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Introduction

- 5.1 This biodiversity chapter forms part of the Environmental Impact Assessment Report (EIAR) prepared for Roadstone Ltd. hereafter referred to as “the Client” in support of a planning application to Tipperary County Council for the proposed construction of a bio-renewables anaerobic digestion (AD) plant (the Project) at Killough Quarry, Killough Hill, Gaile townland, Holycross. Co. Tipperary.

Site Description

- 5.2 The proposed Project will cover ca. 6.3 ha of land located within the southwest corner of the existing Killough hard rock quarry at approximate Irish Transverse Mercator (ITM) coordinates 610684, 650457. Killough quarry itself is located in Killough Hill, a limestone escarpment which is elevated above the surround plain. The development area consists of processed aggregate stockpiles, and a storage building. The surrounding area within the landholding consists primarily of active quarry, asphalt plant, concrete plant, limestone plant, agricultural lime facility, mixed woodland, and improved agricultural lands.
- 5.3 Property in the surrounding area principally comprises isolated, one-off residential houses and/or farmsteads, which largely takes the form of ribbon development along the local road network.

Project Description

- 5.4 An overall planning application site area of c. 6.3 hectares consisting of a proposed bio-renewables production facility, buffer screening, ancillary facilities and site access via the existing permitted quarry entrance, all located within the southwest corner of the existing permitted Killough hard rock quarry.
- 5.5 The proposed bio-renewables production facility (incorporating anaerobic digestion) compound will cover an area of c. 4 hectares with c. 16,821.5m² of new buildings consisting of an administration building; a dry matter reception building; a workshop; a bio-conversion building; a pre-treatment, equalisation and gas upgrading building; a digestate handling building; a warehouse storage building; a bio-filling station building; an odour abatement and pumping station building; a linear generator building; and an ESB sub-station building.
- 5.6 Ancillary site facilities to be provided will include, a wheelwash; a weighbridge; surface water and fire water storage ponds; storage tanks for water, silage feed, cow manure, pot ale and spent grain, maize and chicken litter and gas; effluent collection and storage tanks; staff and visitor car parking and bicycle storage; HGV parking; hydrocarbon interceptors; roof mounted solar panels; wastewater treatment equipment; bunding and surface treatments; boundary treatments and fencing; lighting; services; drainage; landscaping; and all associated ancillary works.
- 5.7 The adjacent Roadstone Killough Quarry plant will utilise the electricity, bio-methane and water generated by the proposed development.
- 5.8 The operation of the AD plant will result in the production of emissions to air associated with the on-site combustion of bio-methane, and odour and ammonia emissions associated with other site operations.

- 5.9 It is anticipated that pelletised digestate will, on the whole, be returned to lands associated with feedstock supplies of crop and/or slurry, thereby promoting a local circular bioeconomy.
- 5.10 The overall development plan is entirely within the existing operational quarry site. There is no requirement to remove topsoil or overburden off site. While the site is within the aggregate stockpile storage area, 6 semi-mature trees (beech and pine), as well as 5 young pine and ca. 50 young willow, which have self-seeded throughout the site, will have to be removed to facilitate the development.
- 5.11 Existing screening berms (c. 4-6m in height) and hedge/tree vegetation bound the southern and western boundaries of the application site, and these features will be retained.
- 5.12 A detailed project description is provided in Chapter 2 - Project Description in this EIAR.

Purpose of the Report

- 5.13 This biodiversity chapter aims to describe the baseline ecological conditions at the Site and to identify potential significant effects associated with the proposed development. Where necessary appropriate mitigation measures will be set out to reduce residual effects to a suitable level.
- 5.14 This chapter forms part of the EIAR that will be submitted with the planning application to assist the competent authority, in this case Tipperary County Council, to carry out an Environmental Impact Assessment (EIA) of the proposed development.
- 5.15 The purpose of this report is to:
- Describe (any) likely significant effects, any indirect, secondary, cumulative, transboundary, short-term, medium-term, and long-term, permanent, and temporary, positive and negative effects of the project, which result from the proposed works both during construction, operation and restoration;
 - Describe mitigation measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on biodiversity; and
 - Explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced, or offset.
- 5.16 This chapter will address the terrestrial and freshwater habitats and species, with particular attention to rare and protected species as listed under the checklist of protected and threatened species in Ireland (Nelson et al., 2019).

Evidence of Technical Competence and Experience

- 5.17 This report was prepared by SLR Project Ecologist Victoria Molloy. The preliminary ecological assessment survey was carried out by SLR Graduate Ecologist Lorcan Kelly. SLR Associate Ecologist Michael Bailey carried out the technical review.
- 5.18 Victoria Molloy holds a BSc. in Zoology from the University of Galway. She has three years' experience as a consultant ecologist and is a Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Victoria has prepared a wide range of impact assessment reports including biodiversity chapters for Environmental Impact Assessment Report (EIAR), Ecological Impact

Assessment Reports (EclA), Appropriate Assessment (AA) screening reports, and Natura Impact Statements (NIS) for a variety of projects including quarries, forestry licence applications, housing, road, and industrial developments.

- 5.19 Lorcan Kelly holds a BSc. in Science (Zoology) from University College Dublin and an MSc. in Applied Ecology and Conservation from the University of East Anglia. He joined SLR in September 2023 having previously worked for The Ecology Consultancy, Norwich. He is a qualifying member of CIEEM. Lorcan has experience of bird surveys from working on wind farm projects within Ireland. He also has written various reports including AA Screening reports and species-specific ecological impact reports.
- 5.20 Michael Bailey holds a BSc (Hons) in Biology and Ecology from the University of Ulster, and an MSc in Quantitative Conservation Biology from the University of the Witwatersrand, Johannesburg, South Africa. Michael is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). He has prepared Appropriate Assessments and Ecological Impact Assessments for a wide range of projects in Ireland and the UK.

Relevant Legislation

Legislation

- 5.21 This section details the relevant legislation, policy and guidance used within the assessment (also refer to **Appendix 5-A**). The main pieces of legislation in terms of ecology in regard to developments such as this are as follows.

International legislation and policy

- United Nations (UN) Convention on Biological Diversity (CBD); and
- The Ramsar Convention on Wetlands of International Importance.

European legislation and policy

- EU Habitats Directive on the conservation of natural habitats and of wild fauna and flora (92/43/EEC) (as amended) (the Habitats Directive);
- EU Birds Directive on the conservation of wild birds (2009/147/EC) (as amended);
- The Berne Convention on the Conservation of European Wildlife and Natural Habitats;
- The Bonn Convention on the Conservation of Migratory Species of Wild Animals;
- EU Water Framework Directive establishing a framework for Community action in the field of water policy (2000/60/EC) (as amended);
- EU Environmental Liability Directive (2004/35/EC);
- EU EIA Directive on the assessment of the effects of certain public and private projects on the environment (2011/92/EU) (as amended);
- EU Biodiversity Strategy 2020;
- Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species, as amended, together with Commission

Implementing Regulation (EU) 2016/1141 and Implementing Regulation (EU) 2019/1262; and

- EU Nature Restoration Law 2023 2022/0195(COD).

National legislation and policy

- The Wildlife Acts 1976, as amended;
- S.I. No. 477/2011 - Regulation 49 and 50 of European Communities (Birds and Natural Habitats) Regulations;
- S.I. No. 272/2009 – European Communities Environmental Objectives (Surface Waters) Regulations, as amended;
- S.I. No. 293/1988 - European Communities (Quality of Salmonid Waters) Regulations;
- European Union Environmental Objectives (Freshwater Pearl Mussel *Margaritifera margaritifera*) (Amendment) Regulations 2009 to 2018;
- The Flora (Protection) Order 2022;
- The Heritage Act, 2018 (as amended);
- Planning and Development Act, 2000 (as amended);
- Project Ireland 2040;
- National Heritage Plan 2030;
- Ireland's 4th National Biodiversity Action Plan 2023 - 2030.
- European Communities (Planning and Development) (Environmental Impact Assessment (EIA)) Regulations 2018, as amended;
- European Communities (Water policy) Regulations, 2003, as amended; and
- European Communities Environmental Objectives (Surface Waters) Regulations 2009.

Local policy

- 5.22 The relevant local planning policies have been extracted from the Tipperary County Development Plan (CDP) 2022-2028. These policies are specific to “Chapter 11 – Environment and Natural Assets” of the county development plan and are concerned with the policies and objectives to protect and/or enhance the ecology and biodiversity of County Tipperary. In broad terms these objectives and policies aim to ensure correct measures are put in place to identify and protect natural heritage and important environmental features within County Tipperary. The full list of relevant policies and objectives are in **Appendix 5-A** of this report.

Guidance

- 5.23 The relevant guidance has been followed:
- Guidelines for Assessment of Ecological Impacts of National roads Schemes (National Roads Authority (NRA, 2009a.);
 - Ecological Surveying Techniques for Protecting Flora and Fauna during the Planning of National Road Schemes (NRA, n.d.);
 - Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes (NRA, 2009b);

- Surveying Badgers (Harris et al., 1989);
- Guidelines for Ecological Impact Assessment in the UK and Ireland (Chartered Institute of Ecology and Environmental Management (CIEEM), 2018);
- Guidance Note 08/23: Bats and Artificial Lighting at Night (Institute of Lighting Professionals (ILP) and Bat Conservation Trust (BCT), 2023);
- Bat Surveys for Professional Ecologists – Good Practice Guidelines (Collins 2016; and Collins, 2023);
- A guide to Habitats in Ireland (Fossitt, 2000);
- The Status of Ireland’s Breeding Seabirds: Birds Directive Article 12 Reporting 2013 – 2018 (Cummins et al., 2019);
- The Status of EU Protected Habitats and Species in Ireland (National Parks and Wildlife Service (NPWS), 2019);
- Common Standards Monitoring Guidance for Reptiles and Amphibians (Joint Nature Conservation Committee (JNCC), 2004);
- UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation (Cresswell et al., 2012); and
- New Atlas of the British and Irish Flora: An Atlas of the Vascular Plants of Britain, Ireland, The Isle of Man and the Channel Islands (Preston et al., 2022).

