant adverse effect on the aquatic and semi-aquatic QI species of Lower River Shannon SAC.

The Lower River Shannon SAC is located to the west of the proposed site (Figure 3-2). During the operational phase, the grave spaces in the cemetery extension will be located to the east of the existing cemetery, c.50m from the Lower River Shannon boundary and c.70m from the River Feale. In view of the location of the cemetery extension to the east of the existing cemetery, there is no potential pathway for run-off of deleterious substances to the River Feale during the operational phase. In view of the nature, size and location of the proposed works c.70m to the east of the River Feale, no significant effects on the quality of groundwater flowing towards the River Feale and Lower River Shannon SAC are expected during the operational phase.

No significant adverse effects on the water quality within Lower River Shannon SAC are expected during the operational phase.

4.2.1 Cumulative Impacts with Other Plans and Projects in the Area

As part of the screening for an AA, in addition to the proposed works, other relevant projects and plans in the region must also be considered at this stage and assessed in the context of potential for in-combination effects. These plans and projects are outlined and assessed in Table 4-1 below.

It is concluded that there will be no negative in-combination effects between the proposed works and plans or project in the area.

Table 4-1: Other Projects and Plans that could result in potential cumulative impacts

Plan / Programme/Policy	Key Objectives/Policies/Proposals	Potential for In-combination Effects and Mitigation
Cork County Development Plan 2014-2020	The policies and objectives of this plan are intended to contribute to the delivery of a number of key aims for the county as a whole. They are as follows: ▪ Enhanced quality of life for all ▪ Sustainable patterns of growth in urban and ▪ rural areas ▪ Sustainable and balanced economic investment ▪ An effective physical and community ▪ Infrastructure ▪ A quality built environment ▪ A network of enhanced natural resources ▪ Responsible guardianship of the County	Policies and objectives of the Cork County Development Plan 2014 – 2020 ensure that local planning applications comply with proper planning and sustainability and with the requirements of relevant EU Directives and environmental considerations, there is no potential for adverse in-combination effects on European Sites.
River Basin Management Plan 2018-2021	The project should comply with the environmental objectives of the Irish RBMP which are to be achieved generally by 2021. ▪ Ensure full compliance with relevant EU legislation ▪ Prevent deterioration ▪ Meeting the objectives for designated protected areas ▪ Protect high status waters ▪ Implement targeted actions and pilot schemes in focus sub-catchments aimed at: targeting water bodies close to meeting their objective and addressing more complex issues which will build knowledge for the third cycle.	The implementation and compliance with key environmental policies, issues and objectives of this management plan will result in positive in-combination effects to European sites. The implementation of this plan will have a positive impact for the biodiversity. It will not contribute to in-combination or cumulative impacts with the proposed development.
Inland Fisheries Ireland Corporate Plan 2016 -2020 **The Inland Fisheries Act 2010.**	To ensure that Ireland's fish populations are managed and protected to ensure their conservation status remains favourable. That they provide a basis for a sustainable world class recreational angling product, and that pristine aquatic habitats are also enjoyed for other recreational uses. ▪ To develop and improve fish habitats and ensure that the conditions required for fish populations to thrive are sustained and protected. ▪ To grow the number of anglers and ensure the needs of IFI's other key stakeholders are	The implementation and compliance with key environmental issues and objectives of this corporate plan will result in positive on-combination effects to European sites. The implementation of this corporate plan will have a positive impact for biodiversity of inland fisheries and ecosystems. It will not contribute to in-combination or cumulative impacts with the proposed works.

	being met in a sustainable conservation focused manner. ▪ EU (Quality of Salmonid Waters) Regulations 1988. All works during development and operation of the project must aim to conserve fish and other species of fauna and flora habitat; biodiversity of inland fisheries and ecosystems and protect spawning salmon and trout.	
WWTP discharges	Newmarket.	Discharges from municipal WWTPs are required to meet water quality standards. Irish Water Capital Investment Plan 2014-2016 and 2017 – 2021 proposes to upgrade water treatment services countrywide. The long-term cumulative impact is predicted to be negligible.
IPPC Programme	Newmarket Co-Operative Creameries Ltd. (P0793), c14.9km to the south-east of the proposed site as the crow flies.	Discharges from these facilities are governed by strict limits to ensure compliance with quality standards. The long-term cumulative impact is predicted to be negligible.
Residential Applications Under consideration[3]	Various local planning applications[4] in proximity and within the Zone of Influence of the proposed residential development. These include small scale domestic dwelling extension and community facility developments.	Adherence to the overarching policies and objectives of the Cork County Development Plan 2015 - 2020 ensure that local planning applications and subsequent grant of planning comply with the core strategy of proper planning and sustainability and with the requirements of relevant EU Directives and environmental considerations, there is no potential for significant adverse in combination effects on European Sites.