Methodology

5.24 The methods used to carry out the survey of the Site to evaluate the ecological value and to prepare the biodiversity chapter is outlined in this section. The assessment methodology for this proposal was developed using the standard professional impact assessment guidance published in 2018 by the Chartered Institute of Ecology and Environmental Management (CIEEM).

Scope of the Assessment

5.25 The scope of this biodiversity chapter is to identify potential impacts likely to occur from the proposed development, and to determine if the effects on biodiversity are significant. The scope of the report includes the provision of mitigation, compensation and enhancement measures as required.

Zone of Influence

5.26 The ‘zone of influence’ for a project is the area over which ecological features may be subject to significant effects because of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries. The zone of influence will vary for different ecological features depending on their sensitivity to an environmental change (CIEEM, 2018).

5.27 The ‘zone of influence’ for the project can be identified through review of the nature of the proposed development / works, the presence / absence of surface water receptors, the presence of ecological connectivity to the wider landscape and distance from known ecologically sensitive sites.

Desk study

- 5.28 All designated sites for biodiversity within 15 km and with ecological and/or hydrological connectivity have also been considered.

Field survey

- 5.29 The study area for field surveys comprised the red-line boundary, although incidental sighting of species beyond this boundary are represented where relevant in this report (**Figure 5-1**)

Baseline Data Collection

Desk Study

- 5.30 A desk study was carried out to collate the available existing ecological information on the Site. The Site and the surrounding area were viewed using existing available satellite imagery¹.
- 5.31 The following data sources were used to compile the desk study:
- The National Parks and Wildlife Service (NPWS)² online resources were accessed for information on sites with a statutory designation for nature conservation, specifically European sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)), Ramsar sites and Natural heritage Areas (NHAs), and other sites such as proposed Natural Heritage Areas (pNHA) that are not legally designated but are identified as being of conservation interest, and protected habitats and species as defined under the NPWS *Checklist of Protected and Threatened Species in Ireland* (Nelson et al., 2019) .
 - The National Biodiversity Data Centre (NBDC)³ online resources were accessed for information on rare and protected habitats and species (Nelson et al., 2019). All records were considered within this assessment; however, where a record was sufficiently old and unlikely to comprise relevant data (e.g., where changes in land management that has occurred in the intervening period), these data have been omitted from the assessment.
 - Environmental Protection Agency (EPA) Maps⁴ was accessed for other environmental information, such as surface water features, relevant to preparation of this report.
 - Records of Annex I habitats, and Annex II and IV species of the Habitats Directive (92/43/EEC) using Article 12 and Article 17 reports.
 - Local policies listed in the Co. Tipperary County Development Plan.
 - Birds of Conservation Concern in Ireland (BoCCI) 2020-2026 (Gilbert et al., 2021), published by BirdWatch Ireland and the RSPB NI, is a list of priority bird species for conservation action on the island of Ireland. The BoCCI lists birds which breed and/or winter in Ireland and classifies them into three separate lists; Red, Amber and Green; based on the conservation status of the bird and hence their conservation priority. Birds on the Red List are those of highest

¹ <https://www.google.ie/maps> & <http://www.bing.com/maps/> (Accessed December 2024)

² www.npws.ie (Accessed December 2024).

³ <http://maps.biodiversityireland.ie/#/Map> (Accessed December 2024).

⁴ <http://gis.epa.ie/> (Accessed December 2024).

conservation concern, Amber List are of medium conservation concern and Green List are not considered threatened.

- The protection of mammals is evaluated using one or more of the following documents; Wildlife Acts 1976 – 2018 (ISB, n.d.), the Red List of Terrestrial Mammals (Marnell et al., 2019), and Annexes of the EU Habitats Directive 92/43/EEC12 (European Commission, n.d.).
- Tipperary County Council website was accessed for information on relevant planning policy while the planning portal⁵ was accessed for information on other planning applications within the Site and immediate surrounding area.
- The drawings and the full project description for the proposed development are contained within other sections of this EIAR which also informed the desk study. Other chapters of the EIAR reviewed included **Chapter 7 - Water**, **Chapter 8 - Air Quality**, **Chapter 10: Noise** and **Chapter 13 - Landscape**.

Field Survey(s)

- 5.32 An ecological field survey was conducted on 07 August 2024 by SLR Ecologist Lorcan Kelly to determine the baseline ecology and to determine its ecological value. The weather conditions during the field survey were dry with some light drizzle, light breeze and cloud cover of 8 oktas.
- 5.33 The approach to the field surveys is based on accepted standard practice and methods. Habitats within the study area were classified using 'A Guide to Habitats in Ireland' (Fossitt, 2000) and were assessed if they comprise Annex I habitats under the Habitats Directive. The dominant plant species present in each habitat type were recorded during the field surveys and this is considered sufficient to allow accurate classification of the habitats present.
- 5.34 Incidental sightings or evidence of birds, mammals or amphibians were also noted during the habitat survey and the habitats within the study area were evaluated for their potential to support protected species. Trees or structures suitable for bat roosts and potential suitable bat foraging were noted where they occurred within the study area. Trees or structures within the study area were visually inspected from the ground level for Potential Roost Features (PRFs) where it was considered likely that they may be suitable for use by roosting bats. Potential roosts / roost features and bat foraging habitat were evaluated using the criteria set out in the Bat Conservation Trust (BCT) guidelines (Collins, 2023).
- 5.35 Invasive species were noted where present. For the purposes of this report "invasive species" are those which are subject to Regulation 49 of the Habitats Directive as listed in Part 1 and Part 2 of the Third Schedule within the Directive.

Limitations

Desk study

- 5.36 Desk study data is unlikely to be exhaustive, especially in respect of species, and is intended mainly to set a context for the study. It is therefore possible that important habitats or protected species not identified during the data search do in fact occur within the vicinity of the site. Interpretation of maps and aerial photography has been carried out using recent imagery, but it has not been possible to verify the accuracy

⁵ <https://www.myplan.ie/> (Accessed December 2024).

of any statements relating to land use and habitat context outside of the field study area.

Field surveys

5.37 All areas of the Site were accessible, and no limitations were experienced.

Assessment Approach

5.38 The ecological evaluation and assessment within this chapter has been undertaken with reference to relevant parts of the 2018 *Guidelines for Ecological Impact Assessment in the UK and Ireland* developed by the Chartered Institute of Ecology and Environmental Management (CIEEM, September 2018).

5.39 Although this is recognised as current good practice for ecological assessment, the guidance itself recognises that it is not a prescription about exactly how to undertake an ecological impact assessment (EclA); rather, they “provide guidance to practitioners for refining their own methodologies”. For the full guidance, refer to <https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/>. The approach to impact assessment also has regard to advice set out in the EPA guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) published in 2022.

Important Ecological Features

5.40 Important Ecological Features (IEFs) can be important for a variety of reasons. Importance may relate, for example, to the quality or extent of the site or habitats therein; habitat and/ or species rarity; the extent to which such habitats and/ or species are threatened throughout their range, or to their rate of decline. IEFs comprise the following:

- Designated sites including European, nationally, and locally designated sites;
- Habitats listed on Annex I of the Habitats Directive;
- Populations of bird species listed on Annex I of the Birds Directive; on local biodiversity action plan or are provided protection through policies listed under the county development plans;
- Populations of protected and threatened species in Ireland as defined by Nelson et al. (2019) and/or the local biodiversity action plan; or
- Habitats that comprise a significant resource for a rare or protected species.

Determining Importance

5.41 The importance of an ecological feature should be considered within a defined geographical context following guidance set out in *Guidelines for ecological impact assessment in the UK and Ireland* (CIEEM, 2018). The following frame of reference has been used in this case, relying on known/ published accounts of distribution and rarity where available, and professional experience:

- International (European);
- National (Ireland);
- County (Tipperary);

- Local; and
 - Negligible.
- 5.42 The above frame of reference is applied to the IEFs identified during the desk study and surveys to inform this report.
- 5.43 In assigning a level of value to the population of a species, it is necessary to consider its distribution and status, including a consideration of trends based on available historical records. Examples of relevant lists and criteria include species of European conservation importance (as listed on Annexes II, IV and V of the Habitats Directive or Annex 1 of the Birds Directive), species protected under the Wildlife Acts 1976 - 2012 and BoCCI.
- 5.44 The level of value is determined by reference to standard criteria. All features of Local value and higher are considered in the assessment if they are likely to be significantly affected. Other features are also considered in the assessment if they are protected by law or policy, or otherwise require consideration in the development process.

Impact Assessment

- 5.45 The impact assessment process involves the following steps:
- Identifying and characterising potential impacts;
 - Incorporating measures to avoid and mitigate (reduce) these impacts;
 - Assessing the significance of any residual effects after mitigation;
 - Identifying appropriate compensation measures to offset significant residual effects (if required); and
 - Identifying opportunities for ecological enhancement.
- 5.46 When describing impacts, reference has been made to the following characteristics, as appropriate:
- Positive or negative;
 - Extent;
 - Magnitude;
 - Duration;
 - Timing;
 - Frequency; and
 - Reversibility.
- 5.47 The impact assessment process considers both direct and indirect impacts: direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat occupied by a species during the construction process. Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process, or feature, e.g. the creation of roads which cause hydrological changes, which, in the absence of mitigation, could lead to the drying out of wet grassland.

- 5.48 Consideration of conservation status is important for evaluating the effects of impacts on individual habitats and species and assessing their significance:
- **Habitats** – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure, and functions as well as its distribution and its typical species within a given geographical area; and
 - **Species** – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.
- 5.49 The threshold of importance is based at 1% of the existing background population / area (CIEEM, 2018).

Significant Effects

- 5.50 The CIEEM (2018) EclA guidance sets out information in paragraphs 5.24 through to 5.28 of the guidance documents which describes the concept of ecological significance. Significant effects are qualified with reference to an appropriate geographic scale, and the scale of significance of an effect may or may not be the same as the geographic context in which the feature is considered important.
- 5.51 A significant effect, for the purposes of EclA, is defined as an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local.
- 5.52 The nature of the identified effects on each assessed feature is characterised. This is considered, along with available research, professional judgement about the sensitivity of the feature affected, and professional judgement about how the impact is likely to affect the site, habitat, or population's structure and continued function. Where it is concluded that an effect would be likely to reduce the importance of an assessed feature, it is described as significant. The degree of significance of the effect takes into account the geographic context of the feature's importance and the degree to which its interest is judged to be affected.

Cumulative Effects

- 5.53 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a proposed development results in individually insignificant impacts that, when considered in-combination with impacts of other proposed or permitted plans and projects, can result in significant effects.
- 5.54 Other plans and projects that should be considered when establishing cumulative effects are:
- Proposals for which consent has been applied but which are awaiting determination;
 - Projects which have been granted consent, but which have not yet been started or which have been started but are not yet completed (i.e. under construction);
 - Proposals which have been refused permission, but which are subject to appeal, and the appeal is undetermined;

- Constructed developments whose full environmental effects are not yet felt and therefore cannot be accounted for in the baseline; or
- Developments specifically referenced in a National Policy Statement, a National Plan or a Local Plan.

Avoidance, Mitigation, Compensation and Enhancement

- 5.55 When seeking mitigation or compensation solutions, efforts should be consistent with the geographical scale at which an effect is significant. For example, mitigation and compensation for effects on a species population significant at a county scale should ensure no net loss of the population at a county scale. The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved.
- 5.56 Where potentially significant effects have been identified, the mitigation hierarchy has been applied, as recommended in the CIEEM Guidelines. The mitigation hierarchy sets out a sequential approach beginning with the avoidance of impacts where possible, the application of mitigation measures to minimise unavoidable impacts and then compensation for any remaining impacts. Once avoidance and mitigation measures have been applied residual effects are then identified along with any necessary compensation measures, and incorporation of opportunities for enhancement.
- 5.57 It is important to clearly differentiate between avoidance mitigation, compensation and enhancement and these terms are defined here as follows:
- **Avoidance** is used where an impact has been avoided, e.g. through changes in scheme design;
 - **Mitigation** is used to refer to measures to reduce or remedy a specific negative impact in situ;
 - **Compensation** describes measures taken to offset residual effects, i.e. where mitigation in situ is not possible; and
 - **Enhancement** is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

Baseline Ecological Conditions

- 5.58 This section sets out the current baseline conditions for the ecological features considered within the Site and provides a clear description of the changes that would occur as a result of the proposed development using the findings of the desk study and field survey.

Nature Conservation Sites

- 5.59 Sites which have been designated for nature conservation are discussed in this section. These designations may include; European sites, (proposed) Natural Heritage Areas, National Parks, Nature Reserves, Wildfowl Sanctuaries and Ramsar Sites.

- 5.60 An AA screening and NIS report has been provided alongside this EIA (SLR, 2024) detailing the European sites considered within the assessment. A summary of these is provided below.
- 5.61 The proposed development area is not within any site designated for nature conservation or subject to any nature conservation designations (**Figure 5-2**).

European Designated Sites

- 5.62 An Appropriate Assessment (AA) screening report and Natura Impact Assessment (NIS) report has been provided alongside this report (SLR, 2024). **Table 5-11** lists the European sites identified within 15 km of the Site. Sites beyond this distance have been scoped out as it is considered that the potential impacts caused by the proposed development are likely to have an imperceptible effect on sites beyond this distance.

Table 5-1: European sites identified within 15 km of the Site

European Site	Distance ⁶	Qualifying Interests ⁷ and Conservation Objectives
Lower River Suir SAC (002137)	3.3 km northwest and Hydrological Connection	<p>Habitats</p> <p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]</p> <p>Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><i>Taxus baccata</i> woods of the British Isles [91J0]</p> <p>Species</p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p> <p><i>Lampetra fluviatilis</i> (River Lamprey) [1099]</p> <p><i>Alosa fallax fallax</i> (Twaite Shad) [1103]</p>

⁶ When measured in a straight line over the shortest distance between the Site and European (Natura 2000) site.

⁷ For SPAs, the bird species that are the reason for designation are Species of Conservation Interest (SCIs) and for SACs the habitats and species that are the reason for designation are its Qualifying Interests (QIs). For convenience, the term qualifying interest or QI is used here for both SPAs and SACs.

European Site	Distance ⁶	Qualifying Interests ⁷ and Conservation Objectives
		<p><i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002137.pdf</p>
<p>River Barrow and River Nore SAC (002162)</p>	<p>19.5 km east and Hydrological Connection</p>	<p>Habitats</p> <p>Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] <i>Salicornia</i> and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p>Species</p> <p><i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016] <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Alosa fallax fallax</i> (Twait Shad) [1103] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]</p>

European Site	Distance ⁶	Qualifying Interests ⁷ and Conservation Objectives
		<i>Trichomanes speciosum</i> (Killarney Fern) [1421] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002162.pdf

5.63 The Appropriate Assessment Screening and Natura Impact Statement (NIS) report prepared for this Project, concluded that with appropriate mitigation for impacts from excessive deposition of nitrogen arising from the emissions from the proposed bio-renewables anaerobic digestion (AD) plant, no Likely Significant Effects (LSEs) were possible for any European sites, and therefore all European sites have been scoped out from potential impacts and have not been assessed further in this chapter.

Natural Heritage Areas

5.64 **Table 5-22** details the Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA) within 15 km of the proposed development. In summary, there are eight pNHA and no NHAs within 15 km of the proposed development (see **Figure 5-3**).

Table 5-2: Proposed Natural Heritage Areas identified within 15 km of the Site

Site Name	Distance	Details ⁸
Killough Hill pNHA (00959)	5 m (covers parts of existing quarry site)	Designated for the following features: <ul style="list-style-type: none"> • Limestone pavement • Semi-natural grassland • Semi-natural woodland
Cabragh Wetlands pNHA (001934)	3.6 km north	No site synopsis is available for this designated site. This pNHA overlaps with part of the Lower River Suir SAC and is, presumably, designated for the same QIs.
Ardmayle Pond pNHA (000945)	7.1 km southwest	No site synopsis is available for this designated site. This pNHA overlaps with part of the Lower River Suir SAC and is, presumably, designated for the same QIs.
Laffansbridge pNHA (000965)	8.4 km southeast	Designated for the following features: <ul style="list-style-type: none"> • Calcareous grassland • Green-winged orchid <i>Orchid morio</i>
Aughnaglanny Valley pNHA (000948)	12.4 km west	Designated for the following features: <ul style="list-style-type: none"> • Semi-natural woodland • Red squirrel <i>Sciurus vulgaris</i> • Otter <i>Lutra lutra</i>
Knockroe Fox Covert pNHA (000964)	13.2 km southwest	Designated for the following features: <ul style="list-style-type: none"> • Semi-natural woodland

⁸ Information the National Parks & Wildlife Service (NPWS)

Site Name	Distance	Details ⁸
Power's Wood pNHA (000969)	13.7 km southeast	Designated for the following features: <ul style="list-style-type: none"> • Semi-natural woodland
Dundrum Sanctuary pNHA (000950)	14.8 km southwest	Designated for the following features: <ul style="list-style-type: none"> • Carr woodland • Wetlands

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Killough Hill pNHA (00959)

5.65 Killough Hill pNHA is designated for limestone pavement, semi-natural grassland, and semi-natural woodland. Due to its proximity to the Site, there is a potential pathway for impacts on this pNHA as a result of the proposed development. This pNHA is evaluated as important on a **national-level** due to the presence of nationally rare limestone pavement and associated grassland habitats. Negative impacts from excessive deposition of nitrogen arising from the emissions from the proposed bio-renewables anaerobic digestion (AD) plant have the potential to effect plant growth and therefore, effects on this pNHA are considered further in this report.

Cabragh Wetlands pNHA (001934)

5.66 Cabragh Wetlands pNHA overlaps with the Lower River Suir SAC. It is anticipated that this area is valued for similar reasons to the Lower River Suir SAC designations. Potential impacts on European sites have already been addressed in the AA screening and NIS report and so it is anticipated that there will be no effects on this pNHA. Therefore, this pNHA has been scoped out and can be excluded from further consideration in this report.

Ardmayle Pond pNHA (000945)

5.67 Ardmayle Pond pNHA overlaps with the Lower River Suir SAC. It is anticipated that this area is valued for similar reasons to the Lower River Suir SAC designations. Potential impacts on European sites have already been addressed in the AA screening and NIS report. Therefore, this pNHA has been scoped out and can be excluded from further consideration in this report.

Laffansbridge pNHA (000965)

5.68 Laffansbridge pNHA is designated for calcareous grassland and the nationally scarce species, green-winged orchid. This pNHA is considered to be sufficiently distant from the project such that it is not likely to be affected by the project. Therefore, this pNHA has been scoped out and can be excluded from further consideration in this report.

Aughnaglanny Valley pNHA (000948)

5.69 Aughnaglanny Valley pNHA is designated for semi-natural woodland, red squirrel and otter. There are no surface water hydrological connections between this pNHA and this Site. This pNHA is considered to be sufficiently distant from the project such that it is not likely to be affected by the project. Therefore, this pNHA has been scoped out and can be excluded from further consideration in this report.

Knockroe Fox Covert pNHA (000964)

- 5.70 Knockroe Fox Covert pNHA is designated for semi-natural woodland. This pNHA is considered to be sufficiently distant from the project such that it is not likely to be affected by the project. Therefore, this pNHA has been scoped out and can be excluded from further consideration in this report.

Power's Wood pNHA (000969)

- 5.71 Power's Wood pNHA is designated for semi-natural woodland. This pNHA is considered to be sufficiently distant from the project such that it is not likely to be affected by the project. Therefore, this pNHA has been scoped out and can be excluded from further consideration in this report.

Dundrum Sanctuary pNHA (000950)

- 5.72 Dundrum Sanctuary pNHA is designated for carr woodland and wetlands. There are no surface water hydrological connections between this pNHA and this Site. This pNHA is considered to be sufficiently distant from the project such that it is not likely to be affected by the project. Therefore, this pNHA has been scoped out and can be excluded from further consideration in this report.