4.3 Screening Assessment

Table 4-2 identifies the potential direct, indirect and secondary impacts of the proposed works on European Sites within a 5 km radius.

Table 4-2: Potential Significant Effects on European Sites from the Proposed Extension at Rockchapel Cemetery

Site Name and Code	Direct Impacts	Indirect / Secondary Impacts	Resource Requirements	Emissions (Disposal to land, Water or Air)	Excavation Requirements
Lower River Shannon SAC (Site Code: 002165)	No impact on QI	Potential water quality degradation during the	No impact on QI	Potential water quality degradation during the	No impact on QI

[3] The Local Planning Applications included in this potential in-combination impacts assessment support the following criteria: planning applications granted within the past five years that may contribute to potential cumulative impacts on European sites of concern.

[4] http://maps.corkcoco.ie/planningenquiryv3/LAResources/info.aspx, accessed 18/06/2021

		construction phase, which may in turn have a significant effect on aquatic/semi aquatic QI of Lower River Shannon SAC.		construction phase.	
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site Code: 004161)	No impact on QI	Disturbance impacts on the SCI of this SPA during construction and operational phase.	No impact on QI	No impact on QI	No impact on QI

4.4 Likely Changes to the European Site(s)

The likely changes that could arise from the proposed Extension at Rockchapel Cemetery, Co. Cork have been examined in the context of a number of factors that could have a significant effect on the relevant European Sites (Table 4-3)

Table 4-3: Likely Changes to European Sites

Site Name and Code	Reduction of Habitat Area	Disturbance to Key Species	Habitat or Species fragmentation	Reduction in Species Density	Changes in Key Indicators of Conservation Value (Water Quality, etc.)	Climate Change
Lower River Shannon SAC (Site Code: 002165)	None	Potential for disturbance to otter	None	Potential for reduction in density of aquatic QI species	Potential reduction in water quality	None
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site Code: 004161)	None	Potential for disturbance to hen harrier	None	None	None	None

4.4.1 Elements of the Project where the Impacts are Likely to be Significant

There is potential for the proposed extension at Rockchapel Cemetery, Co. Cork to result in likely significant effects on the QI species of Lower River Shannon SAC and the SCI of Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA.

5 Conclusion

This AA screening report has been prepared to assess whether the proposed development, individually or in-combination with other plans or projects, and in view of best scientific knowledge, is likely to have a significant effect on any European site(s).

The screening exercise was completed in compliance with the relevant European Commission guidance, national guidance and case law. The potential impacts of the proposed development have been considered in the context of the European sites potentially affected, their qualifying interests or special conservation interests, and their conservation objectives.

Through an assessment of the source-pathway-receptor model, which considered the ZoI of effects from the proposed development and the potential in-combination effects with other plans or projects, the following findings were reported:

- In the absence of mitigation measures to control surface water pollution during construction of the proposed extension at Rockchapel Cemetery, Co. Cork, the potential for likely significant effects to the QI of the Lower River Shannon SAC cannot be excluded.
- In the absence of mitigation measures during the construction and operational phase of the proposed development, the potential for likely significant effects to the SCI species of Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA, as a result of a disturbance cannot be ruled out.

In view of objective information, best scientific knowledge and the conservation objectives of the European sites, the potential for likely significant effects to Lower River Shannon SAC and Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA cannot be excluded.

Likely significant effects (in the absence of mitigation) to these European sites arise primarily from the potential for disturbance to SCI and water quality degradation as a result of the proposed works which, in turn, has the possibility to affect the conservation objectives of the European sites alone or in combination with other plans or projects.

It is acknowledged that Cork County Council as the competent authority shall make the determination whether AA is required.