Habitats

- 5.73 Habitats present within the Site, as recorded during the walkover survey, are described in this section. Habitat classification follows that of Fossitt (2000) 'A Guide to Habitats in Ireland'. A habitat map for the site is provided in **Figure 5-1**.

Desk study

- 5.74 Consultation with Biodiversity Maps⁹ revealed that the woodland located on the north-western side of the quarry has been classified as long-established woodland with mixed woodland, conifer plantation, and semi-natural broadleaf woodlands identified (Perrin and Daly, 2010). This woodland was also identified during the National Survey of Native Woodlands (NSNW) as being non-Annex oak-ash-hazel woodland (WN2) using the Fossitt classification system, excluding the area of conifer plantation located at the south-western corner of the quarry (Perrin *et al.*, 2008).
- 5.75 Consultation with NPWS Article 17 GIS and Metadata – interactive map viewer for 2019 spatial data¹⁰ returned no Annex I habitat within the Site or immediately adjacent to the Site.

Field survey**Active Quarries and Mines (ED4)**

- 5.76 Most of the Site is comprised of active quarry works. Specific uses at the time of survey include stockpiling of aggregates to the west of the Site, tracks used for movement of quarry vehicles, and storage/ parking of vehicles and equipment. Some floral species growing along the side of tracks include teasel *Dipsacus fullonum*, colt's-foot *Tussilago farfara*, mouse-eared hawkweed *Pilosella officinarum* and rosebay willowherb *Chamerion angustifolium*.

⁹ <https://maps.biodiversityireland.ie/Map>. (Accessed December 2024).

¹⁰ <https://storymaps.arcgis.com/collections/1a721520030d404f899d658d5b6e159a?item=1>. (Accessed December 2024).

- 5.77 Much of the area surrounding the Site also comprises active quarries and mines. At the time of the survey, a section of the quarry to the north-west of the Site was in use for quarry activities. Although not currently in use for quarry activities, much of the eastern section still had the features of an active quarry with any floral components limited to isolated individual plants, such as willow *Salix spp.*
- 5.78 This habitat is assessed to be of **negligible value** for biodiversity and, therefore, has been excluded from further assessment in this report.

Buildings and Artificial Surfaces (BL3)

- 5.79 There is one storage building within the application site, along with a weighbridge, and associated artificial surfaces. The building is located in the north-east corner of the Site. It seems to be an old agricultural building with a main section comprised of wooden beams and corrugated steel and two adjacent smaller rooms comprised of stone or brick and a corrugated steel roof. This building is primarily used for storage and has multiple entry points e.g. windows, open facades. There is a large Scot's pine *Pinus sylvestris* growing immediately adjacent to the southern wall of this building alongside smaller individuals of beech *Fagus sp.* and sycamore *Acer pseudoplatanus*.
- 5.80 This habitat is assessed to be of **negligible value** for biodiversity and, therefore, has been excluded from further assessment in this report.

Earth Banks (BL2)

- 5.81 There is a vegetated earth bank along the north-western boundary of the Site. This habitat comprised of grassland and was planted with a treeline consisting of young conifers. There are further earth banks within the site, some of which has become completely vegetated with grasses and herbaceous species including willow scrub, bramble *Rubus spp.* and rosebay willowherb.
- 5.82 Existing screening berms (c. 4-6m in height) and hedge/tree vegetation bound the southern and western boundaries of the application site.
- 5.83 This habitat is assessed to be of **negligible value** for biodiversity and, therefore, has been excluded from further assessment in this report.

Mixed Broadleaved/ Conifer Woodland (WD2)

- 5.84 There is a narrow strip of mixed woodland along the southern boundary of the Site. This strip of woodland seems to consist of two main planted treelines – the inner treeline consisting of primarily broadleaved species such as willow and beech, with an understory of dense bramble, and the outer treeline which is primarily conifer species such as Scot's pine. Most trees in this woodland are approximately 5 m in height and have been planted on the existing perimeter screening earth bank. This line of trees will be retained (**Figure 5-1**).
- 5.85 There are two other strips of woodland bordering the existing main access road. Both strips of woodland seem to be more mature than the strip above, with some of the tallest trees reaching between 15 – 20 m in height. The western strip includes species such as Scot's pine, willow, lawson cypress *Chamaecyparis lawsoniana*, spruce *Picea sp.* and sycamore. The eastern woodland is dominated by beech species along with lawson cypress and sycamore.
- 5.86 The area of woodland surrounding the existing quarry was largely inaccessible. Based on satellite imagery and assessment using binoculars, this area also seems

to be mixed broadleaved/ conifer woodland habitat. Some species recorded along the eastern edge of this woodland include willow and elder *Sambucus spp.* This woodland is part of the Killough Hill pNHA which has a more detailed description within the site synopsis and is located outside of the application area.

- 5.87 There is an area of mixed woodland to the southwest of the existing quarry and to the north of the application site boundary. This area has been intentionally retained within the quarry and consists of a range of species including crab apple *Malus sylvestris*, hawthorn *Crataegus monogyna*, sycamore, ash *Fraxinus excelsior* and conifer species. There is a small area within the woodland consisting of young alder *Alnus glutinosa*, and there are horse chestnut *Aesculus hippocastanum* saplings growing along the woodland boundary. Herbaceous species along the border of this woodland include strawberry *Fragaria sp.*, bramble, colt's-foot, tormentil *Potentilla erecta*, spear thistle *Cirsium vulgare*, creeping thistle *Cirsium arvense*, silverweed *Potentilla anserina*, figwort *Scrophularia sp.*, st. john's wort *Hypericum sp.*, hoary willowherb *Epilobium parviflorum*, rosebay willowherb and common ragwort *Jacobaea vulgaris*. This woodland is part of the Killough Hill pNHA.
- 5.88 As mentioned above, also within the Killough Hill pNHA there is the woodland located on the north-western side of the quarry (and outside of the planning application area) which has been classified as long-established woodland with mixed woodland, conifer plantation, and semi-natural broadleaf woodlands identified (Perrin and Daly, 2010).
- 5.89 Also, while the site is entirely within the aggregate stockpile storage area, there are a number of individual tree comprising 6 semi-mature trees (beech and pine), as well as 5 young pine and ca. 50 young willow, which have self-seeded throughout the site, which will have to be removed to facilitate the development.
- 5.90 The surrounding woodland habitat is assessed to be of **local-level importance** for biodiversity due to its capacity to support local fauna. The woodland habitats to the north and west of the Site do not extend into the proposed project area and the Project will not result in the removal of any of the woodland. However, negative impacts from excessive deposition of nitrogen arising from the emissions from the proposed bio-renewables anaerobic digestion (AD) plant have the potential to effect plant growth and therefore, effects on this woodland are considered further in this report.

Recolonising Bare Ground (ED3)

- 5.91 Within the quarry itself (and outside of the application site), there are areas of recolonising ground, and this habitat seems to form a mosaic with scrub along the slopes north of the retained area of mixed woodland. Herbaceous species include small patches of gorse *Ulex europaeus*, bracken *Pteridium aquilinum*, eyebright *Euphrasia officinalis*, centaury *Centaureum erythraea*, lady's bedstraw *Galium verum* and short patches of grass species. *Cotoneaster sp.* has also started to colonise this area.
- 5.92 There are narrow strips of recolonising bare ground along the raised southeast boundary of the quarry (and outside the application area). These areas are dominated by oxeye daisy *Leucanthemum vulgare* and knapweed *Centaurea nigra*. Grass species include cocksfoot *Dactylis glomerata* and false oat grass *Arrhenatherum elatius*. Other herbaceous species include pyramidal orchid *Anacamptiss pyramidalis*, common bird's-foot-trefoil *Lotus corniculatus*, slender st. john's wort *Hypericum pulchrum* and carline thistle *Carlina vulgaris*. *Cotoneaster sp.* has colonised in some areas. The track leading to this area is dominated by grasses

and herbaceous species such as rosebay willowherb, common hogweed *Heracleum sphondylium*, silverweed and oregano *Origanum vulgare*.

- 5.93 This habitat is assessed to be of **negligible value** for biodiversity and, therefore, has been excluded from further assessment in this report.

Scrub (WS1)

- 5.94 There are areas of scrub within the application site. These areas exist primarily as part of a mosaic with grassland habitat and consist primarily of gorse, with some isolated trees including sycamore, hawthorn, ash and willow occurring immediately north of the retained mixed woodland. Herbaceous species include stinging nettle *Urtica dioica*, common ragwort, and bracken.
- 5.95 There are further areas of scrub bordering the track that leads to the raised south-eastern boundary of the quarry. This area consists primarily of gorse, bramble and willow.
- 5.96 This habitat is assessed to be of **negligible importance** for biodiversity due to its capacity to support local fauna and therefore, has been therefore, has been excluded from further assessment in this report.

Habitats summary

- 5.97 No Annex I habitats were located within the Site.
- 5.98 **Table 5-3** provides a summary of the habitats identified on the Site. The following sections detail each habitat in further detail, and they are shown in **Figure 5-1**.

Table 5-3: Summary of the habitats identified on the Site

Habitat	Fossitt code	Total area (ha) / length (m)	Corresponding Annex I habitat	Importance
Active Quarries and Mines	ED4	4.92 ha	None	Negligible
Buildings and Artificial Surfaces	BL3	0.04 ha	None	Negligible
Earth Banks	BL2	342 m	None	Negligible
Mixed Broadleaved/Conifer Woodland	WD2	0.57 ha	None	Local (potential impacts)
Recolonising Bare Ground	ED3	Trace (outside application area)	None	Negligible
Scrub	WS1	0.52 ha	None	Negligible

Rare or Protected Flora

- 5.99 The NBDC database was searched for records of rare and/or protected species from the 2 km grid square S15A within which the Site is located. The records of rare and/or protected species are presented in **Table 5-3** below.

Table 5-3: Rare and/or Protected Species Recorded Within 2 km Grid Square S15A

Species	Date of Last Record	No. of Records	Conservation Status	Dataset
Common Frog <i>Rana temporaria</i>	2013	1	EU Habitats Directive: Annex V Protected Species: Wildlife Act	Newt Survey 2010-2014
Common Kestrel <i>Falco tinnunculus</i>	2011	1	Birds of Conservation Concern: Red	Bird Atlas 2007 - 2014
Common Linnet <i>Carduelis cannabina</i>	1991	1	Birds of Conservation Concern: Amber	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
House Sparrow <i>Passer domesticus</i>	2016	1	Birds of Conservation Concern: Amber	Birds of Ireland
Sand Martin <i>Riparia riparia</i>	1991	1	Birds of Conservation Concern: Amber	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Eurasian Badger <i>Meles meles</i>	2005	6	Protected Species: Wildlife Act	Badger Setts of Ireland Database
Eurasian Red Squirrel <i>Sciurus vulgaris</i>	2012	2	Protected Species: Wildlife Act	Irish Squirrel Survey 2012
Pine Marten <i>Martes martes</i>	2012	1	EU Habitats Directive: Annex V Protected Species: Wildlife Act	Irish Squirrel Survey 2012

Threatened/ Protected Plants

- 5.100 The data search returned no records of threatened/ protected plant species within the 2 x 2 km square.
- 5.101 No threatened/protected plant species were noted within the proposed application area.
- 5.102 The Site is assessed as being of **negligible importance** for protected/ threatened flora and, therefore, they can be excluded from further assessment in this report.

Invertebrates

- 5.103 The data search returned no records of threatened/ protected invertebrates within the 2 x 2 km square.
- 5.104 No threatened/ protected invertebrates were noted within the proposed application area.
- 5.105 The scrub and woodland habitats on-site may provide foraging and refuge habitat for common and widespread invertebrates.
- 5.106 The Site is assessed as being of **negligible importance** for invertebrates. However, their supporting habitats will be retained during the proposed development and, therefore, can be excluded from further assessment in this report.

Birds

- 5.107 The data search returned the following records of threatened/protected birds within the 2 x 2 km square: common kestrel, common linnet, house sparrow, and sand martin.
- 5.108 Sand martins were noted as incidental species during the initial field survey conducted on 07 August 2024. This species were observed nesting in a stockpile located immediately north of the retained mixed woodland within the existing quarry but outside the application site boundary. Multiple individuals were observed flying above the nesting area and entering the nest holes. This area will not be affected by the proposed development and therefore the sand martin population will not be affected.
- 5.109 The strips of woodland and scrub habitat along the Site boundaries and within the Site could provide suitable nesting and foraging habitat for a variety of common and widespread passerine species.
- 5.110 The faces within the existing quarry area (and outside the application area) may provide suitable nesting habitat for peregrine and kestrel. No nests were identified on the quarry faces that could be observed during the field survey on 07 August 2024. There is no potential nesting habitat for these species within the application site boundary.
- 5.111 The Site is assessed as being of **local-level importance** for birds. However, while the supporting habitats will be retained during the proposed development, the loss of habitats for breeding birds is considered further in this report.

Mammals

Bats

- 5.112 The data search returned no records of bat species within the 2 x 2 km square.
- 5.113 The Site is considered to be of low value to foraging and commuting bats due to the presence of suitable habitats (i.e. woodland edge) which have good connectivity with the surrounding hedgerow network and connectivity with woodland along the northern boundary of the existing quarry. However, these habitats will be retained during the proposed development and there will be no effect on the local bat population.
- 5.114 There are limited opportunities for bat roosting on-site. The trees noted on-site during the field survey are primarily of negligible roosting suitability as they are not of sufficient size or maturity to be used on a regular basis by a bats. The storage building (see Section 0) that is currently being used for storage, and which is due to be removed for the proposed development, which has entrances that may be accessed by roosting bats. However, the corrugated roof of this building reduces its suitability as a bat roost. Therefore, this building is considered to be of negligible suitability for roosting bats.
- 5.115 The Site is assessed as being of **negligible importance** for bats.

Other Mammals

- 5.116 The data search returned the following records of threatened/protected mammal species within the 2 x 2 km square: badger, red squirrel, and pine marten.

- 5.117 There were no mammal species or signs recorded during the 07 August 2024 survey. The understorey of woodland habitats within the Site were quite dense at the time of survey, which may have obscured potential mammal signs and tracks. Woodland habitats within the Site may be utilised by common and widespread mammals.
- 5.118 The Site is assessed as being of **negligible importance** for other mammals. However, their supporting habitats will be retained during the proposed development and, therefore, can be excluded from further assessment in this report.

Invasive Species

- 5.119 The data search returned records of eastern grey squirrel *Sciurus carolinensis* within the 2 x 2 km square. This species is listed in the Third Schedule list of the European Communities (Birds and Natural Habitats) Regulations 2011 [S.I.477/2011].
- 5.120 The data search also returned the following records of invasive species within the 2 x 2 km square: butterfly-bush *Buddleja davidii*, sycamore *Acer pseudoplatanus*, traveller's-joy *Clematis vitalba*, bank vole *Myodes glareolus*, and European rabbit *Oryctolagus cuniculus*. These species are considered to be a risk of medium impact invasive species (Kelly et al., 2013).
- 5.121 Butterfly-bush was noted within the proposed area of works, as well as the surrounding quarry area. *Cotoneaster* sp. was also noted within the surrounding quarry area; however, these species were not observed in the proposed development area and have therefore been excluded from further assessment in this report.

Summary of Important Ecological Features

- 5.122 **Table 5-5** summarises all important (Local-level and above) ecological features for which detailed assessment is required. The geographical scale of importance for the ecological features within the Site are summarised along with their legal status.

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Table 5-4: Summary of Important Ecological Features Subject to Detailed Assessment

Ecological Feature			Scale of Importance	Comments on Legal Status and/or Importance
Designated sites	Proposed Natural Heritage Areas	Killough Hill pNHA	National level	<ul style="list-style-type: none"> Designated for limestone pavement, semi-natural grassland, and semi-natural woodland. Afforded local policy protection under the following policy of the Tipperary County Development Plan: <ul style="list-style-type: none"> 11 – 3: Ensure the conservation and protection of existing, and proposed NHAs, and to ensure that proposed developments within or in close proximity to an existing or proposed NHA would not have a significant adverse impact on the status of the site as described.
Habitat	Mixed Broadleaved/ Conifer Woodland (WD2) and, Individual trees		Local Level	<ul style="list-style-type: none"> Woodland forms parts of the Killough Hill pNHA and will have similar conservation status.
Species	Birds		Local Level	<ul style="list-style-type: none"> All bird species, their nests and eggs, are protected under the Wildlife Acts 1976 as amended.

Assessment of Effects and Mitigation Measures

5.123 This section sets out the potential impacts and their effects on important ecological features. The information available from the desk study and fieldwork has been used to identify impacts and the significant effects including positive, negative, direct, indirect, and cumulative effects. The following design principles and “designed-in” mitigation have informed the assessment of impacts.

- Within the design of the proposal good practice environmental and pollution control measures are employed with regard to current best practice guidance such as, but not limited to, the following:
 - o EPA Environmental Management Guidelines (2006): Environmental Management in the Extractive Industry (Non-Scheduled Minerals); and
 - o DoEHLG (Department of the Environment, Heritage and Local Government) April 2004: Quarries and Ancillary Activities Guidelines for Planning Authorities.
- Landscaping measures are proposed within the design of the development. These are listed in full in Chapter 2 of the EIAR (refer also to EIAR Figure 2-2). Landscaping for the Site will include the following;
 - o The overall development plan is shown in Figure 2-2 and is entirely within the existing operational quarry site. There will be no requirement to remove topsoil or overburden off site. While the site is within the aggregate stockpile storage area, 6 semi-mature trees (beech and pine), as well as 5 young pine and ca. 50 young willow, which have self-seeded throughout the site, will have to be removed to facilitate the development, refer to Figure 2-3.
 - o Existing screening berms (c. 4-6m in height) and hedge/ tree vegetation bound the southern and western boundaries of the application site will be retained and allowed to develop.

5.124 Taking the above into account, the potential impacts of the proposed development are outlined in the following sections.

Do Nothing Impact

5.125 In the absence of the proposed development, it is likely that the Site would continue to be used as an aggregate stockpile storage area.

Potential Impacts and Effects

Killough Hill pNHA

Potential Impacts

5.126 Killough Hill pNHA is designated for nationally rare limestone pavement, semi-natural grassland, and semi-natural woodland. All of this site lies outside the project Site and there will be no direct habitat loss, however, there is the potential for vegetation growth to be affected by excessive deposition of nitrogen arising from the emissions from the proposed bio-renewables anaerobic digestion (AD) plant.

Proposed Mitigation Measures

- 5.127 The operational measures proposed to control the emissions arising from the Project are as follows:
- the chicken litter and brewery residue silos, cattle slurry tanks, pretreatment and equalization building, bio rest tanks and digestate handling building would be enclosed structures, with air extracted to the odour abatement system;
 - the odour abatement system would treat the air extracted from these areas prior to discharge to atmosphere via a dispersion stack at a height of 17.5m;
 - the anaerobic digestion process would be undertaken within sealed reactors located within the bioconversion building. These sealed reactors would be connected to the gas capture system, ensuring complete containment; and
 - a site management system would be in place to ensure routine cleaning measures are undertaken (i.e. spillages cleared and not left in situ).
- 5.128 In addition, an Environmental Management System (EMS) will be put in place for the facility which will include, but not be limited to the following:
- Measures to comply with the Industrial Emissions licence and other relevant environmental legislation;
 - Waste Acceptance Procedures;
 - Standard Operating Procedures;
 - Measures to comply with the corporate sustainability goals (e.g., reducing water and energy consumption); and,
 - Accident prevention and emergency response procedures.
- 5.129 Further details on the control of emissions arising from the Project are provided in *Chapter 8 – Air Quality* of this EIAR.

Significance of Residual Effects

- 5.130 The implementation of operational measures proposed to control the emissions arising from the Project will ensure that there will be no effects on the condition of the habitats within the Killough Hill pNHA.