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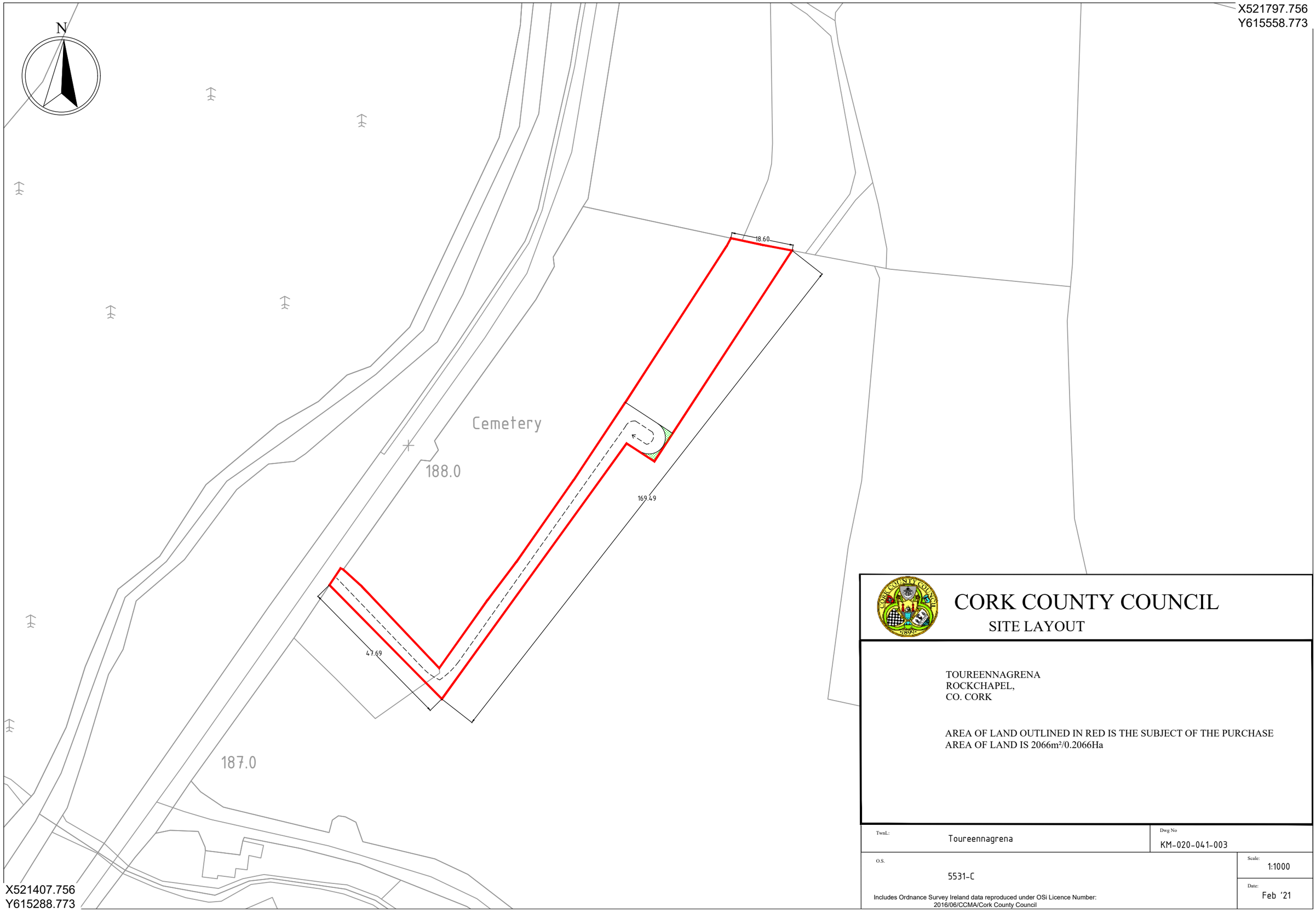
Appendix A: Proposed Layout Drawing



CORK COUNTY COUNCIL

SITE LAYOUT

TOUREENNAGRENA
ROCKCHAPEL,
CO. CORK

AREA OF LAND OUTLINED IN RED IS THE SUBJECT OF THE PURCHASE
AREA OF LAND IS 2066m²/0.2066Ha

TwnL.: Toureennagrena	Dwg No KM-020-041-003
O.S. 5531-C	Scale: 1:1000
	Date: Feb '21

E:521797.756

N:615558.773

N

Cemetery

188.0

187.0

N:615288.773

E:521407.945

CORK COUNTY COUNCIL

LAND ACQUISITION MAP

TOUREENNAGRENA
ROCKCHAPEL,
CO. CORK

AREA OF LAND LINED IN RED IS THE SUBJECT OF THE PURCHASE
AREA OF LAND IS 2024m²/0.2024Ha

NUMBER OF GRAVE SPACES IN LAYOUT SHOWN IS 193

TwnL:	Toureennagrena	Dwg No	MK-19-085-002
O.S.	5531-C	Scale:	1:1000
		Date:	Nov '19