Mixed Broadleaved/ Conifer Woodland (WD2) and, Individual trees

Potential Impacts

- 5.131 There will be no direct habitat loss within the Mixed Broadleaved/ Conifer Woodland however, there is the potential for vegetation growth to be affected by excessive deposition of nitrogen arising from the emissions from the proposed bio-renewables anaerobic digestion (AD) plant.
- 5.132 There will be the direct loss of a small number of individual trees which will include 6 semi-mature trees (beech and pine), as well as 5 young pine and ca. 50 young willow.

Proposed Mitigation Measures

- 5.133 Mitigation proposed to control the emissions arising from the Project are set out above in 5.129
- 5.134 There is no proposal to replace the trees which will be removed but these trees are all young self-seeded trees which are not part of any ecologically valuable woodland or treeline in the area. Considering this, as well as the existing substantial vegetation

screening surrounding the facility area and the quarry development in general, all of which will be retained, no replacement planting is considered necessary as part of the proposed development.

Significance of Residual Effects

- 5.135 The small number of young self-seeded trees that will be removed have limited biodiversity value and there will be no loss of ecologically valuable woodland or treeline in the area.

Birds

Potential Impacts

- 5.136 The direct loss of a small number of individual trees which will include 6 semi-mature trees (beech and pine), as well as 5 young pine and ca. 50 young willow will result in the loss of potential breeding and foraging habitat for the bird assemblage in the area.

Proposed Mitigation Measures

- 5.137 The clearance of the trees within the Site must be carried out outside of the bird nesting season (1st March – 31st August inclusive); this will avoid any loss of breeding birds.
- 5.138 There is sufficient and more suitable bird nesting habitat surrounding the proposed development Site and no replacement trees is required.

Significance of Residual Effects

- 5.139 The loss of a small number of young and semi-mature trees will not significantly reduce bird nesting habitat in the area and so will not affect breeding birds in the area.

In-combination Effects with other developments

- 5.140 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a project results in individually insignificant impacts that, when considered in-combination with impacts of other proposed or permitted plans and projects, can result in significant effects (CIEEM, 2018).
- 5.141 The Tipperary County Development Plan (CDP) 2022-2028 was reviewed for strategies and objectives that may act in-combination with the project. There are no strategies or objectives in the Tipperary County Development Plan (CDP) 2022-2028 that are likely to result in significant effects when considered in-combination with the proposed development.
- 5.142 A GIS search was undertaken of available online planning search facilities provided by the prevailing local planning authorities, An Bord Pleanála and the EIA Portal, as well as the Tipperary County Development Plan (CDP) 2022-2028 and the on-line planning portal for these counties. The GIS search covered a radius of c. 5km from the application site. **Table 5-6** details the granted planning applications. All other applications are considered sufficiently distant from the site to have no in-combination effects with the project.
- 5.143 There were three planning applications within 500 m of the Site within the last 5 years. One of these applications was incomplete, while the remaining applications involved the construction of single-storey buildings that were considered unlikely to contribute to any 'in combination' effects with the Project.

5.144 Planning applications with hydrological connections to the Site were also considered. Those applications which were of significantly large scale or had the potential for similar LSE as the Project were considered for potential cumulative impacts. The Natura Impact Statements associated with these developments concluded that, following appropriate mitigation measures, there were no likely significant effects anticipated. As such, it is considered that there are no likely significant 'in combination' effects anticipated from this Project.

Table 5-6: Relevant Local Planning Applications within 500 m of the Site within the Last 5 Years

Planning Reference	Bried Description	Planning Status
19600799	To construct a single-storey ancillary family accommodation and all associated works	Conditional
22206	The development will consist of an aggregate storage shed (area 980 m2) within the existing quarry landholding	Conditional
18600270	Development comprising the establishment and operation of an enclosed limestone processing facility (area 600 sq. metres and max. height 30 metres) and associated ancillary infrastructure on a O.S. hectare site within the existing quarry landholding. The development will include the lowering of existing ground levels by c.7 meters	Incomplete

Conclusion

- 5.145 SLR Consulting Limited conducted an ecological assessment of the Site and prepared this biodiversity chapter to inform the wider Environmental Impact Assessment process and production of an Environmental Impact Assessment Report to accompany the planning application by Roadstone for a bio-renewables anaerobic digestion (AD) plant as detailed in Chapter 2 of the EIAR.
- 5.146 The AD plant will be constructed on an area of the quarry currently occupied by processed aggregate stockpiles which will be relocated elsewhere within the quarry site prior to any development works associated with the proposed bio-renewables facility being carried out and so there will be no need to remove any significant habitats or soils from the area.
- 5.147 The application site is not subject to any statutory or non-statutory designation and no such sites will be directly or indirectly impacted upon by the proposed development. A separate AA Screening and Natura Impact Statement report has been prepared to be read alongside this report relating to impacts to designated sites.
- 5.148 The proposed AD plant construction phase will result in the direct loss of a small number of young self-seeded trees which have limited biodiversity value and there will be no loss of ecologically valuable woodland or treeline in the area. Existing habitats including woodland, scrub, hedgerows and treelines located outside the proposed application area will be retained.
- 5.149 During the operational phase of the Project there is the potential for nitrogen emissions from the AD plant to effect the vegetation and habitats on the Site as well as sensitive habitats and species in the other areas of the quarry and areas surrounding the Site. However, appropriate built-in anaerobic digestion (AD) plant design mitigation measures will prevent any nitrogen pollution from arising.
- 5.150 Therefore, no significant effects are predicted to impact any rare and protected species and potential significant effects on the biodiversity of the area will not occur.

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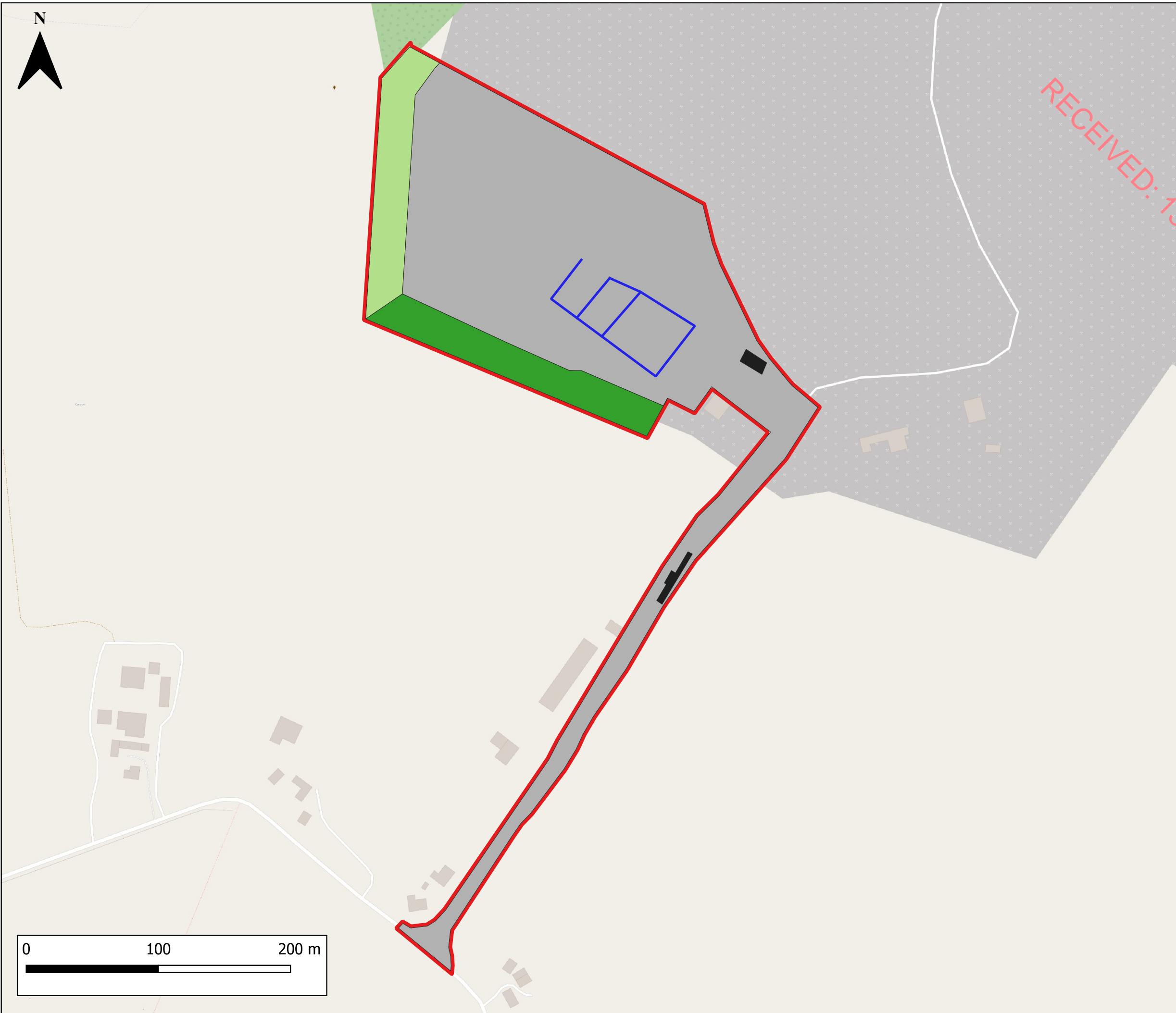
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Figures

Figure 5-1: Habitat Map

Figure 5-2: Designated Sites

Figure 5-3: NHA and pNHA Map



NOTES

1. Base Mapping: OpenStreetMap ©
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LEGEND

- Application Site Boundary
- Habitats
- ED4 - Active Quarries and Mines
- BL3 - Buildings and Artificial Surfaces
- WS1 - Scrub
- WD2 - Mixed Broadleaved/Conifer Woodland
- BL2 - Earthbanks

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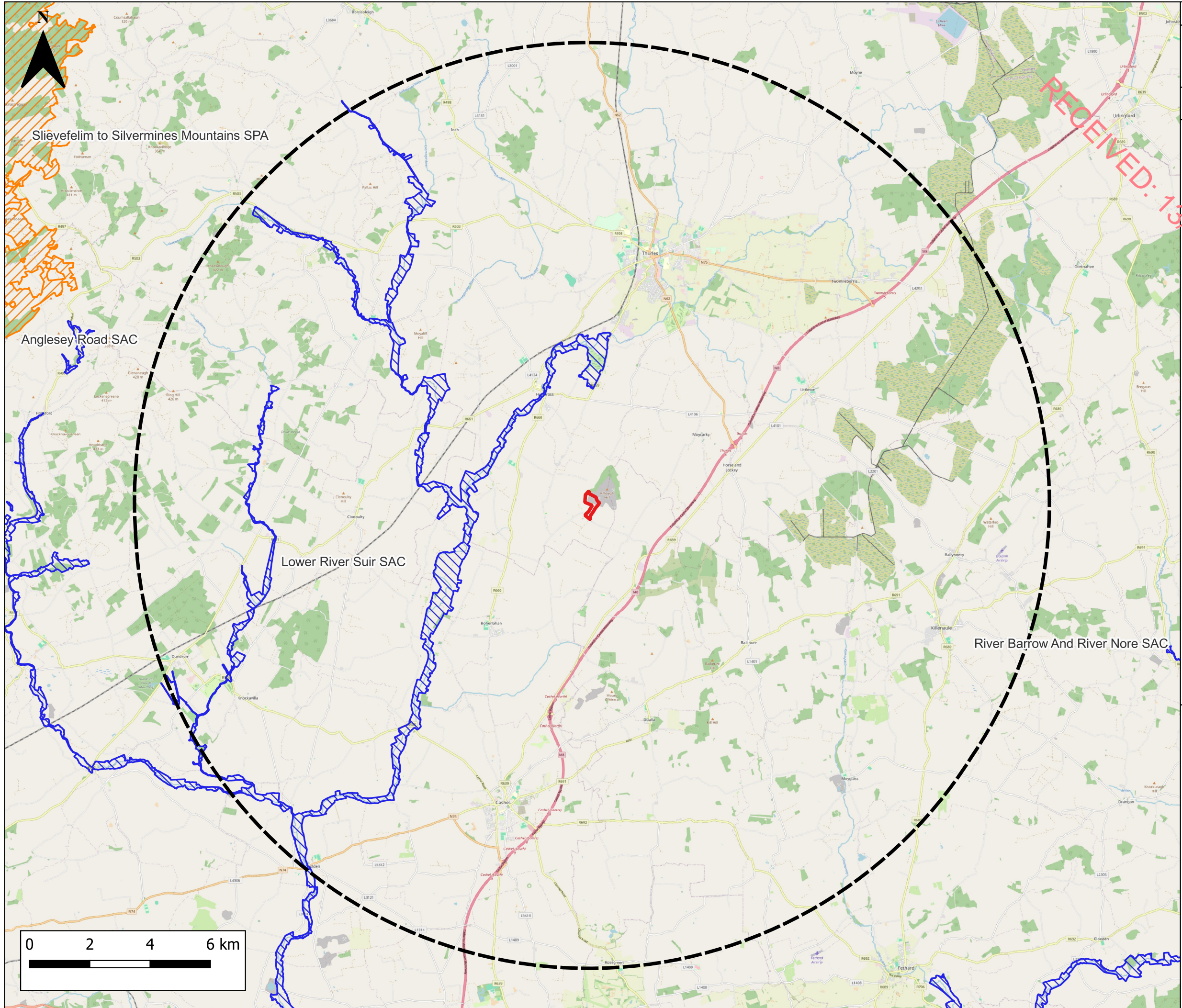
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Bio-renewables Plant
 Killough Quarry, Thurles, Co. Tipperary

Habitat Map

FIGURE 5-1

Scale 1:2750 @ A3	Date DEC 2024
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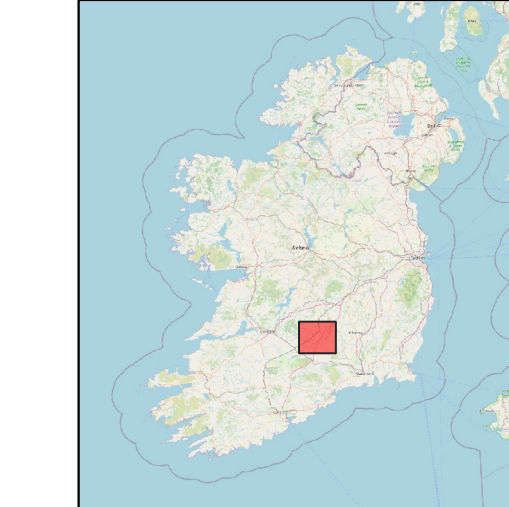


NOTES

1. Base Mapping: OpenStreetMap © (www.openstreetmap.org/copyright)

LEGEND

- Application Site Boundary
- 15 km Buffer
- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)



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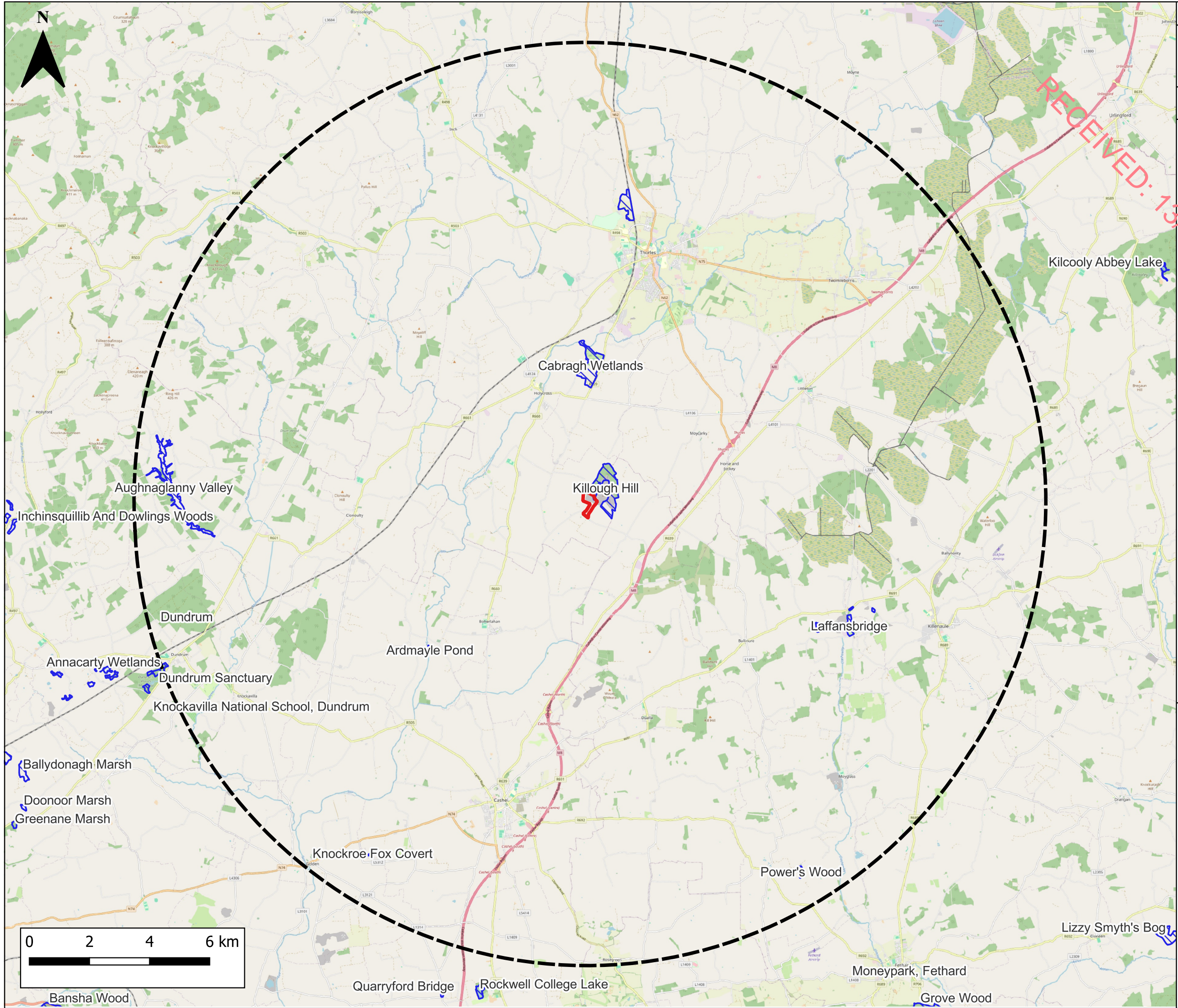
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Bio-renewables Plant
 Killough Quarry, Thurles, Co. Tipperary
European Sites Map

FIGURE 5-2

Scale
 1:120000 @ A3

Date
 DEC 2024

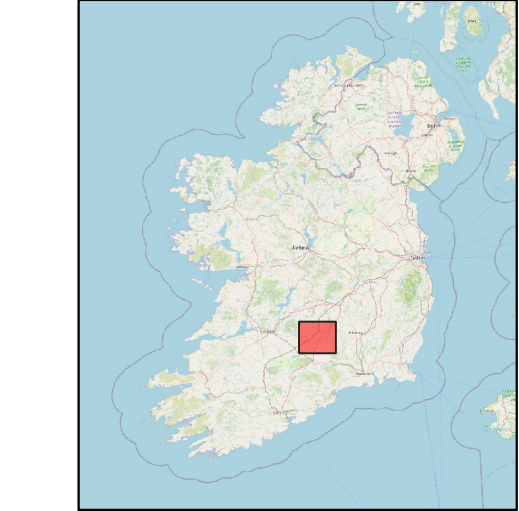


NOTES

1. Base Mapping: OpenStreetMap © (www.openstreetmap.org/copyright)

LEGEND

- Application Site Boundary
- 15 km Buffer
- Natural Heritage Areas (NHAs)
- Proposed Natural Heritage Areas (pNHAs)



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Bio-renewables Plant
 Killough Quarry, Thurles, Co. Tipperary
Natural Heritage Areas Map

FIGURE 5-3

Scale: 1:120000 @ A3
 Date: DEC 2024

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Appendices

Appendix 5-A

Relevant Legislation and Planning Policy

5-A.1 EIA Directive 2014/52/EU

The EIA Directive, Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment as amended by Council Directive 97/11/EC of 3 March 1997, Directive 2003/35/EC of 26 May 2003 and Directive 2009/31/EC of 23 April 2009, now codified in Directive 2011/92/EU of 13 December 2011 and amended in Directive 2014/52/EU of 16 April 2014, is designed to ensure that projects likely to have significant effects on the environment are subject to a comprehensive assessment of environmental effects prior to project consent being given.

The EIA Directive was first transposed into Irish law by the European Communities (Environmental Impact Assessment) Regulations, 1989 (S.I. No. 349 of 1989) which amended the Local Government (Planning and Project) Act, 1963 (and other legislation) to provide for environmental impact assessment. The European Union (Planning and Project) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) transpose the requirements of Directive 2014/52/EU, Amending previous Directive 2011/92/EU, on the assessment of the effects of certain public and private projects on the environment (the EIA Directive) into Irish planning law.

5-A.2 Habitats and Birds Directive

The Habitats Directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species. Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora was adopted in 1992 and aims to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. It forms the cornerstone of Europe's nature conservation policy with the Birds Directive and establishes the EU wide Natura 2000 ecological network of protected areas, safeguarded against potentially damaging projects. The Natura 2000 network of protected areas is known as Special Areas of Conservation (SAC) and Special Protection Areas (SPA). In general terms, they are considered to be of exceptional importance in terms of rare, endangered or vulnerable habitats and species within the European Community. The requirements of the Habitats Directive have been transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011 [S.I. No. 477/2011]. This legislation affords protection to both Special Protection Areas and Special Areas of Conservation. Special Areas of Conservation (SAC) are designated under the Conservation of Natural Habitats and of Wild Fauna and Flora Directive 92/43/EEC (Habitats Directive) which is transposed into Irish law by the EC (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). Special Protection Areas (SPA) are classified under the Birds Directive (2009/147/EC on the Conservation of Wild Birds). Article 6(3) of the Habitats Directive requires an 'appropriate assessment' to be undertaken for any plan or project that is likely to have a significant effect on the conservation objectives of a Natura 2000 site. An 'appropriate assessment' is an evaluation of the potential impacts of a plan or project on the integrity of a Natura 2000 site, and the incorporation, where necessary, of measures to mitigate or avoid negative effects.

5-A.3 National Legislation

Flora and fauna in Ireland are protected at a national level by the Wildlife Acts 1976 to 2018 and the Floral (Protection) Order 2022. Natural Heritage Areas (NHA) are areas that are considered to be important for the habitats present or for the species of plants and animals supported by those habitats. Under the Wildlife Amendment Act 2000, NHAs are legally protected from damage from the date they were formally proposed for designation. Section 19(1) of the Act states that 'Where there is a subsisting natural heritage area order in respect of any land, no person shall carry out, or cause or permit to be carried out, on that land any works specified in the order or any works which are liable to destroy or to significantly alter, damage or interfere with the features by reason of which the designation order was made'. In addition, a list of proposed NHAs (pNHAs) was published in 1995 but to date these have not had their status confirmed. Prior to statutory designation, pNHAs are subject to limited protection under various agri-environment and forestry schemes and under local authority planning strategies such as County Project Plans.

5-A.4 Southern Regional Assembly - Regional Spatial and Economic Strategy

The regional biodiversity and regional heritage policy objectives are set out in the following section and summarised in Table 5-A.4.

Table 5-A.4: Regional biodiversity and natural heritage policies for the southern region

Policy Reference	Policy
RPO 126	<p>a. Promote biodiversity protection and habitat connectivity both within protected areas and in the landscape through promoting the integration of green infrastructure and ecosystem services, including landscape, heritage, biodiversity and management of invasive and alien species in the preparation of statutory and non-statutory land-use plans. The RSES recognises the role of the National Biodiversity Data Centre through its Citizen Science initiatives;</p> <p>b. Support local authorities acting together with relevant stakeholders in implementing measures designed to identify, conserve and enhance the biodiversity of the Region; seek and support the implementation of the All-Ireland Pollinator Plan, National Biodiversity Action Plan and National Raised Bog SAC Management Plan;</p> <p>c. Local Authorities are required to carry out required screening of proposed projects and any draft land-use plan or amendment/ variation to any such plan for any potential ecological impact on areas designated or proposed for inclusion as Natura 2000/ European Sites and shall decide if an Appropriate Assessment is necessary, of the potential impacts of the project or plan on the conservation objectives of any Natura 2000/European Site;</p> <p>d. Support local authorities to carry out, monitor and review biodiversity plans throughout the Region. Planning authorities should set objectives in their land use plans to implement and monitor the actions as set out in the National and County Biodiversity Plans, as the conservation of biodiversity is an essential component of sustainable development. Local authorities should address the issue of fisheries protection and invasive introduced species and encourage the use of native species for landscape planting in rural areas, in the review of their biodiversity plans;</p> <p>e. Support local authorities to work with all stakeholders to conserve, manage and where possible enhance the Regions natural heritage including all habitats, species, landscapes and geological heritage of conservation interest and to promote increased understanding and awareness of the natural heritage of the Region.</p>
RPO 127	<p>It is an objective to:</p> <p>a. Support coordination between the Region’s local authorities in terms of their measures to survey invasive species in their counties and coordinate regional responses;</p> <p>b. Encourage greater awareness of potential threats caused by invasive species and how they are spread;</p> <p>c. Carefully consider and implement the management of invasive species where there is a corridor, such as hydrological connections to European Sites in order to prevent the spread of invasive to sensitive sites.</p>

5-A.5 Relevant Planning Policy

5-A.5.1 Tipperary County Development Plan 2022-2028

The Co. Tipperary planning policy and legislation relating to biodiversity that is relevant to the proposed project is set out in the following section. This plan contains a number of policies relevant to ecology and nature conservation that are summarised below:

11 – 1: In assessing proposals for new development to balance the need for new development with the protection and enhancement of the natural environment and human health. In line with the provisions of Article 6(3) and Article 6 (4) of the Habitats Directive, no plans, programmes, etc. or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects).

11 – 2: Ensure the protection, integrity and conservation of European Sites and Annex I and II species listed in EU Directives. Where it is determined that a development may individually, or cumulatively, impact on the integrity of European sites, the Council will require planning applications to be accompanied by a NIS in accordance with the Habitats Directive and transposing Regulations,

'Appropriate Assessment of Plans and Projects, Guidelines for Planning Authorities' (DEHLG 2009) or any amendment thereof and relevant Environmental Protection Agency (EPA) and European Commission guidance documents.

11 – 3: Ensure the conservation and protection of existing, and proposed NHAs, and to ensure that proposed developments within or in close proximity to an existing or proposed NHA would not have a significant adverse impact on the status of the site as described.

11 - 4 (a): Conserve, protect and enhance areas of local biodiversity value, habitats, ecosystems and ecological corridors, in both urban and rural areas, including rivers, lakes, streams and ponds, peatland and other wetland habitats, woodlands, hedgerows, tree lines, veteran trees, natural and semi-natural grasslands in accordance with the objectives of the National Biodiversity Plan (DCHG 2017) and any review thereof.

(b): Safeguard, enhance and protect water bodies (rivers/canals/lakes) and river walks and to provide links, where possible, to wider green infrastructure networks as an essential part of the design process.

(c): Require an 'Ecosystems Services' approach for new development to incorporate nature-based solutions to SUDS, in so far as practical, as part of water management systems, public realm design and landscaping, in line with best practice.

(d): Where trees or hedgerows are of particular local value, the Council may seek their retention, or where retention is not feasible, their replacement and will seek a proactive focus on new tree-planting as part of new development.

11 - 7 a): Ensure the protection of water quality in accordance with the EU WFD, and support the objectives and facilitate the implementation of the associated Programme of Measures of the River Basin Management Plan 2018-2021 and any successor. This includes contributing towards the protection of Blue-Dot catchments and drinking water resources. Also, have cognisance of the EU's Common Implementation Strategy Guidance Document No. 20 and 36 which provide guidance on exemptions to the environmental objectives of the WFD.

b): Support an integrated and collaborative approach to catchment management in accordance with the River Basin Management Plan 2018-2021 and any successor.

c): Require an undisturbed edge or buffer zone to be maintained, where appropriate, between new developments and riparian zones of water bodies to maintain the natural function of existing ecosystems associated with water courses and their riparian zones, and to enable sustainable public access.

11 – 13: Seek to control the spread of invasive plant and animal species, including consideration of potential pathways for invasive species spread, i.e. watercourses.

11 – 15: Support the diversification of peatlands, whilst ensuring the protection of their ecological, archaeological, cultural and educational significance in line with the National Peatlands Strategy (DAHG 2015). The Council may request landowners to prepare a 'Peatland Master Plan', especially for areas of industrial cut-over peatland, and will work with all stakeholders involved in the process in this regard. Any Masterplan should identify any significant tourism, amenity and recreation potential of these lands.

11 – 18: Ensure that new development does not result in significant noise disturbance and to ensure that all new developments are designed and constructed to minimise noise disturbance in accordance with the provisions of the Noise Action Plan 2018 and relevant standards and guidance that refer to noise management.

11 – 19: Ensure that new development does not result in significant disturbance as a result of light pollution and to ensure that all new developments are designed and constructed to minimise the impact of light pollution on the visual, environmental and residential amenities of surrounding areas.

11 - C (a): Support and facilitate the implementation of the objectives of the Tipperary Heritage Plan 2017- 2021, and,

(b): Prepare a 'Biodiversity and Heritage Plan' for Tipperary over the lifetime of the Plan.

11 – G: Apply best practice in sustainable environmental standards in the design and development of collaborative and/or public sector development in Tipperary, including:

(a): Ensure that biodiversity issues are considered at the earliest possible stages of plan making;

(b): Ensure that plans and strategies comply with nature conservation legislation and policy as required (fulfil SEA and AA requirements); and

(c): Carry out ecological impact assessment of plans and strategies as appropriate.

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